Linguistik Aktuell Linguistics Today 272

New Explorations in Chinese Theoretical Syntax

Studies in honor of Yen-Hui Audrey Li

Edited by

Andrew Simpson

John Benjamins Publishing Company

New Explorations in Chinese Theoretical Syntax

Linguistik Aktuell/Linguistics Today (LA)

ISSN 0166-0829

Linguistik Aktuell/Linguistics Today (LA) provides a platform for original monograph studies into synchronic and diachronic linguistics. Studies in LA confront empirical and theoretical problems as these are currently discussed in syntax, semantics, morphology, phonology, and systematic pragmatics with the aim to establish robust empirical generalizations within a universalistic perspective.

For an overview of all books published in this series, please see
benjamins.com/catalog/la

Volume 272

New Explorations in Chinese Theoretical Syntax
Studies in honor of Yen-Hui Audrey Li
Edited by Andrew Simpson

New Explorations in Chinese Theoretical Syntax

Studies in honor of Yen-Hui Audrey Li

Edited by

Andrew Simpson
University of Southern California

John Benjamins Publishing Company
Amsterdam / Philadelphia

DOI 10.1075/la.272

Cataloging-in-Publication Data available from Library of Congress:
LCCN 2021059062 (PRINT) / 2021059063 (E-BOOK)

ISBN 978 90 272 1067 8 (HB)
ISBN 978 90 272 5817 5 (E-BOOK)

John Benjamins Publishing Company · https://benjamins.com

Table of contents

Introduction

Andrew Simpson

New explorations in Chinese theoretical syntax is intended to be a showcase of the kind of work currently being carried in the area of Chinese formal syntax by leading figures active in the field, as the study of Chinese syntax from a theoretical perspective enters the third decade of the 21st century. The volume is also presented as a tribute to the work of Yen-Hui Audrey Li, who has been deeply involved in the analysis of Chinese syntax across a very broad range of areas ever since the 1990 publication of her seminal treatise on *Order and Constituency in Mandarin Chinese* (Kluwer). Audrey Li's research has regularly exerted a profound and extremely important influence on the evolution of formal approaches to Chinese syntax and her work has always been at the forefront of theoretical investigations into Chinese. We are all indebted to her insights, scholarship and tireless enthusiasm, and grateful for the ways she continues to stimulate and enrich the now global study of Chinese formal syntax. The contributors to the current volume all have close connections to Audrey Li as contemporary colleagues or former students and have collaborated on this collection of papers to create a token of esteem for Audrey and her deep involvement in the field of Chinese linguistics.

As the formal study of Chinese syntax has developed since its initiation in the 1970s, it has seen different emphases of attention as researchers have focused on an increasing range of syntactic phenomena within Chinese and how such patterns can help inform cross-linguistic theories of generative syntax. In the earlier period of the 1980s and 1990s, major contributions were made from work on Chinese to the analysis of at least six different areas of syntax with broad, cross-linguistic significance. James Huang's important 1982 MIT dissertation *Logical Relations in Chinese and the Theory of Grammar* set a whole new agenda for the study of *islands, locality and wh-in-situ* constructions, and has inspired subsequent work on these issues through until the present. Huang (1984, 1989) and work by other authors showed how the study of Chinese could help direct approaches to the distribution and interpretation of *empty categories* such as *pro*, establishing theories of the licensing of such elements which continue to be heavily influential. Much productive research was also carried out on *anaphors* in Chinese and the nature of locality restrictions constraining their occurrence, both the local anaphor *ta-ziji* and the

https://doi.org/10.1075/la.272.01sim

long-distance reflexive bare *ziji*, interacting with and influencing work on logophoricity and long-distance binding carried out on other, non-Sinitic languages. The area of quantification and *quantifier scope* was also prominent as a domain of inquiry in the 1980s and 1990s, with Aoun and Li (1989, 1993) being two particularly substantial engagements with the ways that scope may be computed in Chinese, where linear factors appear to play a greater role than in languages such as English. A fifth dominant theme of research during this period was the study of *aspect* in Chinese, and modeling the syntactic and interpretational properties of morphemes such as verbal-*le*, sentence-*le*, *-guo* and *-zhe* in Mandarin, with Smith (1991, 1994) being two foundational works catalyzing much further research in this area. Finally, the nature of Chinese as a topic prominent language and the interaction of *topics* with sentential syntax attracted significant attention as generative studies on Chinese gathered momentum (see, for example, Shi 1992, 2000 and Shyu 1995).

In addition to the instantiation in Chinese of general paradigms (such as *wh*-questions, binding, aspect etc) which are also robustly present in other languages, the 1980s and 1990s additionally produced much research on patterns which appear more Chinese-specific, with the goal of showing how such apparently language-particular phenomena might bear more broadly on the nature of universal grammar. Three prime examples of this are the *ba-construction*, the pre-verbal quantificational element *dou,* and *A-not-A questions*. These topics continue to excite new ideas and analyses, as researchers regularly revisit the puzzles they pose and are either focused on or referenced in two contributions to the present volume (Shi-Zhe Huang's chapter on *dou*, and Shu-ing Shyu and Liȯk-san N̂g's chapter on question in strategies in Taiwanese Southern Min).

Building further on the substantial progress made from the 1970s to the 1990s, the field of Chinese theoretical syntax in more recent years has significantly expanded both its domain of linguistic inquiry and its modes of analysis and approaches, with an increased use of psycholinguistic and acquisitional studies to probe syntactic phenomena, a greater presence of semantics in syntactic analyses, new contributions from formal pragmatics to the study of morpho-syntactic patterns, and an impressive growth in research into the syntax of regional forms of Chinese, in addition to Mandarin. In terms of specific 'new' language patterns and themes frequently under discussion since the 2000s (or, perhaps, focused on substantially more than in previous years), seven major phenomena can be identified here as having attracted recurrent, significant attention, remaining 'live' hot topics still being addressed and argued over in much ongoing research, as will be seen in the current volume.

Following important, foundational work on aspect carried out in the 1990s, an extended debate has emerged focusing on the question of whether Chinese is a language with the category of *tense* and syntactically projects a TP, and connectedly

how the property of *finiteness* may be relevant and defined for Chinese. Hsieh (2002) and Sybesma (2005) (among others) take the position that Chinese is a language with tense, whereas J.-W. Lin (2003, 2006, 2010) (among others) argues that this is not so, and Chinese should be concluded to be a tenseless language. The related issue of finiteness and its syntactic consequences in Chinese has been investigated in works such as T.-H. J. Lin (2011, 2015), and is re-examined in depth in Jim Huang's contribution to the current volume.

The *structure of nominal projections* in Chinese has also been an area of intense debate in recent years. One central issue is whether Chinese nominals project a DP layer of structure as in English, or only occur as NPs or some intermediate level of projection. Cheng and Sybesma 1999, 2005) have argued that nominals in Chinese typically occur as either ClPs (Classifier Phrases) or NPs, but not DPs (see also Boskovic 2014, and Jiang 2021 for similar NP-type analyses). On the other hand, Audrey Li in a series of works (Li 1998, 1999, 2014a) has defended the view that DPs are projected in Chinese, as well as smaller nominal constituents in certain instances. A separate issue relating to nominal projections which has excited opposing views in recent years is whether the functional structure of such constituents is to be analyzed as right- or left-branching. A right-branching, head-initial view has been championed by Audrey Li (2013, 2014a) and various others, while a left-branching analysis has been proposed by Her and Tsai (2019), and a mixed left- and right-branching approach argued for in Zhang (2013) and X. Li (2013). Work on this topic connects up in a crucial way with the status of *classifiers*, and whether such elements project ClPs as syntactic functional heads or are merged as parts of composite numeral-heads (perhaps inserted as morphological affixes). The function and morpho-syntactic status of classifiers has continued to be the center of attention in many prominent pieces of research on Chinese (as with other numeral classifier languages) and has led to a wealth of new empirical observations, particularly with regard to regional forms of Chinese (see, among others, Cheng and Sybesma 2005, X. Li 2013, Li and Bisang 2012, Simpson 2017).

A third general topic that has excited much productive research in recent times is the syntactic status of *empty (nominal) categories*, and whether null subjects and objects should be uniformly analyzed as empty pronominals (pro, PRO) or be taken to have a different origin. One line of investigation has pursued the idea that *ellipsis* may be involved in the creation of null objects in Chinese, either through the direct ellipsis of nominals in object position – 'argument ellipsis' – or perhaps due to the ellipsis of a larger, containing constituent – VP ellipsis (see Otani and Whitman 1991, Sato 2014, Simpson, Choudhury, and Menon. 2013). In contrast to an ellipsis-based analysis of null objects, Audrey Li (2014b) has developed a novel alternative view that such elements are 'True Empty Categories' which are 'born empty', and not the result of any elision of nominal phrases. This debate continues

in an interesting way, and regularly involves comparisons of Chinese with Japanese, where there are important differences in the patterns found (notably, Japanese permits more interpretational possibilities to null subjects than Chinese does).

The syntactic and pragmatic study of *particles* in Chinese has also developed considerably over the last two decades, again building on earlier descriptive work, and advancing the topic with new syntactic questions and analyses. Chinese languages exhibit great variety and a high frequency occurrence of such elements 'used to communicate a range of discourse-sensitive meaning relating to speaker attitude, force of assertion, evidentiality and clause-type, along with various other semantic and pragmatic factors (Simpson 2014: 157). There are several important questions posed by the analysis of particles, principally relating to their position and their contribution to meaning. Most attention has been drawn to those particles which occur in sentence-final position – sentence-final particles/SFPs – and the issue of their syntactic status. Should such elements be taken to be the instantiations of functional categories, and if so, are they the heads of head-final constituents selecting a leftward complement, or is movement involved in the surface positioning of SFPs? Additionally, how can the sequencing of multiple particles (particle clusters) be accounted for syntactically? Such issues require a good understanding of the semantic-pragmatic functions of SFPs and the relative scope relations between particles in a cluster, a very challenging area of inquiry. Questions of this type have been offered different solutions in studies of Mandarin, Cantonese and Taiwanese, but there is still no broad agreement on the proper analysis of SFPs and new work continues to highlight further interpretational properties of particles in interesting ways, both SFPs and also sentence-internal particles – see, among others, Fung (2000), Law (2004), B. Li (2006), Sybesma and Li (2007), Paul (2014), Tang (2015a/b), Pan and Paul (2017), Simpson and Wu (2002).

Work on the syntax and interpretation of SFPs often dovetails neatly with new investigations of the *structure of the left periphery* in Chinese, frequently examined from a *cartographic perspective*. As cross-linguistic studies of left periphery phenomena continue to increase in recent times, this has triggered new interest in probing the fine syntactic structure of the Chinese left periphery and how discourse-related projections may be present in Chinese clauses encoding point of view, modality, evidentiality, force and other aspects of discourse/pragmatic components properties which structurally occur above the TP/IP-level in clauses. *The Cartography of Chinese Syntax* (2015, ed. Dylan Tsai, Oxford University Press) is an entire volume dedicated to charting out aspects of the fine structure of syntactic projections in Chinese, and other studies of SFPs have regularly contributed to views of how left periphery discourse-related projections may be realized in Chinese (see, for example, Badan 2007, Tang 2020, Pan 2015, Oichi 2020).

Finally, mention can be made of two particular constructions which have attracted considerable attention in recent, post-2000 research, in large part due to the special properties they present in Chinese. *Relative clauses* are syntactically interesting in Chinese because Chinese is the only language documented anywhere to combine an RC>N ordering with regular V>O word order – other VO languages all have post-nominal relative clauses (N>RC). This typological oddity places Chinese in a potentially valuable position to explore different theories of relativization, and has led to a large number of works investigating the syntax (and also processing) of Chinese relative clauses and whether and how a head-raising/LCA-type approach might be supported for Chinese. This has been vigorously discussed in Aoun and Li 2003, del Gobbo 2003, Simpson 2003, Cinque 2020 among other works. Further special aspects of Chinese relative clauses such as the variable positioning of demonstratives before or after such constituents, and the occurrence of head-internal patterns of relativization in regional forms of Chinese have also inspired much recent research (for example, Lin and Tsai 2015, Hu, Cecchetto and Guasti 2018 and references therein). The phenomenon of *non-canonical arguments* and their syntactic realization in Chinese has similarly stimulated much interesting work and remains a much-discussed issue. Different analyses have been proposed to account for the observation that various non-selected nominals are frequently found to occur as the apparent objects of verbs in sequences such as *kai zuobian* 'drive right-side', *kai zuo-shou* 'drive left-hand', *chi haohua canting* 'eat fancy restaurant', *xihuan xie zhe-zhi maobi* 'like to write this brush pen' (Barrie and Li 2015: 180). Such patterns are cross-linguistically uncommon and therefore require some parametrizable adjustment to standard views of argument selection and licensing that will generate these combinations in Chinese but disallow their occurrence in other languages. T.-H. J. Lin (2001) approaches this challenge with reference to the properties of light verbs as argument-selecting eventuality predicates in Chinese. Other perspectives are explored in Zhang (2005), Barrie and Li (2015), Huang, Li and Li (2009), and the topic is a good example of how an unusual construction in Chinese needs to be reconciled with and is also able to inform our understanding of general, cross-linguistic principles of syntax.

Many of the above-mentioned recent themes occur as primary or secondary topics in the range of papers included in the present volume. The first section of the volume is focused on the structure of lexical and functional categories, and presents four new papers addressing the projection of syntactic structures in Chinese. Jim Huang's essay on *Finiteness, opacity and Chinese clausal architecture* considers the important issue of finiteness and the occurrence of finiteness in Chinese, a language without overt tense and agreement morphology. Huang argues that there is a scale of finiteness in Mandarin which corresponds to three distinct clausal categories,

CP, IP, and vP, all of which originate as full CPs but may undergo derivational reduction in a process of 'exfoliation' (Pesetsky 2017–21). Huang then develops a referential theory of tense for Chinese, and shows how properties of temporal interpretation in Mandarin can be successfully modeled if tense is assumed to have different potential specifications governed by principles of syntactic binding theory, being broadly equivalent to anaphors, pronominals, and R-expressions. In *Place and distance: locative expressions in Mandarin and Cantonese*, Lisa Cheng and Rint Sybesma engage in a cartographic-like investigation of locative PPs in mandarin, cantonese and taiwanese, asking whether the expanded, multi-layered PP structures posited in works such as Terzi (2010) for other languages may also be realized in Chinese, which is known to have complex locative PPs. Cheng and Sybesma show that this complexity provides further support for the claim that locative PPs may project a PlaceP independent of PP_{Loc}, but that complications for Terzi's template occur when there is degree modification of locative expressions. The conclusion is reached that the highest layer of complex PPs assumed in languages such as English is in fact absent from equivalent structures in Chinese, raising interesting questions about the parametrization of 'universal' syntactic structures. Tom Ernst returns to a very fundamental issue raised in early formal studies of Chinese – the syntactic status of post-verbal elements in Chinese, and whether constituents other than objects which follow the verb are projected as adjuncts or as complements. Ernst argues that *"Descriptive complements" are manner adverbials* – descriptive complements being post-verbal sequences which consist in the particle *de* and an adjectival phrase, as in *Zhangsan wan de hen tongkuai* [Zhangsan play DE very happy] 'Zhangsan is playing happily'. Ernst demonstrates that the positional and locality evidence elsewhere used to support a complement analysis of the de+AdjP unit does not stand up to closer scrutiny, and in doing so makes the general claim that non-extractability can no longer be taken as a valid test for adjuncthood, and that adjuncts only constitute islands for movement when they do not form a single 'macro-event' with the matrix predicate, as has been proposed by Truswell (2011). The topic of complex eventhood and its connection with syntactic structure which is raised in Ernst's chapter is also taken up by Waltraud Paul in her chapter on *SVCs (serial verb constructions) in disguise: the so-called "directional verb compounds" in Mandarin Chinese*. Paul identifies a multi-verb construction in Chinese employing directional verbs which does qualify as a genuine SVC in the sense of Collins (1997), where there is a single complex event, internal argument sharing, and a unique aspect/tense marker. Paul examines examples such as *ta dai-shang-le yi-bei cha lai* [he carry ascend 1 cup tea come] 'He brought in a cup of tea' and argues for an analysis in which three VPs are merged together as co-components of a single finite clause.

Part II of the volume consists in two papers on another area of Chinese syntax that is attracting increasing interest – *modal verb syntax* – studies of interactions between the syntactic and interpretational properties of modal verbs of different kinds. In *Modal movement licensed by focus*, Kai Fa Yip and Tommy Tsz Ming Lee investigate the occurrence of certain modal verbs such as *neng/keyi* 'can/be possible' in pre-subject positions. Yip and Lee develop a novel account of the restrictions they observe on modals in sentence-initial position which is cast in terms of a focus condition – the raising of modals to initial position is only licensed when this crosses an element that is in focus, and not in other contexts (and hence is similar, in this respect, to focus intervention effects which cause scrambling in languages like Korean). Following this, Roger Liao and Iris Wang consider *Negative modals and prohibitives in Taiwanese Southern Min* and discuss differences in the distribution of modals which express negative imperatives. Observing that *m*-prefixed modals are more restricted in their occurrence when embedded under other predicates than *b*-prefixed modals, Liao and Wang attribute this patterning to a difference in the source of a prohibition/negative attitude: *m*–prefixed modals are argued to have a directive feature which must be logophorically bound by the director (subject) of a higher embedding verb, whereas *b*-prefixed modals are not subject to such a licensing condition. The analysis is a further contribution to ongoing work which proposes that speaker perspective is encoded in functional projections in the clausal periphery and has effects on cross-clausal syntactic phenomena.

The third part of the current collection of papers is focused on a range of *syntax-semantics interactions* in Chinese. Shi-Zhe Huang returns to a prominent issue in Chinese syntax, the characterization of sentences containing the pre-verbal element *dou* (都), which has previously been analyzed in a variety of ways – as a distributive operator, a sum operator, a quantificational adverb, a floating quantifier, a focus element, and a maximality operator. Huang adopts a different investigative perspective in *Skolemized topicality for indefinites and universal quantifier mei-phrases in Chinese,* and develops an interesting analysis which emphasizes important connections between the licensing of universally-quantified *mei* phrases, indefinites, and Chinese as a topic-prominent language. Jowang Lin's paper in this section is a reconsideration of *Chinese comparatives: commentary on clausal vs. phrasal analyses* and contrasts two potential approaches to such constructions – their analysis either as clausal comparatives (Liu 2011, Erlewine 2018) or as phrasal comparatives (Xiang 2005, Lin 2009). Lin evaluates the difficulties that may confront a clausal analysis for Chinese and defends a phrasal approach, despite recent challenges to such an analysis. Niina Zhang takes up a general theoretical issue relating to the realization of syntactic heads via merge or move in her remark on *Head dependency and degree words in Mandarin*. Noting that head movement

has been argued to be either syntactic or morphological in nature (Harizanov and Gribanova 2019), and that the latter form of head-movement never has semantic effects, Zhang asks whether it may be possible for a head element to be *merged* in a non-canonical position (rather than moved to such a position) without this having semantic effects. Zhang's answer to this question is affirmative, and she offers the variable distribution of the degree element *ji* in Mandarin (e.g. *Taiwan ji piaoliang.* vs. *Taiwan piaoliang ji le*. 'Taiwan is extremely beautiful') as an illustration of such a possibility. The fourth paper in Part III is Andrew Simpson and Zoe Wu's *Constraints on the representation of anaphoric definiteness in Mandarin Chinese: a reassessment*, which revisits the claim in Jenks (2018) that anaphoric definites in Mandarin can in general not be encoded via simple, bare nouns and instead require the use of demonstratives due to a principle (*Index!*) which necessitates that referential indices are overtly projected in anaphoric relations. Simpson and Wu show that bare nouns can, in fact, occur as anaphoric definites in a full range of syntactic positions, when certain confounding, non-syntactic effects of discourse coherence are controlled for, calling into question the validity of *Index!* as an across-the-board constraint in Mandarin. Similar patterns are then also shown to occur in two other languages which do not have definite articles – Korean and Hindi – reinforcing the general conclusions which emerge from the paper's broader empirical investigation of Mandarin. Following this, Yafei Li presents a new analysis of non-canonical arguments in *Noncanonical arguments via the high applicative*. Li identifies potential shortcomings in other prominent analyses of the phenomenon of verbs combining with non-canonical arguments/NCAs (for example *chi canguanr* [eat restaurant] 'eat at a restaurant') and suggests that a particular implementation of his (Li, to appear) characterization of high applicatives is better placed to generate a full range of NCAs and also provide an account of why NCAs occur in Chinese but not (widely) in other languages. Similar patterns are also discussed in Richard Larson and Chong Zhang's *Applied objects in Mandarin and the nature of selection*, which argues that Mandarin oblique arguments should be analyzed uniformly as applied objects, which have raised from underlying oblique positions. The authors note that their proposal both captures patterns found in a range of Mandarin constructions and also raises important general questions about the nature of selection, ultimately leading to a view of selection that departs significantly sharply from common semantically-based approaches. Finally, Sze-Wing Tang presents an extended study on the phenomenon of 'incompleteness' in Chinese, in which certain clausal types cannot naturally stand alone as matrix clauses, but may function as adverbial modifiers. *On the syntax of incompleteness: evidence from the converbal construction in Cantonese* demonstrates that one type of verbal suffix in Cantonese is used to build 'converbal constructions' which are reduced TPs with minimal functional projections within TP and no CP layer projected above TP. Such 'defective' TP clauses

can never stand alone or occur in typical case positions and can only be merged as adverbial clauses, due to their syntactic 'incompleteness'.

The syntax and interpretation of *Particles* is the subject of Part IV of the volume, with four papers bringing new insights to the growing study of particles in Chinese. Dylan Tsai and Ching-Yu Helen Yang begin the section with an essay *On the syntax of mirativity: evidence from Mandarin Chinese*. Mirativity refers to unexpectedness expressed towards a situation/event from the speaker's viewpoint, and is associated with evidential morphology in certain languages. Tsai and Yang suggest that mirativity in Mandarin is realized by means of the sentence-final particle a^0 (*a* with a neutral tone), as for example in *Lisi qu-le Taibei* a^0*!* [Lisi go-ASP Taipei PRT] 'To my surprise, Lisi has gone to Taipei!'. Adopting a cartographic analysis of the left periphery, the authors suggest that mirative a^0 is the head of a Speech Act Phrase expressing illocutionary force, and that the specifier of this projection may be instantiated with adverbial elements such as *yuanlai* 'actually' and *zenme* 'how'. Mirativity also figures in Miao-Ling Hsieh's chapter *On the mirative marker leh*^{4} *in Taiwanese Southern Min*. While Chen (2020) reasons that the continuative marker *leh*^{4} at the end of a sentence has developed into a sentence mood particle which serves functions such as confirmation and emphasis, Hsieh follows Aikhenvald's (2012) definition of mirativity and shows that *leh*^{4} is a mirative marker that marks sudden discovery, surprise and counterexpectation not only from the speaker's view, but also from the addressee's view. In her analysis, the projection of the mirative *leh*^{4} is higher than that of an evidential marker. The third paper in this section on particles is Shu-Ing Shyu's and Liok-san Ng̃'s discussion of *Non-veridical kaN in Taiwanese Southern Min.* Shyu and Ng̃ presents a synchronic analysis of Taiwanese *kám,* which diachronically has developed from a verb meaning 'dare.ask' into a question particle that occurs in yes-no question between the subject and the verb: *li kam beh lai?* [you Q want come] 'Do you want to come?' Shyu and Ng̃ considers two previous approaches to *kám* questions – one which characterizes them as regular yes-no questions equivalent to Mandarin *ma* questions (Cheng 1977), and a second analysis which takes them to be equivalents to Mandarin A-not-A questions (Huang 1991). Shyu and Ng̃ herself argues that *kám* questions are a kind of polarity question in which *kám* occurs in the head of a post-subject, sentence-medial PolP. Island effects found in *kám* questions are attributed to covert feature movement between Pol^0 and a higher interrogative projection in the left periphery. Shyu and Ng̃ also shows that there is a significant interaction with focus when the additional element *si* is present in a question with *kám*. The final paper on particles in Part IV, by Wei Wei, considers *Sentence-internal discourse particles in Mandarin Chinese*, elements such as *yòu* 'again', *dào* 'upside down', *kě* 'yet', and *yě* 'also' which occur at the left edge of a verb phrase and provide hearers with information on how a situation/event may diverge (or converge) from expectations held by the speaker.

Wei focuses in particular on the two particles *yòu* 'again' and *dào* 'upside down', and provides a formal pragmatic modeling of these discourse elements using the dynamic semantics framework and the Table model of discourse management (Farkas and Bruce 2010). As Wei points out, the study of sentence-medial particles has not received as much attention as sentence-final particles, but there is much richness to explore in the former group and their physical distribution between subjects and the VP raises interesting syntactic questions about how they may (or may not) relate to sentence-peripheral functional projections encoding speaker attitude and perspective.

The volume is then completed with two papers on the *acquisition and processing of syntactic structures* in Part V. In *V-gei vs. double object construction: the mental representation of the Mandarin V-gei construction,* Yi-Hsien Liu and Heeju Hwang present a psycholinguistic investigation of how L1 speakers of Chinese process the V-*gei* construction in which a ditransitive verb is combined with *gei* 'give' in a complex verbal cluster, as for example in: *Xiao Zhang song-gei-le Mali yi tiao xianglian* [Zhang send-give-ASP Mary one CL necklace] 'Zhang sent Mary a necklace.' Liu and Huang observe that the acquisition of Mandarin dative constructions is challenging for L2 speakers as there are three different structures which occur in Mandarin – the double object construction, a prepositional dative construction, and the *gei*-construction. Using structural priming as a means to probe how the *gei*-construction is processed by native speakers, the authors develop a modeling of the mental representation of the *gei*-construction which is intended to help inform the teaching of the range of dative constructions to L2 learners. Li Yan, in the final paper of the volume, discusses *Predicting the unpredictable: –le used in Chinese serial verb constructions.* Learning how to correctly use the Mandarin perfective aspect marker *-le* is an extremely difficult task for L2 learners of Chinese. Li notes that most previous studies on this topic have focused on the combination of *-le* with a single verb and much less is documented/known about the occurrence of *-le* with two-verb clusters in serial verb constructions/SVCs. Using corpus data, Li's paper attempts to fill this gap, analyzing *-le* and its properties when it appears in sequences of verbs, attached either to the first or second verb in SVCs. Li's study asks what semantic properties may dictate the positioning of *-le* in serial verb clusters and whether its variable positioning may also be affected by the nature of any object that is present.

With its five sections on different aspects of Chinese syntax, approached from a formal perspective, the current volume aims to provide readers with a broad exposure to some of the exciting range of new work on Chinese syntax that is being carried out by prominent researchers in the field. As the study of theoretical Chinese syntax continues to expand its horizons, take in new topics and bring fresh empirical discoveries to light, its special contributions to the cross-linguistic

investigation of universal grammar are becoming increasingly valuable and rich in their description. We hope that readers will enjoy and be stimulated by the set of essays collected in this volume. We are also delighted to dedicate this collective work to our dear friend and colleague Audrey Li, who has inspired so many of us over the years with the valuable insights of her work.

References

Aikhenvald, Alexandra. 2012. The essence of mirativity. *Linguistic Typology*, 16(3), 435–485. https://doi.org/10.1515/lity-2012-0017

Aoun, Joseph and Y.-H. Audrey Li. 1989. Constituency and scope. *Linguistic Inquiry* 20:141–172.

Aoun, Joseph and Y.-H. Audrey Li. 1993. *Syntax of scope*. Cambridge, Mass: MIT Press.

Aoun, Joseph and Y.-H. Audrey Li. 2003. *Essays on the representational and derivational nature of grammar: the diversity of wh-constructions*. Cambridge: Mass: MIT Press. https://doi.org/10.7551/mitpress/2832.001.0001

Badan, Linda. 2007. *High and low periphery: A comparison between Italian and Chinese*. PhD dissertation, Padova: Università degli Studi di Padova.

Barrie, Michael and Audrey Li. 2015. Analytis versus synthesis: objects. In Audrey Li, Andrew Simpson, and Wei-tien Dylan Tsai (eds.), *Chinese Syntax in a Cross-Linguistic Perspective*. Oxford: Oxford University Press, 179–206. .

Bošković, Željko. 2014. Now I'm a Phase, Now I'm Not a Phase: On the Variability of Phases with Extraction and Ellipsis. *Linguistic Inquiry* 45:1: 27–89. https://doi.org/10.1162/LING_a_00148

Chen, Manjun. 2020. The etymology and grammaticalization of the continuative aspect marker *le(h)*^{4}: a survey from the historical documents. In Chinfa Lien and Alain Peyraube (eds) *Diachronic perspectives and synchronic variation in Southern Min*. London: Routledge, 157–196. https://doi.org/10.4324/9790429316517-8

Cheng, Lisa L-S. and Rint Sybesma. 1999. Bare and not-so-bare nouns and the structure of NP. *Linguistic Inquiry* 30. 509–542. https://doi.org/10.1162/002438999554192

Cheng, Lisa L-S. and Rint Sybesma. 2005. Classifiers in four varieties of Chinese.' In Richard Kayne and Guglielmo Cinque (eds.) *The Oxford Handbook of Comparative Syntax*. Oxford University Press: Oxford, 259–92.

Cheng, Robert Liang-Wei. 1977. Taiwanese question particles. *Journal of Chinese Linguistics*, 5, 153–185.

Cinque, Guglielmo. 2020. *The syntax of relative clauses: a unified analysis*. Cambridge: Cambridge University Press. https://doi.org/10.1017/9781108856195

Collins, Chris. 1997. Argument sharing in serial verb constructions. *Linguistic Inquiry* 28, 3.

Del Gobbo, Francesca. 2003. *Appositives at the interface*. PhD dissertation, University of California, Irvine.

Erlewine, Michael Yoshitaka. 2018. Clausal comparison without degree abstraction in Mandarin Chinese. *Natural Language and Linguist Theory* 36:445–482. https://doi.org/10.1007/s11049-017-9383-y

Farkas, Donka and Kim Bruce. 2010. On reacting to assertions and polar questions. *Journal of semantics* 27: 81–118. https://doi.org/10.1093/jos/ffp010

Fung, R.S.-Y. 2000. Final particles in standard Cantonese: semantic extension and pragmatic inference. Ph.D. dissertation, Ohio State University.
Harizanov, Boris and Vera Gribanova. 2019. Whither head movement? *Natural Language and Linguistic Theory* 37.2: 461–522. https://doi.org/10.1007/s11049-018-9420-5
Her, One-Soon Her and Hui-Chin Tsai. 2019. Left is Right, Right is not: On the Constituency of the Classifier Phrase in Chinese. *Language and Linguistics* 20.4.
Hsieh, Miao-Ling. 2002. Tense as a grammatical category in Chinese. In Sze-Wing Tang and Chen-Sheng Luther Liu (eds.) *On the formal way to Chinese languages*. Stanford: CSLI, 3–20.
Hsieh, Miao-Ling. 2008. The internal structure of noun phrases in Chinese. *Taiwan Journal of Linguistics: Book Series in Chinese Linguistics. No. 2*. Taipei: Crane Publishing.
Hu, Shenai, Cecchetto, Carlo and Maria-Teresa Guasti. 2018. A new case for structural intervention: evidence from Wenzhounese relative clauses. *Journal of East Asian Linguistics* 27, 247–273. https://doi.org/10.1007/s10831-018-9182-4
Huang, C.-T. James. 1984. On the distribution and reference of empty pronouns. *Linguistic Inquiry* 15:531–574.
Huang, C.-T. James. 1989. Pro-drop in Chinese: a generalized control approach. In (Osvaldo Jaeggli and Ken Safir, eds.) *The null subject parameter*. Dordrecht: Kluwer, 185–214. https://doi.org/10.1007/978-94-009-2540-3_6
Huang, C.-T. James. (1991). Modularity and Chinese A-not-A questions. In Carol Georgopoulos & Roberta Ishihara (eds.), *Interdisciplinary Approaches to Linguistics: Essays in Honor of Yuki Kuroda*. Dordrecht: Kluwer Academic Publishers, 305–332. https://doi.org/10.1007/978-94-011-3818-5_16
Huang, C.-T. James, Li, Y.-H. Audrey and Yafei Li. 2009. *The syntax of Chinese*. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9781139166935
Jenks, Peter. 2018. Articulated definiteness without articles. *Linguistic Inquiry*. 49:501–536. https://doi.org/10.1162/ling_a_00280
Jiang, Li Julie. 2021. *Nominal arguments and language variation*. Oxford: Oxford University Press.
Law, Ann Y.-K. 2004. Sentence final focus particles in Cantonese. Ph.D. dissertation, University College London.
Li, Boya. 2006. Chinese final particles and the syntax of the periphery. Ph.D. dissertation, Leiden University.
Li, Xuping. 2013. *Numeral classifiers in Chinese*. Berlin: De Gruyter Mouton. https://doi.org/10.1515/9783110289336
Li, Xuping and Walter Bisang. 2012. Classifiers in Sinitic languages: From individuation to definiteness-marking'. *Lingua* 122. 335–355. https://doi.org/10.1016/j.lingua.2011.12.002
Li, Yafei. (to appear) *Universal Grammar and iconicity*. Cambridge University Press.
Li, Y.-H. Audrey. 1998. Argument determiner phrases and number phrases. *Linguistic Inquiry* 693–702. https://doi.org/10.1162/ling.1998.29.4.693
Li, Y.-H. Audrey. 1999. Plurality in a classifier language. *Journal of East Asian Linguistics* 8:75–99. https://doi.org/10.1023/A:1008306431442
Li, Y.-H. Audrey. 2011. Non-canonical objects and case. *Korea Journal of Chinese Language and Literature*, 1: 21–51.
Li, Y.-H. Audrey. 2013. P-insertion and ellipsis. *Studies in Chinese Linguistics* 34:2:99–128.

Li, Y.-H. Audrey. 2014a. Structure of noun phrases: left or right? *Taiwan Journal of Linguistics* 12:2: 1–32.

Li, Y.-H. Audrey. 2014b. Born empty. *Lingua* 151:43–68. https://doi.org/10.1016/j.lingua.2013.10.013

Lin, Jowang. 2003. Temporal reference in Mandarin Chinese. *Journal of East Asian Linguistics* 12:259–311. https://doi.org/10.1023/A:1023665301095

Lin, Jowang. 2006. Time in a language without tense. *Journal of Semantics* 23:1–53. https://doi.org/10.1093/jos/ffh033

Lin, Jo-Wang. 2009. Chinese comparatives and their implicational parameters. *Natural Language Semantics* 17 (1): 1–27. https://doi.org/10.1007/s11050-008-9033-3

Lin, Jowang. 2010. A tenseless analysis of Mandarin Chinese revisited: a response to Sybesma 2007. *Linguistic Inquiry* 41: 305–329. https://doi.org/10.1162/ling.2010.41.2.305

Lin, Jowang and Wei-Tien Dylan Tsai. 2015. In Audrey Li, Andrew Simpson, and Wei-tien Dylan Tsai (eds.), *Chinese Syntax in a Cross-Linguistic Perspective*. Oxford: Oxford University Press, 100–127.

Lin, T.-H. Jonah. 2001. *Light verb syntax and the theory of phrase structure*. PhD dissertation, University of Southern California, Irvine.

Lin, T.-H. Jonah. 2011. Finiteness of clauses and raising of arguments in Mandarin Chinese. *Syntax* 14:48–73. https://doi.org/10.1111/j.1467-9612.2010.00145.x

Lin, T.-H. Jonah. 2015. Tense in Mandarin Chinese sentences. *Syntax* 18:3:320–342. https://doi.org/10.1111/synt.12032

Liu, Chen-Sheng Luther. 2011. The Chinese bi comparative. *Lingua* 121: 1767–1795. https://doi.org/10.1016/j.lingua.2011.07.002

Matthews, Stephen and Virginia Yip. 1994. *Cantonese: a Comprehensive Grammar*. London: Routledge.

Oichi, Masao. 2020. *Wh*-adjuncts, left periphery, and *wh*-in-situ. In Audrey Li, Andrew Simpson, and Wei-tien Dylan Tsai (eds.), *Chinese Syntax in a Cross-Linguistic Perspective*. Oxford: Oxford University Press, 401–428.

Otani, Kazuyo and John Whitman. 1991. V-raising and VP-ellipsis. *Linguistic Inquiry* 22:2:345–358.

Pan, Victor. 2015. Mandarin peripheral construals at the syntax-discourse interface. *The Linguistic Review*, 32(4): 819–868. https://doi.org/10.1515/tlr-2015-0005

Pan, Victor and Waltraud Paul. 2017. What you see is what you get: Chinese sentence-final particles as head-final complementizers. In Josef Bayer, Josef and Volker Struckmeier (eds.) *Discourse particles. Formal approaches to their syntax and semantics*. Berlin: De Gruyter, pp. 49–77.

Paul, Waltraud. 2014. Why particles are not particular: sentence-final particles in Chinese as heads of a split CP. *Studia Linguistica* 68,1: 77–115. https://doi.org/10.1111/stul.12020

Pesestsky, David. 2017–2021. Exfoliation: Towards a derivational theory of clause size. Ms., *available at Lingbuzz*.

Sato, Yosuke. 2014. Argument ellipsis in Colloquial Singapore English and the Anti-Agreement Hypothesis. *Journal of Linguistics* 50(2), 365–401. https://doi.org/10.1017/S0022226713000303

Shi, Dingxu. 1992. *The nature of topic comment constructions and topic chains*. Doctoral dissertation, University of Southern California.

Shi, Dingxu. 2000. Topic and topic-comment constructions in Mandarin Chinese. *Language* 76: 383–408. https://doi.org/10.1353/lan.2000.0070

Shyu, Shu-Ing. 1995. *The syntax of focus and topic in Mandarin Chinese*. Doctoral dissertation, University of Southern California.

Simpson, Andrew. 2003. On the status of modifying DE and the structure of the Chinese DP. In Sze-Wing Tang and Chen-Sheng Luther Liu (eds.) *On the formal way to Chinese languages*. Stanford: CSLI, 74–101.

Simpson, Andrew. 2014. Sentence-final particles. In C.-T. James Huang, Audrey Li and Andrew Simpson (eds.) *Handbook of Chinese Linguistics*. Blackwell: Oxford, 156–179. https://doi.org/10.1002/9781118584552.ch7

Simpson, Andrew. 2017. Bare classifier/noun alternations in the Jinyun (Wu) variety of Chinese and the encoding of definiteness. *Linguistics* 55:2: 305–332. https://doi.org/10.1515/ling-2016-0041

Simpson, Andrew, Choudhury, Arunima and Mythili Menon. 2013. Argument ellipsis and the licensing of covert nominals in Bangla, Hindi and Malayalam. *Lingua* 134:123–138. https://doi.org/10.1016/j.lingua.2013.06.007

Simpson, Andrew and Zoe Wu. 2002. IP-raising, tone sandhi and the creation of particles: evidence for Cyclic Spell-Out. *Journal of East Asian Linguistics* 1–45.

Smith, Carlota. 1991. *The parameter of aspect*. Dordrecht: Kluwer. https://doi.org/10.1007/978-94-015-7911-7

Smith, Carlota. 1994. Aspectual viewpoint and situation type in Mandarin Chinese. *Journal of East Asian Linguistics* 3: 107–146. https://doi.org/10.1007/BF01736124

Sybesma, Rint. 2007. Whether we Tense-agree overtly or not. *Linguistic Inquiry* 38: 580–587. https://doi.org/10.1162/ling.2007.38.3.580

Sybesma, Rint and Boya Li. 2007. 'The dissection and structural mapping of Cantonese sentence final particles. *Lingua* 117: 1739–83. https://doi.org/10.1016/j.lingua.2006.10.003

Tang, Sze-Wing. 2015a. Cartographic syntax of pragmatic projections. In Audrey Li, Andrew Simpson, and Wei-tien Dylan Tsai (eds.), *Chinese Syntax in a Cross-Linguistic Perspective*. Oxford and New York: Oxford University Press, 429–441.

Tang, Sze-Wing. 2015b. A generalized syntactic schema for utterance particles in Chinese. *Lingua Sinica* 1:3. https://doi.org/10.1186/s40655-015-0005-5

Tang, Sze-Wing. 2020. Cartographic syntax of performative projections: evidence from Cantonese. *Journal of East Asian Linguistics* 29, 1–30. https://doi.org/10.1007/s10831-019-09202-7

Terzi, Arhonto 2010. Locative prepositions and Place. In *Mapping spatial PPs* [The cartography of syntactic structures, Vol. 6], ed. Cinque Guglielmo and Rizzi Luigi, 196–224. Oxford: Oxford University Press. https://doi.org/10.1093/acprof:oso/9780195393675.003.0006

Truswell, Robert. 2011. *Events, Phrases, and Questions*. Oxford: Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199577774.001.0001

Xiang, Ming. 2005. *Some topics in comparative constructions*. PhD dissertation, Michigan State University.

Zhang, Niina Ning. 2013. *Classifier structures in Mandarin Chinese*. Berlin: de Gruyter Mouton. https://doi.org/10.1515/9783110304992

Zhang, Ren. 2005. *Enriched composition and inference in the argument structure of Chinese*. New York: Routledge. https://doi.org/10.4324/9780203495957

PART I

The structure of lexical and functional projections

Finiteness, opacity, and Chinese clausal architecture

C.-T. James Huang
Harvard University

Although languages differ considerably in the way they encode finiteness syntactically or morphonology, the 'finiteness distinction' exists as a universal grammatical phenomenon. This chapter will re-affirm the claim that the distinction exists in Chinese, with robust clustered properties that diagnose the different clause types on several scales, with respect to temporal (in)dependence, clausal opacity/transparency, inter-clausal integration, etc. I address how finiteness is encoded, considering the hypothesis that finiteness is related to surface clause sizes (e.g., CP, IP, vP). As for the origin of the clause size differences it is suggested that they arise from the fundamental (in)ability of a clause to make deictic temporal reference. Under a pronominal theory of tense semantics, the nature of a syntactic T^0 (being an anaphor, a pronominal or an r-expression) determines its binding properties as well as its possible clause size, with ensuing signature properties that mark the finiteness distinction.

1. Introduction

Finiteness has played an important role in several domains of grammatical study.[1] One early example in generative studies was Chomsky's (1973) Tensed-S Condition (TSC), according to which a tensed clause constitutes an 'opaque' domain for binding into it as in (1), or raising out of it as in (2):

(1) a. John believes [himself to be honest]
b. *John believes [himself is honest]

(2) a. John is believed [__ to be honest]
b. *John is believed [__ is honest]

1. Abbreviations used: BA (the preverb object marker *ba*), BEI (the marker *bei* for passives), CL (classifier), DE (the prenominal modifier marker), DUR (the durative aspect), EXP (the experiential aspect *guo*), PRF (the perfective verbal suffix *le*), SFP (sentence-final particle, including the clause-final perfect *le* and the imperfective *ne* and *laizhe*), SHUO (the complementizer *shuo*), SUO (the object relative clitic *suo*).

https://doi.org/10.1075/la.272.02hua

Although the relevant distinction was made by tense in English, similar effects were observed in languages (including Portuguese and Turkish) that were not correlated with the presence or absence of tenses. In Chomsky (1977: 74) the TSC was restated as the Propositional Island Condition (PIC), with a propositional island being informally defined as a *finite* clause. It is finiteness that contributes to the making of an opaque domain, but languages may differ in how finiteness is encoded. This move then raised the question of what *finiteness* means. It seems that it cannot be simply equated with the notion of being propositional, since it is not obvious, for example, that the infinitival embedded clause in (1a) is any less propositional than the corresponding finite clause in *John believes that he is honest*.

Since Chinese has neither tense nor agreement marking, a natural question is whether the finiteness distinction exists in Chinese and if so, how it is encoded. These questions were taken up in early studies of (Mandarin) Chinese syntax by both Audrey Li and myself. Although it was claimed in Huang (1982, 1989) that Chinese has the finiteness distinction (which correlates with the distribution of an overt subject, among other things), the first serious argument for making that distinction was offered by Li (1985, 1990), who also suggested that it is encoded syntactically by tense, as in English. In particular, Li (1990: 22) claimed that finite clauses may be diagnosed by the existence of some (possibly null) tense elements. She showed that a future modal like *hui* or *yao* 'will' which signals the existence of tense may occur in a finite clause under verbs like *gaosu* 'tell', but not in a nonfinite clause under *quan* 'persuade' or *bi* 'force':

(3) a. wo gaosu ta [Lisi hui lai].
I tell him Lisi will come
'I told him that Lisi will leave.'
b. *wo quan/bi ta [hui lai]
I persuade/force him will come

In addition, Li (1990: 18ff) showed that an aspect marker (such as the experiential suffix *-guo*) contained in a non-finite clause may be interpreted as having scope over the matrix verb as in (4a), but when contained in a finite clause its scope is limited to the embedded clause as in (4b), as English translations indicate respectively.

(4) a. wo quan ta jie-**guo** yan.
I persuade him quit-EXP cigarette
'I persuaded him to quit smoking before.'
b. wo gaosu ta Lisi jie-**guo** yan.
I tell him Lisi quit-EXP cigarette
'I told him that Lisi had quit smoking before.'

The phenomenon exemplified by (4a) has come under various names in the literature (including Experiential Lowering in N. Huang 2018, control-aspect correlation in Grano 2014, etc.). I shall adopt the term Aspect Lowering (and occasionally *guo*-lowering), as if *guo* has undergone Affix Hopping from the matrix verb to the embedded verb. This contrast between (4a)–(4b) also shows up when the experiential assertion is negated: to negate *jie-guo* in a non-finite clause the negation must include the main verb as in (5a), but a negation of *jie-guo* in a finite clause is confined to the embedded clause as in (5b).[2]

(5) a. wo **meiyou** quan ta jie-**guo** yan.
I did-not persuade him quit-EXP cigarette
'I did not persuade him to quit smoking before.'
b. wo gaosu ta Lisi **meiyou** jie-**guo** yan.
I tell him Lisi did-not quit-EXP cigarette
'I told him that Lisi did not quit smoking before.'

Furthermore, an experiential adverb like *congqian* (or *cengjing*) 'before' collocating with an embedded *-guo* occurs in the main clause of a non-finite complement, but must stay embedded with *-guo* in a finite complement:

(6) a. wo **congqian** quan ta jie-**guo** yan.
I before persuade him quit-EXP cigarette
'I have persuaded him to quit smoking before.'
b. wo gaosu ta Lisi **congqian** jie-**guo** yan.
I tell him Lisi before quit-EXP cigarette
'I told him that Lisi had quit smoking before.'

In short, several syntactic differences exist between two types of clausal complements parallel to their English finite and non-finite counterparts. In addition to allowing overt future modals and licensing an overt lexical subject, a finite clause constitutes an 'opaque' domain that prevents (a) aspect lowering, (b) cross-clausal negation, and (c) cross-clausal adverbial collocation. By contrast, a non-finite clause cannot contain an overt future modal or a lexical subject but forms a 'transparent' domain that allows aspect lowering, cross-clausal negation, and adverbial association. These systematic differences argue for the view that finiteness is a relevant notion in Chinese as it is in English and other languages.

The view that Chinese has the finiteness distinction led to continual debates over the years. Among those recognizing the distinction (Tang 1990, Ernst 1994, etc.), Tang (2000) argued that infinitival clauses exist not only in obligatory control

2. The same observation applies to the perfective *-le* which can appear in the embedded clause in (4a), in place of *guo* or in addition to *guo*: *wo quan ta jie-**le** yan, wo quan ta jie-**guo-le** yan*.

structures, but also in certain raising and ECM constructions in Mandarin. Other researchers, including Y. Huang (1994), Xu (2003), and Hu et al (2001), questioned the validity of the claims made and argued that finiteness is not even a relevant notion in Chinese. Although the early debate (up to 2003) did not generate much further work at the time, the past few years have seen a revived interest in the cross-linguistic expression of tense and finiteness in general, and the questions about the finiteness distinction in Chinese in particular.

One thing that has crystalized over the years is that although languages diverge considerably in how they syntactically or morphologically encode finiteness, a 'finiteness distinction' nevertheless exists as a possibly universal phenomenon, as a grammatical property of clauses.[3] This is demonstrated by the fact that in all languages, two kinds of clauses can be distinguished based on correlated different behaviors that exist between finite and nonfinite clauses in languages that have this traditional distinction. While some clauses (the finite ones) may often come with their independent temporal reference like independent main clauses, others (the non-finite ones) are limited by, and depend on, the main clause for their temporal reference. While finite clauses may always have an overt lexical subject, nonfinite clauses often have PRO subjects under control. And while a finite clause may induce opacity effects on various syntactic and interpretive processes, a nonfinite clause is typically transparent with respect to such processes. And more.[4]

At the same time, that languages differ in the morphological encoding of finiteness has been amply demonstrated as well. While finiteness in English is traditionally identified by the presence of tense, in some languages with 'inflected infinitives' (e.g., Turkish, European Portuguese, Latin) it is the presence of agreement that contributes to finiteness (see Kornfilt 2007, Raposo 1987 and references). In other languages (e.g., Dravidian) finiteness is marked by Mood rather than tense (Amritavalli 2014). Some languages do not have infinitives at all (all clauses are tense-marked,

3. For the dichotomy between the syntactic and the morphological aspects of finiteness, see Sells (2007), Nikolaeva (2007). Here, the term 'finiteness distinction' is being used independently of the presence/absence of morphological coding. The claim is that (possibly) all languages exhibit 'signature properties' or 'symptoms' that typically have been used to diagnose the finiteness distinction. Although I will eventually conclude with a suggestion that Chinese has syntactic T^0 that licenses finiteness, the bulk of the paper will focus on the presence of the symptomatic properties that diagnose it.

4. The observed correlating properties are never the other way round for any language. For example, there are no languages whose nonfinite clauses are more opaque than finite ones in disallowing cross-clausal extraction. There is also no language that requires its finite clauses to have a PRO subject while allowing or requiring a nonfinite clause to have an overt subject. And Chinese is no exception.

as in Bulgarian, Macedonian, Modern Greek), and the finite-nonfinite distinction is encoded by the use of distinct complementizers (Wurmbrand 2014b, 2015).

Despite this diversity in morphological encoding, it has been observed for a long time that the finiteness distinction among complement clause types is related to the meaning of their embedding predicates. In the functionalist tradition, Givon (1980) shows that there is a 'binding hierarchy' among different predicate types that correlates with a 'syntactic coding hierarchy' in such a way that the stronger influence a given predicate exerts over the embedded clause subject, the less the embedded clause behaves like an independent clause. In terms of finiteness, this amounts to the idea that a hierarchy of embedding predicates that differ in the strength of their influence determines a 'hierarchy of finiteness' of their complements: the stronger the embedding predicate, the 'less finite' its complement, and the weaker the predicate, the 'more finite' the complement. In her work on Romance complementation, Rochette (1988, 1990) distinguishes among three types of embedding predicates: propositional predicates like (the equivalents of) *think, claim*; emotive predicates like *wish, prefer*; and effective predicates like *begin, continue*. She argues that they correspond to three broad semantic types of complement clauses that they S-select: Propositions, Events and Actions, whose respective canonical structural realizations (CSRs) are CP, IP and vP. In a similar vein but with a broad cross-linguistic perspective, Wurmbrand (2001, 2014, 2015, etc.), Wurmbrand et al (2020) and Wurmbrand and Lohinger (2020) propose an Implicational Complementation Hierarchy (ICH) to capture Givon's (1980) insight.[5]

(7) ICH (Wurmbrand et al 2020: 122, adapted):

Implicational complementation hierarchy (**ICH**)				
MOST INDEPENDENT	I	II	III	LEAST INDEPENDENT
LEAST TRANSPARENT	Proposition > Situation > Event/Action			MOST TRANSPARENT
LEAST INTEGRATED				MOST INTEGRATED

The hierarchy implies that the differences among these clause types are gradual, and their associated properties are implicational (unidirectional). These complement types differ in the properties they display on three broad dimensions: independence,

5. Both Rochette and Wurmbrand categorize the first type as propositions, recalling the content of the PIC in Chomsky (1977). For the other two types, what Wurnbrand calls situations and events correspond to Rochette's events and actions, respectively. I shall sometimes refer to the 3rd category as an event/action, with the understanding that an event is something that happens while an action refers to some task to be performed. At any rate, it will become clear that none of the terms used to describe the various complements are comprehensive or fully accurate. They are given as convenient labels to facilitate discussion.

transparency, and integration. On the independence scale Type I complements (propositions) resemble main clauses, contain more materials in the CP and IP regions, and are temporally more independent, more so than Type II complements (situations) and Type III complements (events/actions). On the transparency scale, Type III complements are most transparent in allowing certain syntactic or semantic operations out of, or into, their domains while Type I complements are most opaque in resisting such cross-clausal operations. On the integration scale, a Type III complement may often allow its verb to be integrated with the main verb (by incorporation, compounding or other processes), Type II is less open to integration, while a Type I complement is completely resistant to such processes.

In her works just cited Wurmbrand proposes that these three semantic types of complements may directly map to (be structurally realized as) different syntactic categories, i.e., CP, IP and vP–representing an operator domain, an inflectional domain and a theta domain, respectively. In particular, while Type I propositional complements are CPs by default, a Type II situation complement may map to a modal projection, WollP (for modal *wollen* 'will, want-to'), below TP. And for Type III complements (events/actions) their CSR may be as small as a vP, with no material from the TAM (tense-aspect-mood) domain. This is intended to directly reflect their different abilities in making temporal reference. While the CP with a tensed T is temporally independent, a vP with no material from the TAM region must share its time reference with the matrix verb. And a WollP under emotive predicates like *wish* or *prefer* is limited to irrealis or a time reference posterior to that of the embedding verb.[6]

A potential consequence of the Givon-Wurmbrand view of complement types is that the notion of finiteness can now be viewed as part of a hierarchy, too. Instead of the two-way finite-nonfinite dichotomy between Type I and Types II & III, we may now speak of a 'hierarchy of finiteness' from Type I being the most finite, Type II being 'somewhat infinitival', and Type III being the 'most infinitival'.[7] The relative degree in being nonfinite between Types II and III is also correlated with the relative 'strengths' of obligatory control that their PRO subjects are subjected to. A well-known observation since Landau (2000) is that Type III predicates (like

6. I shall use IP as a cover term for the functional categories in the TAM domain, allowing for the possibility that it may or may not include a tense (or even an aspect or mood) projection.

7. See Givon (2009: 68), who also speaks of *languages* that are more finite than others – those that exhibit more traits of finiteness than those that exhibit less. Wurmbrand et al's ICH recognizes this and, by their (Hypothetical) Finiteness Universal (p. 126) predicts that if a given language exhibits a nonfinite trait (e.g. clitic-climbing) on a Type II complement, it cannot fail to exhibit the same trait on a Type III complement. Conversely there will be no language where a nonfinite clause is opaque without a finite clause also being opaque, with respect to any cross-clausal dependency relations.

try) exert exhaustive control (EC) of the embedded PRO, whereas Type II predicates (like *prefer*) allow partial control (PC):

(8) They/*John tried [PRO to gather outside the auditorium].

(9) They/John preferred [PRO to gather outside the auditorium].

To summarize, the past several years has witnessed some significant strides made in our understanding of finiteness. A 'finiteness distinction' exists universally as a property of clauses, whose syntactic or morphological encoding may differ from language to language. At least as far as complement clauses are concerned, the distinction among the clause types has as its origin the different lexical-semantic properties of their embedding predicates. The embedding predicates form a hierarchy in terms of their strengths in exerting influence or control of their complements, which correspond to the different semantic types they S-select. The different semantic types are in turn mapped to appropriate syntactic categories that they C-select, each with its (possibly language-specific) morphosyntactic modes of expression. The complement clauses associated with the types and categories exhibit their respective 'signature properties' that may be attributed to their semantic and syntactic factors and that together reflect the nature of a 'finiteness hierarchy'.

Turning back to Chinese, a number of recent works have also brought us to a better understanding of finiteness in Chinese with new findings some of which are cast in the framework of understanding just described. In the next section, I will review the descriptive generalizations that have come to light from these works. This section will establish or re-affirm the claim that the finiteness distinction exists in Chinese, with robust clustered properties that diagnose the different clause types. In Section 3, I will address the question of how finiteness is encoded, considering the hypothesis that finiteness is directly related to clause size, with finite clauses being identified by CPs and non-finite clauses identified by IP or vPs. A strong version is found to be untenable as all clause types may contain elements that suggest the presence of larger structures. This then leads us to the possibility of a derivational approach according to which all clauses start out as full-fledged CPs but acquire their smaller size by some pruning or truncation processes. Section 4 considers the finiteness distinction beyond the domain of verbal complementation, by considering clauses whose finiteness cannot be ascribed to the properties of embedding predicates. It is then suggested that an important feature of a finite clause is its ability to make independent, non-anaphoric time reference (except for cases involving sequence-of-tense requirements), while nonfinite clauses must rely on a matrix antecedent for temporal reference. Under the pronominal approach to tenses, it is shown that the finiteness distinction may be encoded by the nature (feature make-up) of a syntactic (null) T^0, which may be an R-expression, a pronominal

or an anaphor (for different strengths of finite and nonfinite clauses respectively), thus receiving its appropriate time reference in accordance with general binding principles. The paper ends with a brief conclusion in Section 5.

2. Finiteness distinctions in Chinese and properties that diagnose them

We start by recognizing three types of verbal complements in Chinese along Wurmbrand's ICH-based typology that reflects Givon's hierarchies.[8]

- **Type I** complement clauses denoting propositions are embedded under speech verbs or attitude verbs, including: *shuo* 'say', *shengming* 'declare', *gaosu* 'tell', *queren* 'confirm', *fouren* 'deny', *faxiang* 'find out', *zhidao* 'know', *xiangxin* 'believe', *juede* 'feel', *huaiyi* 'suspect', *wangji* 'forget (factive)', *jide* 'remember (factive)', *xiwang* 'hope', *keneng* 'possible', etc.
- **Type II** complements, dubbed situation complements, are selected by predicates like *jihua* 'plan', *dasuan* 'intend', *zhunbei* 'prepare', *jueding* 'decide', *quan* 'urge, persuade', *bi(po), qiangpo* 'force', *yinyou* 'lure', *zhidao* 'instruct', *xiangyao* 'want', *qitu* 'intend', *zhengqu* 'strive', *wangji* 'forget' (implicative), *jide* 'remember' (implicative), etc.
- **Type III** complements describe actions (or events) and they are selected by such predicates as *changshi* 'try', *kaishi* 'begin', *jixu* 'continue', *tingzhi* 'stop', *shefa* 'try', *deyi* 'manage', *xihuan* 'like', *nuli* 'make efforts to', *xiguan* 'be accustomed to', and modal verbs like *neng* 'be able', *ken* 'be willing', *gan* 'dare', *keyi* 'be permitted to', etc.

These complement types exhibit properties along the three dimensions indicated in the ICH in (7), which jointly characterize Type I complements as finite, and Type II and Type III as non-finite (with III being more so than II).

2.1 Scale of independence

One informal characterization of a finite (Type I) clause is that it contains enough ingredients that enable it to stand alone as independent sentence, whereas Type II and Type III clauses are unable to do so. An important formal difference is that while a finite clause is capable of independent temporal reference under certain circumstances, a nonfinite clause is not. By using a finite clause, a speaker may

8. Many predicates that may be listed under one type may belong to another type, but when a predicate exhibits a property of a given type, it can be expected to have other properties that diagnose that type.

directly establish a deictic or definite time reference (both event time and reference time) or introduce an indefinite time reference independently of the matrix clause.[9] So, a finite clause may contain not only information that comes from the matrix subject as the 'speaker' or attitude holder of the matrix verb, but also material that comes directly from the speaker. This is known as the 'double access' property of such clauses.[10] A nonfinite complement clause, however, may only contain time reference that is dependent on (or restricted by) the time reference established in the main clause. In particular, Type II complements are limited in event time intervals posterior to the time established in the main clause (irrealis or future), often compatible with modal verbs like *bixu*, *dei* 'must', or *yao* 'want'.[11] The reference time (RT) value of the embedded clause is defined relative to the RT of the main clause and is referentially dependent on the latter in this sense. And for Type III complements the embedded RT must be identical with the matrix RT, thus fully anaphoric with a *simultaneous* time reference.

(10) a. Lisi shuo ta chi / chi-le / hui chi longxia.
Lisi say he eat / eat-PRF / will eat lobster
'Lisi said that he eats/ ate/ will eat/ would eat lobsters.'

b. Zhangsan jueding (yao) (mingtian) gen wo bisai.
Zhangsan decide (want) (tomorrow) with me compete
'Zhangsan decided to compete with me.'

c. Zhangsan changshi (*yao) (*mingtian) xi dama.
Zhangsan try want tomorrow smoke marijuana
'Zhangsan tried smoking marijuana.'

---

9. A finite clause may not be temporally independent when embedded as a complement if it is subject to sequence-of-tense (SOT) requirements, as in English. For example, in *John said that he liked math*, the embedded past time must be understood as the NOW for the matrix attitude holder *John*. A tensed relative clause (and certain other adjunct clauses) is typically not subject to tense-sequencing, and its temporal reference is independent: *John taught the boy who lives next door.* See Wurmbrand (2014) for important discussion of this point and related issues. The cases involving SOT will be taken up below.

10. As illustrated by *John said that Mary is pregnant*, with a present tense embedded under a past tense matrix verb. While the embedded present tense in double access relates to the speaker directly and is independent in an obvious sense, its independence is limited by the fact that a direct reference to a past time is impossible: **John said two weeks ago that Mary was sick yesterday*. See Ogihara (1995) for related discussion of the semantic treatments of such sentences. More recent treatments of double access are found in Giorgi (2009), Stowell (2007) and Wurmbrand (2014).

11. The modal *yao* has multiple uses: as a control verb like *want, desire*, as an obligation modal 'have to', or a future modal 'will'. (See also T.-H. Lin 2012: 155). When occurring in a Type II complement it can only be used as a deontic modal of an intentional control verb, but not as a future modal.

A possibly related difference between finite and nonfinite clauses is that the former, but not the latter, has access to the illocutionary domain with speaker-oriented evaluative expressions like *juran* 'to my surprise', *xingkui, haihao* 'fortunately', *buxing* 'sadly', *zhen zaogao* 'it's really bad', etc. By contrast, a non-finite clause cannot accommodate such adverbials. (See also Huang 2016 and Zhang 2019.)

(11) a. ta tingshuo Lisi juran liang-nian-nei jiu nadao-le
he hear Lisi to-my-surprise in-2-years then receive-PRF
boshi xuewei
PhD degree
'He heard that Lisi–to my surprise–received the PhD in 2 years.'

b. *ta bipo Lisi juran liang-nian-nei jiu nadao boshi xuewei
he force Lisi to-my-surprise 2-year-in then receive PhD degree
'He forced Lisi to receive the PhD–to my surprise–in 2 years.'

c. *Lisi dasuan juran liang-nian-nei jiu nadao boshi xuewei
Lisi intend to-my-surprise 2-year-in then receive PhD degree
'Lisi plans to receive the PhD degree–to my surprise–within 2 years.'

(12) a. ta ganggang faxian fanren zhen zaogao yijing tao-chuqu le.
he just find prisoner real bad already run-out SFP
'He just found out that the prisoner–what a mess–has already run away.'

b. *ta toutou xiezhu fanren PRO zhen zaogao tao-chuqu le.
he secretly help prisoner real bad run-out SFP
'He secretly helped the prisoner to–to my dismay–run away.'

c. *fanren deyi PRO zhen zaogao tao-chuqu le.
prisoner manage real bad run-out SFP.
'The prisoner managed to–to my dismay–run away.'

T.-H. Lin (2011, 2012) shows that Chinese modals fall in two groups that show a finiteness distinction. Epistemic modals like *keneng* 'be likely that' and *yinggai* 'should be the case that' take finite complements, and root modals including *neng* 'be able to' and *keyi* 'be permitted to' select only non-finite complements. Evidence comes from the scope of the clause-final perfect aspect marker *le*. He points out (p. 52–53) that the sentences below should be bracketed as shown to correctly reflect their meanings:

(13) a. Zhangsan keneng [qu Taibei le]
Zhamgsam possible go Taipei SFP
'I it is possible that Zhangsan has gone to Taipei.'

b. *Zhangsan [[keneng qu Taibei] le]
Zhangsan possible to Taipei SFP
Intended: 'It has become possible that Zhangsan goes to Taipei.'

(14) a. Zhangsan [[neng qu Taibei] le]
Zhangsan be-able-to go Taipei SFP
'It is now the case that Zhangsan can go to Taipei.'
b. *Zhangsan neng [qu Taibei le]
Zhangsan be-able-to go Taipei SFP
Intended: 'Zhangsan is able to have gone to Taipei.'

In line with Shen (2004), Lin considers the clause-final *le* (a.k.a. le_2 or inchoative marker) to be a marker of the perfect aspect, whose presence presupposes the existence of a reference time RT. A sentence with a perfect aspect is true iff a given event is over by a given RT, but without an RT it would be undefined. Lin proposes that the presence of perfect *le* implies the presence of the syntactic category T, which has "the function of anchoring the event time of the predicate (by providing a reference time to the [perfect] aspect)" (p. 62). This predicts that not only *neng* but also other Type II or Type III predicates will exclude the clause-final *le* from their complements.

(15) Zhangsan tingshuo [Lisi dao guowai nian boshi qu le].
Zhangasn heard Lisi to abroad study PhD go SFP
'Zhangsan heard that Lisi has gone abroad for Ph.D. study.'

(16) Zhangsan guli Lisi [dao guowai nian boshi (*le)].[12]
Zhangsan encourage Lisi to abroad study PhD SFP
'*Zhangsan encourages Lisi to have gone abroad for Ph.D. study.'

(17) Zhangsan kaishi [meitian ba dian qichuang (*le)]
Zhangsan begin every-day 8 hour get-up SFP
'*Zhangsan began to have risen at 8 am every day.'

In short, there is a finite/non-finite distinction between Type I and Types II & III complements which may be correlated to the existence of T.[13] In addition to perfect *le*, Zhang (2019) has argued that two clause-final progressive aspects, *laizhe* and *ne*, also diagnose finiteness.[14] Thus they pattern with clause-final *le* under an epistemic or root modal as predicted by Lin:

---

12. (16)–(17) may end with a final *le*, but the perfect reading must be construed with the reference time of the main verb.

13. As further support for the finiteness distinction, T.-H. Lin follows Paul (2002) and Fu (1994) claiming non-finite clauses do not support clause-internal object shift. But there is evidence (to be presented below) that some objects can shift within infinitival complements. (See also Li 2017.)

14. *laizhe* is common in Beijing and some northern varieties of Mandarin. It differs from *ne* in being only anchored to a past RT (i.e., past progressive).

(18) Zhangsan keneng [xiuli-(zhe) qiche ne/laizhe]
Zhangsan possible repair-DUR car ne/laizhe
'It is possible that Zhangsan is/was fixing the car.'

(19) *Zhangsan neng [xiuli-(zhe) qiche ne/laizhe]
Zhangsan able repair-DUR car ne/laizhe
Intended: '*Zhangsan is able to be/ have-been fixing the car.'

And Zhang (2019) shows that they also pattern as predicted under other predicates – allowed in Type I complements but excluded from Type II and Type III complements, in addition to other constructions she identified.[15] Zhang (2019: 994) additionally points out that an epistemic (or future) modal may occur in a finite clause, including *hui* – and *yao* as pointed out by Li (1985, 1990).[16] (See also He 2020 for relevant discussion.)

(20) a. wo gaosu ta [huoche hui kai].
I tell he train will leave
'I told him that the train might leave.'
b. *Ajie dasuan [mingtian-zhongwu hui zai jia deng ni].
Ajie plan tomoroow-noon will at home wait you
'Ajie plans to wait for you at home tomorrow noon.'

Another famous property reflecting the scale of independence is the fact that all finite clauses are able to license an overt subject by themselves (or small *pro* for a pro drop language) while non-finite clauses often have a PRO subject or otherwise require their overt subjects to be externally licensed (by raising or ECM, or under the complementizer *for* in English). Classical examples of the following kind are easy to come by:

(21) a. yisheng gaosu Lisi [ta bixu mashang jie yan].
doctor tell Lisi he must immediately quit smoking
'The doctor told Lisi that he must immediately quit smoking.'

---

15. The progressive *ne* is also mentioned in T.-H. Lin (2012) along with perfect *le* as marking a finite clause, though Lin did not elaborate on *ne*. As a point of logic, while the presence of these aspect particles diagnoses finiteness, their absence *per se* does not imply nonfiniteness, because habitual or simple-tense sentences (which cannot take these particles) can be finite as well, as can be diagnosed in other ways.

16. In Huang (1982) it was suggested that a nonfinite clause could not contain any modal verb or auxiliary. That was clearly too strong a condition, and the correct generalization is that epistemic modals are banned, but root modals are allowed in nonfinite clauses.

b. yisheng quan Lisi$_i$ [PRO$_i$ /*ta mashang jie yan].
doctor urge Lisi he immediately quit smoking
'The doctor persuaded to quit smoking immediately.'
c. Zhangsan$_i$ jintian kaishi [PRO$_i$/t$_i$ /*ta jie yan].
Zhangsan today begin he quit cigarette
'Zhangsan began to quit smoking today.'

The classical assumption following Li (1985, 1990) is that a finite clause contains a positively specified T^0 which is responsible for nominative Case assignment, thereby licensing a lexical subject. Since the non-finite clauses in (21b–c) lack the requisite Case licensor, it can only exist in the form of a PRO or NP-trace (assuming the control-raising ambiguity of *kaishi* 'begin').

Hu et al (2001: 1131) famously challenged the above generalization by providing purported counterexamples like the following involving an overt lexical subject:

(22) a. wo zhunbei [mingtian xiawu tian hei yihou wo yige ren lai]
I prepare tomorrow afternoon sky dark after I one man come
'I plan to come alone tomorrow afternoon after it gets dark.'
b. wo quan ta [ruguo meiyou-ren mai zhe-ben shu, ta ye bu
I persuade he if nobody buy this CL book he also
yao mai]
not will buy
'I persuaded him not to buy this book if no one bought it.'

However, Sybesma (2017a) questions the validity of these examples, pointing out that "what they overlook is the possibility that one and the same verb may select different types of clauses (finite or non-finite) under different circumstances, much like English *promise*: 'I promise to be on time' and 'I promise that I will be on time'."[17] For example, a more faithful and idiomatic translation of (22b) might be

17. Familiar examples that can freely select a finite or a nonfinite clause include *promise, persuade, prefer, hope, expect, decide*, etc., as well as *forget* and *remember*, which alternate between an implicative and factive reading. Most of their counterparts in Chinese display the same ambiguous status. Some of Hu et al's purported counter-examples include Chinese verbs like *shefa* 'try' and *dasuan* 'plan' whose simple verbal equivalents in English do not readily select finite clauses. However, there is no reason to suppose that these verbs in Chinese cannot correspond to the phrases 'try to bring it about that' and 'make the plan that', respectively, each with a finite complement. It is useful to also note that some of the purported counterexamples are rather marked. See He (2020) for the suggestion that some of the awkward examples may be considered acceptable as a result of 'coercion' in the sense of Pustejovsky (1995). It is reported in Wurmbrand & Lohninger that Serbian infinitival clauses under Type II verbs may contain

'I (tried to) persuade Zhangsan that if nobody bought this book, he also should not buy it.' One thing that has been noted is that these purported counterexamples include substantial additional lexical materials in the complement clauses. But this simply adds to the conclusion that the complement clauses are actually finite clauses, recalling a point in McFadden and Sundaresan (2014: 15) that "a clause with more structure is more finite than one with less".

An obvious problem for Hu et al's position is that they cannot explain the unacceptability of an overt pronoun in standard examples like (21b–c). Their claim is that the overt pronoun is too close to the intended antecedent in these sentences, which become acceptable when additional lexical materials are placed between them (as in their examples reproduced in (22)), due to "an obviation principle, which stipulates that an overt pronoun tends to be obviative from the closest prominent NP" (p. 1134). This claim is instantly falsified by (21a) above, where the overt pronoun is equally close to its antecedent. Even with a reflexive pronoun, to which the supposed obviation principle would be irrelevant, we see that it is also excluded from the subject position of a nonfinite clause. The following minimal pair from Ussery et al (2017:3) makes this point very clear:

(23) Xiaoming wangji ziji dai beibao le.
Xiaoming forget self bring backpack SFP
a. 'Xiaoming forgot to bring the backpack on his own.'
b. 'Xiaoming forgot that he had brought the backpack.'

As indicated in the translation, (23) is ambiguous with two readings of *wangji* 'forget': the implicative ('forget-to') reading (a) and the factive ('forget that…') reading (b). The implicative *wangji* takes a non-finite complement, and the factive *wangji* takes a finite complement, precisely parallel to the ways they are given in the English translation. The crucial observation made by Ussery et al is that under the implicative *forget-to* reading the reflexive *ziji* must have an adverbial reading ('on his own'), but under the factive reading *ziji* may serve as the subject anaphor bound by *Xiaoming*.[18] This provides strong proof that in the *nonfinite* structure, the embedded subject must be a PRO. We can illustrate the same point with some Type III verbs, this time involving a quantificational subject in the matrix:

---

an overt subject instead of a controlled PRO, but not under a Type III verb. But in the Chinese cases a PRO is expected of Type II complements by default, unless the verb ambiguously also selects a Type I finite complement.

18. Under the factive reading *ziji* can also have an adverbial use, given the possibility of a *pro* in Chinese: *Zhangsan wangji* ***pro*** *yijing dai-le beibao le* 'Xiaoming forgot that he had already brought the backpack'.

(24) a. meigeren dou xiguan ziji chi shousi.
everyone all used-to self eat sushi
'Everybody is used to eating sushi by herself.'
b. meigeren dou chengren ziji chi-le shousi.
everyone all admit self eat-PRF sushi
'Everybody admits that she ate the sushi.'

In (24a) *ziji* must have the adverbial reading, but in (24b) it simply serves as the embedded subject argument. This follows from the fact that *xiguan* 'be accustomed to' selects an event/action as a non-finite complement whose subject must be PRO, while *chengren* 'admit' selects a finite proposition complement whose subject may be lexical, including the lexical anaphor *ziji*.

Note that the restriction observed in (23a) and (24a) now constitutes an insurmountable obstacle for Hu et al's attempt to exclude the lexical pronoun in (21b)–(21c), since an obviation principle cannot possibly be invoked here against an overt reflexive in (23a) and (24a). If anything, a reflexive would be proximate, rather than obviative, with a local NP.

Summarizing, we have seen in this sub-section that finite and nonfinite clauses differ on a scale of (in)dependence. Finite clauses may have independent temporal reference and may contain tense-related clause-final particles *le, ne, laizhe*, and future modals like *hui* and *yao*, but nonfinite clauses may not. Finite clauses have lexical subjects whereas nonfinite clauses permit only a PRO subject except in contexts of subject-raising or ECM. And while finite clauses may exhibit the double-access phenomenon and contain speaker-oriented items, such items are banned from nonfinite clauses.

2.2 Scale of opacity

As mentioned above, Li (1985, 1990) showed that finite clauses are opaque and nonfinite clauses transparent with respect to two phenomena: Aspect lowering and *before*-collocation. This subsection will demonstrate the robustness of the finite-nonfinite contrast over a wide variety of constructions on the scale of opacity/transparency. I start by recapitulating the first two cases.

A. *Aspect lowering*

Types II & III complements allow an embedded *-guo* (and possibly the verbal *-le*) to be construed with their matrix predicates, and Type I complements do not. In (25a) and (25b) with the embedded *-guo* in a nonfinite clause, experiential assertion covers both the matrix and embedded verbs. But in (26) with a finite complement, it is confined to the embedded verb:

(25) a. Zhangsan quan Lisi [PRO jie-**guo** yan]
Zhangsan persuaded Lisi quit-EXP smoking
'Zhangsan has persuaded Lisi to quit smoking before.'
b. Zhangsan changshi [PRO jie-**guo** yan]
Zhangsan tried quit-EXP smoking
'Zhangsan has tried quitting smoking before.'

(26) #Zhangsan shuo [Lisi jie-**guo** yan]
Zhangsan say Lisi quit-EXP smoking
Intended: '*Zhangsan has said before that Lisi quit smoking.'

Instead of describing this as aspect lowering (or affix-hopping), the phenomenon may also be analyzed by a process of Agree in LF that connects the embedded *-guo* with the matrix verb (as in, e.g., N. Huang 2018). The 'lowering' of *-guo* (and *-le*) seems to apply easily with certain verbs of both Type II and Type III verbs (*bipo* 'force', *kaishi* 'begin', etc.), but not with others (e.g., *xihuan* 'like', *neng* 'be able to') due presumably to the semantic properties of the matrix verb that resist the aspect marker in question.

B. Before-*collocation*

An experiential adverb like *congqian* (or *cengjing*) 'before' collocating with an embedded *guo* must occur in the matrix clause of a non-finite complement, but must occur embedded in a finite complement:

(27) a. Zhangsan **congqian** quan Lisi [PRO jie-**guo** yan]
Zhangsan before persuaded Lisi quit-EXP smoking
'Zhangsan has persuaded Lisi to quit smoking before.'
b. Zhangsan **congqian** changshi [PRO jie-**guo** yan]
Zhangsan before tried quit-EXP smoking
'Zhangsan has tried quitting smoking before.'

(28) Zhangsan (*__congqian__) shuo [Lisi (__congqian__) jie-**guo** yan]
Zhangsan before say Lisi before quit-EXP smoking
'Zhangsan says that Lisi has quit smoking before.'

C. *Internal topicalization*

Formerly known as Object Preposing, this rule moves a postverbal object to a preverbal position following the subject, where it is interpreted as a secondary or contrastive topic. The phenomenon was known from the earliest days of generative study of Chinese (e.g., Tang 1977). Later studies include Qu (1994), Ernst and Wang (1995), Shyu (1995, 2001), T.-H. Lin (2011, 2015), Paul (2002, 2005, 2014) among others. Qu (1994) first showed that internal topicalization exhibits

A-movement properties and Shyu (1995, 2001) further added that its application is bounded within a (finite) clause. The following examples adapted from N. Huang (2018: 351) show that an internal topic originating in a nonfinite clause may move into the main clause preceding the matrix verb as in (29), but movement out of a finite complement is banned, as in (30b).

(29) a. wo [zhe-pian baogao]$_2$ hui shefa [jinkuai xie-wan t$_2$].
I this-CL report will try asap write-finish
'I will try to finish this report as soon as possible.'
b. Lisi [jinzhan baogao]$_2$ dasuan [zai zhe zhou nei tijiao t2].
Lisi progress report plan at this week in submit
'Lisi plans to submit the progress report within this week.'

(30) a. wo xiangxin [Lisi [zhe-pian baogao]$_2$ xie-wan-le t$_2$].
I believe Lisi this-CL report write-finish-PRF
'I believe that Lisi has already written this report.'
b. *wo [zhe-pian baogao]$_2$ xiangxin [Lisi xie-wan-le t$_2$].
I this-CL report believe Lisi write-finish-PRF

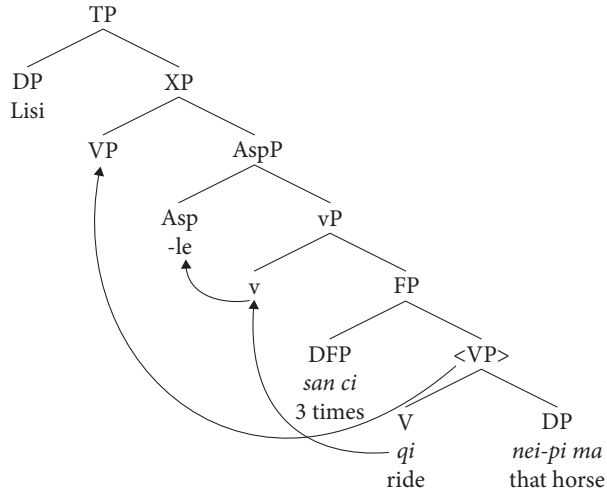
D. *Verb copying*

Th verb-copying (VC) construction as illustrated below has been a topic of continual theoretical interest:

(31) a. Lisi qi nei-pi ma **qi**-le san-ci.
Lisi ride that-CL horse ride-PRF three-times
'Lisi rode that horse three times.'
b. Lisi kan dianshi **kan**-le liang-ge zhongtou.
Lisi watch TV watch-PRF two-CL hours
'Lisi watched the TV for two hours.'

Early treatments of this construction postulated a rule that places a copy of the main verb between the object and postverbal adjunct like 'three times, two hours' (see Huang 1982 and many subsequent works). With the introduction of V-to-v and the copy-theory of movement, a movement analysis of VC has taken a prominent role, as represented in Cheng (2007), Gouguet (2006), Bartos (2003, 2019), H.-L. Huang (2018), Zhao (2017), Zhao and Rouveret (2019), and Lai (2021). Among the most recent movement-based accounts, the general consensus is that VC is the combination of V-movement out of VP followed by movement of the (remnant) VP to post-subject position under IP. According to Lai's (2021) analysis, for example, sentence (31a) is derived as follows (details omitted).

(32)



a. [$_{TP}$ Lisi [$_{AspP}$ -le [$_{vP}$ v [$_{FP}$ san-ci [$_{VP}$ qi nei-pi ma]]]]]
Lisi PRF 3-times ride that-CL horse

b. [$_{TP}$ Lisi [$_{AspP}$ **qi**-le [$_{vP}$ v [$_{FP}$ san-ci [$_{VP}$ <**qi**> nei-pi ma]]]]]
Lisi ride-PRF 3-times ride that-CL horse

c. [$_{TP}$ Lisi [$_{vP}$ **qi** nei-pi ma]$_2$ [$_{AspP}$ **qi**-le [$_{vP}$ [$_{FP}$ san-ci [$_{VP}$ t$_2$]]]]]
Lisi ride that-CL horse ride-PRF 3-times

First, the adverbial *san ci* '3 times' is merged between VP and vP as in the base structure (32a). Second, the main verb *qi* 'ride' in VP moves to v and the aspect *-le*, forming *qi-le*, as in (32b). (Under the copy theory of movement, a copy of *qi* remains in VP.) Then, the 'remnant' VP containing *qi nei-pi ma* 'ride that horse' is fronted to a position below the subject, giving (32c) = (31a). In other words, (31a) is derived by V-to-v-ASP movement followed by 'remnant movement' of the VP, except that the V is pronounced both in the VP 'remnant' and in the position that it has moved to. Th fact that *qi* is pronounced twice thus gives rise to the appearance of verb reduplication that had been the basis of the early traditional accounts. (See Lai 2021 for details of how independent principles of lexicalization determine when a member of a chain gets deleted or retained.) An analysis with a similar mechanism is proposed in Zhao and Rouveret (2019), who motivate the VP-fronting process on labeling-based considerations (Chomsky 2013).

Assuming VC as deriving from VP fronting, we note that VC may occur across a nonfinite clause boundary, but not across a finite one:

(33) a. Zhangsan [qi ma] changshi [PRO qi-le san ci]
Zhangsan ride horse try ride-PRF three time
'Zhangsan has tried riding the horse for three times.'

b. Lisi [pao bu] dasuan [PRO meitian pao liangge-ge zhongtou]
Lisi run step plan everyday run two-CL hours
'Lisi plans to go jogging for two hours each day.'

(34) a. *Zhangsan [qi ma] zhidao [Lisi qi-guo-le liang ci]
Zhangsan ride horse know Lisi ride-EXP-PRF two time
Intended: 'Zhangsan knows that Lisi has gone horse-riding twice before.'

b. *tamen [qi ma] tingshuo [Lisi zuotian qi-le san-ge zhongtou]
they ride horse hear Lisi yesterday ride-PRF three-CL hour
Intended: 'Zhangsan heard that Lisi rode the horse for two hours yesterday.'

The fact that VC may occur across a clause boundary as in (33a–b) lends important support to the movement-based theory of verb-copying. At the same time, the opacity effect induced by a finite clause points to the generalization that the VP fronting is an instance of A-movement, a property shared by internal topicalization and other phenomena discussed in this section.[19]

E. *Focus fronting*

A focused postverbal element (such as a universal quantifier or *even*-marked DP) may be fronted to a preverbal position. Shyu (2001) shows that it likewise involves A-movement and is finite-clause-bounded.[20] The examples below show that a finite clause is opaque in (35b), but a non-finite clause is transparent (N. Huang 2018: 352):

---

19. H.-L. Huang (2018) argues plausibly that VP-fronting and internal topicalization are instances of the same process. Lai (2021) assimilates VP-Fronting to the process of VP-topicalization which places a VP topic at the left periphery, though he also noted that the former, unlike the latter, cannot cross finite clauses. Zhao and Rouveret (2019) argue for treating them as distinct processes. A major difference between them is the pattern of 'selective opacity' they display (Keine 2018). In particular, finite clauses induce opacity for A-movement, but not for A′-movement. Traditionally this follows from the fact that A′-movement may proceed through Spec/CP while A-movement may not (as the latter would generate improper chains of the form {A-A′-A}. See Keine (2018) for useful further discussions.

20. Shyu (2001) proposed a unified treatment of both internal topicalization and focus fronting constructions, but Paul (2002) argued that they should be kept apart. Their difference does not affect our discussion here.

(35) a. Lisi xiangxin [Zhangsan [lian zhe zhong xiao shi]$_2$ dou ziji
Lisi believe Zhangsan even this type small matter all self
chuli t_2].
handle
'Lisi believes that Zhangsan handles even trivial matters like these himself.'

b. *Lisi [lian zhe zhong xiao shi]$_2$ dou xiangxin Zhangsan [ziji
Lisi even this type small matter all believe Zhangsan self
chuli t_2].
handle

(36) a. Lisi [lian zhe zhong xiao shi]$_2$ dou zhunbei [ziji chuli t_2].
Lisi even this type small matter all plan self handle
'Lisi plans to handle even trivial matters like these himself.'

b. Lisi [lian zhe zhong xiao shi]$_2$ dou shefa [ziji chuli t_2].
Lisi even this type small matter all try self handle
'Lisi tries to handle even trivial matters like these himself.'

F. *Clitic climbing of* suo

A familiar fact about the syntax of Romance languages is that an object pronoun needs to cliticize to the left of its VP. In some contexts (viz. in the 'restructuring' structures) the clitic may climb out of a non-finite clause. Mandarin does not have clitic movement as a general phenomenon, but in a widely used relative clause form that retains the Classical Chinese object-relative pronoun *suo*, we witness both local clitic movement and long-distance clitic climbing. (See Chiu 1993, Jiang 2009, and Ting 2010.) First, *suo* is used only when an object is relativized, but it must occur to the left of VP.

(37) wo **suo** xihuan de laoshi.
I SUO like DE teacher
'the teacher that I liked'

(38) ta **suo** wufa liaojie de wenti.
she SUO cannot understand DE problem
'the problem that she cannot understand'

Several authors (Chiu, Jiang and Ting included) have analyzed *suo* as a X^0 element that is cliticized to the left. It has also been observed that *suo* may climb beyond the local clause, as illustrated by the examples below, adapted from Ting (2010) and Chiu (1995), including both control and raising constructions. These examples also show that in many cases, *suo*-climbing is optional: the clitic may stay with the local VP or it may climb:

(39) Subject control construction
a. wo dasuan mingnian **suo** yao dacheng de mubiao
I intend next-year SUO want achieve DE goal
'the goal that I want to achieve next year'
b. wo **suo** dasuan mingnian yao dacheng de mubiao
I SUO intend next-year want achieve DE goal
'the goal that I want to achieve next year'

(40) Object control construction
a. Lisi qiangpo Akiu **suo** xie de zibaishu
Lisi force Akiu SUO write DE confession
'the confession that Lisi forced Akiu to write'
b. Lisi **suo** qiangpo Akiu xie de zibaishu
Lisi SUO force Akiu write DE confession
'the confession that Lisi forced Akiu to write'

(41) Raising construction
a. wo kaishi **suo** niding de yanjiu jihua[21]
I begin SUO draft DE research plan
'the research plan that I began to draw up'
b. wo **suo** kaishi niding de yanjiu jihua
I SUO begin draft DE research plan
'the research plan that I began to draw up'

It is useful to note that, although all non-finite complements seem to permit *suo*-climbing, not all of them allow the non-climbing option. In particular, for most Type II complements *suo*-climbing is optional, but for most Type III complements, *suo*-climbing is obligatory. This is true of all the complements under *tingzhi* 'stop', *shefa* 'try', *qitu* 'intend', *wangji* 'forget' (implicative), *xihuan* 'like', as well as modal verbs like *neng* 'be able to', *ken* 'be willing to', *gan* 'dare to', *keyi* 'be permitted to', etc.

(42) a. Lisi **suo** xihuan chi de na-dao Faguo cai.
Lisi SUO like eat de that-CL French dish
'the French dish that Lisi likes to eat'
b. *Lisi xihuan **suo** chi de na-dao Faguo cai.
Lisi like SUO eat de that-CL French dish

(43) a. ta **suo** wangji dai huijia de na ge beibao
he SUO forget bring home de that-CL backpack
'the backpack that he forgot to bring home'

21. Some speakers (myself included) have a clear preference for (b) with *suo* having climbed to the matrix clause.

b. *ta wangji **suo** dai huijia de na ge beibao
he forget SUO bring home de that-CL backpack

All the examples of *suo*-climbing involve Type II or Type III nonfinite complements. As for finite complements, Ting (p. 458ff) points out that *suo*-climbing is banned. Although the following examples apparently allow *suo* to occur in the main clause (or in the embedded clause), Ting argues that (44b) actually illustrates a case of relative-clause stacking, with *suo* being the object of the matrix verb *shuo* of the higher relative clause.

(44) a. zhe jiu shi [Zhangsan shuo [Lisi **suo** bixu wancheng] de] renwu
this just is Zhangsan say Lisi SUO must accomplish DE mission
'This is exactly the mission that Zhangsan said that Lisi must accomplish.'
b. zhe jiu shi [Zhangsan **suo** shuo [Lisi bixu wancheng] de] renwu
this just is Zhanfgsan SUO say Lisi must accomplish DE mission
'This is exactly the mission that Zhangsan said that Lisi must accomplish.'

She shows that this is so because (a) an additional (relative-clause marker) *de* may be added after the matrix verb as in (45a), and (b) the sentence may contain two occurrences of *suo*, one before the matrix and one before the embedded verb as in (45b):

(45) a. zhe jiu shi [Zhangsan shuo (**de**) [Lisi **suo** bixu wancheng]
this just is Zhangsan say DE Lisi SUO must accomplish
de] renwu
DE duty
'This is exactly the mission that Zhangsan said that Lisi must accomplish.'
b. zhe jiu shi [Zhangsan **suo** shuo (**de**) [Lisi **suo** bixu wancheng]
this just is Zhangsan SUO say DE Lisi SUO must accomplish
de] renwu
DE duty
'This is exactly the mission that Zhangsan said that Lisi must accomplish.'

The double occurrences of *de* and *suo* indicate the presence of two relative clauses, with one stacked on the other. Such double occurrences are completely excluded in true cases of *suo*-climbing in (39)–(43). We thus accept Ting's claim that the clitic climbing in Mandarin *suo* relatives cannot move across a finite clause. In short, the three types of complements differ in the degree of their opacity/transparency with respect to *suo*-climbing: it is banned from a finite clause, optional from a Type II nonfinite clause, and obligatory from a Type III nonfinite clause.

G. *Long distance passivization*

Huang (1999: 440) and Huang, Li & Li (2009: 125) showed that Chinese *bei* passives may involve long-distance movement.

(46) a. Zhangsan bei Lisi pai jingcha zhua-zou le.
Zhangsan BEI Lisi send police take-away PRF
'Zhangsan was 'sent-police-to-arrest' by Lisi.'[22]

b. neifeng xin bei wo jiao Lisi qing Wangwu tuo ta meimei
hat letter BEI me tell Lisi ask Wangwu request his sister
ji-zou le.
send PRF
That letter was told-LS-to-ask-WW-to-get-his-sister-to-send' by me.

The above examples involve Type II predicates like *pai* 'dispatch', *jiao* 'order', etc. A Type III predicate also allows an object to be passivized out of its complement:

(47) a. shizhang yijing bei jingfang kaishi pai yuan diaocha le
mayor already BEI police begin assign staff investigage le
'The mayor has been 'begun-to-assign-agents-to-investigate' by police.'

b. ta de gongkai yanlun zuijin bei Tuite jueding jujue
he de public comments recently BEI Twitter decide refuse
tuisong le.
tweet prf
'His public comments have recently been 'decided-to-refuse-to-tweet' by Twitter.'

However, with a Type I predicate, passivization out of a finite complement is highly degraded (Huang 1999: 441):

(48) a. *Zhangsan bei Lisi toulu jingcha zhua-zou le.
Zhangsan BEI Lisi reveal police arrest PRF/SFP
'*Zhangsan$_i$ was revealed by Lisi that the police had arrested t$_i$'

b. ??neifeng xin bei wo yiwei Lisi shuo Wangwu tuo ta meimei
that-CL letter BEI me think Lisi said Wangwu ask his sister
ji-zou le.
send PRF/SFP
Lit.: 'That letter$_i$ was thought by me that Lisi said Wangwu had asked his sister to send t$_i$'

---

22. In the English translation for this and other examples of LD passivization, I have hyphenated the entire verbal complex between the subject and the *by*-phrase and treated it as if this whole verbal complex is passivized. In other words, in (46a) what Zhangsan was 'done to' by Lisi is the action of sending the police to arrest him. That is, Zhangsan sustained the experience of Lisi's sending the police to arrest him.

We can also illustrate this with the ambiguous interpretations of *wangji* 'forget'.

(49) Zhangsan wangji dai yaoshi hui jia le.
Zhangsan forget bring key go home SFP
a. 'Zhangsan forgot to bring the key home.'
b. 'Zhangsan forgot that he had brought the key home.'

Recall that *wangji* 'forget' per Ussery et al's discussion (see (23)) is ambiguous between an implicative reading with a nonfinite complement as translated in (49a) and a factive reading with a finite complement as translated in (49b). Let's now LD-passivize the embedded object *yaoshi*. The result is that only the implicative reading remains:

(50) yaoshi bei Zhangsan wangji dai hui jia le.
key BEI Zhangsan forget bring go home SFP
'The keys were 'forgotten to bring home' by Zhangsan.'

This is exactly as expected because the factive reading implies a finite complement that would block the extraction. For some speakers who find the factive reading of (49b) hard to come by, addition of *yijing* 'already' or the perfective verbal *-le* (or both) will bring out the reading more clearly:[23]

(51) Zhangsan wangji yijing dai-le yaoshi hui jia le.
Zhangsan forget already bring-PRF key go home SFP
'Zhangsan forgot that he had already brought the keys home.'

And, sure enough, fronting of *yaoshi* by passivization is impossible:

(52) *yaoshi bei Zhangsan wangji yijing dai-le hui jia le.
key BEI Zhangsan forget already bring-PRF go home SFP
'*The keys were forgotten by Zhangsan that he had already brought home.'

In both Huang (1999) and Huang, et al (2009), the nonfinite-clause requirement was taken as a necessary but not a sufficient condition for LD passivization. It is already well-known that the Chinese *bei* passive is subject to various other restrictions. A famous restriction is that it must describe a pejorative or unfortunate

23. It is reported in Mei (1978) that the *ba*-construction exhibits limited long-distance dependency in a sentence like *ta ba yaoshi wang-le dai-le* 'He forgot to bring the key'. Again, this is well-formed only as long as *wang-le* 'forgot' is understood in the implicative sense. An overt subject *Lisi* below *wang-le* would force the factive meaning with a finite complement, with ensuing ungrammaticality: **ta ba yaoshi wang-le Lisi dai-le*, intended for 'He forgot that Lisi had brought the key.'

situation in relation to the subject or another person of interest. Thus, the following sentence is odd even though passivization is out of an otherwise transparent nonfinite clause:

(53) *naxie pingguo bei Lisi xihuan chi le.
Those apple BEI Lisi like eat PRF
'*Those apples were 'liked to eat' by Lisi.'

The examples in (48) above involve verbs that can each be used in the passive, however, so their ungrammaticality should not be attributed to lexical semantic factors. For example, both the matrix *toulu* 'reveal' and the embedded verb *zhua-zou* 'arrest' in (48a) are each suitable for a *bei* passive sentence. And even for (48b), with the matrix verb *yiwei* 'think', passivization is fine as long as it is *local*:

(54) ta-de ganxie han$_2$ bei Lisi yiwei [t$_2$ shi lai zhaolan shengyi de].
his thank letter$_2$ BEI Lisi think [t$_2$ be come solicit business de]
'His thank-you note$_2$ was regarded by Lisi t$_2$ to be a solicitation letter.'

Note that (54) involves the passivization of the embedded subject immediately below the verb, and is a case of local but not LD passivization, analgous to examples like *John was thought to be honest*, or *John is believed to have been kissed by Josephine*, etc. As long as an element in the embedded clause can be fronted to the left edge first, a further movement to the next clause is a local movement. Witness the minimal pair below:

(55) a. ta$_2$ bei baoliao [t$_2$ cengjing jia-gei Lisi]
she BEI break-news before marry-to Lisi
'She was alleged [by explosive news] to have married Lisi before.'
b. *ta$_2$ bei baoliao [Lisi cengjing qu-guo t$_2$]
she BEI break-news [Lisi before marry-EXP t]
Lit.: '*She was alleged [by explosive news] Lisi to have married before.'

Passivization from the embedded subject position is good but not from the embedded object position, because the former is a case of local movement (akin to subject raising).[24] There are two ways to repair (55b): either use a resumptive pronoun in

24. That is, even though the embedded clause is finite. The same happens with a locally bound reflexive in Chinese: *Lisi renwei ziji zui congming* 'Lisi thinks self is the smartest' (also see Ussery et al's example cited in (23b) above). Huang (1982, Chapter 5) attributed their well-formedness to the lack of agreement in T in Chinese (an important ingredient needed in the making of a 'governing category' for binding in the GB framework). In that account, both a reflexive and an NP-trace in the embedded subject position can be locally bound by an antecedent in the next clause up.

place of the embedded object trace as in (56a), or passivize the embedded clause first so the next step can proceed from the subject position as in (56b):[25]

(56) a. ta_2 bei baoliao [Lisi cengjing qu-guo **ta_2**]
she BEI break-news Lisi before marry-EXP her
Lit.: 'She was alleged [by explosive news] Lisi to have married her before.'
b. ta_2 bei baoliao [**t_2** cengjing **bei** Lisi qu-guo t_2]
she BEI break-news before BEI Lisi marry-EXP
'She was alleged [by explosive news] to have been married to Lisi.'

In short, except for local movement from embedded subject position, LD passivization out of a finite clause is banned.[26]

H. *Scope skipping of* you *'again'*

This phenomenon concerns an ambiguity between a repetitive and a 'restitutive' reading of *wieder* 'again' in German and English, widely known since von Stechow (1995, 1996). The original examples involve a causative verb and a definite object in German, as illustrated below (1996:87–88):

(57) a. (weil) Ali Baba Sesam wieder öffnete (repetitive and restitutive)
because Subject object again opened
'(because) Ali Baba opened Sesame again.'
b. (weil) Ali Baba wieder Sesam öffnete (repetitive only)
because Subject again object opened
'(because) Ali Baba again opened Sesame.'

According to the repetitive reading, Ali Baba has opened the door before, and he did it again. According to the restitutive reading, the door has been in an open state before but somehow got closed, and Ali Baba caused it to return to its previous state of being open (and this may be the first time he opened it). The crucial observation here is that (57a), with *wieder* following the object *Sesame*, is ambiguous

25. In their efforts to find counterexamples, Hu et al (2001: 1137ff) came up with some sentences that are at best awkward but can be improved invariably with a resumptive pronoun in place of the trace. Also, given this fronting to the left edge as an option, some apparent cases of LD passivization are in fact local. Their examples therefore carry no force. (They also missed the point as clarified in the preceding footnote.)

26. A note is in order here concerning the analysis in Huang (1999) and Huang et al (2009) that postulates A′-movement of a null operator in the derivation of a passive. In view of the finite opacity effects observed, the apparent LD examples should be considered to involve successive A-movement followed by a last step that brings the null operator to an A′-position (for the purpose of predication with the thematic subject). Also, as Liu and Huang (2016) have argued, some passives in Chinese may also involve raising rather than control, hence also A-movement.

with these two readings but (57b), with *wieder* preceding the direct object, only has the repetitive reading. Von Stechow offered a syntactic account of these facts based on the possible c-command domains of *wieder* in a structure assuming lexical decomposition. Beck and Johnson (2004) show that both the relevant facts and van Stechow's account for them can be fully reproduced in English. Related discussions are also found in Harley (2012). As the examples below demonstrate, a sentence with postverbal *again* may convey a repetitive or restitutive reading, but with a preverbal *again* it can only have the repetitive reading.

(58) John opened the window again. (repetitive or restitutive)
  a. Repetitive: John opened the window, and that had happened before.
  b. Restitutive: John opened the window, and the window had been open before.

(59) John again opened the window. (repetitive reading only)

Assuming lexical decomposition, the ambiguity of (58) follows from having the two possible structures below:

(60) a. [$_{TP}$ John [[$_{vP}$ CAUSED [$_{VP}$ the window open]] again]]
  b. [$_{TP}$ John [$_{vP}$ CAUSED [[$_{VP}$ the window open] again]]]

(60a) represents the repetitive reading with *again* c-commanding the entire vP 'CAUSE the window to open', whereas (60b) gives rise to the restitutive reading with *again* modifying only the lower VP. This theory correctly predicts that a preverbal *again* has only the repetitive reading since it must c-command the entire vP including the causative v-head. In that position, the c-command domain of *again* cannot be less than the whole vP:

(61) [$_{TP}$ John [again [$_{vP}$ CAUSED [$_{VP}$ the window open]]]]

Beck and Johnson showed that a similar pattern also obtains in other constructions (including double object constructions, resultatives) and in the ambiguous scope readings of duration phrases, etc. (See also Harley 2012.) Thus, there is considerable evidence in support of the structural analysis and lexical decomposition.

Returning to Chinese, this predicts that sentences containing *you* 'again' should be unambiguous with a repetitive reading only, since it is a fact of Chinese that adverbs always occur preverbally:

(62) Zhangsan **you** ba men da-kai le.
Zhangsan again BA door hit-open PRF. '
'Zhangsan opened the door again.'

Unfortunately, this prediction is not borne out. As first observed by Xu (2011, 2016), sentences like (62) have both a repetitive and a restitutive reading.[27] Consider a scenario where a window or door had been blown open and damaged by hurricane for some time. It was difficult to close it back tightly. When I finally managed to close it after considerable effort and before I had a chance to secure it with a nail, Lisi happened to come by and opened the door. I could say the following in dismay, knowing this is the first time Lisi opened the door:

(63) wo haoburongyi cai ba chuangzi guan-shang, Lisi **you** ba ta
I great-effort then BA window close-up Lisi again BA it
da-kai le.
hit-open PRF
'I finally managed to close up the window, but Lisi opened it again.'

The availability of the restitutive reading is also observed in Huang (2018) as well as Liu (2020), who calls this phenomenon '*again*-skipping'. More broadly, the adverb *you* 'again' may take scope over the entire domain it c-commands, or over just a sub-domain under it. In the examples below, *again* may be interpreted with multiple scope choices.

(64) ta caigang chi bao, ni zenme **you** jiao ta chi fan?
he just eat full you how-come again ask he eat meal
'He has just barely finished eating, how come you asked him to eat again?'

(65) Lisi zuotian cai huidao jia, ni zenme **you** bipo ta
Lisi yesterday just return home you why again force him
chumen le?
leave-home PRF
'Lisi just returned home yesterday, how come you forced him to leave again?'

(66) Zhangsan **you** jueding tixing Lisi ba men suo-shang.
Zhangsan again decide remind Lisi BA door lock-up
'Lisi again decided to remind Lisi to lock up the door.'

In (65) what happened again may include *bipo* 'force' or just *chumen* 'leave-home'. And in (66) *you* 'again' may be understood to have scope over the matrix *jueding* 'decide', or the next embedded *tixing* 'remind', the causative *suo-shang* 'lock up' or the inchoative predicate denoting the state of being locked if an appropriate context is supplied. To account for this freedom of scope interpretation, Xu (2011, 2016) and Liu (2020) propose that *you* may be underlyingly adjoined to any embedded

27. In fact, Xu (2011: 474ff) claimed that sentences like (62) display a three-way ambiguity, with one repetitive and two restitutive readings.

vP/VP and move to the highest vP leaving a trace. In LF, *you* 'again' may be reconstructed to its trace, giving rise to the narrow scope readings.

In addition, Liu (2020: 14ff) pointed out that this phenomenon of '*again*-skipping' may only occur across nonfinite domains. Movement of *you* 'again' across a finite complement will not retain its embedded scope. Thus, with *you* in the matrix clause, (67) only has the 'pointed out again' reading, and (68) with embedded *you* may have the 'shoveled the snow again' reading.

(67) Lisi **you** zhichu [Zhangsan bangzhu ta chan-kai-le jixue le]
Lisi again point-out Zhangsan help ta shovel-out-PRF snow PRF
'Lisi pointed out again that Zhangsan helped Lisi shovel the accumulated snow.'

(68) Lisi zhichu [Zhangsan **you** bangzhu ta chan-kai-le jixue le]
Lisi point-out Zhangsan again help he shovel-out-PRF snow PRF
'Lisi pointed out that Zhangsan again helped him shovel the accumulated snow.'

Thus, the phenomenon of '*again*-skipping' may be seen as yet another 'signature property' that manifests the finite-nonfinite distinction.[28]

To summarize, we have seen that finite and nonfinite clauses exhibit robust distinctions in blocking or allowing cross-clausal (a) aspect-lowering, (b) experiential adverb collocation, (c) internal topicalization, (d) verb-copying, (e) focus fronting, (f) *suo* clitic-climbing, (g) LD passivization, and (h) scope skipping of 'again'.

2.3 Scale of integration

Some of the differential properties we have seen between finite and nonfinite clauses can also be viewed as differences in the degree of integration. For example, those non-finite clauses that allow *guo*-lowering are more integrated to their matrix predicates in expressing a two-part single experience. In terms of temporal dependence, a Type III complement in (69c) seems to form a single event with the matrix verbs because of the simultaneous time requirement, and in this sense it is more integrated than a Type II complement in (69b), which in turn is more integrated than a finite complement to its matrix component in (69a):

(69) a. Zhangsan jide [PRO zuotian chi-le shengyupian]
Zhangsan jide yesterday eat-PRF sashimi
'Zhangsan remembers that he ate sashimi yesterday.'

28. This raises the question why the same adverb-climbing process could not happen and give rise to a restitutive reading for preverbal *again* in English. Adverb-climbing is also reported to occur in European Portuguese (Costa 2004), so it is not unique to Chinese.

b. Zhangsan jueding [PRO (mingtian) chi shengyupian]
Zhangsan decide (tomorrow) eat sashimi
'Zhangsan decided to eat sashimi (tomorrow).'
c. Zhangsan changshi [PRO (*daihuier) chi shengyupian]
Zhangsan try later eat sashimi
'Zhangsan tried eating sashimi (*a bit later).'

In addition to temporal integration, we can also speak of a 'referential integration' (see Givon 2009: 65) that concerns the freedom of reference of the embedded subject–ranging from no control to (potential) partial control to exhaustive control. (See Landau 2000, Grano 2012, 2015.) As a third type of integration, we saw above that while *suo*-climbing is generally obligatory out of a Type III complement, optional out of a Type II complement, but banned from a finite clause. While the possibility of long *suo*-climbing marks the finite-nonfinite divide, the impossibility of short climbing suggests that Type III complements are so integrated with their matrix that they leave no room to host a *suo* clitic within the complement. Finally, there is also a difference between Type II and Type III complements in the application of internal topicalization and focus fronting. As we saw, these two processes may apply across a non-finite complement. As we shall see soon in the next section, they may also apply locally within each clause, with the difference that local application is more marked in Type III complements than it is in Type II complements. In short, the three types of complements differ on the scale of integration in: temporal reference, the degree of control over the embedded subject, the possibility of aspect lowering, and the application of cross-clausal movement rules.

3. Finiteness and clausal architecture

It is beyond doubt, then, that a 'finiteness distinction' exists as a grammatical property, in Chinese as in other languages, even though languages differ in how (and whether) they morphologically encode finiteness. One natural question is, then, how finiteness is encoded in Chinese, in the absence of overt tense morphology. The question is not about what will help *identify* a clause as finite or nonfinite, for there are already enough diagnostic properties, so that if a given clause can be shown to have certain diagnostic properties, it can be identified as finite or nonfinite, and surely at least some correlating diagnostic properties may reasonably be expected to follow. The real question is: what ingredient(s) of the different types of complement clauses exist that are responsible for the diagnostic properties? Minimally, we want to know why finite and nonfinite clauses behave differently in the ways they do but not, say, the other way round. Finding the precise origins of these diagnostic properties would be a significant step toward *explaining* finiteness in natural language.

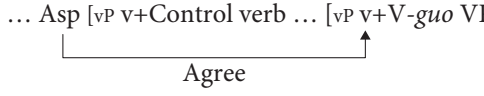
3.1 Finiteness as clause size

One influential view based on Wurmbrand & Lohninger (2020, henceforth W&L) and earlier works is to say that the origin of these properties is directly tied to the *size* of the complement clauses. By default, the three semantic classes (proposition, situation, and event/action) are mapped to three syntactic domains as their minimal clause sizes: a CP for an operator domain, an IP for a TAM domain, and a vP for a theta domain. These syntactic structures represent the canonical *minimal* size structure for each category:

(70) Canonical minimal structure mapping
  a. Type I (proposition) → OP domain → CP
  b. Type II (situation) → TAM domain → IP
  c. Type III (event/action) → Theta domain → vP

Grano (2014, 2015, 2017) adopted a strong variant of this view and proposed that all purported finiteness distinctions in Chinese can be reduced to clause-size differences. (An early predecessor of the finiteness-as-size idea is found in Xue and Paul McFetridge 1996, 1998.) In its strongest terms, this amounts to saying that Chinese does not have a finiteness distinction among clauses, and all so-called nonfinite clauses are not clauses but vPs. (This is parallel to the claim in Cinque 2006 that all restructuring verbs take vP complements while non-restructuring verbs take clausal complements.) The idea that some clause types have smaller sizes that give rise to some of their signature properties seems correct. In particular, the property of allowing *guo*-lowering is restricted to those cases when the complement is indeed no more than a vP (or only a little more than vP) in size. Both Grano (2014) and N. Huang (2018) offer a phase-based account of *guo*-lowering under an Agree relation between the matrix Asp and the lower verb carrying the *-guo* suffix, with the crucial assumption that the complement clause is a vP. (According to this account, there is no literal lowering of *-guo*. Instead, *-guo* is base-generated in the complement, and it is related to a matrix Probe under Agree, thereby acquiring matrix semantic scope.)

(71) *-guo* lowering as Agree (N. Huang 2018: 360; cf. Grano 2014: 34)



This derives the fact that a finite complement (a CP) containing a *-guo* suffix cannot be interpreted as having matrix scope, because a CP adds a phasal head C above the embedded vP, making the lower vP invisible to the matrix Probe, as predicted by the Phase Impenetrability Condition (PIC) of Chomsky (2001). This account also derives the fact that the complement cannot contain a modal like *yao*

'will/want', or a time adverbial, which presumably entails an IP-level head inducing an intervention effect.

(72) a. Zhangsan quan Lisi [PRO jie-guo yan]
Zhangsan urge Lisi quit-EXP cigarette
'Zhangsna has urged Lisi to quit smoking.'
b. *Zhangsan quan Lisi [PRO yao gankuai jie-guo yan]
Zhangsan urge Lisi will soon quite-EXP cigarette

(73) a. Lisi liang-ci changshi [PRO chi-guo shengyupian], dou bu xihuan.
Lisi twice try eat-guo sashimi all not like
'Lisi has tried eating sashimi twice, but never enjoyed it.'
b. *Lisi changshi [PRO mei-zhou chi-guo shengyupian], dou bu xihuan.
Lisi try every-week eat-guo sashimi all not like
'Lisi has tried eating sashimi every day, but never enjoyed it.'

However, the assumption that a nonfinite complement in Chinese is always a vP is clearly too strong. This is based on several facts that all point to the generalization that *all* three types of complement clauses may be a CP or at least an IP category. For one thing, N. Huang (2918:354f) observes that all three types may host the focus element *ye* 'also' whose occurrence entails at least an IP projection, or the complementizer *shuo* (commonly used in spoken Mandarin) which entails a CP:

(74) Ta hui shefa [**ye** zai zhe zhou nei tijiao jinzhan baogao].
he will try also at this week in submit progress report
'He will try to also submit a progress report this week.'

(75) Lisi xiang changshi [**shuo** huan yixia biede xifalu].
Lisi want try SHUO change a-bit another shampoo
'Lisi wants to try switching to another shampoo.'

(76) Lisi dasuan [**shuo** nian-di dao Ouzhou dujia].
Lisi plan SHUO year-end to Europe go-on-vacation
'Lisi plans to take a vacation in Europe at the end of the year.'

In addition, internal topicalization and focus fronting, which as we saw can apply across a nonfinite clause, may also apply locally within such a complement. Examples of local fronting within a Type II complement are easy to come by (see also Zhang 2016, N. Huang 2018, Li 2017):

(77) wo dasuan [PRO zhe-men ke mingnian chuntian zai xuan]
I plan this-CL class next-year spring then elect
'I plan to (wait till) next spring to take this class.'

(78) Lisi bipo ta [PRO lian yi-men yuyanxue ke dou buyao xuan]
Lisi force he even one-CL linguistics class all not-to elect
'Lisi forced him to not take even a single linguistics course.'

Although some Type III complements seem to resist internal fronting in many cases, several examples with internal topics are provided by Li (2017).

(79) wo zuijin kaishi shuiguo zhi chi caomei.
I recently start fruit only eat strawberry
'I recently started, fruits, only eat strawberries [I recently started to eat only strawberries among fruits/for fruit].'

(80) wo yao shefa hua zhi jiang sanfen, danshi gongzuo yiding
I will try word only say 30% but work definitely
zuo shifen.
do 100%
'I will try to say words only 30% but definitely do work 100%.'

And as we have seen above, local *suo*-climbing is fine within a Type II complement, although a Type III complement tends to send it up to the matrix. The examples with local *suo*-movement in (39)–(43) are repeated below:

(81) a. wo dasuan mingnian **suo** yao dacheng de mubiao
I intend next-year SUO want achieve DE goal
'the goal that I want to achieve next year'
b. Lisi qiangpo Akiu **suo** xie de zibaishu
Lisi force Akiu SUO write DE confession
'the confession that Lisi forced Akiu to write'

(82) a. *Lisi xihuan **suo** chi de na-dao Faguo cai.
Lisi like SUO eat DE that-CL French dish
Intended: 'the French dish that Lisi likes to eat.'
b. *ta wangji **suo** dai huijia de na-ge beibao
he forget SUO bring home DE that-CL backpack
Intended: 'the backpack that he forgot to bring home'

This shows clearly that a nonfinite clause can be considerably larger than a vP, even though it also can be as small as a vP, if necessary, to allow for *guo*-lowering. Although *ye* 'also' or the complementizer *shuo* may occur in a non-finite clause as seen in (74)–(76), they cannot occur if *guo*-lowering is to take place:

(83) *Lisi cengjing shefa **shuo** zuo-**guo** zhe-dao cai, …
Lisi previously try SHUO make-EXP this-CL dish
Intended: 'Lisi has tried to cook this dish before.'

(84) *Lisi cengjing shefa **ye** zuo-**guo** zhe-dao cai, …
Lisi previously try also make-EXP this-CL dish
'Lisi has tried also to cook this dish before.'

And although we have seen that internal topics and focused phrases may be locally fronted, the fact remains that a clause containing such fronted elements can no longer support *guo*-lowering. Compare the (a) examples with no internal fronting, with the (b–c) examples where an internal topic/focus has been locally fronted.

(85) a. wo bipo ta [PRO xuan-**guo** na-men ke]
I force him take-EXP that-CL class
'I have forced him to take that class before.'
b. *wo bipo ta [PRO na-men ke xuan-**guo**]
I force him that-CL class take-EXP
c. *wo bipo ta [PRO meiyi-men ke dou xuan-**guo**]
I force him every-CL class all take-EXP

(86) a. wo changshi [PRO chi-**guo** zhe-zhong shousi]
I try eat-EXP this-kind sushi
'I have tried eating this type of sushi.'
b. *wo changshi [PRO zhe-zhong shousi chi-**guo**]
I try this-kind sushi eat-EXP
c. *wo changshi [PRO meiyi-zhong shousi dou chi-**guo**]
I try every-kind sushi all eat-EXP

The generalization is then that a nonfinite clause has to be as small as a vP when *guo*-lowering occurs,[29] but can be as large as an IP or even CP when it does not occur. This view is in contradiction with the strong clause-size hypothesis of Grano (2014) but is compatible with the model presented in W&L (2020). According to the canonical structural mapping scheme in (70), the syntactic categories CP, TP and vP represent the *minimal* required CSRs of the respective semantic categories. W&L adopts a 'synthesis model' of complementation according to which the semantic selection properties of predicates may interact with the syntactic properties of the

29. I note that a local *suo* or a locative phrase does permit *guo*-lowering:

(i) zhe jiushi wo qing ta **suo** chi-**guo** de na-dao cai.
this is I invite him SUO eat-EXP DE that-CL dish
'This is the dish that I have invited him to eat before.'

(ii) zhe jiushi wo qing ta zai jiali chi-**guo** de na-dao cai.
this is I invite him at home eat-EXP DE that-CL dish
'This is the dish that I have invited him to eat at home.'

This shows that a clause a little bigger than the core vP still allows *guo*-lowering to take place. We may assume that *suo* is cliticized to a vP or an extended verbal projection (cf. Chiu 1995). A locative phrase may likewise be adjoined at a position below IP.

complements, with the result that the system "does not impose a strict mapping between syntactic categories and semantic constructs but allows mismatches in one direction: syntactic structure that has no consequence for interpretation is possible." (p. 34). This allows for certain cases of mismatch, including the possibility that a semantic type may be mapped to a larger-than-expected syntactic category with little or no semantic consequence.

The existence of such mismatches between S-selection and C-selection underlies the need for the notion of a 'canonical structural realization' (CSR) in Chomsky (1986)–which implies that there exist cases that are not canonical. A case in point in Chinese is the existence of the complementizer *shuo* which may occur at the beginning of all three types of complements, as exemplified in (75)–(76) above from N. Huang (2018). In spite of this, the occurrence of this complementizer does not induce any opacity effect for the application of the cross-clausal movements:

(87) Internal topicalization
Lisi na-xie jiu yifu zhunbei (**shuo**) guo ji-tian juan-chuqu
Lisi those old clothes prepare SHUO pass some-days donate-out
'Lisi [those old clothes]$_2$ plans to donate t_2 to charities a few days later.'

(88) Focus fronting
ta lian na-jian po chenshan dou dasuan (**shuo**) zai chuan san nian.
he even that-CL torn shirt all intend SHUO further wear 3 year
'He [even that torn shirt]$_2$ intends to wear t_2 three more years.'

(89) *suo*-climbing
zhe jiushi ta **suo** quan wo (**shuo**) lian yi-kou dou bie chi de
this is he SUO advise me SHUO even one-bite all not eat DE
na-dao cai.
that-CL dish
'This is the dish of food that he advised me not to take even one bite of.'

(90) *again* scope-skipping
ta caigang dida Meiguo, ni zenme you jiao ta (**shuo**)
he just arrive USA you why again ask he (SHUO)
mashang hui-lai?
immediate come-back?
'He has just barely arrived in the US, how come you asked him to come back again right away?'

(91) LD passivization
Lisi bei jingfang pai yuan (**shuo**) zai tianmeiliang zhi-qian jiu
Lisi BEI police send staff SHUO at not-dawn before then
dai-zou le.
take-away PRF
'Lisi was 'sent-some-staff-to-arrest-before-dawn' by the police.'

Although this may come as a surprise and a problem given the fact that a full CP usually blocks A-movement, it is useful to note that the optional *shuo* does not have the same status as English *that*. As illustrated above, *shuo* may appear before any post-verbal clause, while English *that* only occurs with a tensed TP and a full CP structure. Furthermore, *shuo* does not have any semantic function–it does not type-shift, in particular. With or without *shuo*, a situation remains a situation and an event/action remains an event/action. The addition of *shuo* to a Type III clause does not make it a situation or add an irrealis or future element of IP. And the addition of *shuo* to a Type II clause does not make it a proposition. As He (2020: 377) points out, *shuo* is 'semantically vacuous and just passes up its input' in the process of semantic computation.

For this reason, I shall assume that although *shuo* is a C^0 head that may prevent the head-head Agree relation involved in *guo*-lowering, its presence does not establish an operator domain (with an operator A′-position which would otherwise have significant semantic consequences). Other than phonological properties, it does not come with a feature that requires licensing of (or by) an A′-specifier. As such, the CP headed by *shuo* has no A′-specifier as a potential landing site (or the CP node may be 'pruned', as will be suggested below). This means that an A-type movement may proceed through a nonfinite clause without creating an 'improper movement' (A-A′-A) chain. (It has been established by Qu 1994 and Shyu 1995 that both internal topicalization and focus fronting are A-movement in type, as they do not induce obligatory reconstruction effects. I also assume that *suo* is a (resumptive) pronoun cliticized to a position below IP; it is not an operator in the Spec of CP of a relative clause.) Likewise, we may assume that *shuo* does not create a phase that would otherwise prevent movement out of the clause.[30]

3.2 On C-selection and clause-size reduction

The situation with the complementizer *shuo* in Mandarin is reminiscent of a type of infinitival construction, the *for-to-VP* construction, found in some dialects of English–including Belfast, Ozark, and Middle English, and in many American pop culture songs. Some examples are listed below and many more can be found in Henry (1995). See also Kaplan, Scruton & Wood (2017):

30. See N. Huang (2018) for detailed discussion of the status of *shuo* and several potential analyses to account for its failure to induce opacity effects on internal topicalization, etc. As a possibility he proposes that these elements proceed through a CP Spec position before landing in the matrix clause–with the consequence of creating an improper chain. Instead, I suggest a simpler solution as shown below.

(92) a. I went to the shop for to get bread. (Belfast English, Henry 1992: 280)
b. … to Caunterbury they wende, the hooly blisful martir for to seke.
'They went to Canterbury for to seek the holy blissful martyr.'
(from the prologue of Chaucer's *Canterbury Tales*)
c. Swing low, sweet chariot, coming for to carry me home.
(first line of American spiritual song)
d. I come from Alabama with my banjo on my knee, I'm going to Louisiana, my true love for to see. (from *Oh, Susanna!*)

These occurrences of *for* do not seem to serve any purpose. In standard English, *for* is called for as a Case assigner to license an overt subject in a full infinitival CP like *for John to go*, *I prefer for Bill to be the next player*, etc. In fact, a *for-to* construction was explicitly ruled out by a filter in Chomsky and Lasnik (1977), and in the GB-Minimalist theory such a construction would be ruled out because a PRO in it would be governed, or receiving a conflicting Case, and a trace would not be properly governed. But in these dialects *for* clearly seems to do no harm – nor any good, for that matter.

Henry (1992: 285) shows that, unlike the standard English *for DP to VP* constructions, *for-to* constructions in Belfast not only occurs in a control construction as in (92a), but also allows raising as well as ECM (or raising to object):

(93) a. John seems for to be better.
b. I believe them for to have done it.

Henry offers convincing arguments that the *for* in Belfast *for to* constructions is a complementizer. She also proposes that *for* in such constructions moves from its C position into TP where it then cliticizes to *to*, without leaving a trace, an idea independently supported by comp-cliticization in Hebrew (Shlonsky 1988). In the structure (94a) the controlled PRO is governed by *for*, in violation of the PRO Theorem. But once the complementizer *for* cliticizes downward to produce (94b), PRO is ungoverned and the structure is well-formed.

(94) a. John tried [$_{CP}$ for [$_{TP}$ PRO to go]]. → cliticization of *for*
b. John tried [$_{CP}$ [$_{TP}$ PRO for-to go]].

And in the raising and ECM cases of (93), after *for* vacates the C position we have:

(95) a. John seems [$_{CP}$ [$_{TP}$ t for-to be better]].
b. I believe [$_{CP}$ [$_{TP}$ them for-to have done it]].

These structures with CP exhaustively dominating TP feed into CP-deletion, resulting in grammatical raising and ECM structures for (93), thereby saving (95a) from the ECP and (95b) from the Case Filter.

Coming back to the Chinese *shuo*, it is interesting to note that N. Huang (2018), completely independently of Henry (1992), also goes in great length to argue that the clause-initial *shuo* is a complementizer, and he also claims that *shuo* must cliticize, but to a preceding (i.e., matrix) verb.[31] This latter move was made in an attempt to explain why this complementizer is disallowed before a sentential subject or adjunct clause, as illustrated below:

(96) a. [(*shuo) mingtian zhaochang shangke] rang dajia
SHUO tomorrow as-usual hold-CLass make everyone
hen shiwang.
very disappointed
'That we will have classes tomorrow as usual disappointed everyone.'

b. [(*shuo) ta yi huidao jia], jiu fangsheng da ku.
SHUO he once return home then let-voice big cry
'As soon as he got home, he started to cry as loud as he could.'

Although he did not consider this possibility, I would like to suggest that the cliticization hypothesis also offers a simple explanation for why *shuo* does not block internal topicalization, focus fronting, *suo*-climbing, etc., much in the spirit of Henry's (1992) treatment of the *for-to* construction in Belfast. Thus, consider the structure of (87) prior to cliticization:

(97) Lisi [na-xie jiu yifu]$_2$ zhunbei [$_{CP}$ shuo [$_{IP}$ guo ji-tian
Lisi those old clothes prepare SHUO pass some-days
juan-chuqu t_2]]
donate-out

Cliticization of *shuo* to the matrix verb (without leaving a trace) will give the following structure with a non-branching CP exhaustively dominating IP:

(98) Lisi [na-xie jiu yifu]$_2$ zhunbei-shuo [$_{CP}$ [$_{IP}$ guo ji-tian
Lisi those old clothes prepare-SHUO pass some-days
juan-chuqu t_2]]
donate-out
'Lisi, those old clothes, plans to donate to charities a few days later.'

---

31. N. Huang's requirement that *shuo* must be cliticized to a preceding matrix verb is clearly too restricted; the general requirement is that it must be cliticized to something on its left. This will correctly allow cases where it is cliticized to an object in an object-control construction: *tamen bipo Lisi* ***shuo*** *xingqitian ye shangban* 'they forced Lisi-shuo to also work on Sunday'. Also, *shuo* is allowed in an adjunct if the latter starts with something lexical such as *suiran* 'although', *jiaru*, *ruguo, yaoshi* 'if', *jiran* 'since, now that', wanyi 'in the rare event that', *zhiyu* 'regarding', etc. An example is *suiran-****shuo*** *Lisi mei de jiang, danshi dajia dou hen peifu ta* 'Although-***shuo*** Lisi did not win the prize, we all admired him nevertheless.'

The remaining natural assumption is that this inconsequential CP layer can be deleted now together with its associated phase-hood (in the same manner as the traditional CP-deletion in producing raising and ECM constructions). The non-opacity of these *shuo*-containing nonfinite clauses then follows, as desired. (This hypothesis should not affect the opaque status of a finite clause, however, which independently contains a full CP with operator features, etc., even in the absence of *shuo*.)

We are now ready to conclude this section, as follows. The distribution patterns of finite and nonfinite clauses, as evidenced by a clustering of diagnostic properties over dimensions of (in)dependence, opacity/transparency, and integration, are correlated with a scale of semantic types of their embedding verbs that respectively select propositions, situations and events/actions as their complements. These semantic types are systematically realized by syntactic categories that differ on a scale of 'clause-size'. While a rigid version of the clause-size theory cannot be maintained, Wurmbrand's 'synthesis' view of complementation has enough flexibility to allow a semantic category to be mapped to a syntactic category larger than expected that may either contain elements that are semantically inconsequential, or coerce a type shift from one semantic class to another.

We saw that the complementizer *shuo*, whose presence implies the existence of CP, does not trigger semantic type-shifting or induce syntactic opacity. With the assumption that *shuo* undergoes cliticization out of the C^0 position, thereby enabling the CP node to be deleted, we can still maintain a version of the clause-size theory of finiteness, as far as the syntax of verbal complementation is concerned.

At this point a question arises as to how the requisite syntactic categories CP, TP and vP are introduced to the derivation of finite and nonfinite clauses. Assuming that *shuo* (just as the *for* in Belfast) to be a complementizer, this means that under some circumstances all three types of complements could be categorially realized as CP at some point in the derivation. This fact, by itself, is not a problem for Wurmbrand's synthesis-based ICH approach with the principle of canonical minimal structure mapping in (70), which only requires the presence of vP, IP as minimal CSRs of Types II and III complements, but does not prohibit the occurrence of larger syntactic structures. It remains, however, that the 'extra' elements above the minimal CSRs are inconsequential with respect to certain principles governing opacity and locality, so a process of cliticization and tree-pruning would presumably be called for, despite the flexibility of the synthesis model.

A potential alternative is to take a derivational view of the minimal CSRs of the three complement types, in the spirit of Pesetsky's recent and current work (2017–2021) on Exfoliation. In contrast to the more familiar theories of base-generating infinitival clauses as they are, Pesetsky has proposed a derivational theory of infinitivization that is a "21st-century revival" of the earliest transformational approaches to English predicate complement constructions. The central thesis of Pesetsky's theory is informally expressed as the Full CP hypothesis below:

(99) Full CP hypothesis (Pesetsky 2021: 10)
Every embedded clause is built by Merge as a full finite CP and may be reduced to a less-than-full clause only as a consequence of later derivational processes.

To derive the smaller size of a nonfinite clause, Pesetsky proposes a rule of Exfoliation that 'peels away outer layers of the clause [i.e., CP] so the subject ends up occupying its edge'. More specifically, he proposes that clauses end up smaller "only as a consequence of extraction-triggered Exfoliation" (p. 118).

The case of *shuo* in Mandarin and that of *for-to* in Belfast clearly fit under the Exfoliation approach, at least in spirit. Thus example (97) (=87) will be derived from a source with a full CP complement as in (98), via cliticization and exfoliation (CP-deletion) followed by internal topicalization. The resulting structure is well-formed with a transparent IP complement clause, as desired:

(100) Lisi [na-xie jiu yifu]$_2$ zhunbei-shuo [$_{IP}$ guo ji-tian juan-chuqu t_2]
Lisi those old clothes prepare-SHUO pass some-days donate-out
'Lisi, those old clothes, plans to donate to charities a few days later.'

Whether or not infinitival constructions are results of direct mapping or syntactically derived via truncation or exfoliation is a matter of ongoing debate, and the cases involving *shuo* and *for-to* only bear on a small part of a larger question. (The possibility of clause reduction is also explored in Müller 2020. See also Satik 2021 for a truncation approach to non-finiteness.) Regardless of the answer to the bigger question, the insights of Wurmbrand's clause-size approach and the ICH remain at some level of representation.

4. Finiteness and syntactic coding

4.1 Finiteness in nominal complementation

So far, our discussion has been concerned with verbal complementation. We can see that the typology of complement clauses based on the S-selection properties of the embedding predicates as proposed by Wurmbrand can be extended to the domain of nominal complementation. As suggested in Huang (2016, 2017) nominal complements can also make a finiteness distinction depending on the S-selection properties of the nominal heads. The propositional type of complements includes complements of nouns like *xiangfa* 'idea, thought', *yaoyan* 'rumor', *xiaoxi* 'news', *shengming* 'claim', *baodao* 'report', etc. (parallel to their verbal counterparts), and appositives (of *the fact that* type) must be able to take finite complements. As Zhang (2008, 2019) shows, they may contain speaker-oriented expressions, and also clause-final particles *le*, *ne*, *laizhe* or the epistemic future *hui*.

(101) a. wo tingshuo-le [Lulu **juran** qiang-le yinhang] de baodao.
I hear-PRF Lulu unexpectedly rob-PRF bank DE report
'I heard the report that Lulu-to my surprise-robbed a bank.'

b. [Lulu **xingkui** kaoshang-le daxue] de xiaoxi rang dajia dou hen xingfen.
Lulu fortunate admit-PRF college DE news let all all very excited
'The news that Lulu–fortunately–got admitted to college excited everyone.'

(102) a. Lulu jiedao-le [ta de-le tou-jiang **le**] de tongzhi.
Lusu receive-PRF she got-PRF first-prize SFP DE notice
'Lulu received the notice that she got the first prize.'

b. wo bu tongyi [Lulu **hui** chizhi hui Meiguo] de caice.
I not agree Lulu will resign return USA DE guess
'I don't agree to the speculation that Lulu will resign and return to the US.'

On the other hand, these signs of finiteness are barred from 'gapless relatives' of the following kind (which Huang et al 2000, 2009 and Huang 2016 claimed are nominal complement clauses). Huang (2016, 2017) argues that the gapless relatives are nonfinite, thus excluding an evaluative adverb. Zhang (2019) shows that they also exclude the clause-final particles and the future modal *hui*.

(103) a. [Zhangsan tan gangqin de shengyin] hen haoting.
Zhangsan play piano DE sound very good-hear
'The sound of Zhangsan playing the piano is good to hear.'

b. *[Zhangsan **juran** tan gangqin de shengyin] hen haoting.
Zhangsan unexpectedly play piano DE sound very good-hear
'The sound of Zhangsan–to my surprise–playing the piano is good.'

c. *[Zhangsan tan-le gangqin **le** de shengyin] hen haoting.
Zhangsan play-PRF piano SFP DE sound very good-hear
'The sound of John having now played the piano is good to hear.'

(104) a. [tamen kao yu de weidao] ba dajia dou gan-zou le.
they grill fish DE smell BA everyone all chase-away SFP
'The smell of them grilling fish chased everybody away.'

b. *[tamen **meixiangdao** kao yu de weido] ba dajia dou gan-zou le.
they to-my-surpise grill fish DE smell BA everyone all chase-away SFP

c. *[tamen kao-le yu **le** de weidao] ba dajia dou gan-zou le.
they grill-PRF fish SFP DE smell BA everyone all chase-away SFP

(105) a. [Lulu da taijiquan de zishi] hen youya.
Lulu do tai-chi DE posture very graceful
'Lulu's posture in practicing taichi is graceful.'
b. *Lulu **hui** da taijiquan de zishi] hen youya
Lulu will do tai-chi DE posture very graceful
c. *Lulu da-le taijiquan **le** de zishi] hen youya
Lulu do-PRF tai-chi SFP DE posture very graceful

Nouns like *shengyin* 'sound', *weidao* 'smell' and *zishi* 'posture' S-select an action or an event, but most definitely not a proposition. So the 'gapless relative' does not, as expected, have a full CP structure, but must be reduced to an IP or a vP. I suggest that examples of this type of gapless relatives have the structure of either a Type II or a Type III complement, as illustrated below:

(106) a. [$_{DP}$ [$_{IP}$ Zhangsan tan gangqin] de [$_{NP}$ shengyin]]
Zhangsan play piano DE sound
'The sound of Zhangsan playing the piano.'
b. [$_{DP}$ Zhangsan (de) [$_{vP}$ PRO tan gangqin] de [$_{NP}$ shengyin]]
Zhangsan DE play piano DE sound
'Zhangsan's sound of [PRO playing the piano].'

According to structure (a), *shengyin* takes a situation/event as its complement, referring to the sound of an event. The IP contains a lexical subject which receives its case from *de* or it may receive a default case similar to the case of an 'Acc-*ing*' construction, as the English translation shows. According to structure (b), *Zhangsan* is the Spec of the entire DP taking a genitive Case (which can be omitted when another modifier follows). The complement clause can be as small as a vP with a PRO subject controlled by *Zhangsan*. As the English translation shows, it means 'the sound that Zhangsan produces in playing the piano'.

Some nominal (or nominalized) counterparts of type II or Type III verbs, like *jueding* 'decision', *qitu* 'desire', *dusuan* 'intention', etc., may also each exhibit a control structure with a vP or IP as its minimal complement. (Note that internal topicalization has applied in (107a), so minimally an IP must be assumed in this case.)

(107) a. [$_{DP}$ Zhangsan$_i$ [$_{IP}$ PRO$_i$ zhe-men ke mingnian zai xuan]
Zhangsan this-CL class next-year then elect
de jueding]
DE decision
'Zhangsan's decision [PRO this course to take next year].'
b. [$_{DP}$ Zhangsan$_i$ [$_{IP}$ PRO$_i$ xuan zhe-men ke de jueding]
Zhangsan elect this-CL class DE decision
'Zhangsan's decision [PRO to take this course].'

In short, there is considerable parallelism between verbal and nominal complementation in the distribution of finite and nonfinite complements.

4.2 Finiteness beyond complement types

Although the ICH provides an insightful framework to talk about the finiteness distinction among complement clauses, it does not cover other domains of syntactic structure.

For example, sentential subjects in English can be finite as well as nonfinite, but where a subject might fit in with the ICH framework is not clear. Another area falling outside the ICH is the typology of adjunct clauses with respect to finiteness. Some adjunct clauses are more often finite (for example, those headed by *because*, *although, even though, in order that, so that*), while others are nonfinite (e.g., purposive clauses headed by *so as to, in order (for DP) to VP*), and still others seem to allow finite or nonfinite clauses with equal freedom (e.g., clauses headed by *when, while*). Since adjuncts are generally unrelated to the S-selection properties of embedding predicates, the distribution of nonfinite adjuncts seems to fall outside of the ICH. In some caaes at least, however, it is possible to extend the spirit of the ICH to adjuncts by reference to the heads of the adjunct clauses. For example, *because* and *although* may select a proposition (and a finite CP), while *because of* and *despite* do not.

At the same time, it remains that both finite and nonfinite adjuncts exhibit some of the same signature properties parallel to complements. For example, finite adjuncts exhibit independence of temporal reference while nonfinite adjuncts do not. (This is particularly clear in relative clauses, e.g., *John criticized the player who lives next door.*) Finite adjuncts license their overt subjects internally, while nonfinite adjuncts either have a controlled PRO or a lexical subject licensed by a preposition. By their nature, adjuncts are not 'integrated' to the main predicates, though they may differ in their degree of relatedness in this regard. And because many adjuncts themselves are extraction islands for A′-extraction already even when they are nonfinite, it is hard to demonstrate opacity effects on A-movement based on finiteness alone.[32] The same points apply to the case of finite and nonfinite sentential subjects.

Returning to Chinese, a similar picture obtains of adjunct clauses as well. Because of the lack of overt morphological tense, it's not at all easy to see if a sentential subject or an adjunct clause is finite or nonfinite. No properties related to

32. See Truswell (2011, and references therein) for cases where finite adjunct clauses exhibit stronger island effects for A′-movement than nonfinite ones and different opacity effects among different nonfinite adjuncts.

opacity under extraction can be used to identify finiteness because all extractions out of sentential subjects and adjuncts are independently ruled out by the CED. However, we can use other properties (e.g., on the independence scale) to help identify finiteness. If a clause exhibits one or two diagnostic properties for one clause type, some other diagnostic properties (to the extent that they are discernable) will be expected to hold. For example, in Mandarin an adjunct expressing a purpose, a rationale or a result may take different forms in postverbal or preverbal position. In Wei and Li (2018) it is shown that a purposive clause may occur bare or introduced by *lai* 'come' in postverbal position, exhibiting properties of a nonfinite clause–close to a Type III clause, with an obligatory controlled PRO.

(108) a. ta mai-le pingguo (lai) [PRO ziji chi]
he buy-PRF apple (to) self eat
'He bought apples to eat by himself.'
b. Lisi biaoyan houzi tiaowu lai PRO dou wawa.
Lisi perform monkey dance to play baby
'Lisi performed a monkey dance to play with the baby.'

In addition, a postverbal adjunct may be introduced by a leading element in the form of *yi*+V, such as *yi-bian*, *yi-li* 'in order to/that', *yi-mian*, *yi-fang* 'lest, so as to prevent', *yi-zhi* 'so as to cause', *yi-shi* 'so as to indicate', etc. Such a postverbal clause may exhibit properties of a Type II clause with controlled PRO or a lexical subject:

(109) a. Lisi jintian tizao xiaban, yi-bian [PRO gen taitai qu kan dianying]
Lisi today early off-work in-order with wife go see movie
'Lisi got off work early today in order to go to the movie with his wife.'
b. Lisi jintian tizao xiaban, yi-bian [taitai keyi gen tongxue juhui]
Lisi today early off-work in-order wife can with friends meet
'Lisi got off work early today so that his wife can go meet her classmates.'

(110) a. Lisi tai-wan qi-chuang, yi-zhi [PRO mei gan-shang huoche]
Lisi too-late get-up so-that not catch train
'Lisi got up too late, so as not to have caught the train.'
b. Lisi changchang wu-gu quexi, yi-zhi [laoban jueding kaichu ta]
Lisi often no-reason absent so-that boss decide fire him
'Lisi was so often absent with no reason that the boss decided to fire him.'

There is also a preverbal alternative for a purposive or rationale adjunct, introduced by the preposition *weile* '(in order) for', with a controlled PRO or a lexical subject:

(111) a. weile Mali neng caifang xiaozhang, wo zuo le henduo nuli.
for Mary can interview headmaster I make PRF much effort
'In order for Mary to be able to interview the headmaster, I made a lot of efforts' (Wei & Li 2018: 168)

b. weile PRO bimian zaocheng mafan, women jintian jiu bu guolai le.
for avoid make trouble we today then not come SFP
'PRO to avoid causing trouble, we won't come over today.'

In short, the finiteness distinction holds across various embedded clauses beyond complements, though languages diverge in how they morphologically encode the distinction.

4.3 Finiteness and syntactic encoding

The next question is how this difference is encoded in Chinese. More importantly, what is the source of this distinction, beyond the lexical semantic properties of embedding predicates? Although we have found many properties that can help identify the finiteness distinction, these are simply the *diagnostic* properties–not themselves the markers of finiteness. These properties are the symptoms or effects, not the cause. Even the clause-final aspect particles *le, ne,* and *laizhe* as identified by T.-H. Lin (2011, 2012) and Zhang (2019), and the future modals *hui*, *yao, jiang* (mentioned by Li 1985, N. Huang 2015, Zhang 2019, and He 2020) only diagnose finiteness but are not themselves the markers of finiteness.

One reasonable strategy to find the source of the symptoms is to ask what property they have in common, if any. A potential answer suggests itself when we consider the final particles and the future modals which have been shown to diagnose finite clauses. Although *le, ne,* and *laizhe* are aspects with different meanings, one thing that ties them together is that they crucially involve temporal reference, and this is also true of the future modals *hui*, *yao*, and *jiang*. Each of them implies the existence of temporal reference in the clause it occurs. Aspects do not by themselves denote a reference time R. They presuppose R and assert its relations with an event time interval (E): The perfect *le* asserts that E is over by R ($E < R$); the imperfective *ne* asserts that R is included in E ($R \subseteq E$); the imperfective *laizhe* makes the same assertion but restricts itself to a time anterior to speech time ($R < S$); and the perfective asserts that the runtime of E is included in R ($E \subseteq R$). See Klein (1994), and Kratzer (1998.)

(112) Aspect denotations (Kratzer 1998: 107):

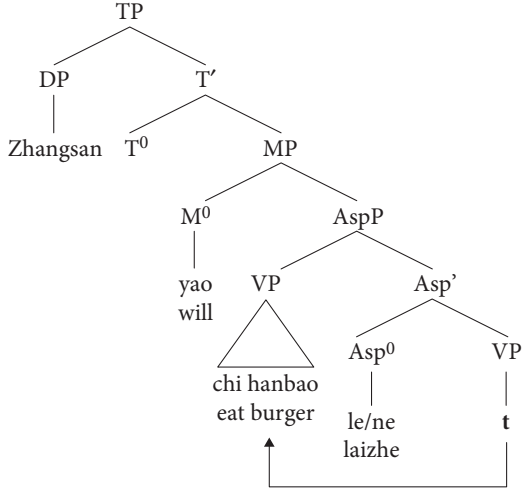
Imperfective: $\lambda P_{<1,<s,t>>}.\lambda t_i.\lambda w_s.\exists e_1$ *(t* $\subseteq$ time*(e)* & *P(e)(w)* = 1*)*
'Reference time included in event time'

Perfective: $\lambda P_{<1,<s,t>>}.\lambda t_i.\lambda w_s.\exists e_1$ *(*time*(e)* $\subseteq$ *t* & *P(e)(w)* = 1*)*
'Event time included in reference time'

Perfect: $\lambda P_{<1,<s,t>>}.\lambda t_i.\lambda w_s.\exists e_1$ *(*time*(e)* < *t* & *P(e)(w)* = 1*)*
'Event over by reference time'

So, aspectual phrases talk about times, though they do not denote times. They are properties/predicates of times. Successful composition of the meaning of a sentence with aspects requires the existence of a reference time argument for a given event. In a language with tenses, Tense provides that time argument. In addition, a future modal like *hui*, *yao, jiang* implies a reference time R posterior to speech time S. Although Chinese lacks overt tense morphology, the existence of semantic tense (R) for semantic well-formedness is beyond doubt. Assuming a strong version of syntax-semantics mapping, T.-H. Lin (2011, 2012, 2015) argues for a (covert) syntactic tense in Chinese. He takes the clause-final *le* (and *ne*) to head an Aspect Phrase below T^0. Adding *laizhe* to *le* and *ne*, and a future modal *yao*, Lin's system will generate syntactic structures like this:

(113)



This analysis has the advantage of accounting for the fact that both the modal and the aspects are interpreted with the reference time R provided by T^0, but they do not contribute the value of R. The analysis by itself, however, does not ensure that the sentence above is finite. In English, at least, we know that an aspect marker may occur in a nonfinite clause, as illustrated below:

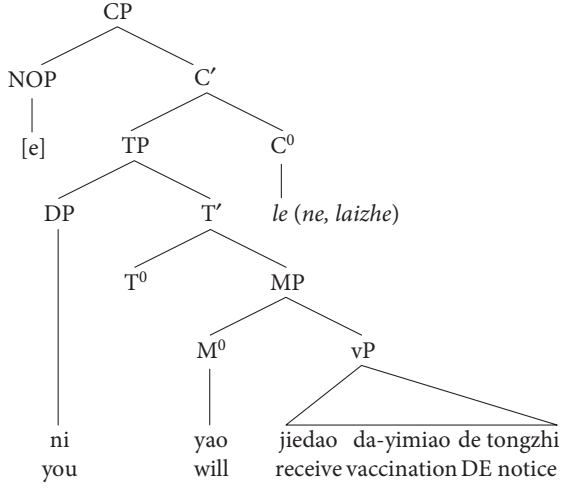
(114) a. John appears [t to have forgotten this].
b. I believe Bill [t to be jogging at the park].
c. It is inconceivable [for John to have arrived so soon].

Therefore, the fact that clauses containing the aspects *le, ne,* and *laizhe* are finite is a language-specific fact. Recall our discussion in Section 2.1, where it was shown that a finite clause is more independent than a nonfinite one. Among other things, a finite clause may contain independent temporal reference, whereas the reference time of a nonfinite clause is always partially or completely dependent on that of the matrix verb. The reference time of a finite clause comes from the speaker, whether it is deictic, specific or introduced by existential quantification: it is non-anaphoric. The syntactic structure in (113), as given, does not ensure that the clause is finite in the mere presence of the final particles

Paul (2015) and Paul & Pan (2017) have argued that the final particles should be located in a 'low CP' projection in syntactic structure. Zhang (2019) also shows that the final particles should be distinguished from auxiliaries within a TP, and that they c-command the subject position and should therefore be placed in a complementizer position, as head of a Finite Phrase (Rizzi 1997 and other works inspired by it), thereby encoding the finiteness, similar to the complementizer *that* in English. It seems there is compelling evidence for placing the final particles in a C position, but to simply call them elements of Fin^0 still misses the fact that their semantic contribution seems to be limited to marking aspectuality–they form a phrase of the semantic type <i<s,t>>–a function from times to propositions. A clause ending with such a particle would not be a complete proposition.

I would like to suggest a hybrid proposal that incorporates both Lin's and Zhang's insights (see also Sybesma and Li 2007).

(115)



'You will soon receive a notification to get vaccinated.

I propose that the CP (or FinP) headed by the clause-final particles includes an operator in its Spec that provides an access to the 'speaker's temporal coordinate' in the sense of Giorgi (2009), who considers it to be responsible for the 'double-access' property of a finite, indicative clause in Italian. (Giorgi shows that subjunctive clauses do not have the double-access property and lack a speaker's temporal coordinate. As a result, the subjunctive clause exhibits sequence-of-tense restrictions, whereby the value of the embedded tense is dependent on the matrix tense.)[33] As mentioned in Section 2.1, footnote 10, the phenomenon of double access is illustrated by sentences like the one below, with a present-tense complement embedded under a past-tense main verb:

(116) John said that Mary is pregnant.

The embedded clause employs a reference time R relative to the speech time S of the speaker, rather than to that of the matrix subject. Abusch (1991) and Ogihara (1995) have treated such a phenomenon as a *de re* interpretation of the time intervals or the state expressed by the embedded proposition. Giorgi (2009: 1837) shows that Italian indicative finite clauses exhibit double-access phenomena and proposes that they each contain a projection "that is read off at the interface as pointing to the speaker's temporal coordinate." I propose that Spec of CP in (115) is a null operator (OP) acting as a 'gate' to pick up a *de re* reference time interval from the speaker's coordinate. The value can be an indexical time (past or present with respect to the speech time), or it may be left unspecified (simply existentially quantified). The denotation accessed by the OP is a time of type <i>, and this composes with the aspectual phrase (of type <i, <s,t>>) that is headed by *le, ne,* or *laizhe*, and so the embedded clause is a proposition with *de re* attitude interpretation.[34] I submit that

---

33. In a similar spirit, Liao and Wang (2021) has independently suggested that finiteness in Chinese may be defined by extending Bianchi's (2003) notion of speaker-anchoring. In particular, they suggest that a finite clause can anchor to the 'world' of the external speech event (which includes the external speaker, time, location, etc.), while a nonfinite clause must anchor to the world of an *internal* speech event. According to their proposal, anchoring to the speaker's temporal coordinate is one of the by-products of world-anchoring.

34. Different from the clause-final *le, ne* and *laizhe*, some other aspect markers occur internally within IP–including the perfective aspect *–le* (le_1 as opposed to the perfect le_2) and durative aspect *–zhe*. Gu (2008) and Tsai (2008) independently show that sentences containing these internal aspect markers are somewhat 'incomplete', but once a clause-final particle is added, they become complete:

(i) Akiu na-le shu *(le).
Akiu take-PRF book *(prf)
'Akiu has taken the book.'

the reason why clauses with these clause-final particles are necessarily finite is that they head a projection that necessarily includes a 'gate' to receive an independent, non-anaphoric time argument.[35] Furthermore, I suppose that the existence of the speaker's coordinate also provides access to other speaker-oriented properties, such as the occurrence of evaluative adverbs. The examples we saw earlier in (11)–(12) are repeated below:

(117) a. ta tingshuo Lisi juran liang-nian-nei jiu nadao-le
he hear Lisi to-my-surprise in-2-years then receive-PRF
boshi xuewei
PhD degree
'He heard that Lisi–to my surprise–received the PhD in 2 years.'

b. *ta bipo Lisi juran liang-nian-nei jiu nadao boshi xuewei
he force Lisi to-my-surprise 2-year-in then receive PhD degree
'He forced Lisi to receive the PhD–to my surprise–in 2 years.'

c. *Lisi dasuan juran liang-nian-nei jiu nadao boshi xuewei
Lisi intend to-my-surprise 2-year-in then receive PhD degree
'Lisi plans to receive the PhD degree–to my surprise–within 2 years.'

(118) a. ta ganggang faxian fanren zhen zaogao yijing tao-chuqu le.
he just find prisoner real bad already run-out SFP
'He just found out that the prisoner–what a mess–has already run away.'

b. *ta toutou xiezhu fanren PRO zhen zaogao tao-chuqu le.
he secretly help prisoner real bad run-out SFP
'He secretly helped the prisoner to–to my dismay–run away.'

c. *fanren deyi PRO zhen zaogao tao-chuqu le.
prisoner manage real bad run-out SFP.
'The prisoner managed to–to my dismay–run away.'

Continuing along with the 'pronominal theory of tense' (which started with early suggestions by Barbara Partee and underlies much current research, including

(ii) gongren tui-zhe che *(ne).
worker push-dur cart prog
'The workers are pushing the cart.'

Both Gu and Tsai attribute these to the need for internal aspectual phrases to be tense-licensed (or 'anchored'). This may be because, without being assigned a value by the Spec of CP, the internal T^0 is unable to compose with the internal aspectual phrase for a proposition.

35. Since we don't want to say that *only* sentences with aspectual particles are finite, I shall tentatively assume that the C may also contain a null element ø that heads a finite clause with the simple-tense or habitual readings. Although such clauses are not diagnosed by the final particles, they can be identified by some of the other diagnostic properties.

notably Kratzer 1998), let us assume that the OP in the CP projection binds the T^0 in the TP, as a case of A′-binding. As such, the T^0 is a variable. As a variable, it is an R-expression (neither an anaphor nor a pronominal) in the sense of Binding Theory, which prevents it from being bound by a matrix T^0. This ensures that the temporal reference of the TP is independent of that of the matrix clause. This representation will be appropriate for embedded clauses with double-access interpretations, or cases like finite relative clauses where the tense is independent of the matrix.[36] (We turn to sequence-of-tense cases directly below.) That is, there is no direct T^0-T^0 binding when the lower T^0 is bound by a closer A′ (or T′) binder–a finite clause is an opaque domain for T-to-T binding.[37] We can see this as yet another example of opacity that a finite clause induces, along with its effects on internal topicalization, focus fronting, relative clitic-climbing, LD passivization and scope-skipping of *you* 'again'.

As for the nonfinite clauses, their transparency follows as well, as a consequence of their not containing the top CP with access to the speaker's coordinate. What is left over is a TP with [ø tense], or an infinitival CP with inconsequential elements that may be subject to truncation or exfoliation. Crucially, the embedded T^0 with no inherent tense value and not being A′-bound will be anaphorically determined by the T^0 of the next clause up. This derives the temporal-dependent properties of the nonfinite clauses, with partial binding in the case of Type II – where the irrealis or future is defined as being posterior to the matrix time. In the case of Type III, simultaneity is ensured if the complement has a pure vP structure or, if a larger structure is projected, the T^0 will be exhaustively bound as an anaphor.[38]

We have now seen that T^0 can be treated as an anaphor that is locally T-bound (if nonfinite), or a variable (and R-expression) that is A′/T′-bound but T-free (if finite). Although our discussion has been focused on the temporal independence of finite clauses, there are circumstances when an *embedded* finite clause is dependent on the matrix for its temporal reference – when it is subject to the sequence-of-tense (SOT) requirement, as illustrated below (from Ogihara 1989, Wurmbrand 2014).

---

36. Susi Wurmbrand (p.c.) has pointed out to me that the double-access cases are not entirely independent of the matrix clause. In English they are limited to cases of 'present under past'. An embedded clause with the speaker's past would be illicit: **John said last week that Mary was sick yesterday*.

37. This situation bears a resemblance to the null topic constructions in Chinese and German studied in Huang (1984), where certain missing arguments are treated as variables bound by null topics. In (115), the null reference time (or topic time) is introduced from outside the sentence in a way similar to the null topic.

38. Treating temporal reference in binding-theoretic terms recalls Borer's (1989) early work on 'Anaphoric Agr', which attempted to relate nominal binding to the referential/anaphoric nature of a finite/nonfinite I^0.

(119) (Earlier today) John wanted to buy a fish that **was** alive (tomorrow).

(120) Leo found out that Mary **was** pregnant.

Although the embedded clauses are finite in the traditional sense, their tense values are determined by the matrix tense. In both cases above the past tense denotes a NOW time value relative to the attitude holder of the matrix verb (the matrix subject). Following ideas from Ogihara and Heim, Wurmbrand (2014) assumes that a sentence like (120) undergoes tense deletion in LF as in (121) with the resulting zero tense bound by a lambda operator as in (122):

(121) [Leo PAST find out [that Mary ~~PAST~~ be pregnant]]

(122) [Leo PAST find out λ0 [Mary 0 be pregnant]]

The bound tense variable is then interpreted as a relative NOW value for the attitude holder of the matrix verb – the NOW relative to Leo's time of discovering Mary's pregnancy.

Note that according to this treatment, the relation between the embedded tense and the matrix tense is not direct T-T binding, but mediated through the lambda operator. Assuming the null operator in Spec/CP as the syntactic correlate of a lambda operator, what we have is a tense-version of a A-A′-A binding configuration. That is, the tense in the embedded clause is A′-bound (T′-bound), hence a variable. But the A′/T′-binder in turn undergoes predication (or strong binding, Chomsky 1986), by which the operator (acting like a null pronominal) takes the higher T as its antecedent. This configuration is, of course, familiar from the syntax of the *tough* construction and other examples of secondary predication discussed in the literature. And it is also reminiscent of the structure of long-distance reflexives as proposed in Chierchia (1989), Huang and Liu (2001), among others.

(123) Zhangsan shuo [O_x [Lisi chang beidi-li piping ziji$_x$]].
Zhangsan say Lisi often behind-back criticize self
'Zhangsan said that Lisi often criticizes him/me behind his/my back.'

On its non-local interpretation, the reflexive *ziji* may be logophorically bound by the speaker, or it may be bound *de se* by the matrix subject. In a parallel way, we can say that a finite clause has its T^0 bound by a null OP, which may be anchored to the speaker's utterance time for the independent-tense (and double-access) reading or predicated on the matrix T for the sequence-of-tense reading. Viewed in this way, then, while all tensed clauses are finite in the traditional sense, they are not equal in temporal (in)dependence. The various temporal situations can be distinguished in binding terms as follows.

(124) Temporal reference and binding

Clause types	Nature of T	Binding Theory (BT-A, -B, -C)	Reference time value
Finite with Speaker's Coordinate	Variable A′-bound by a deictic OP	T′-bound & T-free (BT-C)	Independent RT
Finite with Sequence of tense	Variable A′-bound by a pronominal OP	Internally T-free but Externally T-bound by predication	Coreferential RT
Nonfinite Type II clauses	Anaphor	Locally T-bound (BT-A)	Partially bound RT (irrealis or future)
Nonfinite Type III clauses	Anaphor	Locally T-bound (BT-A)	Exhaustively bound (simultaneous RT)

5. Conclusion

Summarizing, in this paper I have reviewed some recent works on finiteness and on questions surrounding the finiteness distinction in Chinese, showing that important strides have been made in our understanding of finiteness and of Mandarin clausal architecture. Adopting a framework of description from Wurmbrand's works, which emphasize the existence of a range of predicate complements that differ on a scale in the strengths of finiteness in several dimensions, I showed that three types of Mandarin predicate complements can be distinguished with properties that clearly parallel those found in many other languages. The existence of these diagnostic properties demonstrates beyond doubt that finiteness (in the sense independent of morphological marking) and the finite-nonfinite distinction exist in Chinese as much as it does in other languages. These properties also show that finite and nonfinite clauses differ in clause size, ranging from CP to IP to vP. While the different sizes of complement clauses may be correlated to the S-selection properties of the embedding predicates, there is evidence that a larger-than-expected clausal category may sometimes be found, suggesting the possibility of clausal truncation in the derivation of the core minimal clauses.

As for the question of how finiteness is encoded in Chinese, it is suggested, assuming the pronominal theory of time reference and incorporating both T.-H. Lin's and Zhang's recent results, that a finite clause has a CP projection with a null operator in its Spec that serves as a gate to access temporal reference in one of two ways: either by direct access to the speaker's coordinate (giving rise to independent temporal reference), or by predication on the matrix T^0 (resulting in tense-sequencing). In both cases the T^0 of a finite TP is a variable A′-bound by the

OP; they differ in whether OP receives its value directly from the speaker's coordinate or is predicated on the matrix T. A non-finite clause, on the other hand, lacks the CP layer, and its T^0 (if present) is an anaphor bound by the closest matrix T^0, with its R being partially or exhaustively determined by its binder.

This suggestion assumes the existence of syntactic tense whose denotation is governed by general conditions of anaphora. This touches upon the larger question of whether or not there is a syntactic category for tense in Chinese. The existence of semantic tense, i.e., a reference time relative to the speech time as part of the meaning of a sentence, is presumably beyond doubt, but this by itself does not warrant the conclusion that there is syntactic tense, as has been well argued by J.-W. Lin (2003, 2006, 2010, 2012), and most recently Grano (2017). The suggestion I have made is based on the idea that the postulation of T allows us to treat tense on the referential tense theory, as an anaphor, a pronominal, or an R-expression governed by the principles of binding in syntax (notions such as c-command, A/A′-binding, and locality), and therefore that the similarities between finiteness properties and patterns of anaphora are not accidental.

Though based on different considerations, this is much in the spirit of those who have argued for syntactic tense, including Sybesma (2007, 2017b, 2019), Gu (2008), Tsai (2008), and T.-H. Lin (2015) and, especially, Sun (2014) and He (2020). These recent works go well beyond the scope of this paper. But if their proposals and my suggestion here do pan out, then some of the early ideas surrounding the subject of our main concern have been strengthened, including those put out in Li (1985, 1990): the existence of the finiteness distinction in Chinese seems beyond doubt now, and the idea that it is related to tense remains highly promising.

Acknowledgments

The earliest version of this paper was first presented at the 11th Theoretical East Asian Linguistics workshop (TEAL-11) at Academia Sinica, in 2017, and substantial portions of it have been presented elsewhere over several years since then, at Beijing Language and Culture University, National Tsing Hua University, Jiangsu Normal University, Chinese University of Hong Kong, Nanjing University, and National Taiwan Normal University. Both during and following those occasions, I have received useful comments that helped bring it to the current shape, for which I am grateful to Doris Chen, Yixun Chen, Liching Chiu, Audrey Li, Na Liu, Qiongpeng Luo, Andrew Simpson, Dylan Tsai, Changsong Wang, Niina Zhang, and Chen Zhao. I am particularly grateful for the detailed comments from Yuyin He, Roger Liao, Deniz Satik, and Susi Wurmbrand. While I truly believe the paper has improved from their generous comments, there is no implication that the revision has met with their approval. Needless to say, I am alone responsible for all inadequacies that remain.

References

Abusch, Dorit. 1988. Sequence of tense, intensionality and scope. *WCCFL* 7:1–14. CSLI, Stanford University.

Abusch, Dorit. 1991. The present under past as *de re* interpretation. *WCCFL* 10:1–12. CSLI, Stanford University.

Amritavalli, R. 2014. Separating tense and finiteness: anchoring in Dravidian. *Natural Language & Linguistic Theory* 32:283–306. https://doi.org/10.1007/s11049-013-9219-3

Bartos, Huba. 2019. The V-copy construction in Mandarin: A case temporarily reopened. In *Interfaces in Grammar*, Jianhua Hu and Haihua Pan (eds), 167–205. Amsterdam: John Benjamins. https://doi.org/10.1075/lfab.15.07bar

Bianchi, Valentina. 2003. On finiteness as logophoric anchoring. In *Temps et Point de Vue* [tense and point of view], Jacqueline Gueron and L. Tasmovski (eds), 213–246. Nanterre: Université Paris X.

Borer, Hagit. 1989. Anaphoric Agr. In *The Null Subject Parameter*, Osvaldo Jaeggli & Kenneth Safir (eds), 69–110. Dordrecht: Kluwer. https://doi.org/10.1007/978-94-009-2540-3_3

Cheng, Lisa. 2007. Verb copying in Mandarin Chinese. In *The Copy Theory of Movement*, Jairo Nunes & Norbert Corver (eds), 151–174. Amsterdam: John Benjamins. https://doi.org/10.1075/la.107.07che

Chierchia, Gennaro. 1989. Anaphora and attitudes de se. In *Semantics and Contextual Expression*, R. Bartsch, J. van Benthem, and P. van Emde Boas (eds), 1–31. Dordrecht: Foris. https://doi.org/10.1515/9783110877335-002

Chiu, Bonnie. 1993. The Inflectional Structure of Mandarin Chinese. PhD dissertation, UCLA.

Chiu, Bonnie. 1995. An object clitic projection in Mandarin Chinese. *Journal of East Asian Linguistics* 4:77–117. https://doi.org/10.1007/BF01731613

Chomsky, Noam. 1973. Conditions on transformations. In *A Festschrift for Morris Halle*, Stephen R. Anderson and Paul Kiparsky (eds), 232–286. New York: Holt, Rinehart & Winston.

Chomsky, Noam. 1977. *On wh*-movement. In *Formal Syntax*, Peter Culicover, A. Akmajian, and T. Wasow (eds), 71–133. New York: Academic Press.

Chomsky, Noam. 1986. *Knowledge of Language: Its nature, Origins and Use*. New York: Praeger Publishers.

Chomsky, Noam. 2001. Derivation by phase. In *Ken Hale: a Life in Language*, Michael Kenstowicz (ed), 1–52. Cambridge, MA: MIT Press.

Chomsky, Noam. 2013. Problems of projection. *Lingua* 130: 33–49. https://doi.org/10.1016/j.lingua.2012.12.003

Chomsky, Noam and Howard Lasnik. 1977. Filters and control. *Linguistic Inquiry* 8:425–504.

Cinque, Guglielmo. 2006. *Restructuring and Functional Heads*. Oxford: Oxford University Press.

Costa, João. 2004. Subjects in Spec,vP: locality and agree. In *Romance Op. 47*, A. Castro, M. Ferreira, V. Hacquard and A. Pablo Salanova (eds), 1–15. MITWPL.

Ernst, Thomas. 1994. Functional categories and the Chinese Infl. *Linguistics* 32:191–212. https://doi.org/10.1515/ling.1994.32.2.191

Ernst, Thomas, and Chengchi Wang. 1995. Object preposing in Mandarin Chinese. *Journal of East Asian Linguistics* 4:235–260. https://doi.org/10.1007/BF01731510

Fu, Jingqi. 1994. SOV word order in Chinese and IP specifier. *Paper presented at the NACCL-6 conference*, University of Southern California, Los Angeles.

Giorgi, Alessandra. 2009. Toward a syntax of the subjunctive mood. *Lingua* 119, 1837–1858. https://doi.org/10.1016/j.lingua.2008.11.008

Givon, Talmy. 1980. The binding hierarchy and the typology of complements. *Studies in Language* 4:333–377. https://doi.org/10.1075/sl.4.3.03giv

Givon, Talmy. 2009. *The Genesis of Syntactic Complexity*. Amsterdam: John Benjamins. https://doi.org/10.1075/z.146

Gouguet, Jules. 2006. Adverbials in Mandarin argument structure. In *Empirical Issues in Syntax and Semantics 6*, Olivier Bonami and Patricia Cabredo-Hofherr (eds), 155–173.

Grano, Thomas. 2012. Control and Restructuring at the Syntax-Semantics Interface. PhD dissertation, University of Chicago.

Grano, Thomas. 2014. Control without finiteness contrasts: Aspect and complement size in Mandarin Chinese. Ms., Indiana University.

Grano, Thomas. 2015. *Control and Restructuring*. Oxford: Oxford University Press. https://doi.org/10.1093/acprof:oso/9780198703921.001.0001

Grano, Thomas. 2017. Finiteness contrasts without Tense? A view from Mandarin Chinese. *Journal of East Asian Linguistics* 26: 259–299. https://doi.org/10.1007/s10831-017-9159-8

Gu, Yang. 2008. Shitai, shizhi lilun yu Hanyu shijian canzhao yanjiu [Studies of tense, aspect and Chinese time reference], in *Dangdai yuyanxue lilun he Hanyu yanjiu [Contemporary linguistic theories and Chinese language research]*, Yang Shen and Shengli Feng (eds), 97–119. Beijing: Commercial Press.

He, Yuyin. 2020. Time in Mandarin: the Fingerprints of Tense and Finiteness. PhD dissertation, Harvard University.

Henry, Alison. 1992. Infinitives in a *for-to* dialect. *Natural Language & Linguistic Theory* 10: 279–301. https://doi.org/10.1007/BF00133814

Henry, Alison. 1995. *Belfast English and Standard English: Dialect Variation and Parameter Setting*. Oxford: Oxford University Press.

Hu, Jianhua, Haihua Pan & Liejiong Xu. 2001. Is there a finite vs. nonfinite distinction in Chinese? *Linguistics* 39:1117–1148. https://doi.org/10.1515/ling.2001.043

Huang, C.-T. James. 1982 [1998]. Logical Relations in Chinese and the Theory of Grammar. PhD dissertation, MIT. [Published under the same title by Garland Publishers, 1998.]

Huang, C.-T. James. 1983. A note on the binding theory. *Linguistic Inquiry* 14:554–561.

Huang, C.-T. James. 1984. On the distribution and reference of empty pronouns. *Linguistic Inquiry* 15:531–574.

Huang, C.-T. James. 1989. Pro-drop in Chinese: A generalized control theory. In *The Null Subject Parameter*, Osvaldo A. Jaeggli and Kenneth J. Safir (eds), 185–214. Dordrecht: Kluwer. https://doi.org/10.1007/978-94-009-2540-3_6

Huang, C.-T. James. 1999. Chinese passives in comparative perspective. *Tsing Hua Journal of Chinese Studies* 29:423–509.

Huang, C.-T. James. 2016. The syntax and semantics of pre-nominals: construction or composition? *Language and Linguistics* 17:431–475.

Huang, C.-T. James. 2017. On finiteness and the architecture of complements in verbal and nominal domains. *Paper presented at the 11th Workshop on Theoretical East Asian Linguistics (TEAL-11),* Academia Sinica.

Huang, C.-T. James. 2018. Argument structure, lexical decomposition, and light verb syntax. *Studies in Prosodic Syntax* 2:1–31.

Huang, C.-T. James, Y.-H. Audrey Li and Yafei Li. 2000. Relativization: order and structure. *Paper presented at IACL-9*, Singapore National University.

Huang, C.-T. James and C.-S. Luther Liu. 2001. Logophoricity, attitudes and *ziji* at the interface. In *Long distance reflexives*, Peter Cole, Gabriella Hermon & James Huang (eds), 141–195. New York: Academic Press.

Huang, C.-T. James, Y.-H. Audrey Li and Yafei Li. 2009. *The Syntax of Chinese*. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9781139166935

Huang, Hsin-Lun. 2018. The Head-Quarters of Mandarin Arguments. PhD dissertation, University of Massachusetts, Amherst.

Huang, Nick. 2015. On syntactic tense in Mandarin Chinese. *Proceedings of NACCL-27*, 406–423.

Huang, Nick. 2018. Control complements in Mandarin Chinese: implications for restructuring and the Chinese finiteness debate. *Journal of East Asian Linguistics* 27:347–376. https://doi.org/10.1007/s10831-018-9185-1

Huang, X.-Y. Kevin. 2009. Multiple-modal constructions in Mandarin Chinese: A view from cartography and MP. MA thesis, National Tsing Hua University, Taiwan.

Huang, Yan. 1994. *The Syntax and Pragmatics of Anaphora: a Study with Special Reference to Chinese*. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511554292

Huang, Yan. 1992. Review of: Li, Audrey Yen-hui. 1990. Order and constituency in Mandarin Chinese. Dordrecht: Kluwer. *Journal of Linguistics* 28. 251–256.

Jiang, Li Julie. 2009. *Suo* in Chinese and phase edges. Ms., Harvard University.

Kaplan, Aidan, Eliza Scruton & Jim Wood. 2017. *For-to* infinitives. *Yale Grammatical Diversity Project: English in North America*. (Available online at http://ygdp.yale.edu/phenomena/for-to-infinitives.)

Keine, Stefan. 2019. Selective opacity. *Linguistic Inquiry* 50:13–61. https://doi.org/10.1162/ling_a_00299

Klein, Wolfgang. 1994. *Time in Language*. London: Routledge.

Klein, Wolfgang, Ping Li & Hemriette Hendriks. 2000. Aspect and assertion in Mandarin Chinese. *Natural Language & Linguistic Theory* 18: 723–770. https://doi.org/10.1023/A:1006411825993

Kornfilt, Jaklin. 2007. Verbal and nominalized finite clauses in Turkish. In *Finiteness: Theoretical and empirical foundations*, Irina Nikolaeva (ed), 305–332. Oxford: Oxford University Press.

Kratzer, Angelika. 1998. More structural analogies between pronouns and tenses. *SALT Proceedings* 8:92–110. https://doi.org/10.3765/salt.v8i0.2808

Lai, Yan Ki Jackie. 2021. The Nature of the Postverbal Field in Mandarin Chinese. PhD dissertation, University of Chicago.

Landau, Idan. 2000. *Elements of Control*. Dordrecht: Kluwer. https://doi.org/10.1007/978-94-011-3943-4

Li, Charles N. & Sandra A. Thompson. 1981. *Mandarin Chinese*. Berkeley, CA: University of California Press.

Li, Y.-H. Audrey. 1985. Abstract Case in Chinese. PhD dissertation, University of Southern California.

Li, Y.-H. Audrey. 1990. *Order and Constituency in Mandarin Chinese*. Dordrecht: Kluwer. https://doi.org/10.1007/978-94-009-1898-6

Li, Y.-H. Audrey. 2017. Comments on the papers on finiteness. *Presented at the 11th Workshop on Theoretical East Asian Linguistics (TEAL-11),* Academia Sinica.

Liao, W.-W. Roger and Y.-Y. Iris Wang. 2021. Attitude, control and finiteness distinction in Chinese. Ms., Academia Sinica and Ming Chuan University.

Lin, Jo-Wang. 2003. Temporal reference in Mandarin Chinese. *Journal of East Asian Linguistics* 12:259–311. https://doi.org/10.1023/A:1023665301095

Lin, Jo-Wang. 2006. Time in a language without tense: The case of Chinese. *Journal of Semantics* 23:1–56. https://doi.org/10.1093/jos/ffh033

Lin, Jo-Wang. 2010. A tenseless analysis of Mandarin Chinese revisited: A response to Sybesma 2007. *Linguistic Inquiry* 41:305–329. https://doi.org/10.1162/ling.2010.41.2.305

Lin, Jo-Wang. 2012. Tenselessness. In *The Oxford handbook of tense and aspect*, Robert I. Binnick (ed), 669–695. New York: Oxford University Press.

Lin, T.-H. Jonah. 2011. Finiteness of clauses and raising of arguments in Mandarin Chinese. *Syntax* 14:48–73. https://doi.org/10.1111/j.1467-9612.2010.00145.x

Lin, T.-H. Jonah. 2012. Multiple-modal constructions in Mandarin Chinese and their finiteness properties. *Journal of Linguistics* 48:151–186. https://doi.org/10.1017/S0022226711000272

Lin, T.-H. Jonah. 2013. QR and finiteness. In *Deep Insights, Broad Perspectives: Essays in Honor of Mamoru Saito*, Y. Miyamoto, D. Takahashi, H. Maki, M. Ochi, K. Sugisaki & A. Uchibori (eds), 275–291. Tokyo: Kaitakusha.

Lin, T.-H. Jonah. 2015. Tense in Mandarin Chinese sentences. *Syntax* 18:320–342. https://doi.org/10.1111/synt.12032

Liu, Na and C.-T. James Huang. 2016. Control and raising passives, and why Mandarin does not smuggle. *Journal of East Asian Linguistics* 25:385–404. https://doi.org/10.1007/s10831-016-9148-3

Liu, Yuyang. 2020. 'Again' skipping in Mandarin Chinese. Ms. Department of Linguistics, University of Massachusetts, Amherst.

McFadden, Thomas and Sandhya Sundaresan. 2014. Finiteness in South Asian Languages: An Introduction. *Natural Language and Linguistic Theory* 32:1–27. https://doi.org/10.1007/s11049-013-9215-7

Mei, Kuang. 1978. Ba zi ju. [On ba-sentences.] *Humanitas Taiwanica*, Vol. 12.

Mei, Kuang. 2015. *Shanggu Hanyu Yufa Gangyao* [Outline of Archaic Chinese Grammar], Taipei: San Min Books.

Müller, Gereon. 2020. Rethinking restructuring. In *Syntactic architecture and its consequences II: Between syntax and morphology*, András Bárány, Theresa Biberauer, Jamie Douglas & Sten Vikner (eds), 149–190. Berlin: Language Science Press.

Nikolaeva, Irina. 2007. Introduction. In *Finiteness*, Irina Nikolaeva (ed), 1–19. Oxford: Oxford University Press. https://doi.org/10.1007/978-3-658-24376-0_1

Ogihara, Toshiyuki. 1989. Temporal Reference in Japanese and English. PhD dissertation, University of Texas at Austin.

Ogihara. Toshiyuki. 1995. Double-access sentences and reference to states. *Natural Language Semantics* 3:177–210. https://doi.org/10.1007/BF01249837

Paul, Waltraud. 2002. Sentence-internal topics in Mandarin Chinese: The case of object preposing. *Language and Linguistics* 3:695–714.

Paul, Waltraud. 2005. Low IP area and left periphery in Mandarin Chinese. *Recherches linguistiques de Vincennes* 33:111–133. https://doi.org/10.4000/rlv.1303

Paul, Waltraud. 2014. Why particles are not particular: Sentence-final particles in Chinese as heads of a split CP. *Studia Linguistica* 68:77–115. https://doi.org/10.1111/stul.12020

Paul, Waltraud & Victor Pan. 2017. What you see is what you get: Chinese sentence-final particles as head-final complementisers. In *Discourse particles: Formal approaches to their syntax and semantics*, Josef Bayer & Volker Struckmeier (eds), 49–77. Berlin & Boston: De Gruyter Mouton.

Pesestsky, David. 2017–2021. Exfoliation: Towards a derivational theory of clause size. Ms., MIT., available at *Lingbuzz*.

Polinsky, Maria & Eric Potsdam. 2006. Expanding the scope of control and raising. *Syntax* 9:171–192. https://doi.org/10.1111/j.1467-9612.2006.00090.x

Pustejovsky, James. 1995. *The Generative lexicon*. Cambridge, MA: the MIT Press.

Qu, Yanfeng. 1994. Object Noun Phrase Dislocation in Mandarin Chinese. PhD dissertation, University of British Columbia, Vancouver.

Raposo, Eduardo. 1987. Case Theory and Infl-to-Comp: the inflected infinitive in European Portuguese. *Linguistic Inquiry* 18: 85–109.

Rizzi, Luigi. 1997. The fine structure of the left periphery. In *Elements of grammar*, Liliane Haegeman (ed), 281–338. Dordrecht: Kluwer. https://doi.org/10.1007/978-94-011-5420-8_7

Rochette, Anne. 1988. Semantic and Syntactic Aspects of Romance Sentential Complementation. PhD dissertation, MIT, Cambridge, MA.

Rochette, Anne. 1990. On the restructuring classes of verbs in Romance. In *Binding in Romance: Essays in honour of Judith McA'Nulty*, Anna Maria Di Sciullo and Anne Rochette (eds), 96–128. Ottawa, Ontario: Canadian Linguistic Association.

Satik, Deniz. 2021. The maximal size of infinitives: a truncation theory of finiteness. Ms. Department of Linguistics, Harvard University. Available at *Lingbuzz*.

Sells, Peter. 2007. Finiteness in non-transformational syntactic frameworks. In *Finiteness*, Irina Nikolaeva (ed), 59–89. Oxford: Oxford University Press.

Shen, Li. 2004. Aspect agreement and light verbs in Chinese: A comparison with Japanese. *Journal of East Asian Linguistics* 13:141–179. https://doi.org/10.1023/B:JEAL.0000019115.71381.48

Shlonsky, Ur. 1988. Complementizer-cliticization in Hebrew and the Empty Category Principle. *Natural Language and Linguistic Theory* 6:191–205. https://doi.org/10.1007/BF00134229

Shyu, Shu-Ing. 1995. The Syntax of Focus and Topic in Mandarin Chinese. PhD dissertation, University of Southern California.

Shyu, Shu-Ing. 2001. Remarks on object movement in Mandarin SOV order. *Language and Linguistics* 2:93–124.

Stowell, Tim. 1982. The tense of infinitives. *Linguistic Inquiry* 13:561–570.

Stowell, Tim. 2007. The syntactic expression of tense. *Lingua* 117:437–463. https://doi.org/10.1016/j.lingua.2005.08.003

Sun, Hongyuan. 2014. Temporal Construals of Bare Predicates in Mandarin Chinese. PhD dissertation, Universities of Leiden and Nantes, available at: http://www.lotpublications.nl/Documents/373_fulltext.pdf

Sybesma, Rint. 2007. Whether we tense-agree overtly or not. *Linguistic Inquiry* 38:580–587. https://doi.org/10.1162/ling.2007.38.3.580

Sybesma, Rint. 2017a. Finiteness. *Encyclopedia of Chinese Language and Linguistics*, Rint Sybesma, Wolfgang Behr, Yueguo Gu, Zev Handel, C.-T. James Huang & James Myers (eds), Leiden: Brill, Vol II, 233–237. Online at https://referenceworks-brillonline-com.ezp-prod1.hul.harvard.edu/browse/encyclopedia-of-chinese-language-and-linguistics.

Sybesma, Rint. 2017b. Tense. *Encyclopedia of Chinese Language and Linguistics*, Brill. Online at https://referenceworks-brillonline-com.ezp-prod1.hul.harvard.edu/browse/encyclopedia-of-chinese-language-and-linguistics.

Sybesma, Rint. 2019. Xiandingxing he hanyu zhuju ['Finiteness and Chinese main clauses']. *International Journal of Chinese Linguistics* 6:325–344. https://doi.org/10.1075/ijchl.19002.syb

Sybesma, Rint and Boya Li. 2007. The dissection and structural mapping of Cantonese sentence final particles. *Lingua* 117:1739–1783. https://doi.org/10.1016/j.lingua.2006.10.003

Tang, C.-C. Jane. 1990. Chinese Phrase Structure and the Extended X'-Theory. PhD dissertation, Cornell University.

Tang, Ting-Chi. 1977. *Guoyu bianxing yufa diyiji: yiwei bianxing*. [Chinese transformational grammar, V1: movement transformations.] Taipei: Student book Co.

Tang, Ting-chi. 2000. Finite and nonfinite clauses in Chinese. *Language and Linguistics* 1:191–214.

Ting, Jen. 1998. Deriving the *bei* construction in Mandarin Chinese. *Journal of East Asian Linguistics* 7:319–354. https://doi.org/10.1023/A:1008340108602

Ting, Jen. 2010. On the climbing of the particle *suo* in Mandarin Chinese and its implications for the theory of clitic placement. *The Linguistic Review* 27:449–483. https://doi.org/10.1515/tlir.2010.016

Truswell, Robert. 2011. *Events, Phrases and Questions*. Oxford: Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199577774.001.0001

Tsai, Wei-Tien Dylan. 2008. Tense-anchoring in Chinese. *Lingua* 118:675–686. https://doi.org/10.1016/j.lingua.2007.09.002

Tsai, Wei-Tien Dylan. 2019. Hanyu de yuqi xianzhuxing he yinxing motai fanchou [Mood prominence in Chinese and covert modalities]. *Yuyankexue* 18 (1):1–12.

Ussery, Cherlon, Lydia Ding & Yining Rebecca Liu. 2016. The typology of Mandarin infinitives. *Processings of Linguistic Society of America*, Vol 1, Article 28:1–15. https://doi.org/10.3765/plsa.v1io.3727

Wei, Wei Haley and H.-Y. Audrey Li. 2018. Adverbial clauses in Mandarin Chinese. *Linguistic Analysis* 42:163–330.

Wurmbrand, Susi. 2001. *Infinitives: Restructuring and Clause Structure*. Berlin: Mouton de Gruyter.

Wurmbrand, Susi. 2014. Tense and aspect in English infinitives. *Linguistic Inquiry* 45:403–447. https://doi.org/10.1162/LING_a_00161

Wurmbrand, Susi. 2015. Restructuring cross-linguistically. *NELS Proceedings* 45:227–240.

Wurmbrand, Susi, and Maddalena Lohninger. 2020. An implicational universal in complementation: theoretical insights and empirical progress. Ms., to appear in *Propositionale Argumente im Sprachvergleich: Theorie und Empirie* [Propositional Arguments in Cross-Linguistic Research: Theoretical and Empirical Issues], Jutta M. Hartmann & Angelika Wöllstein (eds). Tübingen: Gunter Narr Verlag.

Wurmbrand, Susi, Iva Kovač, Magdalena Lohninger, Caroline Pajančič, and Neda Todorović. 2020. Finiteness in south Slavic complement clauses: Evidence for an implicational finiteness universal. *Linguistica* 60:119–137. https://doi.org/10.4312/linguistica.60.1.119-137

Xu, Liejong. 2003. Choice between the overt and the covert. *Transactions of the Philological Society* 101:81–107. https://doi.org/10.1111/1467-968X.00110

Xu, Ting. 2011. *You* again: How is its ambiguity derived? In *Logic, language and meaning*, Maria Aloni, Vadim Kimmelman, Floris Roelofsen, Galit Weidman Sassoon, Katrin Schulz, and Matthijs Westera (eds), 470–480. Berlin: Springer.

Xu, Ting. 2016. Almost again: On the Semantics and Acquisition of Decomposition Adverbs. PhD dissertation, University of Connecticut, Storrs.

Xue, Ping and Paul McFetridge. 1996. Complement structure in Chinese. *CLS Proceedings* 32. Chicago Linguistic Society.

Xue, Ping, and Paul McFetridge. 1998. Verb complementation, null pronominals and binding. *WCCFL Proceedings* 17: 479–493.

Zhang, Niina Ning. 2008. Gapless relative clauses as clausal licensers of relational nouns. *Language and Linguistics* 9:1005–1028.
Zhang, Niina Ning. 2016. Identifying Chinese dependent clauses in the forms of subjects. *Journal of East Asian Linguistics* 25:275–311. https://doi.org/10.1007/s10831-016-9146-5
Zhang, Niina Ning. 2019. Sentence-final aspect particles as finite markers in Mandarin Chinese. *Linguistics* 57:967–1023. https://doi.org/10.1515/ling-2019-0020
Zhao, Chen and Alain Rouveret. 2019. Chinese objects and the labeling of symmetric structures. Ms., Université de Paris and Huazhong University of Science and Technology.

Place and distance

Locative expressions in Mandarin and Cantonese[1]

Lisa Lai-Shen Cheng and Rint Sybesma
Leiden University

The topic of this chapter is locatives containing a measure expression (like the English *60 yards behind the palace*) in Mandarin and Cantonese. More generally, it is about the structure of locative PPs. The hypothesis in Terzi (2010), which says that locatives are modifiers to an N Place (which itself is the complement to a locative P), offers a helpful framework in accounting for our data. We observe that in Mandarin and Cantonese, the N Place is obligatorily overt if the location denoting expression which modifies it is not an inherent location and not headed by an AxPart. It is optionally overt when it is modified by an inherent location (like a toponym) or by a phrase headed by an AxPart.

1. Introduction

Locative expressions such as *above the table* in languages like English and Dutch can be easily modified by a measure phrase, as in the expressions in (1), which are embedded in a sentence in (2).

(1) a. ten meters behind the house
b. vijftig centimeter boven de tafel (Dutch)
50 centimeter above DET table

(2) a. They threw the ball ten meters behind the house
b. Er hing een lamp vijftig centimeter boven de tafel (Dutch)
there hung DET lamp 50 cm above DET table
'A lamp was hanging 50 centimeter above the table.'

1. We are happy to dedicate this chapter to Audrey. She has been a great inspiration to all of us and we would like to express our heartfelt appreciation for everything she has done for the field of Chinese linguistics. Thank you, Audrey! We wrote this article during our stay at UBC as guests of the Linguistics Department. We would like to thank Henry Davis, Lisa Matthewson and Hotze Rullmann for making our stay worth our while despite covid. In sorting out the data for this chapter, we received help from Cheng Hang, Cherry Lam, Chin-hui Lin, Joanna Sio and Yang Zhaole. We acknowledge their help gratefully, as it was not a simple affair. We are also thankful to a reviewer and to Andrew Simpson for comments and helpful suggestions.

https://doi.org/10.1075/la.272.03che

Just looking at the surface order, we can describe the addition of the measure phrase to the locative PPs as simply putting the measure phrase right in front of the PP.

In Chinese languages, counterparts of (1) and (2) come in two forms, one that looks as straightforward as the English and Dutch versions in (1) and (2) (illustrated using Mandarin in (3); based on [24b] of Wu 2015), and one, in (4) (also Mandarin), that is much less straightforward, as it obligatorily involves an extra constituent meaning 'place'. Note the difference in word order between the measure expression *liáng mǐ* 'two meters' and *hòutou* 'behind' between (3) and (4).

(3) a. fángwū liáng mǐ hòutou
house two meter behind.head
'two meters behind the house'

b. nà dòng fángwū liáng mǐ hòutou zhòng-le huā
DEM CL house two meter behind.head plant-PRF flower
'Flowers grow two meters behind the house.'

(4) a. fángwū hòutou liáng mǐ de dìfang
house behind.head two meter MOD place
'two meters behind the house'

b. nà dòng fángwū hòutou liáng mǐ *(de dìfang)
DEM CL house behind.head two meter MOD place
zhòng-le huā
plant-PRF flower
'Flowers grow two meters behind the house.'

The pattern in (3) is more restricted than the one illustrated in (4) in several respects. Not only do not all native speakers consulted accept it, those who do accept it, judge it more bookish (one reported "less natural"). What is more, its use seems limited to a small number of locative dimensions; for example, it works with *hòutou* 'behind', as is clear from (3), and *wàitou* 'outside' (as in Wu's original example), but it does not combine felicitously with *lǐtou* 'inside' or *shàngtou* 'above', as is shown in (5) for the latter.[2]

(5) *nà zhāng zhuōzi wǔshí gōngfēn shàngtou guà-le yì fú huà
DEM CL table 50 cm above.head hang-PRF one CL painting
INTENDED: 'A picture was hanging 50 cm above that table.'

2. This may or may not be a purely lexical affair, comparable to the fact that in English (and, in fact, many other languages), not all adjectives can combine with a measure expression in their base form, as Grano and Kennedy (2012) point out: *two meters wide* vs. **two dollars expensive*. See also fn. 27 below. In any case, this pattern needs to be looked into more, not only with respect to its distribution and acceptability, but also with respect to its meaning.

The pattern illustrated in (4) does not display these collocational restrictions (compare (5) to (7) below, which is fine). It is also judged more colloquial (and "more natural"). For these reasons, we will focus the discussion in this chapter on the pattern in (4). We briefly turn to the sequence in (3) in Section 8.

The core data we rely on in this paper are drawn from Mandarin and Cantonese (occasionally abbreviated to M and C respectively below), but the pattern in (4) is found in other Chinese languages as well. In (6), we give examples from Mandarin (a), Cantonese (b) and Taiwanese (c). The examples in (7) embed the examples from (6a,b) in a full sentence.

(6) a. zài zhuōzi shàngmian wǔshí gōngfēn de dìfang
at table above.surface 50 cm MOD place

b. hai2 zoeng1 toi2 soeng6min6 ng5sap6 gong1fan1 go2 dou6
at CL table above.surface 50 cm that place

c. tī.leh tohá tíngkuân gōotsa̍p konghun ê sóotsāi
at table above.surface 50 cm MOD place
ALL: '50 centimeters above the table'

(7) a. zhè fú huàr guà zài zhuōzi shàngmian wǔshí gōngfēn
DEM CL painting hang at table above.surface 50 cm
*(de dìfang)
MOD place

b. li1 fuk1 waa2 gwaa3 hai2 zoeng1 toi2 soeng6min6 ng5sap6
DEM CL painting hang at CL table above.surface 50
gong1fan1 *(go2 dou6)
cm that place
BOTH: 'This painting was hanging 50 cm above the table.'

Our point of departure and the main topic of this chapter is the fact that, as we see in (4b) and (7), in the pattern illustrated in (4a) and (6), the inclusion of a measure phrase into the locative expression leads to the obligatory addition of one more location denoting element at the end. Why is this additional locational element needed? How can we account for this phenomenon?

Since our more general goal is to contribute to the discussion on locative expressions, and, more in particular, on the structure of spatial PPs, we adopt the terminology common in this area of research. Thus, we use Ground to refer to the reference point or landmark (e.g., *the car* in *in front of the car*) and Figure for the in principle moveable object the position of which is expressed in relation to the Ground (*the deer* in *the deer in front of the car*).[3] Furthermore, we follow Svenonius (2006) in assuming that the noun-like element *front* in *in front of the car* constitutes

3. See Talmy (1978) and Svenonius (2008) among others.

a functional category, called Axial Part (AxPart), which semantically serves to "identify a region (…) based on the Ground element" (p. 52). The region is connected to the concept of vector space (Svenonius 2006; Jackendoff 1996), as we will see in sections 2 and 3.

Given these terms, we can schematically represent Mandarin (6a) as in (8):[4]

(8)

P	**Ground**	**AxPart**	**Measure**			**Place**
zài	zhuōzi	shàngmian	wǔshí	gōngfēn	de	dìfang
at	table	above.surface	50	cm	MOD	place

In Section 2, we discuss the different components in (8) and reach a preliminary conclusion with respect to the relations that exist between them. After discussing the AxPart in more detail in Section 3, we zoom in on the relations it entertains with Measure and with Ground (in sections 4 and 5 respectively). The conclusions we draw in these sections enable us to turn to the component Place (in (8)) in Section 6 and answer the question why it is obligatorily present in locative expressions that contain a measure. Sections 7 and 8 contain additional discussion on the nature of Place and its relation with the rest of the phrase and a short note on the alternative locative *cum* measure pattern which was illustrated in (3) respectively. The conclusions follow in Section 9.

2. Preliminaries

In this section we take a closer look at the components in the sequence in (8), repeated here as (9), with Cantonese added, and investigate the possible interrelationships among them:

(9)

	P	**Ground**	**AxPart**	**Measure**			**Place**	
M:	zài	zhuōzi	shàngmian	wǔshí	gōngfēn	de	dìfang	
	at	table	above.surface	50	cm	MOD	place	
C:	hai2	zoeng1 toi2	soeng6min6	ng5sap6	gong1fan1		go2	dou6
	at	CL table	above.surface	50	cm		that	place

As, from a descriptive perspective, Measure and Ground are straightforward, we don't need to dwell on the nature of these constituents here; we will turn to them and, more particularly, their relation with the other elements, in the more analytical discussions in sections 4 and 5 respectively. We can be equally brief on P, which

4. For the element *de*, glossed as 'MOD' (modification marker) here, see Section 2.

is realized as *zài* 'at' in (7a) (M) and as *hai2* 'at' in (7b) (C), these being the most neutral prepositions expressing location.[5] We return to P in Section 6.

The elements that we label AxPart here have generally been called "localizers" in Chinese linguistics (Chao 1968, Li 1990). In Mandarin, but not in Cantonese (see (10a) and (10b) respectively), they come in two forms, a simplex one and a complex one; Cantonese only features the complex one. The complex form consists of the simplex form, denoting the vector space ('front', 'back', 'inside'; cf. Wu 2015)[6] plus a morpheme which means something like 'surface' (M *miàn*, C *min6*), 'side' (M *biān*, C *bin6*), 'place, orientation' (M *fāng*) or 'extremity, head' (M *tóu*):[7]

(10) a. zài zhuōzi shàng (mian/bian/fang/tou) wǔshí gōngfēn de dìfang
at table above surface/place/side/head 50 cm MOD place
b. hai2 zoeng1 toi2 soeng6-*(min6/bin6) ng5sap6 gong1fan1 go2 dou6
at CL table above-surface/side 50 cm that place
BOTH: '50 cm above the table'

Even though in (10a), the simplex and complex forms are in free variation, this is not always the case (as we will see in Section 3). Some informants report a slight preference for the use of the complex counterpart in sentences like (10a). As is often the case in Mandarin, prosody may play a role here, because there seems to be a weak preference to combine monosyllabic Grounds with the simplex (monosyllabic) AxPart and disyllabic Grounds with the complex (disyllabic) counterpart. It is important to emphasize that these preferences are slight and weak and that all informants judge sentences with both forms fully grammatical. In labeling them AxPart we follow Svenonius (2006, 2008). More recently, Wu (2015) also argues that, rather than treating the localizers as nouns, postpositions or clitics, as has

5. *Cóng* 'from', *wǎng* 'towards', *dào* 'to' and possibly one or two others "compete for the same structural position" as Wu (2015: 217) phrases it. See also Paul (2015: 124). For Cantonese, the other Ps for this position are *cung4* 'from' and *wong5* 'towards'.

6. We gloss these elements with English prepositions, even though it may be more appropriate (in any case historically) to gloss them with nouns; see below for some discussion.

7. A few comments are in order. First, it must be noted that Cantonese and Mandarin differ in which elements they have available for this function. Secondly, note that these elements are not always in free variation; aside from idiosyncrasies, issues like whether the Figure is in contact with the Ground also play a role in determining which of these elements is appropriate in a given context. Also, so as to not make the reading of this chapter too cumbersome, we will, in the running text (but not in the examples), use one uniform gloss/translation for both the simplex and complex forms, unless there are reasons to distinguish them. Furthermore, the Mandarin elements are listed here with the tone they have as a full form; as part of the complex form, they tend to lose their tone, as represented in the examples. In Cantonese, the tone remains. Finally, for Mandarin, we ignore the rhotacized and phonologically reduced variant forms.

been done in the past, they should be identified as AxParts. She argues that this applies to both simplex and complex forms. We discuss this further in Section 3.

Let's now consider Place in the schematic representation in (9). The example in (11a) illustrates that in Mandarin, Place is instantiated in different forms too: *dìfang* 'place', *chù* 'place' and *nàr* 'there' (to name but a few); note that, of these, only *dìfang* 'place' is preceded by modification marker *de* (an element that signals that what precedes it modifies the noun that follows it). Cantonese (see (11b) = (6b)) just has one option for this category (viz., *go2 dou6* 'that place'), at least in expressions like these; as we will see in Section 7, in certain other cases, *dou6* 'place' appears without the demonstrative.[8]

(11) a. zài zhuōzi shàngmian wǔshí gōngfēn nàr/chù/de-dìfang
at table above.surface 50 cm there/place/MOD-place
b. hai2 zoeng1 toi2 soeng6min6 ng5sap6 gong1fan1 go2 dou6
at CL table above.surface 50 cm that place
BOTH: '50 cm above the table'

With respect to Mandarin (11a), the variant with *chù* 'place' is more formal (from the written register) than the ones with *dìfang* 'place' and *nàr* 'there'. Although only *dìfang* 'place' is preceded by the marker of modification, we assume that *chù* 'place' and *nàr* 'there' are similarly modified by the preceding constituent (after all, as a rule, *de* is not always obligatory in nominal modification).[9] In (11a), *chù* 'place', *dìfang* 'place' and *nàr* 'there' are in free variation (ignoring matters of style and register), but there are cases in which they are not (we will see examples as we go along; in general, *nàr* 'there' is more flexibly employed than *dìfang* 'place'; it is not the goal of this paper to determine the precise distribution of these individual elements).

In the discussion in this chapter, we take, for ease of explication, the variant in (6a) as our point of departure, that is, the most elaborate and explicit one, with the complex AxPart and with *dìfang* 'place' preceded by modification marker *de* as Place.

---

8. Note that, just like Cantonese *go2 dou6* 'that place', which is the Cantonese equivalent of 'there' (*li1 dou6* 'this place' is 'here'), Mandarin *nàr* 'there' also consists of DEM and place: *nà* 'that' and *r* presumably 'place' (cf. *zhè-r* 'here' containing the proximal demonstrative *zhè* 'this'). Despite their potential equivalence, we will continue to gloss Cantonese *go2 dou6* as 'that place' and Mandarin *nàr* as 'there'.

9. In the case of *nàr* 'there' and Cantonese *go2 dou6* 'that place' in (11b), it is, on the face of it, also possible that we are dealing with apposition. A modification relation can, however, not be excluded. See Section 7 for discussion on this point.

In Section 1, we pointed out that the presence of Place is obligatory in locative expressions that include a measure. Location denoting phrases without a measure expression, however, can also be accompanied by one of the elements that can fill the Place slot in (9). In such cases, however, it is optional, as the following examples show (M (a,b), C (c,d)).

(12) a. zhuōzi shàngmian (nàr/ de-dìfang) guà-zhe yì fú huà
table above.surface there/ MOD-place hang-DUR one CL painting
'A painting is hanging above the table.'

b. wǒ de fángzi zài gōngdiàn hòumian (nàr/ de-dìfang)
1S MOD house at palace behind.surface there MOD-place
'My house is behind the palace.'

c. zoeng1 toi2 soeng6min6 (go2 dou6) gwaa3-zo2 fok1 waa2
CL table above.surface that place hang-PRF CL painting
'A painting hung above the table.'

d. ngo5 uk1kei2 hai2 tou4syu1gwun2 hau6min6 (go2 dou6)
I home at library behind.surface that place
'My home is behind the library.'

The fact that Place is obligatory when we have Measure suggests an underlying structure as in (13), in which Measure and Place form a constituent or are in any case connected directly one way or another:

(13) P Ground AxPart [Measure Place]

However, not only does a phrase like *wǔshí gōngfēn de dìfang* (lit.) 'a place of 50 cm' from (6a) not form a constituent in the face of the standard constituency tests, the parse in (13) does not reflect the semantic relations either. Just considering the semantic relations, it is clear that Measure *wǔshí gōngfēn* '50 cm' expresses (or measures out) the degree (distance) to which the painting in (7a) hangs above the table. In other words, it is related to *shàngmian* 'above' (or, possibly, just to *shàng* 'above' in it), thus suggesting the parse in (14):

(14) P Ground [AxPart Measure] Place

The bracketings in (13) and (14) are not compatible and when we take Ground into consideration as well, things become even more interesting. Whatever the categorial status of elements like *shàngmian* 'above' and *soeng6min6* 'above' will turn out to be, N, adposition or AxPart (see Section 3), they will always be most closely related to the Ground. After all, as AxPart, it specifies the vector space of the Ground (see Section 1), as adposition, the Ground will be its complement and as N, it is generally considered to be modified by the Ground (in (6a), the phrase

zài zhuōzi shàngmian 'above the table' would then literally mean something like 'at the top of the table').[10] In any case, the parse would be as indicated in (15), thus complicating the picture we already have even further.

(15) P [Ground AxPart] Measure Place

To resolve the contradictions in the bracketings in (13)–(15) and to lay the groundwork for the rest of this chapter, we take the presence of the modification marker *de* preceding *dìfang* 'place' as an important cue. As we noted earlier on, *de* indicates that whatever precedes it modifies the noun following it. We also saw in (12) that *de* + *dìfang* 'MOD + place' or its variants in Mandarin and Cantonese can also be present when there is no Measure. In other words, locational expressions can in general enter a modification relationship with an element meaning 'place'. In (12b), for instance, *gōngdiàn hòumian* 'behind the palace' can be followed by *de* + *dìfang* 'MOD + place', suggesting that Ground + AxPart modifies *dìfang* 'place' ('the place behind the palace'). This is reminiscent of the conclusion Terzi (2010) reaches after analyzing locative expressions in Greek, Spanish and English. She concludes that most locatives are modifiers to a (covert) noun Place. This N is the complement of a D, the head of a DP, which is in turn the complement of a functional head, P_{Loc}. For the languages she considers, Terzi concludes that the N Place is always "nonphonologically realized" (p. 217). However, if we abstract away from (and further ignore) details in her analysis like the DP and the AgrP that she assumes, her analysis throws a clarifying light on Chinese locatives like those in (6) and (12), with, for Mandarin (6a) and (12b), *zài* 'at' in P_{Loc}, with *dìfang* 'place' as the *overt* realization of the N Place and with the rest of the phrase as the modifier to the N Place. In other words, the N Place, which is phonologically empty in the languages Terzi looks at, is sometimes optionally, sometimes obligatorily phonologically filled in Chinese languages. We will discuss this further in Section 6, but, for now, we can say that, in view of Terzi's proposal and of what we concluded earlier on about the semantic relations between Ground and AxPart and AxPart and Measure, we arrive at the following structure for the locative expression in (6a):[11]

10. In fact, in formal terms, in all the cases the "localizer" would be the head of the phrase containing the Ground DP. The Ground DP is its modifier if the localizer is an N and its complement, if it is a postposition. Below we will see that the Ground DP occupies the specifier position of the projection headed by AxPart (AxPartP).

11. Others have also postulated empty Place nouns in their structure of locatives: Kayne (2004), of course, and several contributions in Cinque and Rizzi (2010) and Wu (2015), to name just a few.

(16) [P [[Ground AxPart Measure] Place]]
[zài [[zhuōzi shàngmian wǔshí gōngfēn] de dìfang]][12]
at table above.surface 50 cm MOD place

Although this bracketed structure displays a number of properties of the locative phrases of this type, it does not say anything about the structural relationship of *shàngmian* 'above' with the measure expression *wǔshí gōngfēn* '50 cm' on the one hand and that with the Ground *zhuōzi* 'table' on the other. We will delve into these issues, after a short discussion on the status of the AxPart.

3. The AxPart

As mentioned above, the nature and categorial status of what we called "AxParts" above and what is more generally referred to as "localizers" in Chinese linguistics, have been under debate for a long time. In this section, we only address the issues that are crucial to our analysis; for more elaborate discussion and an evaluation of previous literature, see Paul (2015) and Wu (2015); for a recent contribution, see Nie and Liu (2021), which came to our attention too late to weave the results into this section.

So far, we have seen only two such elements, the Mandarin and Cantonese counterparts of 'above' and 'behind', *shàng(mian/tou)/soeng6min6* and *hòu(mian/tou)/hau6min6* respectively (see (12)). We present some more examples in (17) (M) and (18) (C).

(17) a. tā bǎ hézi fàng zài zhuōzi xià(mian).
3S BA box put at table down.surface
'He put the boxes under the table.'
b. gōngdiàn qián(bian) méiyǒu chē le.
palace front.side not.have car PRT
'There are no cars anymore in front of the palace.'
c. zhè-xiē dōngxī fàng zài mén wài(tou) ba.
DEM-PL thing put at door outside.side PRT
'Just put these things outside the door.'
d. wǒmen jīntiān zài dàkètīng lǐ(mian) chīfàn ba.
1PL today at living.room inside.surface eat PRT
'Let's eat in the living room today.'

12. We leave *de* outside the bracket for the sake of consistency in the presentation and argumentation. There is, however, every reason to include it in the phrase preceding it, as is done in most analyses of this element that are available in the literature; see Cheng (1986), Cheng and Sybesma (2009), S.Z.Huang (2006), Paul (2005, 2015), Simpson (2002), Zhū (1961); for more references, see Paul (2015: 100, fn. 6).

e. bǎihuòdàlóu páng(bian) yǒu chūzūchēzhàn.
department.store side.side have taxi.stand
'There is a taxi stand next to the department store.'

(18) a. keoi5 baai2-zo2 go3 soeng1 hai2 zoeng1 toi2 haa6min6
he put-PRF CL box at CL table down.surface
'He put the box under the table.'

b. tou4syu1gwun2 ngoi6min6 jau5 hou2do1 jan4
library outside.side have lots person
'There are lots of people outside of the library.'

c. hok6haau6 leoi5tau4 hou2 ngam3
school inside.head very dark
'It is dark inside the school.'

An important factor in the discussion concerning AxParts, here conducted primarily on the basis of Mandarin data, is the existence (in Mandarin) of the two forms alluded to above, simplex and complex, which are freely interchangeable in the examples in (17), but which can be found not to be in free variation in other instances. As Paul (2015: 93) points out, the free interchangeability is only observed in purely spatial environments, like all the examples we have seen so far. As soon as we enter temporal or otherwise more abstract domains, she observes, only the simplex form is possible:

(19) a. huìyì shàng(*bian)
meeting above.side
'at the meeting'

b. lǐlùn shàng(*bian)
theory above.side
'in theory'

Interestingly, in Cantonese, in which, as we have noted, the simplex form is not used, the use of AxParts/localizers is avoided in cases like (19). For (19a), speakers will say *hoi1wui2 ge3 si4hau6* 'at the time of the meeting' and 'in theory' will come out as *gan1ziu3 lei5luon6 lei4 gong2* 'with respect to theory'.[13] This confirms Paul's claim that the complex forms are exclusively locative.[14]

---

13. Of course, *lei5leon6 soeng6*, the literal translation of (19a), can be used, but that is, indeed, a literal translation of Mandarin and is clearly so perceived.

14. A reviewer notes that exceptions to this claim can be found, like *dàodé shàngmian wǒ ràng yìxiē rén shīwàng le* 'when it comes to virtue, I have disappointed some people'. Not all native speakers of Mandarin we have consulted agree that sentences like this one are (fully) grammatical.

Li (1990) and Huang, Li and Li (2009) classify both complex and simplex forms as nouns (cf. McCawley 1992). This can be motivated historically, but Huang, Li and Li point at the syntactic distribution of phrases containing them, which is like that of DPs and unlike that of PPs in that they are restricted to case positions, such as subject position (as in (17b)) and as the complement of a P (see (17d)) (for discussion of this argument, see Paul 2015, Wu 2015). Another reason for treating these elements as nouns is that the complex form can be separated from the preceding noun by *de* 'MOD', which is a property typical of Ns, as only N is ever preceded by this element (similar facts are available for Cantonese):

(20) zhuōzi de shàngmian
table MOD above.surface
'the top of the table'

Huang, Li and Li (2009: 17) treat the simplex form, which does not allow for insertion of *de*, as belonging to a "categorial deviate" subclass of N (labeled "L"). Huang (2009) treats both forms as they appear in sentences like (17) as "light nouns".

Ernst (1988) takes the fact that the simplex and complex forms behave differently with respect to *de*-insertion (which had been noted before, e.g., Chao 1968: 620–627) as a cue for treating them differently, categorizing the complex forms as Ns and the simplex forms as postpositions (a conclusion also reached in Peyraube 1980). Another difference Ernst notes, is that the simplex form never occurs by itself, just like prepositions in Chinese (which cannot be stranded), while the complex form can occur on its own, just like nouns, a fact that Huang (2009) explains by taking the simplex form as a clitic. Paul (2015) also treats the simplex forms differently from the complex forms, categorizing the former as postpositions and calling the latter "location nouns" (p. 99); see also Djamouri, Paul and Whitman (2013).

On the basis of the fact that in the structures that are the focus of this paper, the simplex and complex forms are in free variation and *de* insertion is not possible with either form, as illustrated in (21), we conclude that in contexts like this one, the complex forms belong to the same category as their simplex counterpart. This, of course, does not exclude the possibility that they behave differently (e.g., more like nouns) in other contexts.

(21) a. zhè fú huàr guà zài zhuōzi (*de) shàng(mian) wǔshí gōngfēn
DEM CL painting hang at table MOD above.surface 50 cm
de dìfang.
MOD place
'The painting was hanging 50 cm above the table.' (cf. (7a))

b. wǒmén zài gōngdiàn (*de) qián(fang) / hòu(mian) shí mǐ
1P at palace MOD front.place / behind.surface 10 meter
de dìfang tíngxià.
MOD place stop
'We stopped 10 meters in front of / behind the palace.'

c. zài chuán (*de) qián(mian) liáng mǐ de dìfang wǒmén
at boat MOD front.surface two meter MOD place 1P
kànjiàn-le yì zhī hánjiàn de yāzi.
see-PRF one CL rare MOD duck
'Two meters in front of the boat we saw a rare duck.'

Wu (2015) also comes to the conclusion that there are good reasons to treat the simplex and complex forms alike.[15] Like Svenonius (2006, 2008), she takes them as part of the spatial projection, and categorizes them as AxParts. We adopt this idea. We return to this issue in Section 5, when we discuss the relation between the AxParts and the Ground. We first look at the relation they have with Measure.

4. The AxPart and Measure

For the discussion and the analysis presented below, our point of departure is the observation that in the locative expressions which contain a Measure, the measure phrase (*wǔshí gōngfēn/ng5sap6 gong1fan1* '50 cm' in (9)) follows the AxPart (*shàngmian/soeng6min6* 'above') to which it is related semantically. The fact that the measure phrase follows the AxPart means that it is not a modifier, because in Chinese languages, a modifier precedes the constituent it modifies. This also applies to locatives, as the following examples from Mandarin (22) and Cantonese (23) illustrate, in which the adverbs *zhènghǎo* 'exactly' and *ngaam1ngaam1* 'exactly' respectively modify and precede the PP:

(22) a. zhènghǎo zài xìyuàn duìmiàn
exactly at theatre opposite.surface
'right across from the theatre'

b. zhènghǎo zài sānhàoxiàn shàng
exactly at line.nr.3 above
'right at (bus) line 3'

15. See Hsieh and Sybesma (2011) for a different type of argument against the idea that localizers belong to the same category as adpositions such as *zài* 'at'.

(23) a. ngaam1ngaam1 hai2 hei3jyun1 cin4min6
exactly at theatre front.surface
'right in front of the theatre'
b. ngaam1ngaam1 hai2 ngo5 deoi3min6
exactly at 1s opposite.surface
'right opposite me'

Rather than simply modifying the locative, in the examples under consideration here, the measure phrase seems more like a complement in that it measures out the extent to which the Figure (*zhè-fú huà* 'this painting' in (21a)) is removed from the Ground (*zhuōzi* 'table') in the region (*shàngmian* 'above') indicated by the AxPart. This semantics is consistent with what we see in other parts of Chinese grammar involving measures or degrees, as illustrated in the two Mandarin sentences in (24):

(24) a. tā bí wǒ gāo sānshí gōngfēn.
3s COMP 1s tall 30 cm
'She is 30 cm taller than me.'
b. tā kàn shū kàn-le sān ge xiǎoshí.
3s read book read-PRF three CL hour
'She read for three hours.'

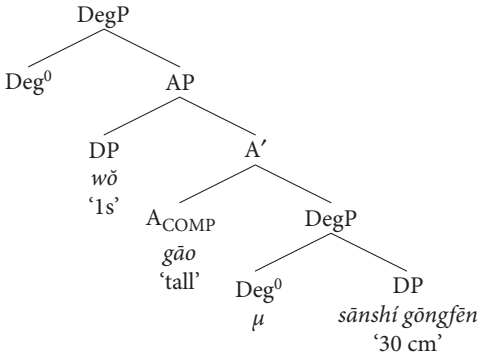
In both (24a) and (24b), the quantifier phrase follows the predicative element, i.e., *gāo* 'tall' in (24a) and *kàn* 'read' in (24b).[16] In (24b), it expresses the duration of the reading (*sān ge xiǎoshí* 'three hours') and in (24a) it measures out the extent to which the figure is taller (*sānshí gōngfēn* '30 cm') than the Standard (*wǒ* '1s').

To understand the structure of measure phrases as complements, we first discuss Grano and Kennedy's (2012) analysis of comparatives in Mandarin. One of the structures they entertain for Mandarin comparative sentences which contain a measure phrase is given in (25) (their [45]). It is based on Xiang's (2005) "DegP Shell" proposal. The lexical items are taken from our (24a).[17]

16. We will not go into the question of where the comparative reading in Chinese adjectives comes from. See Grano (2012) for an overview and discussion. For references on comparatives in Chinese, see Grano and Kennedy (2012).

17. Grano and Kennedy (2012) eventually go for a different structure (their [47]) in which μ is affixed to A. The basic reasoning and motivation for (25) stay intact. μ, by the way, can in Grano and Kennedy's view under certain circumstances be overtly realized with *chū* 'exit, go beyond'.

(25)



In this structure, Grano and Kennedy (2012: 242) "[separate] the semantics of comparison from the syntax of measurement". As they explain (e.g., p. 232), since adjectives do not select for degree arguments, these must be introduced by a separate functional layer, which, in fact, consists of two layers. In a way that is reminiscent of how Voice and *v* are thought to play different but mutually complementary roles – the one (i.e., *v*) providing the semantics (transitivity or causativity), the other, Voice, being responsible for the syntax necessary to realize the external argument (Harley 2013, 2017, Pylkkänen 2008) –, they propose two layers: one (the higher DegP in (25)), which takes care of the comparative semantics, and another one, the lower DegP (headed by *μ*), which provides the structure necessary to introduce the measure expression.

In English comparatives, both DegPs dominate the AP, but in (25), the Mandarin structure, the semantic one is higher and its syntactic counterpart is lower than the AP. This is motivated, not only by word order considerations, but also because Xiang (2005) has shown that the measure phrase must be lower in the structure than the Standard as the latter has scope over the former. As a consequence, in (25), the lower DegP is realized as a complement to A.

In deriving a sentence like (24a) on the basis of (25), Grano and Kennedy argue that *μ* raises to A to form the complex head *μ*+A, and the element *bǐ* is inserted in the head of DegP, primarily to check the case of the Standard (*wǒ* '1s' in (24a)). Another way of forming a comparative (the "transitive comparative" in their terms, exemplified in (26)) is by moving *μ*+A into the higher Deg^0. The Standard is then assigned case by *μ*.

(26) tā gāo wǒ sānshí gōngfēn.
3s tall 1s 30 cm
'She is 30 cm taller than me.'

For Grano and Kennedy, *μ* does two things: it introduces the measure phrase and it has case checking abilities. This explains, they argue, why the transitive comparative

is only possible when there is a measure phrase: without μ, there is no measure phrase and also no case for the Standard. As a result, raising the A to Deg^0 when there is no measure does not yield a grammatical sentence, as is shown in (27).

(27) *tā gāo wǒ.
3s tall 1s
INTENDED: 'She is taller than me.'

Even though the locative expressions we focus on here (illustrated once more in (28)) and comparatives discussed in Grano and Kennedy (2012) are quite different, what they have in common is the presence of a measure phrase expressing the extent to which two participants (Figure vs Standard/Ground) are related to (or removed from) one another.

(28) zhuōzi shàngmian wǔshí gōngfēn
table above.surface 50 cm
'50 cm above the table'

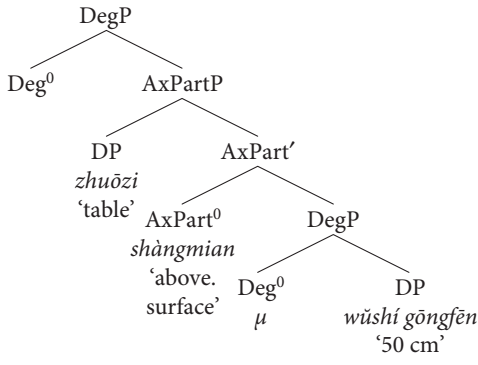
Recent analyses of locative expressions with measure phrases all involve a DegP one way or another (e.g., Koopman 2010, Den Dikken 2010). However, in analyzing locative expressions like the one in (28) (ungrammatical in isolation, as we have seen), we adopt the idea that the AxPart (i.e., *shàngmian* 'above') is accompanied by not just one, but two functional elements which in combination provide the semantics as well as the structure necessary for the introduction of a measure phrase. This is in line with Grano and Kennedy's structure in (25), and also with ideas expressed more directly related to locatives in Svenonius (2010).

With respect to the semantics, Svenonius (2010: 131–133) explains that AxParts can be seen as projecting a space (the vector space) from the DP that serves as Ground.[18] For instance, *behind the palace* refers to a space that is located at the back of the palace. This space starts from the back wall of the palace and how far it extends is largely determined by pragmatic considerations, such as the size of the Ground (the space behind a large object, a palace, for instance, will typically extend further backwards than the space behind a smaller object such as one's uncle). This space is measurable. When it comes to the syntax, Svenonius (2010: 133) associates different categories to the function of projecting and the function of measuring; in his terms, one category creates the space (which he calls "LocP"), the other category ("DegP") restricts it. This is quite similar to Grano and Kennedy's (2012) proposal for comparatives with a measure.

18. This is, of course, a simplification of Svenonius' work. For the complete version, and references to the works that he bases himself on, see Svenonius (2010) as well as Svenonius (2008).

The structure we arrive at for (28) is given in (29). It is indeed like a "shell" structure, consisting of a spine containing several heads: higher Deg^0 (which corresponds to Svenonius' Loc^0), $AxPart^0$ and μ, in the head of the lower DegP.

(29)



Just like adjectives do not themselves select for a measure phrase, AxParts also don't, and that is why they both need the extra functional layers to add the necessary semantics as well as the necessary structure. Without the higher DegP in (29), AxParts would not be measurable and without the lower one, no measure could be expressed overtly.

The structure in (29) has a lot in common with VP-shell structures that have been proposed for prepositional dative sentences like (30a,b), the relevant part of which is schematically given in (30c) (cf. Larson 1988), with the similarities in spinal structure made visible in (31).

(30) a. John gave a gold watch to his mother.
b. John sòng-le yì zhī jīnbiǎo gěi tā māmā.
John present-PRF one CL gold.watch to 3s mother
'John gave gold watch to his mother.'
c. $[_{vP}$ <John> $[_{v'}$ $[_{v}$ *v*] $[_{VP}$ watch $[_{V'}$ $[_{V}$ give] $[_{PP}$ $[_{P'}$ $[_{P}$ to] $[_{DP}$ his mother]]]]]]]

(31) a. [Deg [AxPart [μ]]] (28)/(29) Locative expressions
b. [*v* [V [P]]] (30) Prepositional datives

The sentence in (24b) (a so-called verb-copying sentence containing a durational expression) must be analyzed differently;[19] the relevance of this sentence was that the durational phrase follows V, just like the measure phrases in the locative and comparative sentences. A durational sentence with an underlying structure that is

19. See Cheng (2007) and references cited therein for sentences with verb copying and suggestions for their analysis.

similar to the ones under discussion here is given in (32) (Sybesma 1992: 115). The underlying structure is given in (31c).

(32) wǒ kàn-le zhè běn shū yǒu sān ge xiǎoshí.
1S read-PRF DEM CL book have three CL hour
'I read this book for three hours'

(31) c. [*v* [V [*yǒu*]]] Durational expressions

Even though the details and some other issues will be discussed further below, the structure in (29) clarifies the structural relationship of the AxPart *shàngmian* 'above' with the measure expression *wǔshí gōngfēn* '50 cm': the latter is the complement of the former, be it indirectly, through the intermediary in the form of the lower DegP. The same analysis applies to the Cantonese counterparts to the phrases discussed in this section.

5. The AxPart and Ground

If (29) is the correct analysis of (28), it confirms the conclusion drawn by Wu (2015) that the AxPart cannot be a regular adposition (postposition), at least not in locative expressions containing a measure as the examples in (6): in (29), the Ground, normally the complement of an adposition, is not the complement of the AxPart, which we concluded above is complemented by the lower DegP. Rather, the Ground seems to occupy the specifier position of AxPartP.[20]

Let's look at this hypothesis a bit more closely, also taking the issue of formal licensing into consideration. Consider once more the "shell" structures in (31), repeated and expanded here as (33), with the structure of the comparative added in (33d).

(33)	a.	[Deg	[Ground	AxPart	[*μ*	Measure	]]]	(28)/(29)	Loc. expressions
	b.	[*v*	[DO	V	[P	IO	]]]	(30)	Prep. datives
	c.	[*v*	[DO	V	[*yǒu*	Duration	]]]	(32)	Dur. expressions
	d.	[Deg	[Standard	A	[*μ*	Measure	]]]	(24)	Comparatives

There are many differences between these structures and the derivations that take place on the basis of these structures are also not uniform. What they have in common is that, as is typical for "shell" structures (by definition), every DP, regardless of

20. Wu (2015), who does not analyze cases with measure phrases, generates the Ground DP as the complement of a null Place N. The Ground DP subsequently moves to a DP position higher than AxPartP. However, she provides no motivation for either assumption.

whether it is a DO, an IO, a measure or a durational expression, is associated with its own head. When it comes to formally licensing the DPs, the lower heads (μ, P and *yǒu*) precede their complements and (presumably) check their case features. The formal licensing of the DPs in the specifiers of AxPartP, VP and AP is taken care of by another head. How the case features of these DPs are checked is one of the points on which the structures in (33) differ. As we saw above, Grano and Kennedy (2012) assume that in (33d), the Standard's case is checked from Deg, either by moving μ to A to Deg or by inserting *bǐ* 'than, compared to' into it. In (33c), V moves to *v* and in (33b) we again have two options: we either move V to *v* or we insert the element *bǎ* into *v*.[21]

How is the case of the Ground DP in (33a) checked? It is clear that the AxPart does not move: after all, the Ground always precedes it. Is anything inserted into Deg? *Zài* 'at' maybe?

To answer this question, we have to go back to the sentences in (17) and (18), with the locative expressions without a measure. Note that the sentences in (17a) and (18a) (along with some of the other examples) contain an AxPart as well as *zài* 'at' (M) or *hai2* 'at' (C). In (17b) and (18b), the locative expression contains no *zài* 'at' or *hai2* 'at', but it occupies a case position, as we have seen. In other words, phrases like the one in (34a) and (35a) need an external case checker.

(34) a. dàkètīng lǐ (cf. (17d))
living.room inside
'in the living room'
b. zài dàkètīng lǐ
at living.room inside
'in the living room'

(35) a. zoeng1 toi2 soeng6min6
CL table above.surface
'on the table'
b. hai2 zoeng1 toi2 soeng6min6
at CL table above.surface
'on the table'

In the literature, there is disagreement on the question as to the case features of which constituent need to be checked by the external case checker. This disagreement results from the disagreement on the categorial status of what we call the AxPart. Let's consider (34b) more closely. Li (1990: 33) proposes that the two

21. This is a simplification and only one view on this type of sentences; see Sybesma (2021) for a recent view on Voice and *v* in Chinese languages (where it is actually argued that *bǎ* occupies Voice^0). For excellent overview articles on *bǎ* see Li (2006, 2017).

functions that English prepositions like *in*, *on* and *for* combine in one element, a semantic and a syntactic (i.e., case checking) function, are performed by two separate elements in Chinese: the AxPart (*lǐ* 'inside' in (34), *soeng6min6* 'above' in (35), labeled "localizer" by Li) takes care of the semantic function, while the preposition *zài* 'at' checks case.[22] As we have seen, for Li (1990) and Huang, Li and Li (2009), the elements that we consider AxParts are nominal elements and it is the case features of these nominal elements that need to be checked by the outside case checker: *zài* 'at' in (34), *hai2* 'at' in (35). In this view, the other DP, the Ground, *dàkètīng* 'living room' in (34) and *zoeng1 toi2* 'the table' in (35), is a modifier to the nominal localizer and will presumably be formally licensed comparable to the way in which possessors are licensed (sometimes referred to as "inherent possessive case"). Thus, in this view, the bracketing and labeling of (34b) are as indicated in (36):

(36)

	P	[	Ground	AxPart]	
[PP [P zài	[DP	[NP	dàkètīng	[N lǐ	]]]]]
at			living.room	inside	

On the other hand, if Ernst (1988) and Paul (2015) and others are right in saying that the AxParts are adpositions, there should be no need for an extra case checker. However, according to Djamouri et al. (2013: 90), these adpositions are of an exceptional type, because "they are unable to check the case feature of their complement". Djamouri et al. assume that the DP argument of the AxPart is generated as its complement to the right of the AxPart head and subsequently moves into its specifier position to get its case features checked – by an external case checker. Thus, in a phrase like (34b), *zài* 'at' is still needed for case checking – not the case of the AxPart, as in Li's scenario sketched above (according to Ernst, Paul and Djamouri et al., the AxPart does not have case features to be checked because it is not nominal), but the case of the Ground DP. Note that the resulting configuration/bracketing is the same as in (36), even if the labels are different.[23]

(37)

	P	[	Ground	AxPart]		
[PP [P zài	[PP	[DP	dàkètīng]$_i$	[P'	[P lǐ]	t_i]]]]]
at			living.room		inside	

22. Cf. the distinction between functional and lexical Ps in Cinque's introduction of Cinque and Rizzi (2010).

23. We find the same constellation in Huang (2009), with yet different labels: "Although the localizer typically follows the N whose axial part it indicates, I shall consider it to be a relational head noun that selects the N as its complement" (p. 99). However, he argues, because the case requirement of the Ground DP cannot be satisfied via a process akin to *of*-insertion (because there is no such process in Chinese), it is moved to the specifier of the localizer, "where it also serves as the host for the cliticization of the localizer" (p. 99).

In short, for simple locative phrases like (34b), all agree that *zài* 'at' fulfills a case checking function. Since we have adopted the hypothesis that AxParts are not nominal, we conclude that the case features checked by *zài* 'at' are the ones of the Ground DP, configurationally similar to the scenario sketched in Djamouri et al. (2013), but then applied to (38) rather than to (37) (there is no movement in our view).

(38)

		P		[	Ground	AxPart]		
[PP	[P	zài	[AxPartP	[DP	dàkètīng	[AxPart	lǐ	]]]]]
		at			living.room	inside		

Note (and this is very important) that we reach this conclusion for phrases like (34b) (and (35b)). The question is whether the same conclusion can be drawn with respect to the examples in (6) ((6a) repeated here as (39)), the main topic of this chapter so far.

(39)

zài	zhuōzi	shàngmian	wǔshí	gōngfēn	de	dìfang.	
at	table	above.surface	50	cm	MOD	place	
'50 cm above the table'							

The structure we proposed for these expressions was schematically represented as in (16), repeated here as (40).

(40)

[P	[[Ground	AxPart	Measure]			Place]]	
[zài	[[zhuōzi	shàngmian	wǔshí	gōngfēn]	de	dìfang]]	
at	table	above.surface	50	cm	MOD	place	

In this structure, the essence of which was adopted from Terzi (2010), Place is the complement of P (i.e., *zài*). This structure makes the tacit assumption that P is responsible for the formal licensing of Place. This assumption is justified because the phrase in (41), which is (39) without *zài* 'at', has the same distribution as (33a), i.e., (33b) without *zài* 'at', as is illustrated in (42b) ((42a) = (7a)). This can also be illustrated with Cantonese examples (cf. (18b)).

(41)

zhuōzi	shàngmian	wǔshí	gōngfēn	de	dìfang.	
table	above.surface	50	cm	MOD	place	
'50 cm above the table'						

(42) a.

zhè	fú	huàr	guà	zài	zhuōzi	shàngmian	wǔshí	gōngfēn
DEM	CL	painting	hang	at	table	above.surface	50	cm
de	dìfang.							
MOD	place							
'The painting was hanging 50 cm above the table.'								

b. zhuōzi shàngmian wǔshí gōngfēn de dìfang guà-zhe yì
table above.surface 50 cm MOD place hang-IMP one
fú huàr
CL painting
'Fifty centimeters above the table a picture was hanging.'

The generalization is the same as the one formulated by Huang (1982) and Li (1990) on the basis of sentences such as the ones in (17) and (18) for phrases like (34a) and (35a): they need to occupy a case position. As to expressions containing a measure such as (41), in view of the fact that *dìfang* 'place' is the head noun (everything that precedes it modifies it; see (40)), we conclude that it is this DP whose case features are checked by P (*zài* 'at' in (39)). If this is correct, the Ground DP preceding the AxPart is not case checked by *zài* 'at' in phrases containing Measure like (39). We assume (inspired by Li 1990; see above) that in such cases, the case features of the Ground DP are checked the way in which the case features of possessors are checked (the inherent possessive case mentioned above).

Now that we have acquired a better understanding of the status and function of the different components in (16)/(40) and the configurational relations between them, we are finally in a position to answer the question of why we need Place in locative expressions with Measure.

6. Place and the N Place

Now we turn to the main question of this chapter: Why is it the case that when we add Measure, we also need to add Place? This is all the more interesting in view of the fact that Measure and Place are not directly related, as we have seen: as the complement of a DegP, which is in turn the complement of the AxPart, Measure is quite deeply embedded in the phrase that, as a whole, functions as a modifier to Place.

Before we answer the question, it is necessary to make a distinction between words and expressions that denote a location on the one hand and locatives on the other. Words and expressions that denote a location are just that, while we define locatives as words and expressions that denote a location which can *grammatically* function as a location denoting constituent. Formally, we would like to incorporate the core of Terzi's (2010) proposal and define locatives as constituents which contain a (covert or overt) N Place, which is modified by a word or expression that denotes a location.

Our answer to the question of why we need Place (in (9)) when we have introduced Measure is that Place is Terzi's N Place: without it, we may be dealing with an expression that denotes a location, but that is not a locative.

It is a general property of Chinese that most nouns cannot function as a locative, not even nouns that denote possible locations, like *zhuōzi* 'table' and *fángjiān* 'room'. Huang (2009) argues that this is the reason why the elements that we call AxParts are added to nouns (i.e., to provide the relevant features), when they appear in syntactic slots that are reserved for locations, such as when they are the complement of *zài* 'at'. As we have seen, in Huang's analysis, the AxParts are light nouns. They head an LP (presumably LocationP or LocalizerP) and select the Ground DP, thus providing the latter with the necessary locational features (for further details with respect to the derivation, see fn. 21). As Huang notes, some DPs "already inherently denote a location" (p. 99) and they can appear without an overt AxPart/Localizer/L. He mentions geographical names like New York as an example and assumes that they are also embedded in an LP, just like *zhuōzi* 'table' in *zhuōzi-shàng* 'on the table' and *zhuōzi-xià* 'under the table', except that the L is empty.

Although we agree with the gist of this approach, we disagree on some of the details. As just mentioned, we adopt Terzi's (2010) idea that locatives involve an N Place. As is clear from the previous sections, the elements that we call AxParts do not instantiate N Place. In our view, Huang's inherent locations are not followed by an empty L/AxPart, but by an empty N Place, a point also made in Wu (2015). As we suggested in Section 2, this N Place can (and sometimes must, as we will see shortly) be phonologically realized in Mandarin using words like *dìfang* 'place', *chù* 'place', *zhèr* 'here', *nàr* 'there' and a few others.[24] In (43), *nàr* 'there' has been added to phrases that seem to function as locative expressions in and of themselves, a place name (43a), an institution and this same institution followed by an AxPart (43c). Note that the N Place and the AxPart can co-occur.

(43) a. zài Táiběi nàr
at Taipei there
'in Taipei'

b. zài túshūguǎn nàr
at library there
'in/at the library'

c. zài túshūguǎn pángbian nàr (cf. (12c))
at library beside there
'beside the library'

As a consequence of these data, we take it that not only Huang's inherent locations are followed by an empty N Place, but that the same applies to locations that contain (in fact, are headed by) an AxPart.

24. In this section, we only use Mandarin examples. We return to Cantonese in Section 7.

Huang (2009) is right, of course, that an AxPart can (apparently) turn a common noun into a locative (as in (44)), but so can the addition of *nàr* 'there', when the region is not specified (see (45)):[25]

(44) zài zhuōzi *(shàng)
at table above
'on the table'

(45) zài zhuōzi *(nàr)
at table there
'at/by/on the table'

This locative forming function of *nàr* 'there' is not only observed with common nouns, but also with pronouns and proper/personal names. These can also not function as locatives without overt elements like *zhèr* 'here' or *nàr* 'there' (as in (46)) or *jiā* 'home'.

(46) a. zài tā nàr
at 3s there
'there where she is; with him'
b. zài wǒmen zhèr
at 1p here
'here where we are; with us'
c. zài Zhāng Sān nàr
at Zhang San there
'there where Zhang San is; with Zhang San'

(47) a. zài tā jiā
at 3s home
'at her place'
b. zài wǒmen jiā
at 1p home
'at our place'
c. zài Zhāng Sān jiā
at Zhang San home
'at Zhang San's place'

Considering the examples with *nàr* 'there' and its co-functionaries above, we see that they co-occur both with expressions that are inherent locations or are headed by an AxPart and with expressions that are non-inherent locations and are not headed by an AxPart. With the former, *nàr* 'there' and its counterparts are optional,

25. "Apparently" because in our view it is the N Place which does the job. For relevant discussion, see Zhang (2002).

with the latter, i.e., with the non-inherent locations without an AxPart, the elements like *nàr* 'there' are obligatory. As we mentioned above, we take *nàr* 'there', *zhèr* 'here', *chù* 'place' and *dìfang* 'place' to be instantiations of Terzi's (2010) N Place.

We can now, finally, return to the question of why we need to add Place once we have introduced Measure, as we saw was the case in (6a). The answer is that Place must be added as a consequence of the operations that need to be performed in order to make the introduction of a measure phrase possible. As we have argued, in this process, the AxPartP is embedded into a DegP. In other words, we are dealing with an expression which is not an inherent location and is not headed by an AxPart. As a result, like common nouns, pronouns and proper names in (45) and (46), such expressions can function as a locative only after it has been incorporated in the phrase headed by the N Place, which, in this case, must be overt. In other words, prepositions or verbs which select locatives must be combined with locatives, i.e., phrases headed by an N Place, and when an expression is not grammatically a locative, the N Place must be added. Technically, the location denoting expression is a modifier to the N Place. Without the N Place, the expression may denote a location, but functionally and grammatically, it is not a locative.

7. Modification or apposition

In this section we briefly discuss the nature of the relation between the N Place and the preceding location denoting phrase. As we noted in Section 2, in the case of *dìfang* 'place' it is clear that we are dealing with a modification relation as it is preceded by modification marker *de*. Even though *chù* 'place' (see Section 2) is not similarly accompanied by *de*, in view of its categorial status as a noun (and the fact that a modification relation can be established without *de*), it seems straightforward to assume that it is in a modification relation with the preceding phrase as well. The same would hold for *jiā* 'home' in (47), if it is indeed an instantiation of the N Place as well. These examples are in line with the assumption, which is part of the analysis we have presented in previous sections, that the N Place is modified by the preceding constituent.

However, in other cases we have seen (such as (43)), Mandarin *nàr* 'there' and *zhèr* 'here' and Cantonese *go2 dou6* 'that place' seem to "double" the location denoting constituent that precedes it, in which case we may think of the relation between the two constituents as one of apposition rather than modification. After all, both the location denoting constituent and *nàr* 'there' and *go2 dou6* 'that place' have the same reference, a defining property of appositive constructions (Heringa and De Vries 2008). Even though in yet other cases, such as the ones in (46), the situation

(apposition or modification) is less clear (it depends on whether a person can be a location), examples like the ones in (43) seem to suggest that we have to keep open the possibility that not all is modification. This would, however, make the analysis developed so far, with as a crucial part of it the explanation of the obligatoriness of N Place in locatives which include Measure, less straightforward.

As it turns out, evidence from Cantonese shows that it is not necessary to keep open the option that not all is modification. As pointed out in fn. 7, the Cantonese *go2 dou6* consists of the demonstrative *go2* 'that' and *dou6* which we gloss as 'place'; its proximal counterpart is *li1 dou6* 'this place' or 'here'. As we have seen, both forms appear in the locatives we have investigated. Note that the element *dou6* can also occur without a demonstrative prefix (e.g., (48a,e)).

(48) a. hai2 ngo5 dou6
at 1s place
'at my place'

b. hai2 ngo5 li1 dou6
at 1s this place
'here where I am; here at my place'

c. hai2 ngo5 go2 dou6
at 1s that place
'at my place' [where we are not right now]

d. lei4 ngo5 dou6 / li1 dou6
come 1s place / this place
'come to my place/come here'

e. keoi5 heoi3-zo2 a3-John (go2) dou6 sik6faan6
he go-PRF PRFX-John that place eat
'he went to John's place to eat'

(49) a. hai2 cong4 (soeng6min6) dou6 / go2 dou6 tiu3
at bed above place / that place jump
'jump on the bed'

b. hai2 tou4syu1gun2 (go2) dou
at library that place
'at the library'

c. hai2 tou4syu1gun2 hau6min6 (go2) dou
at library behind that place
'behind the library'

d. jau5-mou4 haau2leoi6-gwo3 hai2 Victoria (*go2) dou6 mat6jyut6?
have-have.not consider-EXP at Victoria that place honeymoon
'have you thought about honeymooning in Victoria?'

This is not the place to investigate in detail the distribution of *go2 dou6* 'that place/there', *li1 dou6* 'this place/here' and *dou6* 'place'.[26] What the examples in (48), (49) and elsewhere in this chapter show is that the distribution of these elements is the same as that of *nàr* in (46)–(47). In fn. 7, we also pointed out that Mandarin *nàr* 'there' and *zhèr* 'here' can be considered to also consist of DEM plus 'place': *nà* 'that' and *zhè* 'this' plus *r*.[27] In Cantonese, then, the N Place position is filled by either bare 'place' or by 'DEM place'. While the former does not seem compatible with the apposition scenario, the latter is (as we have seen), but at the same time gives us a handle to analyze sentences containing them as involving modification. Let's start with bare *dou6* 'place'.

The element *dou6* is distributionally restricted (cf. Cheung 2007) to the two contexts we have reviewed above: as part of 'here' and 'there' (*li1 dou6* and *go2 dou6* respectively) and as part of locative expressions such as the relevant examples in (48) and (49). It never appears in any other context and it cannot be modified. As a bare element, it is non-referential, as is the case for all Cantonese common nouns when they are bare (Cheng and Sybesma 1999).

In their overview of the semantics of appositive constructions, Heringa and De Vries (2008) point out that, typically, the two elements in an apposition have the same referential properties: they are either both specific or both non-specific. In the examples with bare *dou6* that we have seen, such as the ones in (49), it is preceded by specific locational expressions: on the bed, by the library, behind the library and the city of Victoria. This mismatch could be interpreted as pointing against the apposition analysis in such cases. Rather, *dou6* simply occupies the N Place position.

Turning to the examples that include *dou6* preceded by DEM, we see a match in referential properties, which would, as mentioned above, be compatible with an appositive analysis. Note that in many of the cases in which we allow DEM-*dou6*, bare *dou6* is also allowed (but see fn. 23). Although it is true that it is in principle

---

26. The distribution of bare *dou6* is similar but not entirely the same as the *dou6* preceded by a demonstrative. Sometimes the one is preferred over the other (as in (49d)) and sometimes the meaning is different depending on whether bare *dou6* is used or DEM-*dou6*. There are other factors that influence the distribution of all these elements. For instance, although the example in (48e) with *heoi3* 'go' is fine and although a geographical name can be followed by *dou6* when preceded by *hai2* 'at' (as in (49d)), such a geographical name cannot be followed by *dou6* when it is the object of *heoi3* 'go'. This is very interesting and must be looked into.

27. For 'place', Mandarin has other options, such as *lǐ* and *biān*: *nàlǐ* and *nàbiān* 'there', *zhèlǐ* and *zhèbiān* 'here' (contra Wu 2015: according to us the morphs *lǐ* and *biān* are not the AxParts/localizers; see Section 2). Note that in Mandarin, the 'place' part never occurs without a demonstrative: **wǒ-r*, **wǒ-lǐ*, **wǒ-biān* '1s-place'; cf. the discussion on the Cantonese demonstrative pronoun in (50)–(51).

possible that the examples with bare *dou6* must be analyzed differently from those with DEM-*dou6*, there is one fact of Cantonese (observable in Mandarin to a lesser extent) which points towards an across-the-board modification analysis. This fact is the following.

Although Cantonese has a modification marker like *de*, namely *ge3*, in certain cases, as illustrated in (50), it uses the demonstrative to link the modifier and the modifiee; see Sio (2006) and Cheng and Sybesma (2009). Note that modification marker *ge3* cannot be inserted in such cases, as is shown in (51), which is (50b) with *ge3*.

(50) a. ngo5 (li1) bun2 syu1 / keoi5 (go2) bun2 syu1
1S DEM^{PROX} CL book 3S DEM^{DIST} CL book
'my book / her book'

b. lei5 cam4jat6 m4 seung2 sai2 (go2) di1 hau2zaau3 m4-gin3-zo2
2S yesterday NEG want wash DEM^{DIST} CL face.mask NEG-see-PRF
'the face masks that you did not want to wash yesterday have disappeared'

(51) lei5 cam4jat6 m4 seung2 sai2 (*ge3) go2 di1 hau2zaau3 m4-gin3-zo2
2S yesterday NEG want wash MOD DEM^{DIST} CL face.mask NEG-see-PRF

These facts suggest that a parallel analysis of *dou6* 'place' and *go2 dou6* 'that place' is feasible if not the most straightforward.

The phenomenon illustrated in (50) for Cantonese can also be observed in Mandarin, except that modification maker *de* can still be inserted and is often preferred (Sio 2006; Cheng and Sybesma 2009):

(52) a. Zhāng Sān (de) nà běn shū
Zhang San MOD DEM^{DIST} CL book
'Zhang San's book'

b. nǐ zuótiān bù xiǎng xǐ ??(de) nèi xiē kǒuzhào nǎr
2S yesterday NEG want wash MOD DEM^{DIST} CL face.mask where
qù le?
go PRF
'What happened to the face masks that you didn't want to wash yesterday?'

In short, we conclude that in locatives with *go2 dou6* 'that place' (C) or *nàr* 'there' (M), these elements occupy the N Place position and are modified by the preceding phrase (see also Section 6).

8. A brief note about the alternative form

In a few final paragraphs before the paper's conclusions, we would like to discuss very briefly the "other" way in which a measure can be added to a locative expression, which was illustrated in (3a) repeated here as (53).

(53) fángwū liáng mǐ hòutou
house two meter behind.head
'two meters behind the house'

This section will be short because (as we mentioned in Section 1), much is still unclear about this form (its acceptability, for a start, and its distribution). We simply wish to point out one thing, which bears directly on the analysis developed above.

The form in (53) is different from the form we have investigated so far (the one illustrated in (6)), first, because the measure precedes the AxPart and, second, because there is no obligatory N Place. This second difference is understandable, indeed, expected, in light of the discussion in the previous sections: for phrases headed by an AxPart, the addition of an N Place is optional.

The first difference is more interesting. While discussing the forms in (6), we pointed out that the measures in post-AxPart position cannot be modifiers, because in Chinese languages, modifiers precede rather than follow the constituent they modify. In (53), the measure precedes the AxPart, so it is a modifier. Is there a difference in meaning between (53) and the cases in which the measure follows the AxPart?

With adjectives there is a difference (cf. (24a) and see fn. 15):[28]

(54) a. tā yì mǐ bā gāo
3s one meter eight tall
'she is 1.8 meter'
b. tā gāo sān gōngfēn
3s tall three cm
'she is 3 cm taller'

28. See Liu (2007), where it is actually claimed that sentences like (54b) also have a non-comparative reading (his fn. 16); for this, see also Chao (1968: 315); for discussion of the ambiguity, see Wiedenhof (1993). Note further that facts like those in (54) make us wonder whether Grano and Kennedy (2012) are right in treating the addition of measure expressions to base adjectives (e.g., *two meters wide*) and comparatives (*two meters wider*) in the same way. In any case for Chinese languages, more needs to be said if only to get the word order right. Grano and Kennedy mention and briefly discuss the word order variation in their Section 5.

When the measure expression precedes the adjective, as in (54a), it modifies it: in this case, it specifies the height of the subject. When the measure follows the adjective, in (54b), it measures out the difference between the subject and a (non-expressed) standard: it starts out from the standard and then measures out how big the difference is.

Considering the minimal pair in (55) (cf. (53)) and assuming that AxParts behave in the same way as adjectives, the meaning of (55a) would modify (rather than measure) 'behind the house' (the behindness): we are talking about the space that extends two meters, directly behind the house, that is, starting from the wall of the house. The phrase in (55b), on the other hand, would mean something else. Akin to the comparative in (54), it refers to a space which is located two meters away from ("more behind" than) the house: this space does not start from the wall, it begins two meters away from the wall.

(55) a. fángzi liáng mǐ hòu
house two meter behind
b. fángzi hòu liáng mǐ nàr
house behind two meter there

This is, in fact, what expressions like the one in (55b) mean: the picture in (7) hangs 50 cm "more above", i.e., higher, than the table; it does not fill the space between the table and 50 cm up. No native speaker consulted conceives of the tent in (56) as being right behind the palace, filling a space of four meters starting at the wall of the palace; for all, there is a space of four meters between the palace and the tent.

(56) gōngdiàn hòu sì mǐ nàr dāqǐ-le yí gè zhàngpéng
palace behind 4 meter there set.up one CL tent
'Four meters behind the palace a tent had been set up'

And the flowers in (57b) (cf. (4b), (55b)) find themselves three meters away from the back of the house; there is a corridor between the back wall of the house and the flowers. But where are the flowers in (57a) (cf. (3b), (55a))?

(57) a. fángzi sān mǐ hòu zhòng-le huā
house three meter behind plant-PRF flowers
b. fángzi hòu sān mǐ nàr zhòng-le huā
house behind three meter there plant-PRF flowers

We tested this, but the results were inconclusive, because, as already noted, we have not come across many speakers who actually accept sentences like (57a) to start with. However, one informant, who accepts both forms, confronted with the minimal pair in (58) (slightly different from (57)) confirmed our hypothesis. He commented: "For [(58a)], I have the feeling that everywhere, as long as it is 3 meters

behind the house, it is full of flowers. What [(58b)] says is that there are flowers in an area that starts exactly 3 meters away from the house."

(58) a. fángzi sān mǐ hòu zhòng-mǎn-le huā
house three meter behind plant-full-PRF flowers
b. fángzi hòu sān mǐ nàr zhòng-mǎn-le huā
house behind three meter there plant-full-PRF flowers

Even though the overall picture confirms the idea behind the analysis of the format in (4) (the measure is not a modifier but a complement of the AxPart), it is clear that more research is necessary. We have not looked seriously at these issues in relation to Cantonese, because the facts in that language are more complicated than in Mandarin.

9. Conclusion

In this chapter we investigated locatives which contain a measure expression in Mandarin and Cantonese. The conclusions we draw, however, are about the structure of locative PPs more generally. In particular, we have found that the hypothesis in Terzi (2010), which says that locatives are modifiers to an N Place (which itself is eventually the complement to a locative P), has helped us account for the data that constituted the main focus of this chapter, concluding that Place in the schema in (9) is an instantiation of the N Place. The consequence of this conclusion is that in Mandarin and Cantonese, the N Place is sometimes optionally and at other times obligatorily overt. It is obligatorily overt if the location denoting expression which modifies it is not an inherent location and not headed by an AxPart. It is optionally overt when it is modified by inherent locations (like toponyms) or phrases headed by an AxPart. We leave for future research the question why it is optional and not obligatory in these two cases.

References

Chao, Yuen Ren. 1968. *A grammar of spoken Chinese*. Berkeley, Cal.: University of California Press.

Cheng, Lisa Lai Shen. 1986. *de* in Mandarin. Canadian Journal of Linguistics 31: 313–326. https://doi.org/10.1017/S0008413100011865

Cheng, Lisa Lai Shen. 2007. Verb copying in Mandarin Chinese. In *The copy theory of movement on the* PF side, Norbert Corver and Jairo Nunes (eds), 151–174. Amsterdam: John Benjamins. https://doi.org/10.1075/la.107.07che

Cheng Lisa Lai Shen and Rint Sybesma. 1999. Bare and not-so-bare nouns and the structure of NP. *Linguistic Inquiry* 30(4): 509–542. https://doi.org/10.1162/002438999554192

Cheng, Lisa Lai Shen and Rint Sybesma. 2009. *De* 的 *as an underspecified classifier: first explorations. Yǔyánxué lùncóng* 39: 123–156.

Cheung, Samuel Hung-nin. 2007. *Xiānggǎng Yuèyǔ yǔfǎ de yánjiū/A grammar of Cantonese as spoken in Hong Kong* [revised edition]. Hong Kong: The Chinese University Press.

Cinque, Guglielmo and Luigi Rizzi (eds). 2010. *Mapping spatial PPs.* [The cartography of syntactic structures., Vol. 6]. Oxford: Oxford University Press. https://doi.org/10.1093/acprof:oso/9780195393675.001.0001

Den Dikken, Marcel. 2010. On the functional structure of locative and directional PPs. In *Mapping spatial PPs* [The cartography of syntactic structures, Vol. 6], Cinque Guglielmo and Rizzi Luigi (eds), 74–126. Oxford: Oxford University Press. https://doi.org/10.1093/acprof:oso/9780195393675.003.0003

Djamouri, Redouane, Waltraud Paul and John Whitman. 2013. Postpositions vs Prepositions in Mandarin Chinese: The Articulation of Disharmony. In *Theoretical Approaches to Disharmonic Word Order*, Theresa Biberauer and Michelle Sheehan (eds), 74–105. Oxford: Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199684359.003.0003

Ernst, Thomas. 1988. Chinese postpositions? – Again. *Journal of Chinese Linguistics* 16(2): 219–245

Grano, Thomas. 2012. Mandarin *hen* and universal markedness in gradable adjectives. *Natural Language and Linguistic Theory* 30: 513–565. https://doi.org/10.1007/s11049-011-9161-1.

Grano, Thomas and Chris Kennedy. 2012. Mandarin transitive comparatives and the grammar of measurement. *Journal of East Asian Linguistics* 21: 219–266. https://doi.org/10.1007/s10831-012-9090-y

Harley, Heidi. 2013. External arguments and the Mirror Principle: On the distinctness of Voice and *v*. *Lingua* 125: 34–57. https://doi.org/10.1016/j.lingua.2012.09.010

Harley, Heidi. 2017. The "bundling" hypothesis and the disparate functions of little *v*. In *The verbal domain*, Roberta D'Alessandro, Irene Franco and Ángel J. Gallego (eds), 3–28. Oxford: Oxford University Press.

Heringa, Herman and Mark de Vries. 2008. Een semantische classificatie van apposities. *Nederlandse Taalkunde* 13: 60–87.

Hsieh, Feng-fan and Rint Sybesma. 2011. On the linearization of Chinese sentence-final particles: Max spell out and why CP moves. *Korea Journal of Chinese Language and Literature* 1(1): 53–90,

Huang, C.T. James. 1982. Logical relations in Chinese and the theory of grammar. PhD dissertation, MIT.

Huang, C.-T. James. 2009. Lexical decomposition, silent categories, and the localizer phrase. *Yuyanxue Luncong* 39: 86–122.

Huang, C.T. James, Y.H. Audrey Li and Yafei Li. 2009. *The Syntax of Chinese*. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9781139166935

Huang, Shi-Zhe. 2006. Property theory, adjectives and modification in Chinese. *Journal of East Asian Linguistics* 15: 343–369. https://doi.org/10.1007/s10831-006-9002-0

Jackendoff, Ray. 1996. The architecture of the linguistic-spatial interface. In *Language, speech, and communication. Language and space*, Paul Bloom, Mary A. Peterson, Lynn Nadel and Merill F. Garrett (eds), 1–30. Cambridge, Mass.: The MIT Press.

Kayne, Richard S. 2004. Here and There. In *Syntax, Lexis, and Lexicon-grammar: Papers in Honour of Maurice Gross*, Christian Leclère, Éric Laporte, Mireille Piot and Max Silberztein (eds), 253–75. Amsterdam: John Benjamins. https://doi.org/10.1075/lis.24.23kay

Koopman, Hilda. 2010. Prepositions, postpositions, circumpositions, and particles. In *Mapping spatial PPs* [The cartography of syntactic structures, Vol. 6], Cinque Guglielmo and Rizzi Luigi (eds), 26–73. Oxford: Oxford University Press. https://doi.org/10.1093/acprof:oso/9780195393675.003.0002

Larson, Richard. 1988. On the double object construction. *Linguistic Inquiry* 19: 335–391.

Li, Y.H. Audrey. 1990. *Order and constituency in Mandarin Chinese*. Dordrecht: Kluwer. https://doi.org/10.1007/978-94-009-1898-6

Li, Y.H. Audrey. 2006. Chinese *ba*. In *The Blackwell Companion to syntax*, Martin Everaert and Henk van Riemsdijk (eds), Vol I, 374–468. Malden, Mass.: Blackwell. [2nd edition 2017.] https://doi.org/10.1002/9780470996591.ch12

Li, Y.H. Audrey. 2017. *Bǎ*-construction. In *Encyclopedia of Chinese language and linguistics*, Rint Sybesma, Wolfgang Behr, Yueguo Gu, Zev Handel, C.-T. James Huang and James Myers (eds), Vol I, 249–257. Leiden: Brill.

Liu, Chen-Sheng Luther. 2007. The weak comparative morpheme in Mandarin Chinese. *Concentric: Studies in Linguistics* 33: 53–89.

McCawley, Jim. 1992. Justifying part-of-speech assignments in Mandarin Chinese. *Journal of Chinese Linguistics* 20(2), 211–246.

Nie, Xiaowen and Feng-hsi Liu. 2021. Disyllabic localizers in Modern Chinese. *Journal of Chinese Linguistics* 49(1), 1–39. https://doi.org/10.1353/jcl.2021.0001.

Paul, Waltraud. 2005. Adjectival modification in Mandarin Chinese and related issues. *Linguistics* 43: 757–793. https://doi.org/10.1515/ling.2005.43.4.757

Paul, Waltraud. 2015. *New perspectives on Chinese syntax*. Berlin: De Gruyter Mouton. https://doi.org/10.1515/9783110338775

Peyraube, Alain. 1980. *Les constructions locatives en chinois moderne*. Paris: Langages Croisés.

Pylkkänen, Liina. 2008. *Introducing arguments*. Cambridge, Mass., The MIT Press. https://doi.org/10.7551/mitpress/9780262162548.001.0001

Simpson, Andrew. 2002. On the status of 'modifying' DE and the structure of the Chinese DP. In *On the formal way to Chinese languages*, Sze-Wing Tang and Chen-Sheng Liu (eds), 74–101. Stanford: CSLI.

Sio, Joanna. 2006. *Modification and reference in the Chinese nominal*. PhD dissertation, Leiden University.

Svenonius, Peter. 2006. The emergence of Axial Parts. In *Nordlyd: Tromsø Working Papers in Linguistics* 33/1 [Special issue on Adpositions, Peter Svenonius and Marina Pantcheva (eds)], 49–77. Tromsø: CASTL. http://www.ub.uit.no/munin/nordlyd/

Svenonius, Peter. 2008. Projections of P. In *Syntax and semantics of Spatial P*., Anna Asbury, Jakub Dotlačil, Berit Gehrke and Rick Nouwen (eds), 63–84. Amsterdam: John Benjamins. https://doi.org/10.1075/la.120.04sve

Svenonius, Peter. 2010. Spatial P in English. In *Mapping spatial PPs [The cartography of syntactic structures, Vol. 6]*, Cinque Guglielmo and Rizzi Luigi (eds), 127–160. Oxford: Oxford University Press. https://doi.org/10.1093/acprof:oso/9780195393675.003.0004

Sybesma, Rint. 1992. *Causatives and accomplishments: the case of Chinese bǎ*. PhD dissertation, Leiden University.

Sybesma, Rint. 1999. *The Mandarin VP*. Dordrecht: Kluwer. https://doi.org/10.1007/978-94-015-9163-8

Sybesma, Rint. 2021. Voice and little *v* and VO-OV in Chinese languages. *Syntax* 24(1): 44–77. https://doi.org/10.1111/synt.12211

Talmy, Leonard. 1978. Figure and ground in complex sentences. In *Universals of Human Language*, Joseph H. Greenberg (eds), Vol. 4, pp. 625–649. Stanford: Stanford University Press.

Terzi, Arhonto. 2010. Locative prepositions and Place. In *Mapping spatial PPs* [The cartography of syntactic structures, Vol. 6], Cinque Guglielmo and Rizzi Luigi (eds), 196–224. Oxford: Oxford University Press. https://doi.org/10.1093/acprof:oso/9780195393675.003.0006

Wiedenhof, Jeroen. 1993. 'Three inches high' in Mandarin. In *From classical fú to 'three inches high'. Studies on Chinese in honor of Erik Zürcher*, James C.P. Liang and Rint Sybesma (eds), 183–194. Leuven: Garant.

Wu, Iris. 2015. The fine structure of spatial PPs in Mandarin Chinese. In *The cartography of Chinese syntax*, Wei-tien Dylan Tsai (eds), 209–234. Oxford: Oxford University Press. https://doi.org/10.1093/acprof:oso/9780190210687.003.0007

Xiang, Ming. 2005. *Some topics in comparative constructions*. PhD dissertation, Michigan State University.

Zhang, N. 2002. Movement within a spatial phrase. In *Perspectives on Prepositions* [Linguistische Arbeiten 454], Hubert Cuyckens and Guenter Radden (eds), 47–63. Tübingen: Max Niemeyer. https://doi.org/10.1515/9783110924787.47

Zhū, Déxī. 1961. *Shuō de* [On *de*]. Zhōngguó Yǔwén 1:1–15.

"Descriptive complements" are manner adverbials

Thomas Ernst
University of Massachusetts, Amherst, and Dartmouth College

The Mandarin "descriptive complement" construction (e.g. *Ta pao-de kuai "S/he runs fast"*) is often analyzed as a verb plus a syntactic complement, but I argue that the postverbal de-phrase is in fact a manner adverbial. Several facts about the construction, including morphological and cooccurrence restrictions, do not help decide the issue. Rather, two strong arguments support its adjunct status. First, taking these phrases as complements would require all Mandarin verbs to optionally select for a manner expression, a dubious proposition. Second, doing so would violate a widely-assumed universal restriction on argument structure (to at most three arguments). Finally, several putative arguments for complement status are shown to be either invalid (such as the possibility of extraction) or weak (postverbal position).

1. Introduction[1]

1.1 The descriptive construction

A well-known issue in Mandarin syntax is the restriction on postverbal material. Aside from the normal options for single complement DPs, PPs, and CPs, one finds two-complement constructions as in (1a–b), as well as one complement DP plus a duration or frequency expression, as in (1c):

(1) a. Weiyuanhui fa-le wo $500.
committee fine-PRF me $500
"The committee fined me $500."

1. I am grateful to Audrey Li, Rong Yang, and Lindsay Whaley for discussion, and to Andrew Simpson and Walli Paul for helpful comments on an earlier draft. But, of course, I reserve the guilt for any mistakes to myself.

https://doi.org/10.1075/la.272.04ern

b. Jinrong fang-le yi-dui hezi zai di-shang.
Jinrong put-PRF one-pile box at floor-on
"Jinrong put a pile of boxes on the floor."
c. Women tui-le ta san ci.
we push-PRF her/him three time
"We pushed her/him three times."

But there are two phrases that must occur by themselves after the verb: the so-called "descriptive complement," shown in (2), and resultative clauses, in (3a–b):

(2) Na-zhi tuzi pao-de hen kuai.
that-CL rabbit run-DE very fast
"That rabbit ran fast."

(3) a. Lao Li pao-de hen lei.
Lao Li run-DE very tired
"Lao Li ran himself tired."
b. Ta qi-de wo xiang ban-zou.
s/he annoy-DE I want move-go
"She annoyed me so much that I wanted to move away."

I will refer to descriptive phrases as in (2) as *DES*, so as to stay neutral as to their syntactic status (and will have relatively little to say about resultatives). It is natural to think of DES as a complement, since it is postverbal like the complements in (1), while almost all clear examples of adverbials in Mandarin occur preverbally (see Li and Thompson 1981, Huang 1982, Ernst 2014a). However, the purpose of this paper is to argue against this view – that is, to make the case that is an adverbial adjunct. Though there are few explicit justifications of DES as a complement in the literature, it is widely referred to as such, without discussion. Yet, since it is standardly translated into other languages as a manner adverbial, a semantic criterion makes it look like an adjunct. Thus, the issue is worth examining.

DES phrases begin with *de*, which is generally agreed to cliticize to the preceding verb. (*De* is often taken to be some sort of complementizer, as in Huang 1982, but its categorial identity is not important here.) The rest of the phrase is a kind of predicative phrase, usually taken as an AP, yielding the phrase [de AP] with the head *de* taking AP as its complement. There is never an overt subject, in contrast to the related resultative construction shown in (3b), and, as noted, DES must occur alone after the verb (see 4).

(4) Zhangsan da (*ta) (*san ci) (-de) hen xiong.
Zhangsan hit s/he three time DE very fierce
"Zhangsan beat (her/him) fiercely (three times)."

The verb to which *-de* attaches cannot have any other verb morphology aside from *-de*, but the head of the AP may; (5a–c) provides examples of this, using the A-not-A question formation pattern in (5a–b), and aspect markers in (5c):

(5) a. *Ta {shuo-bu-shuo-de / shuode-bu-shuode} qingchu?
s/he talk-not-talk-DE talk-not-talk clear
(Intended: "Does s/he speak clearly?")
b. Ta shuo-de qingchu-bu-qingchu?
s/he talk-DE clear-not-CLear
"Does s/he speak clearly?"
c. *Ta shuo-zhe/guo-de hen qingchu.
s/he talk IMPF/EXP DE very clear
"S/he is talking / has talked clearly."

Given such restrictions (and others), the DES construction has often been of interest to syntacticians, going back at least to Chao (1948), first discussed in a generative framework in Mei (1972), and given prominence in Huang (1988) (which provides a fuller set of early references).

1.2 Two types of choice for an analysis

Early analyses split into two types. In the Primary Predication analysis (e.g. C.R. Huang and Mangione 1985, Tsai 2012), the AP is the main predicate, and the preceding material (minimally, DP + V-*de*) is the subject of the sentence. This approach has the advantage of automatically predicting the contrast in (5a–b), if one assumes that only main predicates allow the A-not-A question pattern (or at least preferentially do); it also accounts for the fact that no complements of the first verb, such as *da* "hit" in (4), occur after *-de*. (See Huang 1988 for further references and discussion.)

The Secondary Hypothesis was advanced by Mei (1972) and Huang (1988); on this approach, the verb immediately preceding DES is the main predicate. This has the advantage of more straightforwardly predicting the manner interpretation of DES, and of getting adverb scope facts correct, e.g. in (6), with the two analyses' bracketing shown in (7):

(6) Lisi tongchang chi-de hen kuai.
Lisi usually eat-DE very fast
"Lisi usually eats fast."

(7) a. [Lisi tongchang chi-de] hen kuai.
b. Lisi tongchang [chi-de hen kuai].

The Primary Predication analysis's structure in (7a) wrongly predicts a semantic representation along the lines of "[Lisi's usual eating] was fast" – this should mean that the total time span made up of Lisi's many (habitual) eatings was short. The Secondary Predication hypothesis in (7b) correctly says that the individual events of Lisi's fast-eatings occurred habitually, many times.

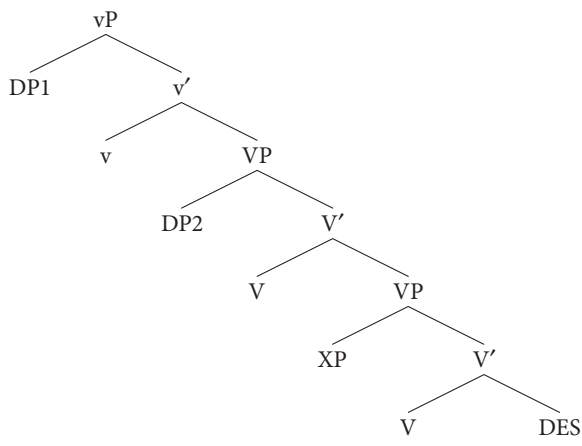
In what follows I will assume the Secondary Predication hypothesis, which is the most common one in current literature, in the wake of arguments against Primary Predication in Huang (1988), as well as further arguments discussed below.

A second issue, within the Secondary Predication analysis, is the argument status of DES. Early research did not explicitly take it as an adjunct; Mei (1972) called it a "VP-complement" (as opposed to the standard verb complement) and proposed a phrase structure that, on normal assumptions, would make it an adjunct. Certain later works (e.g. Ernst 1995, 2002, Gouguet 2006, Cheng 2007) treat DES as an adjunct. Taking it as a complement seems more common in the literature: see, among others, Li (1990), Tang (1990), and Huang et al. (2009).[2] In terms of phrase structure, the two hypotheses are most naturally represented as in (8a) (complement) and (8b) (adjunct). DP1 represents subjects (before they are raised to Spec,TP); DP2 represents direct objects, and XP stands for an indirect object or duration/frequency expression (ignoring the precise ordering of DP2 and XP, as irrelevant to current concerns).[3]

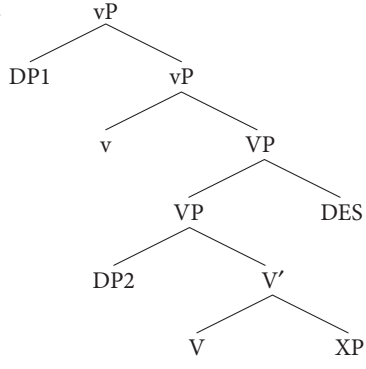
2. Li (1990: 48ff.) has a mixed proposal; a DES phrase starts out as a complement of V, followed by a process of reanalysis that converts this to a structure in which the AP of DES is the primary predication – essentially relabeling the VP as an AP, with the original V head now becoming a kind of modifier of the (new) adjectival head of AP.

3. See Huang et al. (2009: 91ff.), and references cited there, especially Soh (1998), for this analysis by which duration/frequency expressions are in the specifier (or adjunct) position of VP shells.

(8) a.



b.



(Adapted from Huang et al. 2009: 89)

1.3 Organization

In Section 2 I review some of the properties of DES that can be accommodated under either of the adjunct or complement analyses, and in sections 3–4 I first provide two arguments that DES functions as an adverbial adjunct, and then review two proposed arguments for the complement hypothesis, maintaining that they are either invalid or relatively minor. Section 5 provides a summary and conclusion.

2. Equivocal evidence

There are three properties of the DES construction that can clearly be handled equally well regardless of whether DES is treated as a complement or an adverbial adjunct; therefore they do not provide decisive evidence for either approach (though it is nevertheless important to have an analysis for them).[4]

First, as illustrated in (4), DES must be alone postverbally. The usual assumption is that other postverbal constituents are possible in base structure, but that they cannot be overt in that position, i.e. they must be an empty category, move to some other position, or be involved in the verb-copying process.[5] These three options are illustrated in (9–11), respectively.

(9) Ta xie-de [Ø] hen zhengqi.
s/he write-DE very neat
"S/he wrote [it] neatly."

(10) Wenzhang, ta xie-de hen zhengqi.
essay s/he write-DE very neat
"The essay, s/he wrote neatly."

(11) Ta xie wenzhang xie-de hen zhengqi.
S/he write essay write-DE very neat
"S/he wrote the essay neatly."

Other movement options aside from topicalization in (10) include preposing of direct objects in the *ba*-construction, focusing, or *bei*-passives; see Huang et al. (2009) for overviews. This restriction is most commonly ascribed to a morphological property of *-de*: it must cliticize to the verb root at PF (Li 1990, Ernst 19 95, 2002, Huang et al. 2009: 88–90). Any intervening material would block this cliticization and so violate the clitic's morphological requirements. As an adjunct, DES would be adjoined to VP, and so linearized to the right of all complements (and duration or frequency phrases), so the restriction on any other postverbal

4. In the discussion below, I adopt the common view that only phrases that are (i) part of the argument structure of a head, and/or (ii) are in some way specially selected by that head (e.g. as for a specific category, or as an obligatory accompaniment, as in 19 below) are complements, and therefore, under standard phrase-structural assumptions, are necessarily sisters to that head.

5. The exact analysis of the verb-copying construction is not important here. See Cheng (2007) for discussion.

phrase cooccurring with DES would be accounted for.[6] Thus there is no argument favoring either complement or adjunct status from this "aloneness" restriction, as both hypotheses correctly rule out any other phrase between *-de* and the verb, in the same way.

The second phenomenon overlaps with the first: the V-*de* verb form cannot have any other morphology, be it cliticization (enclitic aspect markers) or the complex A-not-A question form, as noted earlier in (5a–c); relatedly, it cannot occur with an immediately preceding *bu* "not" (which may be a proclitic). These are illustrated in (12–14), respectively:

(12) *Wangwu tan (-le) -de (-le) hen hao.
Wangwu play PRF DE PRF very well
"Wangwu played (the piano) well."

(13) *Wangwu tan-(de)-bu-tan-de hao?
Wangwu play-DE-not-play-DE well
"Does Wangwu play (the piano) well?"

(14) *Wangwu bu tan-de hao.
Wangwu not play-DE well
"Wangwu doesn't play (the piano) well."

The restriction in (12) can be chalked up to the cliticization requirement of *-de (*as noted earlier, assuming that *-de* is the initial element of DES); both the complement and adjunct hypothesis can do this, so there is no evidence for one or the other. The ungrammaticality of (13) might be handled if DES is an adverbial,[7] and on the complement hypothesis it could be explained if the question operator is taken as an overt suffix (later converted to the A-not-A form at PF). However, to my

---

6. The same may be true of initial *-de* in resultative constructions, as in (3a–b), if it is generated as the initial element of resultative complements (which are often taken to be made up of *de* plus a clause, see, e.g., Li 1990, Zhang 2003). Huang et al. (2009: 91) instead take V-*de* as a lexical item.

7. If DES is an adverbial, one can explain the ungrammaticality of (13), and also that of (i), assuming that the [+Q] feature is on the verb (possibly represented by an unpronounced proclitic) and that the modal element represented by *bu* in (i) also has scope lower than DES:

(i) *Baorong xie-bu-wan-de kuai.
Baorong write-cannot-finish-DE fast
(Intended) "Baorong can't finish quickly."

That is, the DES manner expression would have scope over the question and modal operators, which is semantically ill-formed; if we assume that these operators must raise (Ernst 1994, Law 2006), they cannot do so, since the DES adverbial would block this raising process, via minimality.

knowledge, there are no fully satisfying accounts of (14). Huang (1988) proposes that *bu* cliticizes to the verb and therefore must take narrow scope with respect to the DES manner phrase, which is semantically anomalous (assuming that there can be no manner of not doing something); but it is unclear why cliticization, a PF phenomenon, should force narrow scope (an LF phenomenon).[8] Ernst (1995) suggested that DES actually starts out preverbally to the right of *bu* and must move rightward across the verb, and the trace it leaves behind blocks *bu*-cliticization; but this requires a dubious stipulation for blocking cliticization (especially since null direct objects do not block cliticization of *de*, as illustrated in 9). Overall, one would hope that there is a more general, morphological account of all these restrictions, which would also generalize to the resultative construction (which shows the same behavior). In any case, the data in (12–14) do not clearly provide evidence to decide between the complement and adjunct analyses.

The third issue is the semantics of DES. It is clear that its meaning is identical to manner expressions in other languages.[9] In (9–11), the manner of her writing is neat, and in (15) Lisi speaks in a clear way:

---

8. A reviewer echoes Huang's (1988) analysis by asserting that "*bu* is construed with the following verb." However, it is not true that *bu* must be so construed, nor need it be cliticized to the verb itself. As Ernst (1995) points out, some adverbials may occur between *bu* and the verb, with negation taking scope over the (rest of the) VP, e.g. (i):

(i) Tamen bu huxiang bangmang.
they not each-other help
"They don't help each other."

Therefore there is no reason to assume that *bu* must take narrow scope over just the verb in (14).

9. I assume that the manner *interpretation* is lexically required by *-de*, in the same way as for English *-ly*. It must be noted that there are other *-de*'s, even beyond the one that heads resultative phrases (and the nominal and preverbal adverbial *-de*'s: see Huang et al. (2009) and references there for discussion). They are sometimes included under the rubric of DES, since their syntactic behavior is the same in the relevant respects. These phrases include the time-related adverbial in (i), the frequency expression in (ii), and possibly also the degree phrase in (iii):

(i) Ta qi-de hen wan.
s/he rise-DE very late
"S/he gets up late."

(ii) Jinrong lian-de hen pinfan.
Jinrong practice-DE very frequent
"Jinrong practices frequently."

(iii) Neige qiuyuan hao de yaoming.
That-CL player good DE extreme
"That player is really great!"

(15) Lisi zuotian jiang de hen qingchu.
Lisi yesterday speak DE very clear
"Lisi spoke clearly yesterday."

There is no commonly accepted formal analysis of manner semantics, but these adverbials are generally taken as restricting the verb's eventuality to a subset of eventualities having the indicated manner property, with the described eventuality mapped on a scale of that property, using a comparison class of eventualities of the verb's type. So in (15), for example, the events of her speaking are mapped onto a scale of speaking events, above a point representing the "norm" for clarity of speaking (see Ernst 2002, Kubota 2015, and Morzycki 2016 for discussion).

It is important that it is an eventuality that is mapped to the scale, not an entity such as an agent or a theme. It is sometimes asserted that DES functions not as a manner modifier, but as a depictive secondary predicate, with the clause's subject or object functioning as its subject. (On this view, either DES contains a pro/PRO, so that DES constitutes an adjectival small clause with the subject or object as the antecedent of pro/PRO, as in Huang 1992; or DES is a smaller constituent like an AP, the subject/object functioning as its subject, as for Huang et al. 2009: 89.) However, there is evidence against this secondary predicate analysis: there are clear cases where DES is not interpreted as predicated of the subject or object (as required on a secondary predicate analysis), but is in fact a predicate on the whole event, as expected if it is a true manner expression.[10] Examples are given in (16a–b):

(16) a. Gunzi, ta wo de hen jin.
club s/he grasp DE very tight
"S/he grasped the club tightly."
b. Tade biaoyan gaijin de hen man.
his performance improve DE very slow
"His performance improved slowly."
c. Qiu gun-de hen shun.
ball roll-DE very smooth
"The ball rolls smoothly."

These may be categorially distinct (e.g. Degree Phrase for (iii)). I take them to have their different interpretations encoded lexically on their *-de*, in the same way as for the usual manner meaning of DES. See Zhang (2020) for an account of degree phrases with *-de* that assumes a preverbal base position.

10. See Geuder (2000: 181), Himmelmann & Schultze-Berndt (2005), and Rapoport (2019) for discussion of the difference between manner adverbials and depictive secondary predicates.

In (16a), it is not the club or the subject denoted by *ta* that is tight, but rather the holding; in (16b), it is not the performance that is slow, but the improvement; in (16c) the meaning is not that the ball is smooth, but that its rolling motion is. So DES is truly a manner modifier, not a depictive secondary predicate.

Huang (1988, 1992) suggests that DES can combine with the verb to form a complex predicate, with DES counted as a type of "outer complement" (1988:306). Despite the terminology, this should not necessarily make it a complement in the (more standard) narrow sense. Aside from the fact just noted that DES functions as a manner expression (not a secondary predicate) it would be unusual for a secondary predicate to count as a complement. Both standard-issue secondary predicates, as in *eat the oysters raw*, and manner expressions, can equally be taken as forming complex predicates with the verb, yet they are demonstrably adjuncts in their syntactic behavior (see for example Rothstein 2006, Rapoport 2019). Taking DES as a complement here would thus (presumably) require a special and exceptional process to map the secondary predicate in a complex predicate to a complement position, instead of to an adjunct position. Moreover, such a rule would have to not apply to preverbal secondary predicates in Mandarin, such as those discussed in Zhang (2003) (illustrated in 17, her 2a), which also clearly function as adjuncts syntactically.

(17) Wusong huo zhuo le yi zhi laohu.
Wusong alive catch PRF yi CL tiger
"Wusong caught a tiger alive."

Moreover, there is no evidence for such a complement-deriving process in English and other languages where secondary predicates have been well-studied (see Himmelmann & Schultze-Berndt 2005, for example).

However, unlike standard cases of manner modification, DES has additional semantic effects: sentences containing such phrases have a generic/habitual reading by default, but may have an eventive reading as long as they presuppose some event-type established in the context, or else supply one (see Li and Thompson 1981:623 for discussion). (18), without the temporal modifier of (15) and a special context, makes a general statement about how Lisi speaks, rather than describing a particular event:

(18) Lisi jiang de hen qingchu.
Lisi speak DE very clear
"Lisi speaks clearly."

Also, (18) would not normally be used in "out-of-the-blue" contexts, but rather in a situation where the topic is Lisi's speech, or (say) his qualifications to be an invited lecturer, or the like.[11]

Given that DES is a manner expression, both the complement and adjunct approaches can handle the facts, by encoding its manner and any contextual requirements on its head *-de*. I will return to this point below, however, as universal patterns of the realization of manner phrases provides a strong argument for adjunct status.

3. (Potentially) deciding evidence

3.1 Selection

Consider how complements and adjuncts are normally defined: in essence, complements are expressions that are semantically required, i.e. selected, by a head (s-selection), while adjuncts are not required/selected. As a very strong cross-linguistic default, manner phrases are not selected; they are always assumed to be verb modifiers in any language. The exception proves the rule in the case of the small number of verbs that do in fact select for manner phrases, as illustrated in (19):

(19) a. George treats Marcia *(well).
(where *treat* means "act towards," not health-related treatment)
b. Albert is behaving *(strangely).
(where *behave* without a manner modifier has an inherent manner component, i.e. "behave well")

Even in the middle construction, illustrated in (20), the manner phrase is standardly taken as an adverbial modifier, even though it is in some sense required by the verb:

---

11. DES expressions also have a stative quality (Li and Thompson 1981 say that these constructions "refer to a state of affairs"); some evidence for this is the ungrammaticality of imperatives in such constructions, e.g. **Pao-de hen kuai!* "Run fast!". However, other indications are of a dynamic predicate, e.g. possible negation of the main verb + DES combination (*Ta mei-you jiang-de hen qinqchu*) vs. the ungrammaticality of the same negation with the verb in DES by itself (**Ta meiyou hen kuai*) (except as denial of a previous utterance). I leave the precise semantics aside here, as irrelevant to current syntactic concerns.

(20) Books like this read *(easily).

Taking DES as a complement therefore requires saying that *all* verbs in Mandarin may select a manner modifier as a complement. This not only would require positing two lexical entries for every verb in Mandarin – one with the usual set of complements, and one with the additional DES complement – but it also goes radically against cross-linguistic patterns.

It is sometimes suggested that *-de* attaches to the verb root in the lexicon; this has the advantage of allowing it to change the verb's valency, adding DES as an extra argument. If so analyzed, as a derivational affix, the problem of dual lexical entries would be avoided. However, this would run afoul of morphology – among other things, incorrectly predicting that (12–13) are grammatical – and make it difficult to explain why no other arguments can occur with it postverbally.

There might be another option to get around the selection problem and take DES as a complement: as many people have pointed out, the line between selected arguments and unselected adjuncts is not sharp as sometimes claimed. So then the question becomes: what classes of unselected elements can be arguments? Could DES be included in this group?

There seem to be two classes of unselected expressions that are sometimes considered arguments. The most important of them is made up of phrases expressing result, including goals.

(21) gives some examples:

(21) a. She smashed the can *flat.*
b. Kim threw the ball *to Fido.*
c. Bruce sat down *on the couch.*

Even though the italicized phrases are optional, and seemingly not part of the verbs' argument structure, they often behave like arguments and are frequently treated as such in the literature. As Rapoport (2019) points out, this is because the result-element constitutes part of general argument structure's "aspectual core." For Ramchand (2008, 2018), for example, this core (for accomplishments and achievements, at least) consists of an Initiator, a Process, and a Result.[12] A second group is that of participant PPs (PPPs) like benefactives, instrumentals, comitatives, and locatives (the last of which may overlap with the first group when it expresses a goal, as in 21c). These are standardly taken as adjuncts (see, for

12. For Ramchand and others who adopt a "lexical decomposition" analysis (rooted in the theories of Hale and Keyser 1993 and Distributed Morphology) these elements are syntactic, but are amalgamated into a verb's surface form.

example, Marantz 1984, Ernst 2002 for instrumental PPPs like those in 22[13]), but suppose one were to instead take them as arguments (at least, possible derived arguments). The best evidence for this comes from applicatives, where some morphological marker indicates that the PPP has been combined with the original verb, converting it to an argument; an example from Chichewa is given in (22) (Baker 1988; see also McGinnis 2017):

(22) a. Fisi a-n-a-dul-a chingwe ndi mpeni. (Baker 1988: 238)
hyena SP-PAST-cut-ASP rope with knife
"The hyena cut the rope with the knife."
b. Fisi a-n-a-dul-ir-a mpeni chingwe.
hyena SP-PAST-cut-with-ASP knife rope
"The hyena cut the rope with the knife.

However, the small set of expressions that partake of the applicative construction does not normally include manner expressions – very few manner-applicatives are reported cross-linguistically (a rare case is found in Kinyarwanda; see Baker 1988: 471). Thus it seems unlikely that DES manner phrases could be taken as unselected arguments in such a general way in Mandarin.

3.2 Argument structure

A second, related argument against the complement hypothesis focuses on argument structure. Consider universal constraints on theta roles, illustrated by (23a–b). (23a) shows a normal double-object construction:

(23) a. Zhangsan gei-le wo tade yaoshi.
Zhangsan give-PRF me his key
"Zhangsan gave me his key."
b. (Yaoshi,) Zhangsan gei wo gei de hen kuai.
key Zhangsan give me give DE very fast
"His key, Zhangsan gave me quickly."

In (23b), where the DES phrase is added and both the direct and indirect object are preposed (the latter in a verb-copying construction), the complement hypothesis would have to claim that *gei* "give" allows four arguments: subject, direct object,

13. Baker (1988: 240) suggests that these instrumentals as arguments, on the grounds that their exact interpretation is "a function of both the verb and the prepositional element," with the preposition in (22a) narrowing the meanings that the propositional object NP can have. However, these are arguably semantic or pragmatic effects, given that "instrumental" encompasses a number of slightly different readings, and it is normal for these to be determined by extra-syntactic factors.

indirect object and DES. Yet the usual assumption is that Universal Grammar permits a maximum of three arguments per predicate. Huang et al. (2009: 91–92) invoke this idea explicitly (to argue that postverbal duration/frequency phrases are adjuncts), and Hale and Keyser's (1993) theory of argument structure, by its very architecture, allows at most three arguments to appear with any given verb; Ramchand (2008, 2018) makes a similar claim (if only implicit) (see Harley 2011 for discussion). Thus, by the same logic as for duration/frequency expressions, DES phrases must be adjuncts: if they are complements, there are either too many arguments for the VP-shell structure (if the UG constraint is encoded in phrase structure, as for Huang et al. 2009), or too many theta roles in the argument structure (if the constraint is encoded lexically). Sentences like (23b), of course, do not pose a problem on the adjunct hypothesis. This constitutes an argument that DES expressions are adverbial adjuncts.[14]

4. Two non-arguments for the Complement Hypothesis

4.1 Extraction from DES

Huang et al. (2009: 87) present an argument that DES phrases are complements based on the possibility of extracting a DP from within them; their example is shown in (24a), and (24b) provides another:

(24) a. ?Na-zhi tuzi, ta pao-de [kuai-dao neng zhuishang ___]
that-CL rabbit he run-DE fast-till be.able.to catch.up.with
Lit: "That rabbit, he ran fast enough to catch up with."

b. ?Bianpao sheng, ta shui-de [chen-dao neng hulüe _____]
firecracker sound, s/he sleep-DE deep-till be.able.to ignore
"The sound of the firecracker, he sleeps deeply enough to ignore."

---

14. The discussion here assumes a traditional view by which predicates come out of the lexicon with a fixed argument structure; either this is the end of the story, or if (as noted above) there may be a limited number of unselected argument types, then these may be added according to a template for results, goals, and so on. That said, there is one more potential path to extra arguments: light verbs, such as CAUSE; Lin (2014) provides a good exposition of ths idea (see also references there). However, I reject this as a promising avenue for adding DES as an added manner complement, for the reason that, if light verbs are a valid part of grammar (as they seem to be), the number of options supplied by UG must be limited (as seems to be the case so far) – restricted to a small number of very general, widely recognized, cognitively salient verbs. What the meaning of a putative manner light verb might be is certainly less clear than for DO, CAUSE, or EXIST; and just as manner phrases very rarely participate in applicative constructions, the manner semantic role is arguably too peripheral to be included on the list.

The idea is that, give some version of the Condition on Extraction Domains (CED: Huang 1982), movement out of an adjunct is impossible, while movement out of a complement is generally fine (Huang et al. 2009 attribute the slight awkwardness of (24) to it being "long and clumsy"). If so, then (24) shows that the bracketed DES expression is a complement.

However, recent research has shown that extraction out of adjuncts is in fact fairly common (Borgonovo and Neeleman 2000, Truswell 2011, Ernst 2022, and references therein). Ernst (2022) provides the examples from English in (25), and from other languages in (26).

(25) a. What did you go there [to discuss __]?
(rationale clause)
b. !Which speech did John make his point [by reciting __]?
(prepositional participial adjunct)
c. What did Al arrive [singing __]?
(bare present participial adjunct)
d. !Who did Vermeer create the majority of his paintings [for __]?
(participant PP)

(26) a. Vem sjöng du sången [med __]? (Swedish)
who sang you song-the with
"Who did you sing the song with?"
b. Ti piγane s tin aθina [na kanun __]? (Modern Greek)
what went.3PL to the-Athens SUBJNC do.3PL
"What did they go to Athens to do?"
c. Yeh kitaab Ram [Bill-ko __ de-ne-ke liye] Dilli aa-yaa hai] (Hindi)
this book Ram Bill-DAT give-INF-GEN for Delhi come-PRF is
"This book, Ram came to Delhi to give to Bill."
d. ?Qué llegó [silbando __] María? (Spanish)
what arrived whistling Maria
"What did Maria arrive whistling?"

While extraction out of participant PPs (as in 25d and 26a) is barred for independent reasons in most languages, it is possible in languages that allow preposition stranding, at least English, Swedish, and Norwegian. Movement out of participial adjuncts (as in 25b–c and 26d) is less common, but still attested; movement out of rationale clauses is very widespread (see 25a and 26b–c) – notably, it is even possible in Mandarin, as illustrated shown in (27):

(27) *Hamilton*, ni zhi neng qu Niuyue [kan __]. (Mandarin)
Hamilton you only can go NY see"
Hamilton, you can only go to New York to see."

Ernst (2022) follows Truswell (2011) in proposing that such extractions are possible if and only if the adjunct and matrix predicates can together constitute a "macro-event." Briefly, macro-events can be constituted by participant PPs because they act like additional arguments (Ernst 2002, 2014b), by participial secondary predicates under certain conditions (as, for example, in 20c where John is the agent of both the arriving and the singing, and these two events are simultaneous), and with cases involving causation or enablement, e.g. in rationale clauses like (25a), (26b), and (27), where the agent's intentional action enables the event expressed in the adjunct clause. The relevant condition from Ernst (2022) is stated in (28):

(28) The Single Event Grouping Condition (SEGC)
An instance of *wh*-movement is legitimate only if the minimal constituent containing the head and the foot of the chain can be construed as describing a single (macro-) event.

(See Truswell 2011 and Ernst 2022 for more detailed discussion of the semantic and pragmatic requirements for macro-events.)

Given the close connection between verbal semantics and the semantics of manner modification, the combination of the two clearly ought to constitute a macro-event. Standardly, as noted earlier, sentences with a manner modifiers are seen as expressing a single event because manner modification restricts the meaning of the predicate. One common analysis of manner modification treats it precisely as participant PPs are, as shown in (29) for (18) (where m = manner, a notation adapted from Schäfer 2008; see also Piñon 2013):[15]

(29) ∃e [Speak (e) & Agt (e, Lisi) & ∃m [Speak(m) & Clear (m)]]

Applying this to Mandarin, we cannot say that the account based on macro-event formation is generally inapplicable in the language, since movement out of rationale clauses is perfectly possible. The account based on the SEGC in (28) correctly predicts data like (24). Since the complement hypothesis does this as well, there is no evidence for one side or another.

15. See Ernst (2002) and Kubota (2015) for analyses of a different style, which equally treat manner expressions as restricting a set of events.

4.2 Postverbal position

The clearest argument I know of for the complement status of DES is that it occurs postverbally, while (almost) all other adjuncts are preverbal (see Huang 1982, Li 1990, and Ernst 2014a for discussion). If DES is a complement this position is normal; if it is an adjunct, this must be an exception.

I maintain that, while this is a valid argument, it is a relatively weak one. The reason is that inconsistencies in head-final vs. head-initial orders within one language are not uncommon cross-linguistically. Within Mandarin itself, of course, complements are to the right of verbal heads (as well as to the right of T and possibly C), but adjuncts are to the left, while most VO languages allow (or require) adjuncts to the right. The case of Dutch and German is well known: here, CPs, DPs, and PPs are head-initial, while VP is head-final (including with respect to adjuncts). In Hindi, Gujarati, and related languages, DP complements and most adjuncts precede the verb, while CP complements follow it. And quite generally, VO languages allow low predicational adverbs (i.e. manner adverbials) to the right of clausal heads, while high, clausal adverbs (such as modal, evaluative, or agent-oriented adverbs) must occur to the left (see Ernst 2002, 2014b).

There must be some mechanism to account for these sorts of word-order variation within a given language. Ernst (2002, 2003) proposed that, in general, adjuncts have base positions according to the directionality of a given language's specifier and complement directions, assuming that specifiers are universally to the left of heads. If so, then all languages allow adjuncts to the left, and this is the only option for head-final languages; if a language is head-initial, then it allows adjuncts to the left or right, in principle. On this view, what is anomalous about Mandarin Chinese is not that it allows (some) adverbials to the right of the verb, but that it allows so few. Thus Ernst (2003) proposed that Mandarin allows them only at the lowest level, i.e. VP. In most VO languages, right-adjoined adverbials are allowed if they are (i) participant PPs (locative, instrumentals, etc.), which are adjoined above VP (Ernst 2002), or (ii) clause-modifying PPs or CPs that are even higher (e.g. reason, conditional, or temporal clauses); also, (iii) clause-modifying predicational adverbs like *probably* or *unfortunately* are apparently barred from that position in all languages. Some low adverbs like *luan* "chaotically" or *hen* "very" in Mandarin are Lite adverbs, which are commonly barred from clause-peripheral positions (see Abeillé and Godard 2001, Ernst 2002). So if we allow only adverbs within VP to right-adjoin in Mandarin, the three classes in (i-iii), along with the Lite adverbs like those just mentioned, will occur preverbally. This correctly predicts that DES is the only postverbal adverbial.

This is still not quite correct for Mandarin, for three types of adverbial aside from DES. Duration and frequency expressions can occur postverbally, as is

well-known; this need not be a problem for anyone as long as they are in the specifier (or preverbal adjunct) position of VP shells (as noted earlier). And the purpose clauses discussed above are postverbal (a fact for which there is no satisfactory solution at present). So, with all of this variation, it is a relatively minor matter to explain the exceptional nature of DES's postverbal position: it is not unusual to have some exceptions for word order patterns.

An alternative to the analysis suggested above, by which some adverbials are exceptionally base-generated in postverbal position, is that these adverbial classes are preverbal in base structure, but moved rightward at some point. As noted above, Ernst (1995) in fact proposed this for DES: there is a convenient motivation for this, if we take DES as headed by an initial *de*, which lexically requires enclitic status; the only way to satisfy this is for the whole DES constituent to move and adjoin to the right of all complements. An alternative would be to invoke something like Zhang's (2020) "low predicate inversion," by which she derives the related degree phrase (30b) from (30a); again, DES would start in preverbal position and end up to the right of the verb.

(30) a. Baorong hen shou.
Baorong very thin
"Baorong is thin."
b. Baorong shou de hen.
Baorong thin DE very
"Baorong is extremely thin."

Liao and Lin (2019) argue for purpose clauses as having left-adjoined base positions within a VP shell (as for duration and frequency phrases for many people), which again allows treating all adjuncts as preverbal in some sense. The point here is that, if either the base-generation or movement analysis is adopted, the surface postverbal position of DES is not necessarily a strong argument for argument status.[16]

16. There are analyses of various postverbal adjuncts in Mandarin that assume the Linear Correspondence Axiom (Kayne 1994), and so must assume some version of Cinque's (1999) cartographic account of adverbials (Liao and Lin 2019, and Zhang 2020). It is becoming clear, however, that this approach to adverbial adjuncts cannot stand; see Chomsky (2004), as well as Ernst (2002, 2007, 2014b) for extensive discussion.

5. Summary and conclusion

In the preceding discussion, I have considered whether the Mandarin postverbal descriptive expression (DES) is a complement or an adverbial adjunct. I first showed that neither the restrictions on its morphology, nor the fact that it must occur alone after the verb, help us in making the decision, as both the complement and the adjunct hypotheses have good (or equally unsatisfying) analyses of these phenomena. I then provided two arguments for the adjunct hypothesis: first, that DES is not selected by a predicate, the usual criterion for adjunct status, and second, that even if it were selected, this would amount to saying that Mandarin can have a "tritransitive" verb when combined with a normal ditransitive verb – something that is presumably barred by UG. Finally, I showed that two putative arguments for complement status are either invalid (the possibility of extraction) or relatively weak (word order).

Aside from the very few analytical decisions that are "no brainers" – obvious decisions facing no good counterarguments, and about which everyone agrees – one must always balance the number and importance of arguments on both sides. If the preceding discussion is correct, arguments for adjunct status based on selection and argument structure are strong, as they are rooted in apparently universal semantic facts – arguably part of Universal Grammar – having no or very few exceptions. The argument for complement status based on linear order is instead far weaker, given what we know about variation in ordering protocols, especially the fact that many languages show internally inconsistent orderings. Therefore, I claim that DES phrases are in fact adverbial adjuncts.

References

Abeillé, Anne, and Daniele Godard. 2001. A Class of 'Lite' Adverbs in French. In Joaquin Camps et al. (eds), *Romance Syntax, Semantics and L2 Acquisition*, 9–25. Amsterdam: John Benjamins. https://doi.org/10.1075/cilt.216.04abe

Baker, Mark. 1988. *Incorporation*. Chicago: University of Chicago Press.

Borgonovo, Claudia., and Ad Neeleman. 2000. Transparent Adjuncts. *Canadian Journal of Linguistics/Revue canadienne de linguistique*, 45:199–224. https://doi.org/10.1017/S0008413100017680

Chao, Yuen-Ren. 1948. *Mandarin Primer*. Cambridge, MA: Harvard University Press.

Cheng, Lisa L.-S. 2007. Verb Copying in Mandarin Chinese. In *The Copy Theory of Movement*, Norbert Corver and Jairo Nunes (eds.), 151–174. Amsterdam: John Benjamins. https://doi.org/10.1075/la.107.07che

Cinque, Guglielmo. 1999. *Adverbs and Functional Heads*. Oxford: Oxford University Press.

Ernst, Thomas. 1995. Negation in Mandarin Chinese. *Natural Language and Linguistic Theory* 13:665–707. https://doi.org/10.1007/BF00992855

Ernst, Thomas. 2002. *The Syntax of Adjuncts*. Cambridge: Cambridge University Press.
Ernst, Thomas. 2003. Adjuncts and Word Order Typology in East Asian Languages. In *Functional Structure(s), Form and Interpretation*, Audrey Li and Andrew Simpson (eds.), 241–261. London: RoutledgeCurzon.
Ernst, Thomas. 2014a. Adverbial Adjuncts in Mandarin Chinese. In *The Handbook of Chinese Linguistics*, C.-T. James Huang, Y.-H. Audrey Li, and Andrew Simpson (eds.), 49–72. Malden, MA: Blackwell. https://doi.org/10.1002/9781118584552.ch3
Ernst, Thomas. 2014b. The Syntax of Adverbs. In *Routledge Handbook of Syntax*, A. Carnie, Y. Sato, and D. Sadiqqi (eds.), 108–130. Abingdon: Routledge.
Ernst, Thomas. 2022. Adjunct Condition and the Nature of Adjuncts. *The Linguistic Review* 39:1.
Geuder, Wilhelm. 2000. *Oriented Adverbs: Issues in the Lexical Semantics of Event Adverbs*. Ph.D. dissertation, Universität Konstanz.
Gouguet, Jules. 2006. Adverbials and Mandarin Argument Structure. In *Empirical Issues in Syntax and Semantics 6*, Oliver Bonami and Patricia Cabredo Hofherr (eds.), 155–173. Paris: Colloque de Syntaxe et Semantique de Paris.
Hale, Kenneth, and Samuel Jay Keyser. 1993. On Argument Structure and the Lexical Expression on Syntactic Relations. In *The View from Building 20*, Kenneth Hale and Samuel Jay Keyser (eds.), 53–109. Cambridge, MA: MIT Press.
Harley, Heidi. 2011. A Minimalist Approach to Argument Structure. In *The Oxford Handbook of Linguistic Minimalism*, Cedric Boeckx (ed.), 426–447. Oxford: Oxford University Press.
Himmelmann, Nikolaus P., and Eva F. Schultze-Berndt. 2005. Issues in the Syntax and Semantics of Participant-Oriented Adjuncts: an Introduction. In *Secondary Predication and Adverbial Modification*, Nikolaus P. Himmelmann and Eva F.Schultze-Berndt (eds.), 1–68. Oxford: Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199272266.003.0001
Huang, C.-T. James. 1982. Logical Relations in Chinese and the Theory of Grammar. Ph.D. dissertation, MIT.
Huang, C.-T. James. 1988. *Wo pao de kuai* and Chinese Phrase Structure. Language 64:274–311.
Huang, C.-T. James. 1992. Complex Predicates in Control. In *Control and Grammar*, Richard K. Larson, Sabine Iatridou, Utpal Lahiri and James Higginbotham (eds.), 109–147. Dordrecht: Kluwer. https://doi.org/10.1007/978-94-015-7959-9_4
Huang, C.-T. James, Audrey, Li Y.-H., and Yafei, Li. 2009. *Syntax of Chinese*. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9781139166935
Huang, Chu-ren, and Mangione, Louis. 1985. A Reanalysis of de: Adjuncts and Subordinate Clauses. In *WCCFL 4*, Jeffrey Goldberg, Susannah MacKaye and Michael Westcoat (eds.), Stanford: CSLI.
Kayne, Ricard. 1994. *The Antisymmetry of Syntax*. Cambridge, MA: MIT Press.
Kubota, Ai. 2015. Transforming Manner Adverbs into Surface-Subject-Oriented Adverbs: Evidence from Japanese. *Natural Language and Linguistic Theory* 33:1019–1046. https://doi.org/10.1007/s11049-015-9287-7
Law, Paul. 2006. Adverbs in A-not-A Questions in Mandarin Chinese. *Journal of East Asian Linguistics* 15:97–136. https://doi.org/10.1007/s10831-005-4916-5
Li, Audrey Y.-H. 1990. *Order and Constituency in Mandarin Chinese*. Dordrecht: Kluwer. https://doi.org/10.1007/978-94-009-1898-6
Liao, Wei-wen Roger, and Tzong-hong Jonah Lin. 2019. Syntactic Structures of Mandarin Purposives. *Linguistics* 57:87–126. https://doi.org/10.1515/ling-2018-0032

Lin, T.-Z. Jonah. 2014. Light Verbs. In *The Handbook of Chinese Linguistics*, C.-T. James Huang, Y.-H., Audrey Li, and Andrew Simpson (eds.), 73–99. Malden, MA: Blackwell. https://doi.org/10.1002/9781118584552.ch4

Marantz, Alec. 1984. *On the Nature of Grammatical Relations*. Cambridge, MA: MIT Press.

McGinnis, Martha. 2017. Applicatives. In *Blackwell Companion to Syntax*, 2nd ed., Martin Everaert and Henk van Riemsdijk (eds.). Malden, MA: Blackwell. https://doi.org/10.1002/9781118358733.wbsyncom124

Mei, Kuang. 1972. *Studies in the Transformational Grammar of Modern Chinese*. Ph.D. Dissertation, Harvard University.

Morzycki, Marcin. 2016. *Modification*. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511842184

Pinon, Christopher. 2013. Speech Act Adverbs as Manner Adverbs. MS, Universite Lille 3. http://pinon.sdf-eu.org/work/pinon_saama_ho.pdf

Ramchand, Gillian. 2008. *Verb Meaning and the Lexicon*. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511486319

Ramchand, Gillian. 2018. *Situations and Syntactic Structures*. Cambridge, MA: MIT Press. https://doi.org/10.7551/mitpress/10911.001.0001

Rapoport, Tova. 2019. Secondary Predication. In *Oxford Handbook of Event Structure*, Robert Truswell (ed.), 426–455. Oxford: Oxford University Press.

Rothstein, Susan. 2006. Secondary Predication. In *Blackwell Companion to Syntax*, Martin Everaert and Henk van Riemsdijk (eds.), Vol. 4, 209–233. Malden, MA: Blackwell. https://doi.org/10.1002/9780470996591.ch58

Schäfer, Martin. 2008. Resolving Scope in Manner Modification. In *Empirical Issues in Syntax and Semantics 7*, Oliver Bonami and P. Cabredo Hofherr (eds.), 351–372. Paris: CSSP.

Soh, Hooi Ling. 1998. Object Scrambling in Chinese. Ph.D. dissertation, MIT.

Tang, C.-C. Jane. 1990. *Chinese Phrase Structure and the Extended X' Theory*. Ithaca, NY: Cornell University dissertation.

Truswell, Robert. 2011. *Events, Phrases, and Questions*. Oxford: Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199577774.001.0001

Tsai, Cheng-Yu Edwin. 2012. Descriptive Complement Constructions as Concealed Pseudoclefts in Chinese. In *Proceedings of the 29th West Coast Conference on Linguistics*, Jaehoon Choi et al. (eds.), 259–267. Somerville, MA: Cascadilla Proceedings Project.

Zhang, Niina. 2003. The Asymmetry between Depictives and Resultatives in Chinese. In *Asymmetry in Grammar*, Anna Maria DiSciullo (ed.) Vol. 1, 165–185. Amsterdam: John Benjamins. https://doi.org/10.1075/la.57.09zha

Zhang, Niina. 2020. Low Predicate Inversion in Mandarin. *Journal of East Asian Linguistics* 29:159–207. https://doi.org/10.1007/s10831-020-09208-6

SVCs in disguise

The so-called "directional verb compounds" in Mandarin Chinese

Waltraud Paul
Centre de recherches linguistiques sur l'Asie orientale (CRLAO)
CNRS-EHESS-INALCO, Paris

The so-called *directional verb compounds* or *directional constructions* in Mandarin Chinese, '$V1_{displacement}$ $V2_{direction}$ *lái* (come)/ *qù* (go)', e.g. *bān chū lái* 'transport exit come' = 'bring out (towards the speaker)' are not compounds, but genuine object sharing serial verb constructions in Collins' (1997) sense. The different positions of the shared internal argument are derived by raising one, two or three verbs to *v*, each verb adjoining to *v* as closely as possible (*tucking in* à la Richards 1997), thus maintaining the relative order between the verbs (cf. Collins 2002). This analysis automatically predicts that the internal argument must follow the verb (sequence) bearing the aspectual suffix, a correlation left unexplained in previous works.

1. Introduction

Practically every surface string with more than one verb in Chinese has been considered a *serial verb construction* (SVC), because in Chinese linguistics the term SVC is typically not used to refer to a unique construction with an associated set of predictable properties, but instead serves as a cover term for a myriad of separate constructions with completely different structures, such as control structures, sentences with postverbal purposive clauses or preverbal adjunct clauses, with sentential subjects etc. (cf. Paul 2008 and references therein). Strangely enough, the so-called *directional verb compounds* (cf. Li & Thompson 1981: 58), '$V1_{displacement}$ $V2_{direction}$ *lái* (come)/ *qù* (go)', have not been termed SVCs. This is probably due to their misanalysis as compounds, i.e. as words, despite the well-known fact that aspect suffixes and objects can occur at different positions "inside" the alleged compound (e.g. *bān-chū-lái*), as shown in (1b)–(1c):

https://doi.org/10.1075/la.272.05pau

(1) a. Tā cóng fángjiān lǐ *bān* *-chū* *-lái* -le [yī bǎ yǐzi].[1]
3SG from room in transport -exit -come –PERF 1 CL chair
b. Tā cóng fángjiān lǐ *bān* *-chū* -le [yī bǎ yǐzi] *lái.*
3SG from room in transport -exit -PERF 1 CL chair come
c. Tā cóng fángjiān lǐ *bān* -le [yī bǎ yǐzi] *chū-lái.*
3SG from room in transport -PERF 1 CL chair exit-come
'She brought out a chair from the room.' (Liu/Pan/Gu 2001: 572)

In fact, these "compounds" turn out to be genuine SVCs in the strict sense as defined by Collins (1997), representing a single event with one aspect/tense marker and sharing of the internal argument. (For first proposals in this direction, cf. Ernst 1989, Law 1996, Paul 2005, 2008). This analysis allows us to derive the different positions for the shared internal argument *yī bǎ yǐzi* 'a chair' observed in (1a–c) by raising of the verb(s) to *v*, starting from the internal argument sharing SVC 'V1 object DP *pro* V2 *lái*'. In (1c), only V1 raises to *v* (as is standard), whereas in (1a–b) V1 and V2 or all 3 verbs move to *v*, each verb adjoining to *v* as closely as possible (*tucking in* à la Richards 1997), thus maintaining the relative order between the verbs (cf. Collins 2002). This also correctly predicts that the object must follow the verb (sequence) bearing the aspectual suffix, for it is the verb (sequence) adjoined to *v* that further raises to Asp° (if projected).

The present article provides ample evidence for such an analysis. It is organized as follows. Section 2 establishes the basis for the present study. It presents an overview of the phenomena subsumed under the traditional label "directional verb compound", discusses the properties of the verb classes involved in their formation and determines the subset of structures that indeed involve SVCs and are to be further examined. Section 3 spells out the details of my analysis of SVCs, based on Collins (2002) and Richards (1997). This new analysis avoids major shortcomings encountered by earlier proposals and can derive the correct order of verbs after raising as well as the different positions available for the object. Section 4 turns to aktionsart differences and takes as its starting point the general observation in the literature (cf. a.o. Zhu Dexi (1982), Kimura (1984), Liu Yuehua (1988)) that the order where all verbs are adjacent 'V1-V2-*lái* O' gives rise to a telic predicate, while the non-adjacent orders 'V1-V2 O *lái*' and 'V1 O V2-*lái*' are atelic. Section 5 addresses the issue of definite DP objects in SVCs. Their distribution is subject to constraints, in contrast to indefinite objects of the format 'Num CL N' which are

1. Given that for the position of the object and of aspect suffixes, adjacent verbs behave as a compound *in syntax*, they are linked by a hyphen. The following abbreviations are used in glossing examples: CL classifier; NEG negation; IMP imperfective aspect; PERF perfective aspect; PL plural (e.g. 3PL = 3rd person plural); PROGR progressive aspect; SFP sentence-final particle; SG singular; SUB subordinator.

allowed in all three position theoretically available in a complex SVC. Again, this is a well-known fact and goes back at least to Zhu Dexi (1982: § 9.4), but has so far not received a satisfying account. Section 6 concludes the article and outlines some of the remaining open research questions.

2. Clearing the ground

Before presenting the relevant generalizations about "directional verb compounds" known from the vast literature in Chinese on this subject, a brief *caveat* about terminology is called for. In the following, the term *SVC* exclusively refers to the *internal argument sharing SVC* in the sense of Collins (1997), not to the cover term for any multi-verb surface string as currently (mis-)applied in the literature. "Directional verb compounds" enclosed in quotation marks is used when I want to refer to the traditional term and the constructions subsumed here, which turn out not to be homogeneous, either. Note that the Chinese literature uses the term "verbs with a directional complement (*qūxiàng bǔyǔ*)", which, however, has the same coverage as the English term "directional verb compound".

2.1 Three verb classes

Taking the "directional verb compounds" consisting of three verbs 'V1 V2 *lái/qù* ('come/go')' (which will be shown to involve genuine SVCs) as a starting point (cf. (1a–c) above), three verb classes are to be distinguished.

The first, V1, is an open class which can largely be described as involving displacement, i.e. change in location of the patient in the case of transitive verbs such as *bān* 'transport', *sòng* 'send', *rēng* 'throw', *dài* 'carry' etc., and movement of the agent in the case of intransitive verbs such as *pǎo* 'run', *fēi* 'fly' etc.[2]

V2 is the closed class of so-called "directional verbs" (with six to eight members depending on the author):[3] *shàng* 'ascend', *xià* 'descend', *jìn* 'enter', *chū* 'exit', *huí* 'return', *guò* 'cross', *qǐ* 'rise, start', *kāi* 'open'. The first six all select locative nouns as object when used in isolation (e.g. *xià lóu* 'descend staircase', *huí jiā* 'return home').

---

2. The inclusion of intransitive verbs might at first sight seem surprising. Cf. Section 5 below for further discussion.

3. The Latin-stem based meaning is used for the glosses here to emphasize their word status, the more so as these directional verbs can all combine with the deictic verbs *lái* 'come' and *qù* 'go' and then indicate movement in a direction to or away from the speakers, translated as a 'verb + particle' combination into English: *shàng-lái* 'ascend-come'= 'come up (towards the speaker)', *xià-qù* 'go down (away from the speaker)' etc.

Both *qǐ* 'rise, start'and *kāi* are more complex cases. Besides the unaccusative verb *qǐ* 'rise, start' as in *Qǐ fēng le*. 'rise wind SFP' = 'Wind came up.', there is also the unergative verb *qǐ* 'rise, get up' as in *Tā hái méi qǐ* '3SG still NEG rise' = 'He still hasn't gotten up (from bed).'. Similarly, in addition to the transitive verb *kāi* 'open' (*kāi mén* 'open the door'), we also have the unaccusative verb *kāi* 'bloom', as in *Jīntiān kāi-le xǔduō méiguīhuā* 'today bloom-PERF many rose' = 'Today there bloomed many roses.'. Given this and other complications, *inter alia* specific constraints on the object position (cf. Lu Jianming 2002: 15), examples with *kāi* 'open, bloom' and *qǐ* 'rise' as V2 will not be included.

V3 is the closed class consisting of the two deictic verbs *laí* 'come' and *qù* 'go', which as in other languages indicate direction towards or away from the speaker, respectively. As will become clear in the remainder of the article (cf. Section 5 below), two cases need to be distinguished: (i) the unaccusative verbs *laí* 'come' and *qù* 'go (away)' with a unique internal argument as in (2); (ii) the transitive verbs *laí* 'come (to)' and *qù* 'go (to)', with a locative noun as object as in (3). (For a detailed study of the existential construction as a diagnostics for unaccusative verbs, cf. Paul/Lu/Lee 2020; also cf. Basciano 2010: 140ff, § 4.2):

(2) a. Jīntiān lái-le sān ge kèrén.
today come-PERF 3 CL guests
'There have come three guests today.'
b. Zuótiān yǐjing qù-le sān ge rén.
yesterday already go-PERF 3 CL person
'Yesterday, there already left three persons.'

(3) Tāmen lái-le /qù-le Běijīng.
3PL come-PERF /go-PERF Beijing
'They have come/gone to Beijing.'

2.2 SVCs: Complex and simple: $V_{displacement}$ ($V_{directional}$) *lái/qù* 'come/go'

(4) – (6) below provide some more examples of SVCs with three verbs, henceforth called "complex" SVCs to distinguish them from "simple" SVCs of the form '$V_{displacement}$ DP *lái/qù*', illustrated in (7–9) further below (cf. Lu Jianming 2002: 14, § 4.2.3.2 for a complete paradigm):

(4) a. Tāmen rēng -shàng -qù -le [yī kuài zhuāntou].(Fan Jiyan 1963: 46)
3PL throw -ascend -go -PERF 1 CL brick
b. Tāmen rēng -shàng -le [yī kuài zhuāntou] qù.
3PL throw -ascend -PERF 1 CL brick go
c. Tāmen rēng-le [yī kuài zhuāntou] shàng-qù.
3PL throw-PERF 1 CL brick ascend-go
'They threw up a brick.'

(5) a. Tā bān -guò -qù -le [yī bǎ yǐzi]. (Lu Jianming 2002: 14, (155))
3SG transport -cross -go -PERF 1 CL chair

b. Tā bān -guò -le [yī bǎ yǐzi] qù.
3SG transport -cross -PERF 1 CL chair go

c. Tā bān -le [yī bǎ yǐzi] guò-qù.
3SG transport -PERF 1 CL chair cross-go
'He carried over a chair (away from the speaker).'

(6) a. Tā ná -chū -lái -le [yī běn cídiǎn].
3SG take -exit -come -PERF 1 CL dictionary

b. Tā ná -chū -le [yī běn cídiǎn] lái.
3SG take -exit -PERF 1 CL dictionary come

c. Tā ná -le [yī běn cídiǎn] chū-lái.
3SG take -PERF 1 CL dictionary exit-come
'She took out a dictionary.'

The "simple" SVCs consist of only two verbs, i.e. a displacement verb plus the deictic verbs *lái* 'come' or *qù* 'go'. (Cf. Lu Jianming 2002: 8; (18–29) for further examples.)

(7) a. Tā ná -lái -le [yī běn shū].
3SG take -come -PERF 1 CL book

b. Tā ná-le [yī běn shū] lái.
3SG take-PERF 1 CL book come
'She fetched a book.'

(8) a. Wǒ xiàng tā rēng -qù -le [yī bāo yān].
1SG towards 3SG throw -go -PERF 1 packet cigarette

b. Wǒ xiàng tā rēng -le [yī bāo yān] qù.
1SG towards 3SG throw -PERF 1 packet cigarette go
'I tossed him a packet of cigarettes.'

(9) a. Wǒ jì -qù -le [liǎng zhāng zhàopiàn].
1SG send -go -PERF 2 CL postcard

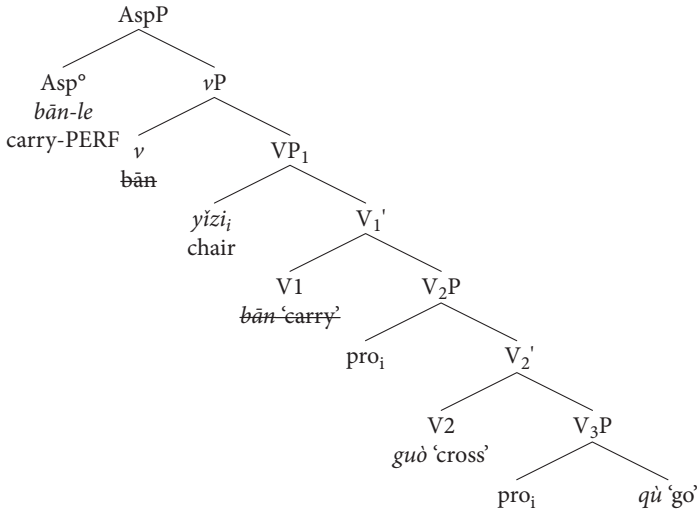
b. Wǒ jì -le [liǎng zhāng zhàopiàn] qù.
1SG send -PERF 2 CL postcard go
'I sent off two postcards.'

In both complex and simple SVCs, it is the leftmost, i.e. highest verb (sequence) that carries the aspect marker, here the perfective aspect suffix *-le*. It is also this very same verb (sequence) plus aspect that is followed by the object DP. This results in three object positions for complex SVCs and two for simple SVCs.

The fact that the position to the right of the verb (sequence) *cum* aspect suffix coincides with the object position has so far not been accounted for, but straightforwardly follows from the analysis proposed here, for only the verb(s) raised to *v* can further raise to Asp° and thus occupy a position above, hence precede the (overt)

object in SpecVP. While the detailed analysis is presented in Section 3 below, the somewhat simplified tree structure in (10) below already conveys the basic idea for the case where only the displacement verb *bān* 'transport, move' has undergone *v*-to-ASP° raising:

(10)



2.3 "Directional verb compounds" not to be analysed as SVCs

2.3.1 '$V_{directional}$ + *locative NP* + lái '*come*'/qù '*go*'

While 'displacement V + *lái/qù* 'come/go' in (7)–(9) above instantiates a simple SVC, this is not the case for the sequence 'directional verb + locative NP + *lái/qù*' (cf. (11)–(13) below). No argument sharing is involved here; the locative nouns selected for by the directional verbs *shàng* 'ascend', *xià* 'descend', *jìn* 'enter', *chū* 'exit', *huí* 'return', *guò* 'cross' are clearly not the internal argument of the deictic verbs *lái* 'come' or *qù* 'go'. This is also reflected in the availability of a single object position only (cf. (11b–13b)), an observation omnipresent in the literature (cf. a.o. Fan Jiyan 1963: 74; Liu Yuehua 1980, Lu Jianming 1985, 2002).

(11) a. Tā shàng shān lái/qù. (Lu Jianming 2002: 10, (58)–(65))
!3SG ascend mountain come/go
'He climbs the mountain (towards/away from the speaker).'

b. *Tā [shàng-lái /-qù] shān.
3SG ascend-come/-go mountain

(12) a. Tāmen jìn fángjiān lái/qù.
3SG enter room come/go
'They entered the room (towards/away from the speaker).'

b. *Tāmen jìn -lái /qù fángjiān.
3SG enter-come/go room

(13) a. Tā huí gōngchǎng lái/qù.
3SG return factory come/go
'He returned to the factory (towards/away from the speaker).'
b. *Tā huí -lái /qù gongchǎng.
3SG return -come /go factory

It seems therefore plausible to analyse *lái/qù* as matrix verbs preceded by an adjunct clause:[4]

(14) [$_{TP}$ DP$_i$ [$_{vP}$ [$_{adj.cl.}$ *pro*$_i$ V$_{directional}$ locative NP] *lái* 'come'/*qù* 'go']].

The analysis proposed in (14) is different from the traditional view. Although the latter does observe the constraint on the object position and explicitly mentions that the subject is the agent of *lái/qù* 'come/go' here (not the locative NP), it still subsumes these cases under the same label "verbs with a directional complement" alongside genuine (simple and complex) SVCs. (Cf. a.o. Fan Jiyan 1963: 74, Liu Yuehua 1980, Lu Jianming 1985).

2.3.2 *Locative nouns as objects in "directional verb compounds"*

In fact, locative nouns as objects in "directional verb compounds" in general can only occur in one position, irrespective of the number of verbs involved. No SVCs are involved here, as argued for in detail below.

First, in contrast to simple SVCs 'V$_{displ}$ + *lái/qù* 'come/go' where the patient DP can occur in two positions (cf. (6–8) above), a locative noun as object again must immediately follow the displacement verb: 'V$_{displ}$ [locative NP] *lái/qù*':

(15) a. Píqiú gǔn [$_{PostP}$ chuáng dǐxià] qù-le.
ball roll bed under go-PERF
'The ball rolled under the bed.' (Lu Jianming 2002: 9 (30)–(33))
b. *Píqiú gǔn-qù [$_{PostP}$ chuáng dǐxià] le.
ball roll-go bed under SFP

(16) a. Mìfēng fēi [$_{PostP}$ fángjiān lǐ] lái-le.
bee fly room in come-PERF
'The bee flew into the room.'

---

4. (11)–(13) thus show the same structure as (i) below (cf. Fan Jiyan 1963: 82):

(i) [$_{TP1}$ Wǒmen$_i$ [$_{vP}$ [$_{adj.cl.}$ *pro* zǒu] qù]] háishi [$_{TP2}$ pro$_i$ [$_{vP}$ [$_{adj.cl.}$ pro zuò chē] qù]]?
1PL walk go or sit train go
'Should we go [there] on foot or by train?'

b. *Mìfēng fēi-lái [$_{PostP}$ fángjiān lǐ] le.
bee fly-come room in SFP

Note that (15b) and (16b) are acceptable *without* the locative object, thus showing that it is indeed the presence of the latter that causes the unacceptability.

Second, in the sequence 'V_{displ} +$V_{directional}$ + *lái/qù*', the only position available for a locative noun object is after the directional verb, suggesting that the locative noun is selected by the verb sequence '$V_{displacement}$ + $V_{directional}$':[5]

(17) a. Tā zǒu-jìn jiàoshì lái.
3SG walk-enter classroom come
'He walked into the classroom (toward the speaker).'
b. *Tā zǒu -jìn -lái jiàoshì.
3SG walk -enter -come classroom
c. *Tā zǒu jiàoshì jìn-lái.
3SG walk classroom enter-come

(18) Tā pǎo (*mén) chū mén lái/qù (*mén).
3SG run door exit door come/go door
'She ran out of the door (toward/away from the speaker).

(19) Hǎi'ōu fēi (*hǎi) guò hǎi qu (*hǎi). (Chao 1968: 477)
seagull fly sea cross sea go sea
'The seagull flew away over the sea.'

This differs from the three positions in principle available for a patient DP in complex SVCs (cf. Section 2.1 above). (17a–c), for example, neatly contrasts with the complex SVC *bān-jìn lái* 'transport-enter-come', where the object DP has the patient role:

(20) a. Tā bān -jìn -lái -le [yī bǎ yǐzi].
3SG transport -enter -come –PERF 1 CL chair
b. Tā bān -jìn -le [yī bǎ yǐzi] lái.
3SG transport -enter -PERF 1 CL chair come
c. Tā bān -le [yī bǎ yǐzi] jìn -lái.
3SG transport -PERF 1 CL chair enter -come
'She brought in a chair.'

These facts are well-known from the literature, but have so far not been accounted for. Note, though, that Chao (1968: 477) makes the crucial observation that a locative noun object is unacceptable in the *bǎ* construction, in contrast to non-locative objects such as *yǐzi* 'chair' in (20):

5. According to Lu Jianming (2002: 17, footnote 12), this constraint on locative objects is not observed in Taiwanese Mandarin nor in Southern Min and Cantonese.

(21) *Tā bǎ jiàoshì zǒu -jìn -lái -le.
3SG BA classroom walk -enter -come -PERF

(22) Ta bǎ yǐzi bān -jìn -lái -le.
3SG BA chair transport -enter -come -PERF
'She brought in the chair.'

The contrast between (21) and (22) and the single position for locative noun objects follow directly from my proposal, where (22), but not (21), is analysed as an SVC, the object bearing a patient role. The difference between the two constructions is confirmed by the fact that the agent of *lái/qù* 'come/go' in (15)–(19) is the (matrix) subject, not the object. I therefore suggest the same analysis as for (11)–(13) above, i.e. an adjunct clause preceding the main verbs *lái* 'come' or *qù* 'go' (cf. (14) above). For semantic reasons, only locative objects are allowed in such an adjunct clause:

(23) Tā$_i$ [$_{adj.cl.}$ *pro*$_i$ zǒu-jìn jiàoshì] lái /qù.
3SG walk-enter classroom come/go
'He walked into the classroom (towards/away from the speaker).'

As a result, cases of "directional verb compounds" with locative objects are excluded from further examination in the remainder of the article, because they do not involve SVCs.

2.3.3 *"Directional verb compounds" without* lái *'come' or* qù *'go'*

Finally, there are also "directional verb compounds" of the form '$V_{displacement}$ + $V_{directional}$', i.e. without *lái* 'come' or *qù* 'go'. Depending on the semantics of the verbs involved, they select either a patient as object (cf. (24) – (26)) or a location (cf. (27)–(28)). In both cases, the object must follow the entire sequence, the order '$V_{displacement}$ [DP] $V_{directional}$' being excluded. They are therefore analysed as compounds, on a par with compounds such [$_{V^0}$ bà-shǒu] 'stop-hand' = 'give up', [$_{V^0}$ *bāng-zhù*] 'assist-help' = 'assist, help', [$_{V^0}$ *xué-huì*]'learn-know' = 'acquire, master' etc., which in syntax behave like simple verbs and are followed by their object. Not being SVCs, [$V_{displacement}$ − $V_{directional}$] compounds are not discussed any further in the remainder of the article.

(24) a. Tā [$_{V^0}$ chuān-shàng]-le yīfu.
3SG wear-ascend-PERF clothes
'He put on clothes.'
b. *Tā chuān-le yīfu shàng.
3SG wear-PERF clothes ascend

(25) a. Tā shōu -huí -le wénjiàn.
3SG receive-return-PERF documents
'He recovered the documents.'

b. *Tā shōu -le wénjiàn huí.
3SG receive-PERF documents return

(26) a. Tā ná -chū -le shǒujī.
3SG take -exit -PERF cell.phone
'She took out the cell phone.'
b. *Tā ná-le shǒujī chū.
3SG take-PERF cell.phone exit

(27) a. Tā [V^{o} zǒu-chū]-le fángjiān.
3SG walk-exit-PERF room
'She walked out of the room.'
b. *Tā zǒu-le fángjiān chū.
3SG walk-PERF room exit

(28) a. Tāmen tiào-shàng-le diànchē.
3PL jump-ascend-PERF tram
'They jumped onto the tram.'
b. *Tāmen tiào-le diànchē shàng.
3PL jump-PERF tram ascend

In fact, (27a) and (28a) illustrate the same case as (23), repeated in (29a) below, *modulo* the fact that in (29a), the [V_{displ} + V_{dir}] compound is the predicate of an adjunct clause preceding the matrix verb *lái* 'come'.

(29) a. [Tā$_i$ [$_{adj.cl.}$ *pro*$_i$ zǒu-jìn jiàoshì] lái]. (= (23) above)
3SG walk-enter classroom come
'He walked into the classroom (toward the speaker).'
b. Tā [V^{o} zǒu-jìn] jiàoshì le.
3SG walk-enter classroom SFP
'He walked into the classroom.'

(29b) shows that the clause serving as adjunct of the matrix verb *lái* 'come' in (29a) is a well-formed independent sentence with a [V_{displ} + V_{dir}] compound. In other words, sentences with a [V_{displ} + V_{dir}] compound predicate selecting a locative noun object are all acceptable as adjunct clauses for *lái* 'come' and *qù* 'go' as matrix verbs.

2.4 Interim summary

The phenomena subsumed under the traditional label "directional verb compounds" are not homogeneous, but involve different constructions.

First, there is the case just discussed which indeed is to be analysed as a compound verb, consisting of a displacement verb plus a directional verb, where the object (a patient or a location) must follow the compound: [V^{o} $V_{displ.}$ – $V_{dir.}$] DP.

Second, there are sentences where the matrix verb *lái* 'come' or *qù* 'go' is modified by an adjunct clause, whose predicate is either a simple directional verb or a compound verb 'V_{displ} + V_{dir}', both selecting a locative noun object: DP_i [$_{adj.cl.}$ *pro*$_i$ [v° ($V_{displ.}$) $V_{dir.}$] locative NP] *lái/qù*'.

Third, there are simple and complex SVCs of the format '$V_{displ.}$ (V_{dir}). *lái/qù*' with a patient as object, which can occur in two or three positions, respectively. These SVCs crucially involve the presence of *lái* 'come' and *qù* 'go', a point which will be shown to be important, because it is their status as unaccusative verbs that allows for (internal) argument sharing (cf. Section 5 below). Only these genuine SVCs are to be further examined in the remainder of the article.

3. Internal argument sharing SVCs (Collins 1997, 2002)

This section applies Collins' (2002) "multiple verb movement" analysis to the genuine SVCs identified in the preceding section. The main challenge is to capture the correct order of the verbs, the position of aspectual suffixes such as the perfective *-le* and the several positions available for the object DP. As to be demonstrated, these three issues are intricately related and can be automatically derived from the analysis as an internal argument sharing SVC, with verb movement being constrained by the two locality conditions, *Minimal Link Condition* and *Local Move* (cf. Richards 1997: 114).

Minimal Link Condition (MLC) (cf. Chomsky 1995: 296)
α can raise to target K only if there is no legitimate operation Move β targeting K, where β is closer to K.

Local Move (cf. Chomsky 2000: 136–137)
Let X have a selectional feature F, and let Y satisfy F. The Y must move to the closest possible position to X.

Collins (2002: 13) further states that a verb must *left*-adjoin to a *functional* head (such as *v*, T or C), not to another *verb*, and that the trace of a verb does not block movement.[6]

---

6. Traces in general are invisible for the MLC. In Bulgarian multiple *wh*-movement, for example, the object *wh*-phrase in (ic) must skip the trace of the subject *wh*-phrase in SpecIP (cf. Collins 2002: 10, referring to Chomsky 1995: 304):

(ia) [$_{CP}$ C IP] (underlying structure)

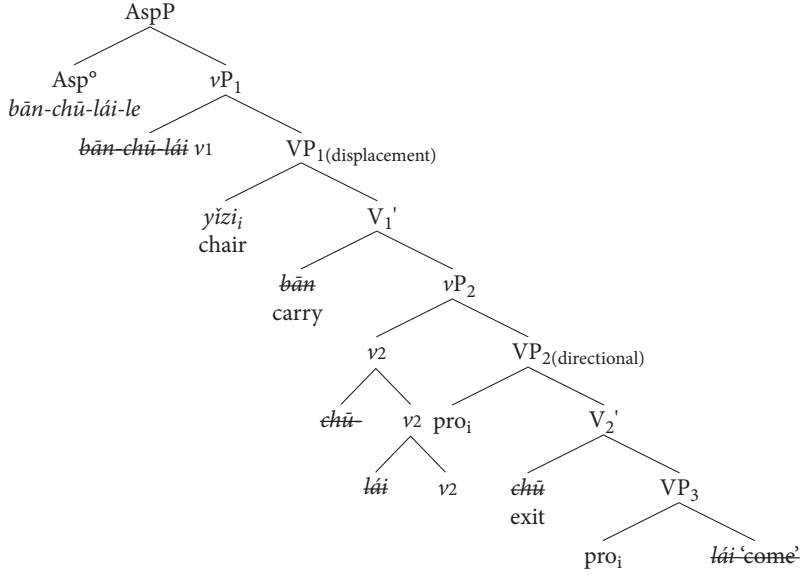
(ib) [$_{CP}$ 'who' [$_{C'}$ C IP]] (MLC)

(ic) [$_{CP}$ 'who' [$_{C'}$ 'whom' [$_{C'}$ C IP]]] (Local Move)

(30b) below implements the derivation via multiple verb movement for the complex SVC in (1), repeated here as (30a):

(30) a. Tā *bān* *-chū* *-lái* -le [yī bǎ yǐzi].
3SG transport -exit -come -PERF 1 CL chair
'She brought out a chair.'

b.



Starting from the bottom, the unaccusative verb *lái* 'come' projects VP3 hosting its unique (internal) argument, *pro*, co-indexed with the internal argument, *yǐzi* 'chair', of the displacement verb *bān* 'carry' in VP1.[7] The VP3 headed by *lái* 'come' in turn merges with the directional verb V2 *chū* 'exit', whose internal argument is again *pro*, co-indexed with *yǐzi* 'chair' in SpecVP1. Since *chū* 'exit' is closest to the target, i.e. *v*2, it must raise and left-adjoin to *v*2 first (as per the MLC), before *lái* 'come' raises to *v*2 as well. Since by Local Move, *lái* 'come' must adjoin as close as possible to *v*2, it "tucks in" (cf. Richards 1997) and we obtain the order *chū-lái* 'exit-come'.[8] VP1

7. Collins (2002: 8) leaves open for further research the choice between PRO and pro. For Chinese, Huang (1989: 194) abandons the distinction between PRO and *pro* and treats them as instances of the same null pronominal, subject to the same *Generalized Control Rule* (GCR), stating that "an empty pronominal is controlled in its control domain (if it has one)." (p. 193). In the following, this null pronominal is represented as *pro*.

8. According to Collins (2002: 12), V2 is closer to *v* in (i) ("inner adjunction") than in (ii) ("outer adjunction"), because there is no segment intervening between the "sisters" V2 and *v*:

(i) [$_v$ V1 [$_v$ V2 *v*]]
(ii) [$_v$ V2 [$_v$ V1 *v*]]

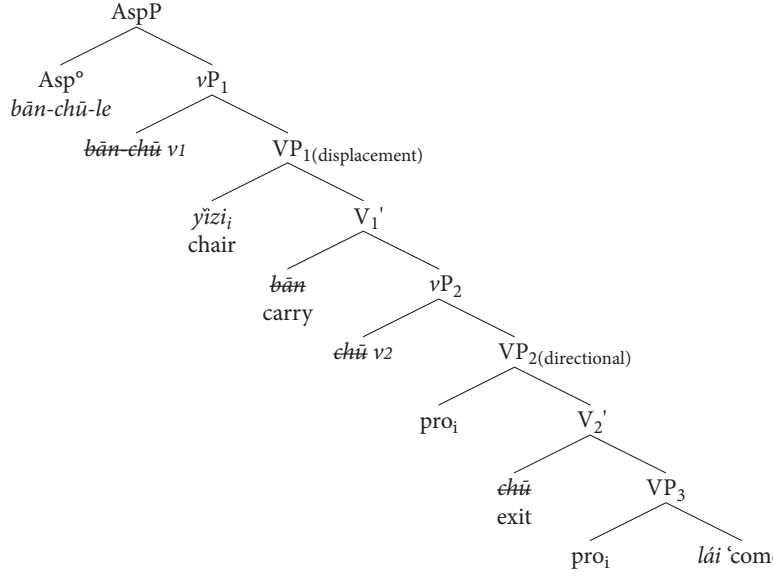
headed by *bān* 'carry, transport' is projected: its internal argument *yǐzi* 'chair' occurs in SpecVP1 and *v*P2 occupies the complement position. Being closest to *v*1, the verb *bān* 'carry' raises first: [$_{v1}$ *bān* 'carry' *v*1]; the sequence *chū-lái* 'exit-come' likewise raises and "tucks in" immediately left-adjacent to *v*1: [$_{v1}$ *bān* 'carry' [$_{v1}$ *chū-lái* 'exit-come' *v*1]]. Finally, the resulting sequence *bān-chū-lái* 'transport-exit-come' raises to Asp° and adjoins to the left of the perfective aspect suffix *-le*, as is standard. "Tucking in" is irrelevant here, because with respect to syntax, *bān-chū-lāi* behaves as one block (whose internal structure is opaque), on a par with a simple verb, and as such is maximally close to Asp° when left-adjoining.

Note that Collins' account must be slightly adjusted, because Chinese has SVCs with three verbs, unlike ǂHoan where the SVC giving rise to the (surface) compound only features two verbs. A second *v*P must therefore be postulated for Chinese, given that there is no V-to-V movement. (Cf. Carstens 2002 for additional *v*P projections sandwiched between the VP projections in an SVC.) Chinese is also different from ǂHoan insofar as not all verbs have to raise, as illustrated immediately below in (31b).

The derivation in (31b) proceeds in the same way, *modulo* the fact that the verb *lái* 'come' remains in situ, and that it is only *chū* 'exit' and *bān* 'carry' that raise to Asp°.

(31) a. Tā *bān* *chū*-le [yī bǎ yǐzi] *lái.*
3SG transport exit-PERF 1 CL chair come
'She carried out a chair.'

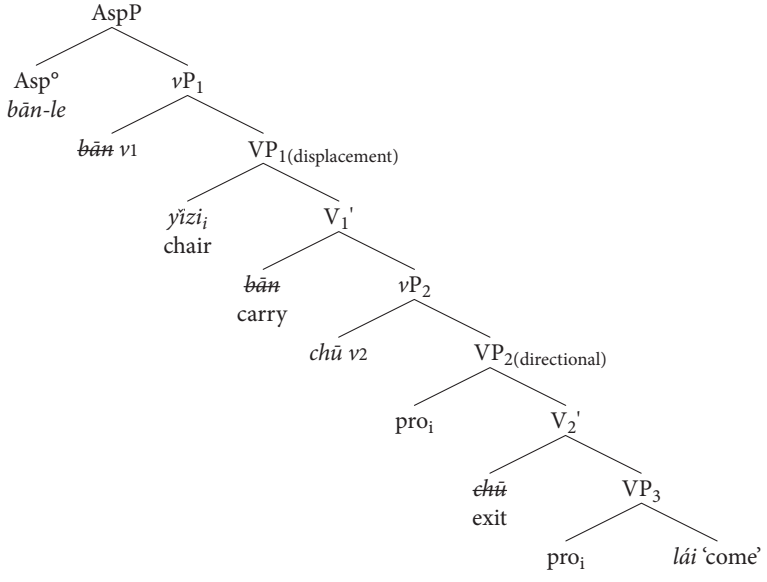
b.



Finally, (32b) shows the derivation for (32a), where only the displacement verb *bān* 'transport, carry' raises to Asp°:

(32) a. Tā *bān* -le [yī bǎ yǐzi] *chū-lái*.
3SG transport-PERF 1 CL chair exit-come
'She brought out a chair.'

b.



In (32b), *bān* 'carry' behaves like any other verb in a sentence with a singe verb insofar as it raises to *v* and then to Asp°. It is difficult to choose between the option illustrated in (32b) where *lái* 'come' remains *in situ*, on the one hand, and the possibility for *lái* 'come' to raise to *v*2 as well. At the moment, I cannot think of any test to decide this issue.

Be that as it may, the analysis presented in (30)–(32) makes it possible for the first time to derive the fact that the object must directly follow the verb (sequence) that bears an aspectual suffix such as the perfective *-le*. This coinciding of the object position with the position directly following the aspectual suffix is a direct consequence of *v*-to-ASP° raising; only the verb(s) raised to the highest *v* can further raise to Asp°.[9] As a result, the patient DP in SpecVP1 directly below the highest *v*P

9. This is the reason why (i)–(iii) are all unacceptable (also cf. Fan Jiyan 1963: 77, (3)):

(i) *Tā bān –le chū [yī bǎ yǐzi] lái.
3SG transport -PERF exit 1 CL chair come

(ii) *Tā bān –chū–le lái [yī bǎ yǐzi].
3SG transport -exit-PERF come 1 CL chair

(ii) *Tā bān [yī bǎ yǐzi] chū-le lái.
3SG transport 1 CL chair exit-PERF come

follows the verb (sequence) located in Asp°. Furthermore, the necessity of "tucking in" to guarantee Local Move finally provides a way to derive the correct word order both in simple and complex SVCs, and thus contrasts with previous proposals, briefly discussed in the following section.

3.2 Previous proposals – a short overview

While all the observations reported here come from the substantial Chinese literature on "directional verb compounds", formal, analytic proposals are largely absent from previous studies. Recall, though, that the Chinese literature does not talk about "compounds", but of "verbs with a directional complement" (cf. a.o. Fan Jiyan 1963; Li Linding 1984; Lu Jianming 1985, 2002; Liu Yuehua 1988; Liu/Pan/Gu 2001: 546–579).

Interestingly, they are *not* subsumed under the cover term *liándòngshì* 'SVC', applied to practically every multi-verb sequence in the Chinese literature. This very probably reflects the tacit insight that *liándòngshì* 'SVCs' lack internal argument sharing, present in at least a subset of "verbs with a directional complement".

To my knowledge, Ernst (1989) and Law (1996) are the first proposals to explicitly challenge the compound status of "directional verb compounds" and to no longer content themselves with the schizophrenic state of affairs where alleged compounds can be "split up" by the object and aspectual suffixes, and thus violate general principles such as the *Lexical Integrity Hypothesis* (LIH) known to hold for Chinese as well (cf. C.-T. James Huang 1984).[10] Limiting themselves to (what I call) simple SVCs such as *sòng lái* 'send come' = 'send over', Ernst (1989) and Law (1996) both propose a tripartite VP structure where *sòng* 'send' is treated as a double object verb taking two complements, the NP (*xiāngzi* 'suitcase' in (33)) and the VP *lái* 'come'. As a consequence, no argument sharing is involved in such structures.[11]

(33) a. Tā [$_{VP}$ sòng-le [$_{NP}$ yī ge xiāngzi] [$_{VP}$ lái]] Law (1996: 203)
3SG send–PERF 1 CL suitcase come

b. Tā [$_{VP}$ sòng-lái-le [$_{NP}$ yī ge xiāngzi] [$_{VP}$ t_{lai}]]
3SG send come-PERF 1 CL suitcase come
'He sent over a suitcase.'

10. To my knowledge, Fan Jiyan (1963: 70–71) is the only one among the Chinese linguists to explicitly challenge the idea that the object as well as aspectual suffixes are "inserted" (*binyǔ chārù shuō* 'object insertion hypothesis').

11. Nevertheless, Law (1996) calls this structure an SVC. Given that he also treats as SVC sentences with an adjunct clause preceding the main verb (as in (11) – (13) above), this voids the term SVC of its substance, because not referring to a unique construction with a fixed set of syntactic and semantic properties (cf. Paul 2008 for discussion).

The alternative word order in (33b) is derived by raising the verb *lái* 'come' to the verb *sòng* 'send'. Law (1996) does not observe or comment on the fact that canonical head-to head raising as left adjunction would result in the incorrect order **lái-sòng-le*, or **lái-le sòng* (depending on the non-spelt out position of aspect in his structure).

Taking Law (1996) as a starting point, Paul (2005: 17–20, § 5; 2008: 371–372) proposes an analysis of "directional verb compounds" as argument sharing SVCs in the sense of Collins (1997) and applies it to both simple and complex SVCs, hence with *pro* as the internal argument in the second VP, and with binary branching instead of Law's ternary branching. However, here as well the exceptional right adjunction required in order to obtain the correct word order for V-to-V movement is not seen as a problem, either.

Zou Ke (1994) likewise obtains the adjacent order in (34b) by raising and *right*-adjoining the verb *lái* 'come' to the verb *sòng* 'send', and glosses over this stipulation. Note that despite postulating a complex VP structure (cf. (34a–b)), he nevertheless talks about "split" and "non-split" *compounds*.[12]

(34) a. Tā [$_{VP1}$ sòng-le [$_{VP2}$ [$_{NP}$ yī běn shū] [$_{V2}$ lái]]]
3SG send-PERF 1 CL book come

b. Tā [$_{VP1}$ sòng-lái-le [$_{VP2}$ [$_{NP}$ yī běn shū] [$_{V2}$ t$_{lái}$]]]
3SG send-come-PERF 1 CL book
'He sent a book over here.' (Zou Ke 1994: (2a), simplified)

The same problem of not seeing the necessity of exclusively adjoining to *v* instead of V and satisfying Local Move by *tucking in* also holds for Chen Zhishuang (2016) and to a certain extent for Hu Xuhui (2022).[13]

---

12. The null pronominals present in some of his derivations are all *subject*-controlled, hence do not involve *internal* argument sharing (Zou Ke 1994: 451, (1b'')).

(i) [$_{IP}$ Lǐsì$_i$ [$_{Infl°}$ zǒu-jìn$_j$]$_k$ –le] [$_{VP1}$ [$_{NP1}$ t$_i$] [$_{V1}$ t$_k$ [$_{VP2}$ [$_{NP2}$ pro$_i$] [$_{V2'}$ t$_j$ [$_{NP3}$ wūzi]]]]]]
Lisi walk-enter -ASP house
'Lisi walked into the house.'

Similarly, when stating that his "lexical-syntactic analysis […] can derive the verb compound simply by verb raising and NP-movement" (p. 443), "NP movement" refers to raising of the *subject* from a VP-internal position to SpecIP. As illustrated in (i), IP is assumed to be headed by aspectual markers; this is, however, straightforwardly invalidated by the acceptability of adverbs between the subject and the verb (bearing an aspectual suffix or not). Cf. Ernst (1994) for demonstrating that *Infl* in Chinese is never overtly realized.

13. Hu Xuhui's (2022) proposal is so convoluted and *ad hoc* that nearly each of its assumptions can be challenged, because not tying in with the overall syntax of Chinese. To present its various claims and invalidate them one by one would go far beyond the scope of this article. Suffice it to say that according to Hu Xuhui, the items in a "directional verb compound" are not (always) verbs; instead, "the same directional item may in fact be the phonological form of a verb, a preposition,

Chen Zhishuang (2016: 150) adopts my earlier proposal in Paul (2005: 17–20, § 5; 2008: 371–372) to analyse "directional verb compounds" as argument sharing SVCs in the sense of Collins (1997).[14] However, she recasts this in a model based on Ramchand (2008) and then introduces such a range of ad hoc changes that not much remains of Ramchand's proposal, in particular not the original insights into event decomposition. For example, Chen Zhishuang (2016: 163–164) simply inverts the hierarchy of subevents from Ramchand's 'InitiatorP > ProcessP > ResultP' into 'Initiator > ResultP > ProcessP', because otherwise head incorporation (another feature absent from Ramchand 2008) resulting from verb raising will produce an incorrect order. Furthermore, the different orders are not obtained from the same underlying structure as argued for above, but instead directly start out as different structures. For this, it is necessary to stipulate that the verbs *lái* 'come' and *qù* 'go' can be inserted either under ResultP (for the adjacent order) or under the additionally postulated DeicticP (for the non-adjacent order), with DeicticP either adjoined to ResultP or the additionally postulated PathP. Similarly, the directional verbs are either to be inserted under ResultP or PathP; only the displacement verbs always occur in ProcessP. All these stipulations are not only necessary to obtain the correct order of the verbs and the object, but are also appealed to when "deriving" the well-known aktionsart differences (cf. Section 4 immediately below)

---

a part of a single preposition, or even a spatial aspectual marker in different directional constructions" (cf. abstract). Importantly, he does not even address the issue that his proposal is completely at odds with the basic assumption shared by all studies over the last 60 years, *viz*. that "directional verb compounds" are formed by verbs (including their respective argument structure) and that the meaning of the whole is obtained compositionally (with possible metaphoric extensions). No evidence is provided for the advantage of his proposal over those based on a verbal analysis of the parts in a "directional verb compound." Nor does he mention the well-known aktionsart differences between adjacent and non-adjacent orders and the equally well-known constraints on the distribution of objects in terms of their internal structure and thematic role (patient vs location); it is therefore impossible to know how these central problems would be accounted for in his proposal. Given this regression to a *status quo ante* it comes as a surprise that he complains about "past studies often touch[ing] upon parts, instead of *all the constructions* to be discussed in this paper" and furthermore claims "to provide a *comprehensive account* within the generative approach, attempting to cover the *major issues* involved in Chinese directional constructions" (p. 46–47, emphasis mine).

14. Chen Zhishuang (2016) has an awkward and confusing way of (not) acknowledging my work. First, though both Paul (2005) (wrongly cited as Paul (2004)) and Paul (2008) argue against word status of "directional verb compounds", they are not mentioned when compoundhood is rejected (cf. Chen's Chapter 2, p. 76ff); then (on p. 143) my analysis is incorrectly likened to Zou Ke's proposal (1994), and finally (on p. 150) it is said to be adopted. In general, it is very surprising that besides her brief reference to Liu Yuehua (1998) (on pp. 271–272), no other studies written in Chinese were consulted, notwithstanding the huge amount of literature existing on "directional verb compounds" and the important generalizations made there, some of which are reported in Chen Zhishuang (2016) as well.

between the adjacent and the non-adjacent order. In brief, a substantial number of under-motivated assumptions and machinery are needed to make Chen's proposal work and in the end nothing much appears to be gained.

4. Aktionsart differences between adjacent and non-adjacent orders in SVCs

It has long been noted in the literature that the order where all verbs are adjacent and the ones where they are not, are associated with aktionsart differences (cf. a.o. Fan Jiyan (1963), Zhu Dexi (1982), Lü Shuxiang (1992: 164), Kimura (1984), Liu Yuehua (1988), Liu/Pan/Gu (2001: 572–3), Lu Jianming (2002)).

Yang Ching-Yu (2009) identifies this difference with the dichotomy between achievement verbs ([+dynamic], [+telic]) and accomplishment verbs ([+dynamic], [-telic]): the adjacent order gives rise to a telic predicate, whereas the non-adjacent order results in an atelic predicate. This generalization can capture the data contrasts observed in previous works, as to be demonstrated below.

First, there is a robust consensus that the adjacent order is unacceptable in imperatives (on a par with achievement verbs such as *dào* 'arrive'); only the non-adjacent orders are allowed here. More precisely, according to Lu Jianming (2002: 10, (48)–(57); 13, (117)–129)), the object immediately follows the displacement verb, as illustrated by him for simple SVCs in (35), and for complex SVCs in (36):[15]

(35) a. Lǎo Wáng, nǐmen bān (*qù) [yī zhāng chuáng] qù!
Lao Wang 2PL transport go 1 CL bed go
'Lao Wang, you carry a bed (away from the speaker).'

b. Lǎo Wáng, jì (??-lái) yīxiē qián lái!
Lao Wang send-come some money come
'Lao Wang, send some money (over to the speaker)!'

(Lu Jianming 2002: 10)

(36) a. Rēng [yī ge jiǔpíng] xià-lái!
throw 1 CL wine.bottle descend-come
'Throw down a wine bottle (towards the speaker)!'

b. *Rēng -xià -lái [yī ge jiǔpíng]!
throw -descend -come 1 CL wine.bottle

c. Nǐmen bān [yī zhāng zhuōzi] guò – qù!
2PL transport 1 CL table cross-go
'You carry the table over there (i.e. away from the speaker)!'

15. Lü Shuxiang (1992: 164) also states that the adjacent order 'Vdis-Vdir-*lái*' is not acceptable in imperatives, but includes 'Vdis-Vdir DP *lái/qù*' as a second possible order in imperatives.

d. Nǐmen tái [yī tǒng píjiǔ] shàng-qu!
2SG lift 1 barrel beer ascend-go
'Carry up a barrel of beer (away from the speaker)!'
(Lu Jianming 2002: 13)

Second, disallowing telic predicates, the progressive aspect *zài* is incompatible with the adjacent order (cf. (37b)) and requires the non-adjacent order:

(37) a. Tā zhèng zài { *duān* [yī wǎn tāng] *shàng lái* /*duān*
3SG just PROGR carry 1 bowl soup ascend come /carry
shàng [yī wǎn tāng] *lái* }
ascend 1 bowl soup come
'He is carrying in a bowl of soup.'
b. ??Tā zhèng zài *duān shàng lái* [yī wǎn tāng]
3SG just PROGR carry ascend come 1 bowl soup

Against this backdrop, the example by Liu/Pan/Gu (2001: 572; (3–4)) below can be easily accommodated. They observe that the non-adjacent order (i.e. *duān* DP *lái* 'serve DP come') can be used in the same context as the adjacent order (*duān-lái* DP 'serve-come DP') and likewise conveys the completion of the event:

(38) Shuì jiào qián, māma gěi wǒ duān [yī wǎn tàng] lái / duān-lái
sleep sleep before mum for 1SG serve 1 bowl soup come / serve-come
[yī wǎn tàng], yīdìng jiào wǒ hē-le.
1 bowl soup absolutely make 1SG drink-PERF
'Before going to sleep, mum brought me a bowl of soup and told me to absolutely drink it.'

Although they do not provide any further comment, it is the presence of the continuing clause *yīdìng jiào wǒ hē le* 'and told me to absolutely drink it' which provides a temporal boundary for the preceding clause, whence the interpretation of the non-adjacent order *duān yī wǎn tàng lái* 'serve 1 bowl soup come' as a completed event, on a par with the adjacent order, *duān-lái yī wǎn tàng* 'serve-come 1 bowl soup', *modulo* the latter not requiring the continuing clause.

Xiao Xiumei (1992: 61) makes a similar observation for the pair (39a–b). While the adjacent order in (39a) indicates the completion of the event without any aspect marker, for the non-adjacent order in (39b), the aspectual suffix *-le* is obligatory in the same context:

(39) a. Tā (zuótiān) cóng shāngdiàn mǎi-lái yī jiàn yīfu.
3SG yesterday from shop buy-come 1 CL dress
'She bought a dress from the shop (yesterday).'
b. Tā zuótiān jìn chéng le, mǎi*(-le) yī ge lùyīnjī lái.
3SG yesterday enter city SFP buy–PERF 1 CL tape.recorder come
'She went downtown yesterday and bought a tape recorder."

Kimura (1984) explicitly talks about an aspectual opposition between the two orders, where the adjacent order is said to imply a "static aspect" (as the result of previous motion) and the non-adjacent order a "motion aspect". The evidence cited by Kimura (1984) can be easily recast into the dichotomy telic vs atelic posited by Yang (2009). More precisely, the atelic non-adjacent order(s) are compatible with process-related manner adverbs and auxiliaries and can be presented as consecutive events in a listing. The adjacent order is excluded from these contexts:

(40) a. Xiǎopō miǎnmiǎnqiǎngqiǎngde {shēn-chu shétou lái /
Xiaopo reluctantly stretch-exit tongue come
??[shēn-chū-lai] *shétou* }, bǎ qiānbǐ zhān-shī, méi shuō shénme.
stretch-exit-come tongue BA pencil soak-wet NEG say what
'Xiaopo reluctantly stretched out his tongue, moistened the pencil and said nothing.' (Kimura 1984: 266, (4))

b. Tā cōngmáng qǔ-xià yǎnjìng qù/ ??[qǔ -xià -qù] yǎnjìng.
3SG hastily take-descend glasses go/ take -descend go glasses
'He hastily took off his glasses.' (Kimura 1984: 269, (7))

Importantly, the same incompatibility with process-related manner adverbials likewise holds for (achievement) verbs such as *dào* 'arrive' (cf. (41)).

(41) Tā (*màntūntūnde) dào-le shāndǐng le.
3SG slowly arrive-PERF mountain.top SFP
'He has slowly reached the mountain top.' (Kimura 1984: 270; (9))

When listing consecutive events and when conveying the simultaneous occurrence of events with e.g. *yī biān* 'one side'…. *yī biān* 'one side' = 'at the same time', only the non-adjacent order is acceptable:

(42) Xiǎohuā zuò -qǐ-lai, rǒu-le rǒu yǎnjing, xiǎng-le xiǎng, gǎnjǐn
Xiaohua sit -rise-come rub-PERF rub eye think-PERF think hastily
ná-qǐ bàozhǐ lai / ??[ná-qǐ -lai] bàozhǐ, dǎkāi-le.
take-rise newspaper come / take-rise -come newspaper open-PERF
'Sitting up, Xiaohua rubbed his eyes and thought for a while, then took up the newspaper hastily and opened it.'

(43) Lǎoshi yī biān jiūzhù Xiǎopō de lǐngzi, yī biān {chǎo-qǐ bǎnzi
teacher 1 side hold.fast Xiaopo SUB collar 1 side clutch-rise paddle
lai / ??[chǎo -qǐ -lai] bǎnzi } (Kimura 1984: 271, (10))
come / clutch -rise -come paddle
'In one hand the teacher grasped Xiaopo by the collar, and in the other hand he grasped the paddle.'

Finally, only the non-adjacent order is acceptable as complement of modal auxiliaries:

(44) Tā yào { tái -qǐ [zuǒ shǒu] lai / ??[tái-qǐ-lai] zuǒ shǒu}
3SG will lift -rise left hand come / lift-rise-come left hand
'He will raise his left hand.' (Kimura 1984: 272, (13))

As demonstrated above, Yang Ching-yu's (2009) characterization of the non-adjacent order as atelic, in contrast to the telic nature of the adjacent order can nicely account for the earlier observations in the literature.

Her syntactic account of SVCs (cf. her Section 4), however, suffers from various drawbacks. Although both are derived from a phrasal structure, the adjacent order is analysed as a "non-separable" complex verb and the non-adjacent order as a verb phrase. The deictic verbs *lái* 'come' and *qù* 'go' occur in the highest verb position "because of the weakest meaning". Furthermore, the situation type differences are captured by positing several "light verbs" in the sense of Lin Tzong-Hong (2001) such as BECOME and CAUSE. In the adjacent order, all verbs raise to the (covert) light verb BECOME. By contrast, the highest "light verb" in the two non-adjacent orders is CAUSE, and the object is hosted by a FocusP below the CAUSE projection and above the BECOME projection. Not much motivation is provided for these additional projections, and the basic feature of internal argument sharing can no longer be captured in these structures, given that *lái* 'come' and *qù* 'go' now occupy the highest position.[16]

To summarize my analysis, when all verbs have raised to *v* and are thus adjacent, this gives rise to a telic predicate, whereas raising to *v* of one verb in simple SVCs and of one or two verbs in complex SVCs, respectively, results in an atelic

16. The postulation of FocusP in the non-adjacent orders (ib) vs their absence in the adjacent order (ia) is motivated by the data below:

(ia) Māma duān shàng lái [yī wǎn tāng], ér bù shì {bàba / yī pán cài}.
Mum carry ascend come 1 bowl soup but NEG be Dad / 1 plate dish
'Mum brought in a bowl of soup, (and it was) not {Dad/a dish}.

(ib) Māma duān [yī wǎn tāng] shàng lái / duān shàng [yī wǎn tāng] lái,
Mum carry 1 bowl soup ascend come / carry ascend 1 bowl soup come
ér bù shì {*bàba / yī pán cài}.
but NEG be Dad / 1 plate dish
'Mum brought in a bowl of soup, (and it was) not a dish.'
(Yang Ching-Yu 2009: (14–16); my glosses and translation)

While these observations are very intriguing, they involve contrast, not focus, and certainly do not warrant the projection of a FocusP *within* the *v*P. It is not obvious, either, what such a FocusP would predict for the positions of definite object DPs to be discussed in Section 5 below.

predicate. Given that the different orders co-exist in the grammar of the same speaker, no "parametric" differences can be appealed to here, as done by Collins' (2002: 9) for the difference between ǂHoan and Ewe.[17]

5. Constraints on the position of definite object DPs in SVCs

While indefinite object DPs of the form 'Num CL N' are allowed in all the three positions available in a complex SVC, the distribution of definite DP objects is more constrained. Again, this is a well-known observation and goes back at least to Zhu Dexi (1982: § 9.4), but has so far not received a satisfying account.

(45) a. *Tā ná-chū-lái [$_{DP}$ nà běn xīn de shū]. (Zhu Dexi 1982: 130)
3SG take-exit-come that CL new SUB book
b. Tā ná [$_{DP}$ nà běn xīn de shū] chū-lái.
3SG take that CL new SUB book exit-come
c. Tā ná-chū [$_{DP}$ nà běn xīn de shū] lái.
3SG take-exit that CL new SUB book come
'He took out that new book.'

(46) a. *Tā jiào-chū-lái {Lǎo Wáng / tā}
3SG call-exit-come Lao Wang / 3SG
b. Tā jiào {Lǎo Wáng / tā } chū-lái[18]
3SG call Lao Wang / 3SG exit-come
c. Tā jiào-chū {Lǎo Wáng / tā } lái
3SG call-exit Lao Wang / 3SG-come
'He called for/summoned Lao Wang/him.'

There is a broad consensus in the literature subsequent to Zhu Dexi (1982) that definite object DPs are banned from the postverbal position in the adjacent order. While native speakers in general share the judgements for inanimate DPs (hence the unacceptability of (47a) below with *wǒ de shūzhuō* 'my desk', in addition to

17. Collins (2002: 9) simply stipulates that in ǂHoan all verbs must raise to *v* (thus giving rise to surface compounds), whereas in e.g. Ewe only the first verb raises and we obtain SVCs. Given that he compares the ǂHoan–Ewe contrast with the contrast between English, where only one *wh* phrase moves in multiple questions, on the one hand, and Bulgarian, on the other, where all *wh* phrases move, he seems to have a parameter in mind, distinguishing the two languages.

18. As pointed out by Zhu Dexi (1982: 130), when stress is not on *jiào* 'call' as intended in (46b), but on *chū* 'exit', then the sequence is interpreted as 'tell Lao Wang/him to come out'; in other words, it is analysed as a control construction, not as a complex SVC.

Zhu's (45a) above), the situation is less clear-cut for proper names (*Xiǎo Míng*) and definite animate DPs (*wǒ de māo* 'my cat') in (48):

(47) a. *Tā yīgerén bān -guò -qù -le [wǒ de shūzhuō].
3SG alone transport -cross -go -PERF 1SG SUB desk
b. Tā yīgerén bān -le [wǒ de shūzhuō] guò – qù.
3SG alone transport -PERF 1SG SUB desk cross-go
c. ??Tā yīgerén bān -guò -le [wǒ de shūzhuō] qù.
3SG alone transport -cross -PERF 1SG SUB desk go
'He moved my desk over (away from the speaker) all on his own.'

(48) a. %Tā gǎn -chū -qù -le Xiǎo Míng / [wǒ de māo].
3SG chase -exit -go -PERF Xiao Ming / 1SG SUB cat
b. Tā gǎn-le Xiǎo Míng / [wǒ de māo] chū-qù.
3SG chase-PERF Xiao Ming / 1SG SUB cat exit-go
c. ??Tā gǎn-chū-le Xiǎo Míng / [wǒ de māo] qù.
3SG chase-exit-PERF Xiao Ming / 1SG SUB cat go
'He chased away/drove out (away from the speaker) Xiao Ming/my cat.'

The definite object DP *wǒ de shūzhuō* 'my desk' is excluded from the postverbal position with the adjacent order (47a), but acceptable in the non-adjacent order (47b). The marginality of (47c) in fact involves still another factor, i.e. the asymmetry between *lái* and *qù* in sentence-final position observed for a subset of speakers and to be discussed further below (cf. (54)).

While Yang Ching-yu (2009) marks (48a) with the proper name as unacceptable, native speakers consulted accepted it, hence the mark "%" indicating the heterogeneity of judgements. (48b) is the order reported as acceptable in the literature for definite object DPs in complex SVCs and confirmed by the native speakers consulted. The marginal character of (48c) with *qù* 'go' on its own in sentence-final position again is not linked to the definite character of the object DP, but to the sentence-final position of *qù* 'go', given that the same subset of native speakers likewise rejected the order in (48c) with an *indefinite* object DP such as *yī zhī māo* '1 CL cat' = 'a cat'.

The conditioned ban on definite DPs in the postverbal position of the adjacent order, contrasting with the acceptability of inanimate DPs in all of the three possible positions, is reminiscent of the *Definiteness Effect* (DE) observed in existential constructions (ExC), where definite DPs are in general excluded from the postverbal position (cf. Huang 1987, Paul/Lu/Lee (2020)). Interestingly, here as well proper names are an exception insofar as they are allowed postverbally in list contexts (cf. Huang 1987: 239):

(49) a. (Gānggāng) lái-le {sān ge kèrén/ *Lǐsì/ *[wǒ de péngyou]}.
just come-PERF 3 CL guest/ Lisi/ 1SG SUB friend
'There just arrived three guests/Zhangsan/my friends.'
b. {Sān ge kèrén/Lǐsì/ [wǒ de péngyou]} gānggāng lái-le.
3 CL guest/Lisi/ 1SG SUB friend just.now come-PERF
'Three guests/Lisi/my friends just arrived.'
c. (Jīntiān) lái-le Lǐ lǎoshī, Wáng lǎoshī hé tāmen
today come-PERF Li professor Wang professor and 3PL
de xuéshēng.
SUB student
'Today arrived Prof. Li, Prof. Wang and their students.'

Zhu Dexi (1982: 130) in a certain way draws this parallel when stating that a definite DP must occupy the preverbal subject position in the case of SVCs with an intransitive motion verb such as *fēi* 'fly' and is excluded from the postverbal position:

(50) a. Nà zhī cāngyíng yòu fēi-jìn-lái-le.
that CL fly again fly-enter-come-PERF
'That fly has again flown in.'
b. Lǎo Wáng pǎo-huí-qù-le.
Lao Wang run-return-go-PERF
'Lao Wang has run back (away from the speaker).'

Zhu Dexi's (1982) observation must be seen against the backdrop of ExC with complex SVCs featuring intransitive motion verbs (cf. Lu Jianming 2002: 12–13; (104–110):[19]

(51) a. [Gāng] zǒu –jìn-lái /-qù-le [yī ge háizi].
just walk-enter-come/ –go-PERF 1 CL child
b. [Gāng] zǒu-jìn-le [yī ge háizi] lái/ *qu.
just walk-enter-PERF 1 CL child come/ go
c. [Gāng] zǒu-le [yī ge háizi] jìn-lái / jìn-qù.
just walk-PERF 1 CL child enter-come / enter-go
'A child just walked in (into the direction of/away from the speaker).'

19. In the following, I concentrate on complex SVCs, because there seems to be only one DP position available with simple SVCs in the existential construction, i.e. *lái* 'come' in (i) preferrably raises to *v* (cf. Xiao Xiumei 1992: 59):

(i) Fēi -{lái}–le [yī zhī cāngyíng] {??lái}.
fly -come-PERF 1 CL fly come
'There has a fly come in.' (Lu Jianming 2002: 8, (11))

As illustrated in (51b), *qù* 'go' on its own is in general excluded from the sentence-final position (for all speakers) and contrasts with *lái* 'come' which is acceptable in this position. The ExC can therefore provide us with a clue to the asymmetry of *lái* 'come' vs *qù* 'go', holding for a subset of speakers in complex SVCs with transitive verbs (cf. (47)–(48) above).

In fact, the unaccusative verb (uaV) *qù* where the agent (and not the locative goal) is the unique internal argument also differs semantically from the corresponding transitive verb *qù* 'go' with a locative noun as object, insofar as the uaV *qù* means 'go away, depart' rather than simply 'go' (also cf. (2)–(3) above):[20]

(52) a. Zuótiān yǐjīng qù-le sān ge rén.
yesterday already go.away-PERF 3 CL person
'Yesterday, there already left 3 persons.'
b. Gāng qù-le yī liàng xiāofángchē.
just go.away-PERF 1 CL fire-engine
'There just departed a fire-engine.' (Lü Shuxiang 2000: 455)

This is confirmed by Lu Jianming's (2002: 8, fn 9) observation that the sequence *fēi-qù* 'fly-go (away)' is only acceptable in the ExC when meaning 'fly away, fly off', precisely with *qù* as 'leave, depart':

(53) Shù shàng yǒu wǔ zhī niǎo, fēi-qù -le liǎng zhī niǎo,
tree on exist 5 CL bird fly-go.away-PERF 2 CL bird
hái yǒu jǐ zhī niǎo?
still exist how.many CL bird
'In the tree there are five birds; after three have flown away, how many birds remain?'

Note that no such meaning difference is observed for the uaV *lái* 'come' and its transitive counterpart *lái* 'come (somewhere)'.

Returning to the asymmetry between *lái* and *qù* in the sentence-final position of complex SVCs, summarized in (54) below, I propose that native speakers reject the sentence-final *qù* in (54b), because they cannot construe *qù* as an uaV here. This contrasts with the sequences 'Vdir-*qù*' and 'Vdis-Vdir-*qù*' which clearly function as unaccusative predicates, as demonstrated in the ExC in (51a,c) above.[21] As for

---

20. The uaV *qù* 'go away' is thus like the uaV *zǒu* 'leave' *modulo* the component of movement away from the speaker present in *qù* 'go away'.

21. Somewhat surprisingly, the speakers rejecting sentence-final *qù* 'go' in complex SVCs accept it in simple SVCs:

(i) Tāmen bān {lái /qù} -le yī zhāng chuáng {lái /qù}.
3PL transport come /go -PERF 1 CL bed come /go
'They moved a bed (towards/away from the speaker).'

the speakers that do not manifest the asymmetry *lái* 'come' vs *qù* 'go (away)' in the sentence-final position of transitive complex SVCs, it seems plausible to surmise that the uaV *qù* has both the meaning 'go' and 'go away, leave' for them:

(54) a. Tāmen bān -jìn -{lái/qù} -le [yī bǎ yǐzi].
3PL transport -enter -come/go –PERF 1 CL chair
b. Tāmen bān -jìn -le [yī bǎ yǐzi] {lái / %qù}.
3PL transport -enter -PERF 1 CL chair come / go
c. Tāmen bān -le [yī bǎ yǐzi] {jìn -lái/ jìn -qù}.
3PL transport -PERF 1 CL chair enter -come/ enter -go
'They brought in a chair (towards/away from the speaker).'

The uaV status of *qù* in (54b) is crucial, because only with *qù* 'go (away)' as uaV can there be the required argument sharing. When *qu* is not an uaV, but the transitive verb qù 'go somewhere', whose internal argument is the locative goal (which remains covert here), then no argument sharing is possible between this locative goal and the patient DP of the displacement and directional verbs.

6. Conclusion

Genuine argument sharing SVCs in the sense of Collins (1997, 2002) have been argued to exist in Chinese as well. They are either composed of two verbs, *viz.* a displacement verb (e.g. *bān* 'transport') plus the verb *lái* 'come' or *qù* 'go' (simple SVCs) or of three verbs, *viz* a displacement verb, a directional verb (e.g. *jìn* 'enter') plus *lái* or *qù* (complex SVCs). Crucially, *lái* 'come' and *qù* 'go' are unaccusative verbs, thus allowing for the sharing of their unique internal argument with the patient of the directional verb and the displacement verb.

The different orders observed for the verbs and their internal argument DP in simple and complex SVCs can be divided into an adjacent order 'V_{dis} (V_{dir}) *lái* 'come'/*qù* 'go' DP', on the one hand, and a non-adjacent order, on the other. More precisely, there is one non-adjacent order in the case of simple SVCs: 'V_{dis} DP *lái*/*qù*', and two non-adjacent orders in the case of complex SVCs: 'V_{dis} DP V_{dir} *lái*/*qù*' and 'V_{dis} V_{dir} DP *lái*/*qù*'. They can all be derived from the structure [$_{vP1}$ [$_{VPdis}$ DP_i V_{dis} [$_{vP2}$ [$_{VPdir}$ *pro*$_i$ V_{dir} [$_{VP}$ *pro*$_i$ lái/qù]]]]] by V-to-*v* movement and *tucking in* à la Richards (1997), where each verb adjoins to *v* as closely as possible.

This analysis correctly predicts the relative order of the verbs, the possible position of aspect suffixes and the distribution of the internal argument DP, something previous works had not achieved so far. It confirms Collins' (2002) claim that the verb raises to a functional category such as *v* or T, not to another verb. It also nicely

fills the "gap" noticed by Collins (2002: 9) who only observes SVCs with two verbs in the languages examined by him.

Naturally, it is impossible to provide a comprehensive analysis of the entire array of phenomena involved, and in fact a monograph would be needed here.

The observed correlation between the different orders (adjacent vs non-adjacent) and the aktionsart (telic vs atelic) of the predicate is a first step in the right direction, but needs to be examined further by controling inter alia for the co-varying (in) definiteness of the internal argument DP.

There remain open questions such as the factors determining whether a given verb raises or not. This is not surprising, because the precise semantic/syntactic differences between the different output structures are not well-understood. It is evidently always possible to postulate some ad hoc features triggering the desired verb movement, but that would simply amount to restating the facts, as long as the phenomenon in question cannot be tied in with independently known principles of Chinese grammar.

Acknowledgments

This article has benefited from discussions with Liu Chang, Lu Yaqiao and Thomas Hun-tak Lee, as well as from comments by an anonymous reviewer and the editor of this volume, Andrew Simpson.

References

Basciano, Bianca. 2010. Verbal compounding and causativity in Mandarin Chinese. PhD dissertation, Università degli Studi di Verona.

Carstens, Vicki. 2002. Antisymmetry and word order in serial verb constructions. *Language* 78(1): 3–50. https://doi.org/10.1353/lan.2002.0004

Chao, Yuen Ren. 1968. *A grammar of spoken Chinese*. Berkeley: University of California Press.

Chen, Zhishuang. 2016. Mandarin directional serial verb constructions: A constructionist approach. PhD dissertation, University of York.

Collins, Chris. 1997. Argument sharing in serial verb constructions. *Linguistic Inquiry* 28(3): 461–497.

Collins, Chris. 2002. Multiple verb movement in ǂHoan. *Linguistic Inquiry* 33(1): 1–29. https://doi.org/10.1162/002438902317382161

Ernst, Thomas. 1989. On verb subcategorization in Chinese. In: Chan Marjorie & Ernst, Thomas. *Proceedings of the Third Ohio State University Conference on Chinese Linguistics*. Bloomington, Indiana: Indiana University Linguistics Club, pp. 116–140.

Ernst, Thomas. 1994. Functional categories and the Chinese *Infl*. *Linguistics* 32(2): 191–212. https://doi.org/10.1515/ling.1994.32.2.191

Fan, Jiyan. 1963. Dòngcí hé qūxiàng-xìng hòuzhí chéngfēn de jiégòu fēnxī [Analysis of the construction 'verb + directional item] *Zhongguo Yuwen* 1963, nr. 2: 136–160, 170. Reprint 1987 in *Fan Jiyan lùnwénjí* [Collected works of Fan Jiyan], Beijing: Yuwen chubanshi, pp. 38–39.

Hu, Xuhui (2022). Same root, different categories: Encoding direction in Chinese. *Linguistic Inquiry*. 53(1): 41-85. https://doi.org/10.1162/ling_a_00398

Huang, C.-T. James. 1984. Phrase structure, lexical integrity and Chinese compounds. *Journal of the Chinese Language Teachers' Association* 19(2): 53–78.

Huang, C.-T. James. 1987. Existential sentences in Chinese and (in)definiteness. In *The representaton of (In)definiteness*, Eric J. Reuland & Alice ter Meulen (eds), 226- 253. Cambridge, Mass.: Mit Press.

Huang, C.-T. James. 1989. Pro-drop in Chinese: A generalized control theory. In *The Null subject parameter*, Osvaldo Jaeggli & Ken Safir (eds), 185–214. Dordrecht: Kluwer. https://doi.org/10.1007/978-94-009-2540-3_6

Kimura, Hideki. 1984. On two functions of the directional complements *lái* and *qù* in Mandarin. *Journal of Chinese Linguistics* 12(2): 262–297.

Law, Paul. 1996. A note on the serial verb construction in Chinese. *Cahiers de Linguistique – Asie orientale* 25(2): 199–235. <https://www.persee.fr/doc/clao_0153-3320_1996_num_25_2_1450>

Li, Charles Sandra Thompson. 1981. *Mandarin Chinese. A functional reference grammar*. Berkeley et alibi: University of California Press.

Li, Linding. 1984. Dòngcí de bīnyǔ hé jiégòu de bīnyǔ [The object of the verb and the object of the phrase]. *Yuyan jiaoxue yu yanjiu* 1984, nr. 3: 103–114; 123.

Liu, Yuehua. 1980. Guānyú qūxiàng bǔyǔ "lái", "qù" de jǐ ge wèntí [Some problems concerning the directional complements *lái* and *qù*]. *Yuyan jiaoxue yu yanjiu* 1980, nr. 3: 36–44.

Liu, Yuehua. 1988. Qūxiàng bǔyǔ de yǔfǎ yìyì [The grammatical meaning of directional complement]. In: *Yǔfǎ yánjiū hé tànsuǒ* 6: 74–88.

Liu, Yuehua. 1998. *Qūxiàng bǔyǔ tōngshì* [An account of the directional complements]. Beijing: Beijing yuyan wenhua chubanshe.

Liu, Yuehua, Wenyu Pan & Wei Gu. 2001. *Shíyòng xiàndài hànyǔ yǔfǎ* [A practical grammar of spoken Chinese]. Beijing: Shangwu yinshuguan.

Lu, Jianming. 1985. Guānyú "qù+VP" hé "VP+qù" jùshì [On the sentence patterns '*qù* + VP and 'VP + *qù*]. *Yuyan jiaoxue yu yanjiu* 1985, nr. 4: 18–32.

Lu, Jianming. 2002. Dòngcí hòu qūxiàng bǔyǔ hé bīnyǔ de wèizhí wèntí [On the order of the postverbal directional complement and the object]. *Shijie hanyu jiaoxue* 2002, nr. 1:5–17.

Lü, Shuxiang. 1992. Tōngguò duìbǐ yanjiū yǔfǎ [Grammar research by comparison]. In: *Lü Shuxiang wenji* [Collected works by Lü Shuxiang], vol. 4, 152–66.

Lü, Shuxiang (ed.). 2000. *Xiàndài hànyǔ bābáicí* [Eight hundred words of Modern Mandarin]. Beijing: Shangwu yinshuguan.

Paul, Waltraud. 2005. The "serial verb construction" in Chinese: A Gordian knot. In: Oyharçabal B. & Paul W. 2005. *Proceedings of the workshop La notion de "construction verbale en série" est-elle opératoire ?* December 9, 2004, CRLAO, Paris. <http://crlao.ehess.fr/index.php?177> (Accessed on September 30, 2020) <http://crlao.ehess.fr/docannexe/file/1543/svcfinalversion oct2005.pdf>

Paul, Waltraud 2008. The "serial verb construction" in Chinese: A tenacious myth and a Gordian knot. *The Linguistic Review* 25(3/4): 367 – 411. https://doi.org/10.1515/TLIR.2008.011

Paul, Waltraud, Lu, Yaqiao & Lee, Thomas Hun-tak. 2020. Existential and locative constructions in Mandarin Chinese. *The Linguistic Review* 37(2): 231–267. https://doi.org/10.1515/tlr-2019-2043

Ramchand, Gillian C. 2008. *Verb meaning and the lexicon: A first-phase syntax*. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511486319

Richards, Norvin. 1997. *What moves where when in which language?* PhD dissertation, MIT.

Xiao, Xiumei. 1992. "Dòng + lái + míng" hé "dòng + míng + lái" liǎng zhǒng jùshì de bǐjiào [Comparison between the two patterns 'verb + *lái* + NP' and 'verb + NP + *lái*]. *Yuyan jiaoxue yu yanjiu* 1992, nr. 1: 59–62.

Yang, Ching-Yu. 2009. The semantic and syntactic differences of Mandarin complex verb-direction constructions. <http://www.sfu.ca/gradlings/working-papers/wp_2.html>.

Zhu, Dexi (1982). *Yǔfǎ jiǎngyì* [On grammar]. Bejing: Shangwu yinshuguan.

Zou, Ke. 1994. Directional verb-compounds in Chinese. In *Proceedings of the 30th Annual meeting of the CLS*, K. Beals et al. (eds). Chicago: CLS, vol. 1, 443–457.

PART II

Modal verb syntax

Modal movement licensed by focus

Ka-Fai Yip and Tommy Tsz-Ming Lee
Yale University / University of Southern California

This paper investigates the high position of root modals (such as *keyi* 'may') in Chinese, and its interaction with focus interpretations. We address a long-standing puzzle concerning their position: A-not-A questions appear to exceptionally license an otherwise unavailable high position of root modals preceding subjects and/or topics. Upon closer examination, we observe that (i) A-not-A questions do not always license the high position of root modals and that (ii) the position of focus plays a crucial role in licensing high modals. We propose that root modals undergo head movement across a focused element to the high position, and this movement is constrained by a focus version of output economy.

1. Introduction

This paper investigates the distribution of modals in Chinese, and their interaction with focus interpretations. As is well-noted in the literature, modals can be dichotomized into *epistemic* modals and *root* modals (Ross 1969, Perlmutter 1971, Jackendoff 1972).[1] One syntactic manifestation of this distinction in Chinese is the (in)flexibility of their positions in the sentence: while epistemic modals can either precede or follow the subject, root modals cannot precede the subject in general (T.-H. J. Lin 2011, Tsai 2015), as shown in the contrast below.[2]

(1) Epistemic modals can precede or follow the subject
(Keneng) Zhangsan *(keneng)* zhunbei-le wancan
be.possible Zhangsan be.possible prepare-PERF dinner
'Zhangsan is possible to have prepared the dinner.'

1. Root modals form a heterogeneous class which can be further divided into (at least) deontic modals and dynamic modals (Palmer 1990, see Portner 2009 for a finer classification).

2. We postpone the discussion of the modal *yinggai* 'should' which is lexically ambiguous between an epistemic modal and a root modal. The judgement concerning whether it can appear in a pre-subject position is less clear. We focus on the clear cases first.

https://doi.org/10.1075/la.272.06yip

(2) Root modals cannot precede the subject

*{*Neng/ *hui/ *keyi}* Zhangsan *{neng/ hui/ keyi}* zhunbei wancan
can will may Zhangsan can will may prepare dinner
Int.: 'Zhangsan can/ will/ may prepare the dinner.'

(T.-H.J. Lin 2011: 50–51, with the addition of *keyi*)

However, it has been observed that root modals can appear sentence-initially in some cases. For example, if they are in A-not-A form, the higher pre-subject position becomes available (J.-W. Lin & Tang 1995, Huang, Li & Li 2009), exemplified in (3):

(3) Root modals in A-not-A form can precede the subject

Neng-bu-neng/ hui-bu-hui/ ke-bu-keyi Zhangsan zhunbei wancan?
RED-NEG-can RED-NEG-will RED-NEG-may Zhangsan prepare dinner
'Can/ will/ may it be that Zhangsan prepare the dinner?'

(T.-H. J. Lin 2011: 69, with the addition of *keyi*)[3]

The contrast between (2) and (3) raises questions on the mechanism that regulates the distribution of modals. This issue receives little attention until recently (e.g. T.-H. J. Lin 2011, Hsu 2016). In this paper, we approach the issue by first reporting two novel empirical observations on the distribution of root modals: (i) in addition to A-not-A formation, there are other cases where root modals in the higher pre-subject position are allowed, and (ii) the A-not-A form of root modals does not *always* license the pre-subject position. Instead of attributing the availability of the pre-subject position to A-not-A formation, we uncover a correlation between the pre-subject position of root modals and focus interpretations. Specifically, we suggest that the pre-subject position is licensed when the constituent that immediately follows the modal receives a focus interpretation. We then show that these new observations posit challenges to existing base generation proposals and we motivate a movement analysis to capture the correlation between the higher pre-subject position of root modals and focus interpretations. We suggest that the pre-subject position is a derived position and root modals optionally undergo head movement to the higher pre-subject position. We further suggest that this movement does not apply freely but is subject to an interface condition of Output Economy (Fox 2000, Reinhart 1995, Chomsky 2000, 2001, Miyagawa 2006, 2011). Specifically, the movement of root modals is licensed if it imposes an effect on the focus set calculation; if not, the movement is disallowed.

Three notes are in order. First, we hereafter refer to root modals in the higher (non-canonical) pre-subject position as *high (root) modals*, and those in a lower

3. The interpretation of the modals in (3) has subtle differences from their uses in (2), as noted by T.-H. J. Lin (2011) and an anonymous reviewer. To indicate the differences, we translate the modals in (3) as 'can/ will/ may *it be that* …' for now, and we will return to this issue in Section 3.2.

(canonical) post-subject position as *low (root) modals*.[4] Second, high modals and low modals display a subtle interpretive difference. We, however, would like to postpone the discussion on modal interpretation to Section 3.2. Third, while the data are given in Mandarin, similar patterns are also observed in Cantonese, Taiwanese, Chenghai Teo-Swa Min and Changsha Xiang. The patterns are not specific to Mandarin but appear to be generally observed in Chinese languages.

This rest of this paper is organized as follows. Section 2 reports a generalization on the licensing conditions of high root modals: they are licensed by an immediately following focused element. Section 3 argues against alternative base-generation approaches. We show that they fall short of accounting for the correlation between high modals and focus. In Section 4, we propose a movement account for high modals and suggest that the movement is constrained by a focus-based version of output economy. Section 5 concludes.

2. High root modals and focus

In this section, we first uncover a correlation between high modals and focus. Particularly, we observe that high modals are only allowed in the configuration in (4)a, but not (4)b.

(4) The distribution of high root modals
   a. ^{OK}Modal [XP$_{[+Focus]}$ …
   b. *Modal [XP$_{[-Focus]}$ …

In § 2.1, we show that high modals are licensed if the constituent that immediately follows high modals (i.e. XP) receives a focus interpretation. We illustrate this observation with various focus-marking devices and constructions. Additionally, we show that XP is not confined to subjects and it can be other constituents like (preposed) objects. In § 2.2, we return to A-not-A formation and we show that a parallel pattern is observed in polarity questions. We report cases where A-not-A formation (and polarity questions) fail to license high modals. We argue that high modals are not inherently related to A-not-A formation; instead, the licensing effect is achieved by the focus interpretation associated with questions.

---

4. "Subject" here does not include non-specific noun phrases which are argued to be located lower in *v*P (Diesing 1992, Tsai 2015), such as NPs headed by *you* 'have' as in (i). We thank Dylan Tsai for pointing this out.

(i) Keyi you san-ge-ren lai.
may have three-CL-person come
'There may be three persons coming.'

2.1 Focus interpretations

We observe that high (root) modals are licensed as long as the following element receives a focus interpretation. We discuss four relevant cases, namely, (i) positions of contrast/correction in the discourse; (ii) focus-marking devices such as focus marker *shi*; (iii) *lian…dou* 'even…also' focus constructions; and (iv) elements that come with inherent focus such as *wh*-expressions.

First, an element may receive a focus interpretation if it is in contrast with another element in the discourse. In (5), the subject *ni* 'you' is in contrast with *ta* 's/he' in the second clause (with regard to the issue concerning who can go), marked by a subscripted "F". High modals are licensed in both clauses.

(5) Contrastive focus on the subjects
Keyi ni_F qu, ye keyi ta_F qu
may 2SG go also may 3SG go
'It is allowed to be that you go, and it is also allowed to be that s/he goes.'

In contrast, if the element being contrasted is separated from the high modal, the sentence is degraded. In (6), the predicate *liuxia* 'stay' is contrasted with *zou* 'leave', where the (non-focused) subject intervenes between the high modal and the contrastive focus.

(6) Contrastive focus on the predicates
*Keyi ni $liuxia_F$, ye keyi ni zou_F
may 2SG stay also may 2SG leave
Int.:'It is allowed to be that you stay, and it is also allowed to be that you leave.'

This asymmetry correlates with the stress pattern in sentences with high modals in Northern Mandarin, where the accented element receives a contrastive reading. High modals are licensed by an immediately following accented element like the subject in (7), but not one that appears at a distance with the high modal like the object in (8).

(7) Accented subjects
Keyi $ZHANGSAN_F$ qu Beijing
may Zhangsan go Beijing
'It is allowed to be that ZHANGSAN (but not someone else) goes to Beijing.'

(8) Accented objects
*Keyi Zhangsan qu $BEIJING_F$
may Zhangsan go Beijing
Int.:'It is allowed to be that Zhangsan goes to BEIJING (but not somewhere else).'

The same can be said to corrective focus. The contrast in the following pairs suggests that high modals are licensed if the following elements receive a focus interpretation.

(9) Corrective focus on the subject

Keyi *ni*$_F$ qu, bushi *ta*$_F$
may 2SG go not 3SG
'It is allowed to be that you go, not him/her.'

(10) Corrective focus on the predicate

*Keyi ni *liuxia*$_F$, bushi *zou*$_F$
may 2SG stay not leave
Int.:'It is allowed to be that you stay, not leave.'

Second, focus may also be marked by syntactic devices such as the focus marker *shi* (Teng 1979, Shyu 1995, Cheng 2008, Erlewine 2020, *i.a.*). As already mentioned in J.-W. Lin & Tang (1995: 62, footnote 7), insertion of the focus marker *shi* after the high modal would improve the sentences, as in (11). Importantly, if *shi* is inserted before the verb (phrase), we do not observe the same improvement, as in (12). The contrast again suggests that high modals are sensitive to the position of the focus: high modals require an immediately following focused element.

(11) *Shi*-focus associated with the subject

Keyi *(shi) *Zhangsan*$_F$ qu Beijing
can FOC Zhangsan go Beijing
'It is allowed to be that it is Zhangsan that goes to Beijing.'

(12) *Shi*-focus associated with the object/ the whole VP

*Keyi Zhangsan shi *[qu Beijing]*$_F$
can Zhangsan FOC go Beijing
Int.:'It is allowed to be that it is Beijing that Zhangsan goes to.'

Another focus marking device is *lian…dou* 'even…also'. It has been argued that the element following *lian* 'even' receives a focus interpretation (Paris 1979, Shyu 1995, Cheng and Vicente 2013, *i.a.*). We observe that high modals are licensed by an immediately following *lian*-phrase, as in (13). Note that we embedded the high modal clause under another predicate, since (root) clauses with an initial monosyllabic modal (e.g. *hui* 'will') are degraded for independent reasons. This also shows that high modals are not a root/main-clause phenomenon.

(13) *Lian…dou*-focus on the subject

Wo juede [hui *lian* *Zhangsan*$_F$ dou zhao-bu-dao Lisi]
1SG think will even Zhangsan also find-NEG-RSLT Lisi
'I think that it will be that even Zhangsan cannot find Lisi.'

A contrast is observed when the *lian*-phrase does not immediately follow the high modal. Note that the *lian*-phrase must occur pre-verbally and an object focused by *lian* will be fronted. (14) shows that when the *lian*-phrase occurs in a post-subject position, at a distance from *hui* 'will', the sentence is degraded.

(14) Lian…*dou*-focus on the object

*Wo juede [hui Zhangsan *lian* *Lisi*$_F$ dou zhao-bu-dao]
1SG think will Zhangsan even Lisi also find-NEG-RSLT
Int.:'I think that it will be that Zhangsan cannot find even Lisi.'

Lastly, high modals are also licensed if they are immediately followed by *wh*-elements. This is demonstrated in (15), where the subject is a *wh*-expression. It contrasts with (16), where the *wh*-expression appears at a distance from the high modal (i.e. in the object position). Assuming that *wh*-phrases bear an inherent focus interpretation (Rochemont 1986), this contrast matches what has been observed in the preceding three focus-related cases.

(15) *Wh*-subjects

Name, keyi *shei*$_F$ mianfei qu Beijing?
so may who free.of.charge go Beijing
'So, who may go to Beijing for free?'

(16) *Wh*-objects

*Name, keyi Zhangsan mianfei qu *nali*$_F$?
so may Zhangsan free.of.charge go where
Int.: 'So, where may Zhangsan go for free?'

It should be noted that while all the above examples involve subject focus, high modals can be licensed by elements other than the subject. For example, in *lian*… *dou* focus constructions, *lian* 'even' may associate with an object and the whole *lian*-phrase can be placed in a pre-subject position (Shyu 1995). In such cases, a high modal is licensed in the position before the *lian*-phrase (=(17)a), but not before the subject (=(17)b). This suggests that the licensing condition of high modals concerns focus interpretations instead of the status of being a subject.

(17) Object focus in *lian…dou* constructions (pre-subject)

a. Jingran keyi *lian* *GB*$_F$ na-ge-laoshi dou bu-jiao,
unexpectedly may even GB that-CL-teacher also NEG-teach
zhen lipu!
really unacceptable
'How could that teacher not teach GB (Government & Binding theory)! That's insane!'

b. *Jingran *lian* GB_F keyi na-ge-laoshi dou bu-jiao,
unexpected even GB can that-CL-teacher also NEG-teach
zhen lipu!
really unacceptable

Analogously, a predicate can also be focused by the *lian*…*dou* focus constructions (Cheng and Vicente 2013) and such a *lian*-phrase also licenses high modals.

(18) Predicate focus in *lian*…*dou* focus constructions

a. Wo juede [hui *lian* chi_F ta dou bu chi]
1SG think will even eat 3SG also NEG eat
'I think it will be that s/he even doesn't eat.'

b. *Wo juede [*lian* chi_F hui ta dou bu chi]
1SG think even eat will 3SG also NEG eat

To see one more example, the focused element that licenses high modals can be as large as a clause. Consider the following sentence, where the whole clause following the high modal is being contrasted with the second clause.[5]

(19) Contrastive focus on the whole clauses

Keyi *[Zhangsan ba wenjian na-guo-qu]*$_F$, ye keyi *[Lisi ba tuzhang song-guo-lai]*$_F$
may Zhangsan BA document take-pass-go also can Lisi BA stamp give-pass-come
'It is allowed to be that Zhangsan passes the document there, and it is also allowed to be that Lisi passes the stamp here.'

Before we leave this section, it is instructive to note that not all information-structurally-marked elements license high modals. For example, topics do not license high modals. Topics in Mandarin can be marked by the particle *ne* (C. N. Li and Thompson 1989) but sentences with a high modal are degraded even if it is immediately followed by a topic phrase.

---

5. Another example showing a clausal focus following high root modals, marked by the *shi*…*de* cleft constructions:

(ii) (Ruguo yizhi zhao-bu-dao xiongshou, name …) Hui-bu-hui shi *[sizhe ziji zisha]*$_F$ de?
if keep find-NEG-RSLT murderer then RED-NEG-will FOC the.dead self suicide SFP
'(If we can't find the murderer this whole time, …) will it be that the dead actually killed himself?'

(20) Topicalized objects

a. Wo juede [*zhe-ben-shu ne*, Zhangsan hui toutou na-qu
1SG think this-CL-book TOP Zhangsan will secretly take-go
maiqian]
sell.for.money
'I think that for this book, Zhangsan will secretly sell it for money.'

b. *Wo juede [hui *zhe-ben-shu ne*, Zhangsan toutou na-qu
1SG think will this-CL-book TOP Zhangsan secretly take-go
maiqian]
sell.for.money

Additionally, Cheng & Vicente (2013) suggests that the first occurrence of the verb in the verb doubling cleft constructions receives a topic interpretation (also see Lee 2021). It does not license high modals either.

(21) Topicalized verbs

a. *Chi*, Zhangsan shi keyi chi la de
eat Zhangsan COP may eat spicy SFP
'Concerning eating, Zhangsan may eat spicy food.'

b. *Keyi *chi*, Zhangsan shi chi la de
can eat Zhangsan COP eat spicy SFP

Building on the above observations, we generalize the licensing condition of high modals as in (22). In the next section, we return to A-not-A formation and address its relevance to (22).

(22) The licensing condition of high root modals
High root modals are licensed if the element immediately following them receives a focus interpretation.

2.2 A-not-A questions and polarity questions

The previous section makes clear that high modals are not exclusively licensed by A-not-A formation. In this section, we suggest that the link between high modals and A-not-A formation is indeed indirect and is mediated by the focus interpretation associated with questions. First, we observe that polarity questions (e.g. marked by rising intonation or question particles) may also license high modals.[6]

6. High root modals can also be licensed in disjunctive questions when the disjuncts are the subjects, but not the objects. This contrast can be explained if disjunctive questions with *haishi* (composed of a focus marker and a copula) in Chinese also express focus (C.-Y. E. Tsai 2015).

(23) Polarity questions

Keyi Zhangsan qu Beijing {↗/ ma}? (↗ = rising intonation)
may Zhangsan go Beijing Q SFP.Q
'Is it allowed to be that Zhangsan goes to Beijing?'

Second, there are cases where A-not-A questions or polarity questions fail to license high modals. For example, if an A-not-A question comes with focus marking on some element at a distance with the high modal (e.g. objects), the high modal is not licensed. Given the context in (24), questions like "Is it allowed to be that *someone else* goes to Beijing then?" (i.e. subject focus) and "Is it allowed to be that Lisi goes *somewhere else* then?" (i.e. object focus) should be both discourse-relevant. However, with a high modal, only the former question can be asked, not the latter.

(24) A-not-A questions with different focus positions

[Lisi's Mainland Travel Permit had expired, so that he cannot go to Beijing. If so…]

a. Ke-bu-keyi *Zhangsan*$_F$ qu Beijing?
RED-NEG-may Zhangsan go Beijing
'Is it allowed to be that Zhangsan goes to Beijing then?'

b. *Ke-bu-keyi Lisi qu *Taibei*$_F$?
RED-NEG-may Lisi go Taipei
Int.: 'Is it allowed to be that Lisi goes to Taipei then?'

This is by no means particular to A-not-A questions. In polarity questions with high modals, the sentence in (25)a is well-formed, where the focus marker *shi* is attached to the subject. However, if *shi* is attached to the VP as in (25)b, which allows either object or VP focus (but not subject focus), the sentence is degraded.

(25) Polarity questions with different focus positions

a. Keyi shi *Zhangsan*$_F$ qu Beijing {↗/ ma}?
may FOC Zhangsan go Beijing Q SFP.Q
'Is it allowed to be that Zhangsan but not someone else goes to Beijing?'

b. *Keyi Zhangsan shi *qu Beijing*$_F$ {↗/ ma}?
may Zhangsan FOC go Beijing Q SFP.Q
'Is it allowed to be that Zhangsan goes to Beijing but not somewhere else?'

(iii) Keyi *Zhangsan*$_F$ haishi *Lisi*$_F$ qu?
may Zhangsan or.Q Lisi go
'Zhangsan or Lisi, who may go?'

(iv) *Keyi Zhangsan qu *Beijing*$_F$ haishi *Taibei*$_F$?
may Zhangsan go Beijing or.Q Taipei?
Int.: 'Beijing or Taipei, which one may Zhangsan go to?'

These examples indicate that the A-not-A form and the polarity question markers (i.e. the rising intonation and the question particles) are not the true licensers of high modals, since they do not necessarily license them. Instead, we suggest that the apparent licensing effects imposed by A-not-A questions are because the question so formed comes with subject focus. The licensing effects disappear in cases without subject focus (*pace* J.-W. Lin and Tang 1995; T.-H. J. Lin 2011). Furthermore, we suggest that the correlation between high modals with A-not-A formation (and polarity question markers) can be subsumed under the generalization given in (22), where the licensing of high modals depends on the position of focus triggered in the above A-not-A and polarity questions. Particularly, the focus has to immediately follow the high modal, in the same way as the examples in § 2.1.

Before we leave this section, since focus interpretations in questions may not be as clear as the cases discussed in § 2.1, we briefly discuss how focus interpretations are manifested in A-not-A questions and polarity questions. We suggest that questions with different focus interpretations have a different set of felicitous follow-up phrases. We demonstrate this idea with A-not-A questions, but the same goes for polarity questions. Consider the baseline example in (26). Here, the A-not-A question does not come with a high modal. Both answers (A1) and (A2) are negative, and it is felicitous to provide the additional information by follow-up phrases either correcting *the subject* or *the object*. We refer to the questions compatible with different correction sites as focus-neutral questions.

(26) An A-not-A question with a *low* root modal

a. Q: Zhangsan ke-bu-keyi zhunbei wancan?
Zhangsan RED-NEG-may prepare dinner
'May Zhangsan prepare the dinner?'

b. A1: Bu keyi, zhiyou $Lisi_F$ keyi zhunbei wancan (subject focus)
NEG may only Lisi may prepare dinner
'No, only Lisi may prepare the dinner.'

c. A2: Bu keyi, ta zhi keyi zhunbei $zaocan_F$ (object focus)
NEG may 3SG only may prepare breakfast
'No, he may prepare the breakfast only.'

Now consider an A-not-A question with a high modal, as in (27). After providing a negative answer to the question, it is felicitous to follow-up on the question by correcting the subject (A1), but it is infelicitous to do so by correcting the object (A2). The question in (27) is thus not focus-neutral in the same way as (26). Allowing follow-up phrases such as (A1) instead of (A2) suggests that the question indeed comes with subject focus. The focus interpretation is manifested as forcing the Question Under Discussion (QUD, Roberts 1996, 2012) to be "*who* may prepare dinner" instead of "*what* Zhangsan may prepare" (*cf.* a focus-neutral question like

(26) is compatible with both). The infelicity of (A2) in (27) then follows from a relevance maxim for not being relevant to the QUD.

(27) An A-not-A question with a *high* root modal

a. Q: Ke-bu-keyi Zhangsan zhunbei wancan?
RED-NEG-may Zhangsan prepare dinner
'Is it allowed to be that Zhangsan prepares the dinner?'

b. A1: Bu keyi, zhiyou $Lisi_F$ keyi zhunbei wancan (subject focus)
NEG may only Lisi may prepare dinner
'No, only Lisi may prepare the dinner.'

c. A2: #Bu keyi, ta zhi keyi zhunbei $zaocan_F$ (#object focus)
NEG may 3SG only may prepare breakfast
'No, he may prepare the breakfast only.'

To sum up, the data presented in both subsections can be captured by the generalization given in (22), repeated below. In the following two sections, we turn to different approaches to account for this generalization.

(28) The licensing condition of high root modals
High root modals are licensed if the element immediately following them receives a focus interpretation.

3. Previous approaches to high root modals

While the phenomenon of high (root) modals has been noticed in the early literature, it is not until recently that attempts have been made to capture the distribution of these modals (e.g. T.-H. J. Lin 2011, Hsu 2016). Common in these analyses is that high modals are taken to be base-generated in the pre-subject position and that high modals are not interpreted in the same way as low modals. In other words, root modals are lexically ambiguous and the high and low modals are not derivationally related. In Section 3.1, we first illustrate how the generalization in (22)/(28) poses challenges to these existing accounts. We then discuss the issue on modal interpretation in Section 3.2.

3.1 Base generation approaches

In this subsection, we discuss two base generation approaches to high modals suggested in the literature. They differ in the semantic contribution of high modals, but they share the idea that high modals are not derivationally related to low modals. We also discuss an in-situ approach to modals, where their relative order to subjects is due to subject movement.

T.-H. J. Lin (2011) observes that high modals (in A-not-A form) come with an epistemic-like reading which is often absent in their low positions.[7] This appears to suggest that high modals are in fact epistemic modals which may base-generate in the pre-subject position (as in (1)). In what follows, however, we show that high modals display substantial distributional differences with genuine epistemic modals and thus should not be treated alike.

First, the high position of genuine epistemic modals like *keneng* 'be possible' does not count on an immediately following focus. They can freely occur in the high position with (in-situ) object focus, as shown in (29). This contrasts with the distribution of high modals discussed in the previous section. Positing that high modals are epistemic modals does not account for the contrast.

(29) Keneng ta shi qu-le *Beijing*$_F$, bu shi *Taibei*$_F$
be.possible 3SG FOC go-PERF Beijing NEG FOC Taipei
'It is possible that he went to Beijing instead of Taipei.'

Second, high modals further contrast with genuine epistemic modals in modal stacking. It is instructive to consider the modal *yinggai* 'should' which is well-known to be ambiguous between an epistemic modal and a deontic modal. On one hand, the epistemic *yinggai* cannot be embedded below the epistemic *keneng* 'be possible', as suggested in T.-H. J. Lin (2012: 157, =(30)), suggesting that a stronger epistemic modal cannot be embedded under a weaker one.

(30) a. Zhangsan *yinggai*^{Epi} keneng lai
Zhangsan should be.possible come
'It should be the case that Zhangsan is possible to come.'
b. *Zhangsan keneng *yinggai*^{Epi} lai (le)[8]
Zhangsan be.possible should come SFP

On the other hand, the deontic *yinggai* can (in fact must) be embedded under the epistemic *keneng* (T.-H. J. Lin 2012; see also Tsai 2015).

(31) a. (Weile xuefen,) Zhangsan keneng *yinggai*^{Deo} lai
for credit Zhangsan be.possible should come
'(For the sake of course credits,) it is possible that Zhangsan should come.'
b. *… Zhangsan *yinggai*^{Deo} keneng lai
Zhangsan should be.possible come

7. Note that Lin's work concerns a broader issue of finiteness in Mandarin and he only mentions in passing that high modals may be related to epistemic modals. An anonymous reviewer also notes this possibility.

8. Lin's original gloss for *keneng* is 'be likely to'.

Given this background, the relative order with *keneng* is thus informative to whether a modal is epistemic or deontic. Precisely, if a high (pre-subject) *yinggai* is an epistemic modal, it should not be able to follow *keneng*; if it is a deontic modal, we predict the opposite. The example in (32) lends support to the deontic status of a high modal: it occurs before the subject but after *keneng*.

(32) Ruguo Zhangsan bing-le, name keneng *yinggai* ni_F qu
if Zhangsan sick-PERF then be.possible should 2SG go
zhunbei wancan
prepare dinner
'If Zhangsan is sick, perhaps it should be that you (but not Zhangsan) prepare the dinner.'

Additionally, (33) reveals that the high *yinggai* cannot precede *keneng*, an observation that further speaks against its epistemic status.

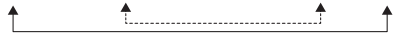
(33) a. *… name *yinggai* keneng ni_F qu zhunbei wancan
then should be.possible 2SG go prepare dinner
b. *… name *yinggai* ni_F keneng qu zhunbei wancan
then should 3SG be.possible go prepare dinner
Int.: '… then it should be that perhaps you (but not Zhangsan) prepare the dinner.'

Another approach to high modals, as suggested in Hsu (2016), is to treat them as focus operators base-generated above subjects. Precisely, she suggests that high modals are *verum focus operators* in the CP domain (i.e. Focus heads). According to this approach, high modals assign focus to the whole sentence (proposition). One of her arguments comes from the intervention effects displayed by *wh*-phrases.

(34) *Yinggai Zhangsan mai *shenme* ne? (Hsu 2016: 263)
should Zhangsan buy what SFP.Q
Int.: 'What should Zhangsan buy?'

She suggests that (34) is disallowed because *yinggai* is intervening between a covert question operator (above the high modal) and the *wh*-object (below the high modal), following Beck (2006).

(35) *[Q_{OP} … $Focus_{OP}$=*Yinggai* [… XP_{focus} … *wh* …]



Her proposal, however, wrongly predicts high modals with *wh*-subjects to be ungrammatical (=(36) below, see also the example in (15)).

(36) Yinggai *shei* qu?
should who go
'Who should go?'

Furthermore, although both Hsu's account and our generalization in (22)/(28) relate high modals to focus, the relations are in opposite direction. In Hsu's account, the focus reading is attributed to the high modals (i.e. high modals → focus). In (22)/(28), however, the modal position *depends* on the focus reading (i.e. focus → high modals), but not the other way around.[9] Hence, we conclude that Hsu's version of base generation account is untenable either.

Another version of the base-generation approach, as suggested by an anonymous reviewer, is to assign one and only one position to root modals. The apparent "high" and "low" positions of modals are due to subject movement. To see how this may work, it is crucial to assume that root modals are raising verbs and take non-finite clauses as their complements (J.-W. Lin & Tang 1995; Bhatt 1998; Wurmbrand 1999). When the embedded subject raises to the matrix clause, it results in the canonical "subject > modal" order. Crucially, when a subject is focused, Criterial Freezing (in the sense of Rizzi 2015 and Shlonsky & Rizzi 2018, which bans movement from focus positions) requires the subject to stay within the low focus position of complement clause.[10] This gives rise to the "modal > subject" order. This approach, however, faces empirical challenges in cases involving non-subject elements. For example, the sentences in (17) (reproduced below in (37)) represent a case where a high modal is licensed by a fronted object focus:

(37) Object focus in *lian…dou* constructions (pre-subject)

a. Jingran keyi *lian* GB_F na-ge-laoshi dou bu-jiao,
unexpectedly may even GB that-CL-teacher also NEG-teach
zhen lipu!
really unacceptable
'How could that teacher not teach GB (Government & Binding theory)!
That's insane!'

9. Moreover, if high modals were indeed a focus operator, they would be predicted to occur in a plain declarative sentence *without any other focus marking device*, since themselves already marked the focus. This is contrary to the facts. Hsu's account thus incorrectly predicts high modals to pattern with genuine focus markers such as *shi*, which may occur in a pre-subject position unproblematically.

10. A theory-internal concern is that if modals are raising predicates and subjects move for Case reasons, the movement should be obligatory (Li 1990).

b. *Jingran *lian* GB_F keyi na-ge-laoshi dou bu-jiao,
unexpected even GB can that-CL-teacher also NEG-teach
zhen lipu!
really unacceptable

The contrast in (37) shows that the licensing of high modals depends crucially on the position of the object focus, but not the subject. A subject movement account would suggest the non-focused subject, being free from Criterial Freezing, can (indeed must, for Case reasons) raise across the modal, which is contrary to the facts. We thus reject a subject movement approach.

As we will see in Section 4, an explanation in terms of modal movement is arguably both empirically and conceptually superior to base generation accounts. Yet, before proceeding to our proposal, we discuss a remaining issue in need of clarification, namely the difference in the interpretation between high and low modals.

3.2 The interpretation of high root modals

In Section 3.1, we showed that the high/low position does not correspond to the epistemic/deontic split. We suggest instead that the interpretive difference between high and low modals concerns the *ought-to-be* reading and *ought-to-do* reading of deontic modals (Feldman 1986, Brennan 1993, Hacquard 2006, Portner 2009, *i.a.*): high modals consistently denote an *ought-to-be* reading, whereas low modals are ambiguous between the two readings. The ought-to-be reading may sometimes be conflated with the epistemic reading, but we show that the former differs from the latter upon closer scrutiny.

T.-H. J. Lin (2011) observes that the interpretation of high modals may differ from low modals. We illustrate this idea with *yinggai* 'should', as reflected in the translations in (38)a-b. Both subjects are focused to form a minimal pair.[11]

(38) a. *Yinggai* $[\text{Zhangsan}]_F$ zhunbei wancai (high root modal)[12]
should Zhangsan prepare dinner
'It should be that Zhangsan (but not someone else) prepares the dinner.'

b. $[\text{Zhangsan}]_F$ *yinggai* zhunbei wancai (low root modal)
Zhangsan should prepare dinner
'Zhangsan (but not someone else) should prepare the dinner.'

11. The same is also observed for other root modals like *keyi* 'may', *neng* 'can' and *hui* 'will'. Here, we illustrate with *yinggai* 'should' first, which displays a clearer meaning contrast between the high and low uses.

12. Note that (38)a also has an irrelevant (and less salient) epistemic reading of *yinggai* 'should'.

While (b) expresses an obligation on Zhangsan to prepare the dinner, the same obligation seems not to be placed on Zhangsan in (a). Rather, it obligates the state of affairs that Zhangsan prepares the dinner to happen. The obligation may instead fall on the hearer, for instance. We argue that the difference between (a) and (b) in (38) is comparable to the distinction between the *ought-to-be* reading and *ought-to-do* reading (Feldman 1986, Brennan 1993, Hacquard 2006, Portner 2009, *i.a.*). Consider the English examples in (39):

(39) a. Murderers ought to go to jail. (ought-to-be)
b. Wickham ought to apologize. (ought-to-do)
(Hacquard 2006: 40)

The most natural way to interpret (a) is that the situation of murderers' going to jail ought to occur, but not that murderers have an obligation to go to jail. The obligation is connected to a discourse referent, e.g. the government. In (b), however, it is *Wickham* that is required to apologize, i.e. the obligation of an action is connected to the subject. The contrast here is parallel to the contrast in (38)a-b: the (a) sentences denote an ought-to-be reading, while the (b) sentences an ought-to-do reading.[13]

It should be noted that, however, the ought-to-be reading is not strictly unavailable for low modals. For examples, both sentences in (40) convey a (salient) ought-to-be reading.

(40) a. *Yinggai* [sharenxiongshou]$_F$ qu zuolao, er bu-shi wugu
should murderer go be.imprisoned but NEG-be innocent
de ren
MOD people
'It ought to be that murderers go to jail, but not innocent people.'=(b)
b. [Sharenxiongshou]$_F$ *yinggai* qu zuolao, er bu-shi wugu
murderer should go be.imprisoned but NEG-be innocent
de ren
MOD people
'It ought to be that murderers go to jail, but not innocent people.'=(a)

The most natural interpretation of both sentences is that they express that the state of affairs concerned (i.e. "murderers go to jail") ought to occur, rather than placing the obligation on "murderers". Hence, low modals, unlike high modals, are ambiguous

13. Note that the (b) sentences are in fact ambiguous between the two readings, although the ought-to-be reading may be less salient.

between an ought-to-do and ought-to-be reading.[14] It should be admitted that in some cases the ought-to-be reading of low modals may be less salient, however.

Now we contrast the *ought-to-be* reading with the *epistemic* reading. Following the Kratzerian framework on modality (Kratzer 1977, 1991), where modal interpretation involves a contextually determined conversational background (and an ordering source), an ought-to-be reading (e.g. in (40)a) concerns all worlds compatible with, for instance, some set of the laws and moral principles. On the other hand, an epistemic reading concerns worlds compatible with what is known in the actual world. Their difference can be illustrated in (41):

(41) Ju wo suo-zhi, *yinggai*^{Epi} sharenxiongshou hui qu zuolao
accord 1SG that-know should murderer will go be.imprisoned
'According to what I know, it is probably the case that murderers will go to jail.'

(41) contains a genuine epistemic *yinggai* 'should'. Unlike the high (deontic) *yinggai* in (40)a, the state of affairs is evaluated under a set of facts that belongs to the speaker's knowledge in (41). There is no obligation expressed by the epistemic *yinggai*.

The difference between the ought-to-be and epistemic readings is further supported by a syntactic asymmetry. Tsai, Yang and Lau (2017) notice an interesting asymmetry between ought-to-be and epistemic modals with regard to their ability to license a quantity subject indefinite. Provided that quantity subject indefinites in Chinese are generally disallowed (Li & Thompson 1989), ought-to-be modals exceptionally allow a quantity subject indefinite. This asymmetry carries over to high deontic *yinggai* and epistemic *yinggai*, as shown in (42)–(43) below:[15]

(42) High deontic *yinggai*
Yinggai^{Deo} [san-ge-ren]$_F$ zuo yi-bu-che, er bu-shi si-ge.
should three-CL-person sit one-CL-car but NEG-be four-CL
'It ought to be that three persons are seated in one car, but not four persons.'

(43) Epistemic *yinggai*
**Yinggai*^{Epi} [san-ge-ren]$_F$ zuo-le yi-bu-che, er bu-shi si-ge.
should three-CL-person sit-PERF one-CL-car but NEG-be four-CL
Int: 'It is probably the case that three persons have been seated in one car, but not four persons.'

14. We set aside the question on why high modals cannot convey an ought-to-do reading.

15. For further discussion on why epistemic modals fail to license a quantity subject indefinite, readers may refer to Tsai, Yang and Lau (2017).

Based on the evidence from both meaning contrast (as in (40)a vs. (41)) and syntactic asymmetry (as in (42) vs. (43)), it is now clear that high (deontic) *yinggai* is not an epistemic modal, but a deontic modal with an ought-to-be reading. This is also true for other high (root) modals. For example, high *keyi* 'may' has an *allowed-to-be* reading (as compared to an *allowed-to-do* reading) and licenses a quantity subject indefinite in (44).[16]

(44) [Context: You and your friends were calling a taxi. However, the capacity of the taxi is limited to three persons. You then asked the taxi driver:]
Keyi [si-ge ren]$_F$ zuo yi-bu che ma?
may four-CL person sit one-CL car SFP.Q
'Is it allowed to be that four persons are seated in one car?'

We therefore conclude that high (root) modals are not epistemic modals, but root modals that are concerned with states of affairs, e.g. whether they ought to or are allowed to occur. In the next section, we pursue an account where high modals are derived by moving a low modal to a higher position.

4. A movement approach

We retain the classic treatment that root modals are consistently base-generated below Spec TP (i.e. below the surface subject) (Tsai 2015) and suggest that high modals are in a derived position. We propose that root modals undergo (head) movement from the lower position to the position right above a focused element, detailed in (45).[17]

---

16. High *neng* 'can' and *hui* 'will' are also able to license a quantity subject indefinite:

(v) [The same context with (44), you asked:]
Neng-bu-neng [si-ge-ren]$_F$ zuo yi-bu-che?
RED-NEG-can four-CL-person sit one-CL-car
'Can it to be that four persons are seated in one car?'

(vi) [The same context with (44), the taxi driver answered:]
Zheli *bu-hui* [si-ge-ren]$_F$ zuo yi-bu-che de.
here NEG-will four-CL-person sit one-CL-car SFP
'Here, (our practice is that) there wouldn't be four persons being seated in one car.'

17. The landing site of the modal may be a specifier position or an adjoined position. The distinction is immaterial here; but see Matushansky (2006), Lechner (2007), Iatridou and Zeijlstra (2013) for possible implementations.

(45) Modal movement

$[\text{Mod}^{\text{root}}\ [_{\text{CP/TP}}\ \text{XP}_{[+\text{Focus}]}\ [\ \_\_\ [_{\text{VP}}\ \ldots\ ]]]]$

Crucially, we suggest that while this movement is optional, it is restricted to cases where it crosses a focused element. The movement is otherwise unavailable in the absence of such a focused element. We propose that this restriction follows from a version of Output Economy, following the same spirit in Fox (2000), Reinhart (1995), Chomsky (2000, 2001), Miyagawa (2006, 2011), among others.

(46) Output Economy (focus version)
Optional operations must affect the output with regard to focus set calculation.

The core idea is that the movement of modals must have an effect on the output which would otherwise be ruled out due to its vacuity. In our case of high (root) modals, a focused element is crucial on the path of the moving modals as it ensures the movement to have an effect on the calculation of the focus set. In contrast, the absence of such focused elements renders the movement vacuous in violation of (46). In the following subsections, we detail the implementation of the proposal with concrete examples in § 4.1. We discuss a further issue with A-not-A questions and focus reading in § 4.2.

4.1 Modal movement and the calculation of the focus set

Here we assume a Roothian framework on focus (Rooth 1985, 1992) which keeps track of both the ordinary semantic values and the focus semantic values during the derivation. The latter is obtained by substituting the alternatives triggered by the focus-marked element(s). Following Beck (2006), we suggest that a focus operator can look at the focus semantic values and "reset" the focus semantic values (or the alternative set) of its complement, i.e. replacing the focus semantic values with the ordinary semantic values (*cf.* Rooth's ~ operator, and see also discussions in Kotek 2016, 2019, Erlewine 2019). For space reasons, we abstract over the details of the semantic composition, but we stress the distinction between focused elements and the focus set calculated against the focused element. It is the latter on which the proposed modal movement imposes an effect.

To see a concrete example, consider the following sentences both with subject focus. For expository reasons, we consider cases involving an overt focus marker (i.e. *shi*) with a contrasting continuation in the second clause.

(47) Shi [*Zhangsan*$_F$ keyi lai], bu shi [Lisi keyi lai]
FOC Zhangsan may come NEG FOC Lisi may come
'It is the case that Zhangsan may come, not that Lisi may come.'

(48) Keyi shi [*Zhangsan*$_F$ lai], bu shi [Lisi lai]
may FOC Zhangsan come NEG FOC Lisi come
'It is allowed to be that Zhangsan comes, not that Lisi comes.'

We suggest that the focus marker *shi* comes with a "resetting" focus operator which sets the upper bound of the focus set. In effect, this gives rise to the crucial difference between (47) and (48). In (47), the modal *keyi* 'may' in the first clause is within the focus set closed off by *shi*. It generates the set of alternatives as {Zhangsan may come, Lisi may come, Wangwu may come, …}. The continuation is appropriately contrasted with the first clause as it is one of the alternatives. Contrarily, the modal in (48) is not included in the focus set. The focus set is then slightly different, which is now {Zhangsan comes, Lisi comes, Wangwu comes…}. The contrasting continuation in (48) is the one without the modal *keyi* 'may', which is one of the alternatives.

It should be noted that while the proposed movement of modals does not contribute to the focus reading *per se* (as it is the subject that receives the focus interpretation in both cases), it affects the calculation of the focus set. The interpretive difference is revealed in the attempt to add different continuations to the sentences in (47) and (48), illustrated in (49) and (50), both of which are infelicitous due to a mismatch between the focus set and the contrasting phrase.[18,19]

(49) #Shi [*Zhangsan*$_F$ keyi lai], bu shi [Lisi lai]
FOC Zhangsan may come NEG FOC Lisi come

---

18. The interpretive difference will become truth-conditional if the modal moves across a focus-sensitive operator, e.g. *zhi(you)* 'only' (Erlewine 2015), as shown in the contrast below. The semantic effect here not only arises from the difference in focus set calculation, but also the scopal interaction between the exclusive 'only' (which contains a universal quantification) and the modal (see also Lee 2019).

(vii) *Zhiyou xueshang*$_F$ keyi lai (, laoshi bu keyi lai)
only student may come teacher NEG may come
'Only students may come. Teachers may not come.'

(viii) Keyi *zhiyou xueshang*$_F$ lai (, dan laoshi lai ye meiguanxi)
may only student come but teacher come also do.not.matter
'It is allowed to be that only students come, but it is also fine for teachers to come.'

19. For other cases without an overt focus operator discussed in § 2.1, we suggest that there is a null counterpart of *shi* (in line with Rooth, whose ~ operator is also null). In cases of questions, we follow Kotek (2016, 2019) and assume that there is a resetting operator, ALTSHIFT, which is distinct from a (higher) question operator. Modals escape from the calculation of the focus set by the proposed movement (while being within the scope of the question operator).

(50) #Keyi shi [*Zhangsan*$_F$ lai], bu shi [Lisi keyi lai]
may FOC Zhangsan come NEG FOC Lisi may come

Let us turn to what happens when there is no focus on the movement path of high modals. (51) is the unacceptable case, where the focused element is the object.[20] We suggest that this is because the movement does not affect the calculation of the focus set, hence is in violation of Output Economy in (46).

(51) *Keyi Zhangsan shi qu *Beijing*$_F$
may Zhangsan FOC go Beijing
Int.:'It is allowed to be that it is Beijing that Zhangsan goes to.'

For illustrative purposes, let us consider two logically possible base structures for (51). In (52), *keyi* is base-generated above *shi*, whereas in (53) *keyi* is merged below *shi*. As will be seen, neither structures can derive (51) without violating Output Economy.

(52) [$_{TP}$ Zhangsan [keyi [shi [$_{vP}$ qu *Beijing*$_F$]]]]

(53) [$_{TP}$ Zhangsan [shi [keyi [$_{vP}$ qu *Beijing*$_F$]]]]

For (52), the modal starts out at a position higher than the focus operator *shi*. It follows then that the movement of the modal could not possibly affect the calculation of the focus set, which is already closed off by *shi*. On the other hand, in (53), the modal is below *shi* and its movement may potentially alter the calculation of the focus set. However, we suggest that the movement of *keyi* is disallowed due to a locality constraint. Specifically, *keyi* can move over the focus operator *shi*, but not the subject *Zhangsan*. This is because the effect on the calculation of the focus set is achieved by crossing *shi*.[21] Put differently, movement of *keyi* in (53) is allowed and it results in a surface word order that looks exactly like (52).[22] Further movement of *keyi* is disallowed as it cannot affect the calculation of the focus set anymore. The same reasoning applies to other cases discussed in § 2.1 and § 2.2. The generalization in (22) is thus derivable from a movement analysis of modals supplemented with a version of Output Economy.

---

20. The focus could also be on the verb or the whole verb phrase. For simplicity, we stick to the object focus case.

21. This is reminiscent of Fox's (2000) Shortest Move constraint on Quantifier Raising. We leave further comparison to future research.

22. The structure is indeed allowed as shown in the grammatical sentence below, though it is highly marked:

(ix) Hao, wo chengren Zhangsan keyi shi qu-le *Beijing*$_F$ er bu shi Taibei.
okay 1SG admit Zhangsan may FOC go-PERF Beijing but NEG FOC Taipei
'Okay, I admit that it could be the case that Zhangsan has gone to Beijing but not Taipei.'

4.2 A-not-A questions and focus reading

In the previous sections, we have witnessed the connection between high modals and focus interpretations. Accordingly, the initial puzzle posited by A-not-A questions and high modals falls into a more general picture of modal movement licensed by focus interpretations. However, recall that high modals are often discussed specifically in connection to A-not-A questions in the literature. We suggest that this may not be a coincidence and there is a way in which A-not-A questions combine very naturally with high modals. Consider again the following contrast, repeated from (2) and (3):

(54) Root modals cannot precede the subject (=(2))
*{*Neng / *hui / *keyi}* Zhangsan *{neng / hui / keyi}* zhunbei wancan
can will may Zhangsan can will can prepare dinner
Int.: 'Zhangsan can/ will/ may prepare the dinner.'

(55) Root modals in A-not-A form can precede the subject (=(3))
Neng-bu-neng/ hui-bu-hui/ ke-bu-keyi Zhangsan zhunbei wancan?
RED-NEG-can RED-NEG-will RED-NEG-may Zhangsan prepare dinner
'Can/ will/ may it be that Zhangsan prepare the dinner?'

As is clear by now, the sentence in (54) is degraded since the subject does not receive a focus interpretation. Crucially, if A-not-A questions were *completely* unrelated to high modals, then we would expect the sentence in (55) to pattern with (54) in terms of unacceptability, especially in the absence of any focus-marking devices or contexts. Nonetheless, (55) is fully acceptable. This suggests that A-not-A questions contribute to some potential licensing environment for high modals (i.e. focus interpretations), which is otherwise absent in (plain) declarative sentences. However, how A-not-A questions may trigger a focus interpretation is a non-trivial question, since, not every A-not-A question carries narrow focus. For example, in (56), the context indicates that the question is focus-neutral and carries broad focus:

(56) [Context: The speaker knows nothing about Zhangsan:]
Zhangsan qu-bu-qu Beijing?
Zhangsan RED-NEG-go Beijing
'Does Zhangsan go to Beijing?' (broad focus)

Although not every A-not-A question triggers narrow focus, there are cases where the link with narrow focus is clear. Schaffar & Chen (2001) and Tsai & Yang (2015) propose that A-not-A questions may be divided into two types. The first type, *inner* A-not-A, is formed by ordinary verbs and contributes to a neutral/broad focus interpretation, e.g. (56) above. The second type, *outer* A-not-A, is often formed by

copular *shi* (or epistemic modals) and contributes to a narrow focus interpretation. (57) exemplifies a narrow subject focus in the outer A-not-A questions.

(57) [Context: The speaker knows that only Zhangsan likes Beijing:]
Shi-bu-shi *Zhangsan*$_F$ qu Beijing?
RED-NEG-COP Zhangsan go Beijing
'Does Zhangsan (but not sb. else) go to Beijing?' (narrow focus: subject)

In structural terms, they analyze the inner A-not-A head as one within the *v*P domain, whereas the outer A-not-A is occupying a higher functional head in the CP domain (labelled as the head of *Pol2P* in Schaffar & Chen 2001 and the head of *AstP* in Tsai & Yang 2015). Essentially, this outer A-not-A head triggers a narrow focus interpretation, i.e. subject focus in (57).

(58) [$_{CP}$ … A-not-A^{outer} … [$_{TP}$ subject … [$_{vP}$ … A-not-A^{inner} …]]]

Verbs, however, are too low to move to the outer A-not-A head.

(59) *Qu-bu-qu *Zhangsan*$_F$ Beijing?
RED-NEG-go Zhangsan Beijing
'Does Zhangsan (but not someone else) go to Beijing?'

We suggest that A-not-A questions formed with high modals (e.g. (24)a, reproduced below) are outer A-not-A questions containing a higher functional head in CP domain. The outer A-not-A head triggers a narrow focus on the subject. Under our proposal, the movement of *keyi* is licit in crossing the focused subject. After the movement, *keyi* fuses with the outer A-not-A head to form *ke-bu-keyi*. The derivations are given in (61). Crucially, we propose that the modal movement is prior to A-not-A formation, i.e. the moving element is only the modal *keyi*, but not *ke-bu-keyi*.

(60) Ke-bu-keyi (shi) *Zhangsan*$_F$ qu Beijing? (=(24)a)
RED-NEG-may FOC Zhangsan go Beijing
'Is it allowed to be that Zhangsan (but not someone else) go to Beijing?'

(61) a. Subject focus
[$_{CP}$ A-not-A [(shi) [$_{TP}$ Zhangsan$_{[+Focus]}$ [*keyi* [go Beijing]]]]]

b. Modal movement
[$_{CP}$ A-not-A [*keyi* [(shi) [$_{TP}$ Zhangsan$_{[+Focus]}$ [__ [go Beijing]]]]]]

c. A-not-A formation
[$_{CP}$ ke-bu-keyi [(shi) [$_{TP}$ Zhangsan$_{[+Focus]}$ [__ [go Beijing]]]]]

There is indeed evidence for the higher position of the outer A-not-A head from the calculation of focus set. First, A-not-A questions arguably denote a set of propositional alternatives {p, not p} (Dong 2009, which can be dated back to Huang's 1982 domain of restriction). Also, the focus operator *shi*, by nature of its resetting function, will close off the focus set. Accordingly, if the A-not-A sequence is lower than the *shi*, focus intervention effects in the sense of Beck (2006) will arise, illustrated below in (62)–(63). Hence, the A-not-A must be higher than *shi* for successful semantic composition.

(62) *Shi *Zhangsan*$_F$ qu-bu-qu Beijing?
FOC Zhangsan RED-NEG-go Beijing
Int.:'Does Zhangsan (but not someone else) go to Beijing?'

(63) *[shi [$_{TP}$ Zhangsan$_{[+Focus]}$ [$_{vP}$ A-not-A [go Beijing]]]]

With all these ingredients, now consider the focus calculation in (64) (without modal movement), and (65) (with modal movement).

(64) Outer A-not-A without modal movement
[$_{CP}$ A-not-A [shi [$_{TP}$ Zhangsan$_{[+Focus]}$ [*keyi* [go Beijing]]]]]

(65) Outer A-not-A with modal movement
[$_{CP}$ A-not-A [*keyi* [shi [$_{TP}$ Zhangsan$_{[+Focus]}$ [__ [go Beijing]]]]]]

In (64), where *keyi* does not move and stays within TP, the focus set of TP is {Zhangsan may go to Beijing, Lisi may go to Beijing, Wangwu may go to Beijing …}. It is closed off by *shi*. The higher A-not-A triggers an alternative set of the prejacent proposition and its complement, i.e. {it is Zhangsan that can go to Beijing, it is not Zhangsan that can go to Beijing}. In (65), in contrast, the movement of *keyi* allows it to escape the focus set of TP. The TP focus set is now {Zhangsan goes to Beijing, Lisi goes to Beijing, Wangwu goes to Beijing …}, and is closed off by *shi*. The higher A-not-A triggers an alternative set of {it can be Zhangsan that goes to Beijing, it cannot be Zhangsan that goes to Beijing}. Thus, although the A-not-A and its alternative sets scope over the modal in both cases, the lower focus set calculations are different after the modal movement. There is no violation to the proposed output economy and hence the modal movement in A-not-A questions is licit.

5. Conclusion

This paper addressed a long-standing puzzle concerning Chinese modals, that is, A-not-A questions appear to exceptionally license an otherwise unavailable pre-subject position for root modals. It has been argued here that A-not-A licensing

is actually just the tip of the iceberg and high root modals constitute a broader phenomenon related to focus interpretations in general.

We proposed that root modals can undergo (optional) movement across a focused element to a higher position, yielding a change in focus set calculation. Specifically, a modal moving out of the scope of a focus operator will "escape" the focus set and amount to a different set of alternatives. We argued that this movement is constrained by a focus version of output economy (Fox 2000, Reinhart 1995, Chomsky 2000, 2001, Miyagawa 2006, 2011), explaining why there must be a focus on the path of modal movement. We discussed the relevance of A-not-A questions to high root modals and suggested that outer A-not-A questions contribute to a narrow (subject) focus reading that licenses modal movement.

Acknowledgments

We would like to dedicate this chapter to Audrey Li to thank her guidance and support. Earlier versions of this paper have been presented at ARF-2019 (EDUHK), SICOGG 22 (GNU, Korea) and NACCL 32 (UConn). For comments and discussions, we thank Peppina Po-lun Lee, Sze-Wing Tang, Dylan Tsai, and the audience in the above occasions. We are also grateful to the inspiring and helpful comments from an anonymous reviewer. For Mandarin judgements, we thank Zhuo Chen, Jia Ren, Haley Wei, Bo Xue, and the late Jiahui Huang. We also thank Yi-ching Hsieh, Jia Jin, Joy Lee and Min Sun for judgements on other Chinese varieties. Thanks also go to Andrew Simpson for all the editorial work. All errors remain the authors' own responsibilities.

Abbreviations

1, 2, 3	first, second, third person respectively
BA	object preposing marker *ba*
CL	classifier
COP	copula
FOC	focus marker
NEG	negation
PERF	perfective aspect marker
PL	plural
PROG	progressive aspect marker
Q	question marker
RED	reduplication
RSLT	resultative complement
SFP	sentence-final particle
SG	singular
TOP	topic marker

References

Beck, Sigrid. 2006. Intervention effects follow from focus interpretation. *Natural Language Semantics* 14 (1): 1–56. https://doi.org/10.1007/s11050-005-4532-y

Bhatt, Rajesh. 1998. Ability modals and their actuality entailments. In *Proceedings of the West Coast Conference on Formal Linguistics (*WCCFL) 17, 74–87.

Brennan, Virginia Mary. 1993. Root and Epistemic Modal Auxiliary Verbs. PhD dissertation, University of Massachusetts.

Cheng, Lisa Lai-Shen & Luis Vicente. 2013. Verb doubling in Mandarin Chinese. *Journal of East Asian Linguistics* 22 (1): 1–37. https://doi.org/10.1007/s10831-012-9095-6

Cheng, Lisa Lai Shen. 2008. Deconstructing the *shì … de* construction. *The Linguistic Review* 25: 235–66. https://doi.org/10.1515/TLIR.2008.007.

Chomsky, Noam. 2000. Minimalist inquiries: the framework. In *Step by Step: Essays on Minimalist Syntax in Honor of Howard Lasnik*, Roger Martin, David Michaels & Juan Uriagereka (eds), 89–156. Cambridge MA: MIT Press.

Chomsky, Noam. 2001. Derivation by phase. In *Ken Hale: A Life in Linguistics*, Michael Kenstowicz (ed), 1–52. Cambridge MA: MIT Press.

Diesing, Molly. 1992. *Indefinites*. Cambridge MA: MIT Press.

Dong, Hongyuan. 2009. Issues in the Semantics of Mandarin Questions. PhD dissertation, Cornell University.

Erlewine, Michael Yoshitaka. 2015. In defense of closeness: focus-sensitive adverb placement. Ms., McGill University. https://mitcho.com/research/closeness.html.

Erlewine, Michael Yoshitaka. 2019. *Wh*-quantification in Alternative Semantics. *Paper presented at GLOW in Asia XII and SICOGG XXII*.

Erlewine, Michael Yoshitaka. 2020. Mandarin *shì* clefts and the syntax of discourse congruence. Ms., National University of Singapore. https://ling.auf.net/lingbuzz/005176.

Feldman, Harry. 1986. *Doing the Best We Can: An Essay in Informal Deontic Logic*. Dordrecht: Reidel. https://doi.org/10.1007/978-94-009-4570-8

Fox, Danny. 2000. *Economy and Semantic Interpretation*. Cambridge MA: MIT Press.

Hacquard, Valentine. 2006. Aspects of Modality. PhD dissertation, Massachusetts Institute of Technology.

Homer, Vincent. 2015. Neg-raising and positive polarity: the view from modals. *Semantics and Pragmatics* 8 (4): 1–88. https://doi.org/10.3765/sp.8.4.

Hsu, Yu-yin. 2016. Sentence-initial modals as focus operators at CP in Chinese. In *Proceedings of the 51st Annual Meeting of Chicago Linguistics Society (CLS)*, Ksenia Ershova, Joshua Falk & Jeffrey Geiger (eds), 257–68. Chicago IL: Chicago Linguistic Society.

Huang, C.-T. James. 1982. Move *wh* in a language without *wh* movement. *The Linguistic Review* 1: 369–416. https://doi.org/10.1515/tlir.1982.1.4.369

Huang, C.-T. James, Audrey Yen-hui Li & Yafei Li. 2009. *The Syntax of Chinese*. Cambridge, MA: Cambridge University Press. https://doi.org/10.1017/CBO9781139166935

Iatridou, Sabine & Hedde Zeijlstra. 2013. Negation, polarity, and deontic modals. *Linguistic Inquiry* 44 (4): 529–568. https://doi.org/10.1162/LING_a_00138

Jackendoff, Ray. 1972. *Semantic Interpretation in Generative Grammar*. Cambridge, MA: MIT Press.

Kotek, Hadas. 2016. On the semantics of *wh*-questions. In *Proceedings of Sinn Und Bedeutung 20*, Nadine Bade, Polina Berezovskaya & Anthea Schöller (eds), 424–447.

Kotek, Hadas. 2019. *Composing Questions*. Cambridge, MA: The MIT Press. https://doi.org/10.7551/mitpress/10774.001.0001

Kratzer, Angelika. 1977. What 'must' and 'can' must and can mean. *Linguistics and Philosophy* 1(3): 337–355. https://doi.org/10.1007/BF00353453

Kratzer, Angelika. 1991. Modality. In *Semantics: An International Handbook of Contemporary Research*, Arnim von Stechow & Dieter Wunderlich (eds), 639–650. Berlin: de Gruyter.

Lechner, Winfried. 2007. Interpretive effects of head movement. Ms., University of Athens. http://ling.auf.net/lingBuzz/000178.

Lee, Tommy Tsz-Ming. 2019. Quantifier-raising a head. In *Universal Grammar and Its Cross-linguistic Instantiations (Proceedings of GLOW in Asia XII & SICOGG XXI)*, Sae-Youn Cho (ed), 160–172. Seoul: The Korean Generative Grammar Circle.

Lee, Tommy Tsz-Ming. 2021. Asymmetries in doubling and Cyclic Linearization. *Journal of East Asian Linguistics* 30: 109–139. https://doi.org/10.1007/s10831-021-09222-2

Li, Audrey Yen-hui. 1990. *Order and Constituency in Mandarin Chinese*. Dordrecht: Kluwer Academic Publishers. https://doi.org/10.1007/978-94-009-1898-6

Li, Charles N. & Sandra A. Thompson. 1989. *Mandarin Chinese: A Functional Reference Grammar*. London: University of California Press.

Lin, Jo-Wang & Chih-Chen Jane Tang. 1995. Modals as verbs in Chinese: a GB perspective. *Bulletin of the Institute of History and Philology, Academia Sinica* 66: 53–105.

Lin, Tzong-Hong Jonah. 2011. Finiteness of clauses and raising of arguments in Mandarin Chinese." *Syntax* 14 (1): 48–73. https://doi.org/10.1111/j.1467-9612.2010.00145.x.

Lin, Tzong-Hong Jonah. 2012. Multiple-modal constructions in Mandarin Chinese and their finiteness properties. *Journal of Linguistics* 48 (1): 151–186. https://doi.org/10.1017/S0022226711000272.

Matushansky, Ora. 2006. Head movement in linguistic theory. *Linguistic Inquiry* 37 (1): 69–109. https://doi.org/10.1162/002438906775321184

Miyagawa, Shigeru. 2006. On the "undoing'' property of scrambling: a response to Bošković. *Linguistic Inquiry* 37 (4): 607–624. https://doi.org/10.1162/ling.2006.37.4.607

Miyagawa, Shigeru. 2011. "Optionality." In *The Oxford Handbook of Linguistic Minimalism*, Cedric Boeckx (ed), 1–19. Oxford: Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199549368.013.0016.

Palmer, Frank R. 1990. *Modality and the English Modals*. New York & London: Routledge.

Paris, Marie Claude. 1979. Some aspects of the syntax and semantics of the '*lian…. ye/dou*' construction in Mandarin. *Cahiers de Linguistique d'Asie Orientale* 5: 47–70. https://doi.org/10.1163/19606028-90000206.

Perlmutter, David. 1971. *Deep and Surface Structure Constraints in Syntax*. New York: Holt, Rinehart and Winston.

Portner, Paul. 2009. *Modality*. Oxford: Oxford University Press.

Reinhart, Tanya. 1995. *Interface Strategies. OTS Working Papers in Linguistics*. Utrecht: Utrecht University, Research Institute for Language and Speech.

Rizzi, Luigi. 2015. Notes on labeling and subject positions. In *Structures, Strategies and beyond: Studies in Honour of Adriana Belletti*, Elisa Di Domenico, Cornelia Hamann & Simona Matteini (eds), 17–46. John Benjamins. https://doi.org/10.1075/la.223.02riz

Roberts, Craige. 1996. Information structure in discourse: towards an integrated formal theory of pragmatics. *OSU Working Papars in Linguistics* 49: 91–136.

Roberts, Craige. 2012. Information structure in discourse: towards an integrated formal theory of pragmatics. *Semantics and Pragmatics* 5 (6): 1–69. https://doi.org/10.3765/sp.5.6.

Rochemont, Michael. 1986. *Focus in Generative Grammar*. Amsterdam, The Netherlands: John Benjamins Publishing Company. https://doi.org/10.1075/sigla.4

Rooth, Mats. 1985. Association with Focus. PhD dissertation, University of Massachusetts, Amherst.

Rooth, Mats. 1992. A theory of focus interpretation. *Natural Language Semantics* 1 (1): 117–121. https://doi.org/10.1007/BF02342617

Ross, John. 1969. Auxiliaries as main verbs. In *Studies in Philosophical Linguistics, Series One*, William Todd (ed), 77–102. Evanston, Illinois: Great Expectations Press.

Schaffar, Wolfram & Lansun Chen. 2001. Yes-no questions in Mandarin and the theory of focus. *Linguistics* 39 (5): 837–870. https://doi.org/10.1515/ling.2001.036.

Shlonsky, Ur & Luigi Rizzi. 2018. Criterial freezing in small clauses and the cartography of copular constructions. In *Freezing: Theoretical Approaches and Empirical Domains*, Jutta Hartmann, Marion Jäger, Andreas Kehl, Andreas Konietzko & Susanne Winkler (eds), 29–65. Berlin: De Gruyter Mouton. https://doi.org/10.1515/9781501504266-002

Shyu, Shu-ying. 1995. The Syntax of Focus and Topic in Mandarin Chinese. PhD dissertation, University of Southern California.

Teng, Shou-hsin. 1979. Remarks on cleft sentences in Chinese. *Journal of Chinese Linguistics* 7 (1): 101–114.

Tsai, Cheng-yu Edwin. 2015. Toward a Theory of Mandarin Quantification. PhD dissertation, Harvard University.

Tsai, Wei-Tien Dylan. 2015. On the topography of Chinese modals. In *Beyond Functional Sequence*, Ur Shlonsky (ed), 275–294. New York: Oxford University Press. https://doi.org/10.1093/acprof:oso/9780190210588.003.0015

Tsai, Wei-tien Dylan & Ching-yu Helen Yang. 2015. Inner vs. outer A-not-A questions. *Paper presented on International Workshop on Cartography of Syntax*, Beijing Language and Culture University.

Tsai, Wei-Tien Dylan, Ching-Yu Helen Yang & Seng-hian Lau. 2017. Modal licensing and subject specificity in Mandarin and Taiwan Southern Min: a cartographic analysis. In *Studies on Syntactic Cartography*, Fuzhen Si (ed), 75–104. Beijing: China Social Sciences Press.

Wurmbrand, Susi. 1999. Modal verbs must be raising verbs. In *Proceedings of the West Coast Conference on Formal Linguistics (WCCFL) 18*, 599–612.

Negative modals and prohibitives in Taiwanese Southern Min

Wei-wen Roger Liao and Yuyun Iris Wang
Academia Sinica / Ming Chuan University

The paper discusses two types of negative modal particles found in prohibitives in Taiwanese Southern Min (TSM) – m-modals and b-modals. What distinguishes the two types of modals, we argue, is whether they are used in a descriptive or a directive/performative way. The m-modals are always used in a directive way, meaning that they represent prohibition issued by the (reported) speaker. The b-modals, on the other hand, are used in a descriptive way, where the speaker simply reports a prohibition from an external source. The finding supports the modalized theory of imperatives. Syntactically, we argue that the m-modal particle is best analyzed as a modal complementizer that manifests a logophoric control relation.

1. Introduction

This paper investigates the issue surrounding the negative imperative sentences, or the prohibitives in Taiwanese Southern Min (henceforth TSM), which is a variety of the Southern Min (Hokkien) languages spoken in Taiwan. Based on the classification of modal particles in Lien (2013, 2015), we argue that there are syntactic and semantic differences between the m-prefixed negative modals (m-modals) and the b-prefixed ones (b-modals) found in the prohibitive sentences in TSM. Semantically, it is argued that different sources of prohibition can be identified in the two groups. The b-prefixed negative modals (b-modals) are basically deontic, and the source of prohibition may be external to the speaker (e.g. coming from the law, moral codes, or social norms). On the other hand, the m-prefixed negative modals are strictly speaker-bouletic, and the source of prohibition comes directly from the speaker's wishes or preferences. The distinction becomes more explicit when we look at embedded prohibitive clauses. In such cases, there is modal concord between the matrix predicate and the modal particle in the embedded clause (Anand & Hacquard 2013), so the directive m-modals can only appear under a directive attitude predicate and the contextual backgrounds associated with the

https://doi.org/10.1075/la.272.07lia

m-modals are always anchored to the closest 'speaker' (or the director), who issues the prohibition. In the embedded case, the director is identified as the matrix subject of the attitude predicate. In order to capture the local anchoring property of the modal particle, we propose that the m-modals, but not the b-modals, project a null argument, or a logophoric PRO, which is logophorically bound by the closest speaker, echoing recent proposals on (embedded) imperatives, control, and attitude predicates (Landau 2015, Pearson 2016, Stegovec 2019, Stephenson 2010). This results in a new analysis of imperative sentences and negative modals in TSM. The paper is organized as follows. In Section 2, we lay out the similarities and differences between the m-modals and the b-modals in TSM. In Section 3, we build a formal account for the modal distinctions. Section 4 concludes the paper.

2. M-modals and b-modals

2.1 Basic data

Negations in TSM are signaled by the prefixes *m-* and *b-*. The former element can also function as a stand-alone negation marker, but the latter is always prefixed to an aspectual or modal marker (Lin 2004, Tang 1994):

(1) a. *Ong-e m kong-ue.*
Ong-e NEG speak
'Ong-e does not (want to) speak.'
b. *Ong-e b-o kong-ue.*
Ong-e NEG-ASP speak
'Ong-e did not speak.'
c. *Ong-e b-eh kong-ue*
Ong-e NEG-MOD speak
'Ong-e will not speak.'

In addition to the basic forms of negation above, both the *m-* and the *b-* prefixes can combine with different modal particles. For our purpose here, we focus on negative modals that are used in prohibitives. Lien (2013, 2015) has noticed that both m-modals and b-modals can be used in prohibitive sentences when they combine with priority modal particles (including deontic, bouletic, and teleological modals) (Portner 2007, 2009):[1]

1. We assume the three-way distinction of modals in Portner (2007, 2009): modals are classified into epistemic (knowledge-based), priority (preference-based), and dynamic (ability/tendency-based) modals. Priority modals can be further divided into deontic modals (related to rules or obligations), bouletic modals (related to desires or wishes), and teleological modals (related to goals or purposes).

(2) m-modals
  a. *M-ai* *kong-ue.*
     NEG-MOD speak
     'Do not speak.' ≃ (I don't want you to speak.)
  b. *M-thang* *kong-ue.*
     NEG-MOD speak
     'Do not speak.' ≃ (You are not allowed to speak.)
  c. *M-ho* *kong-ue.*
     NEG-MOD speak
     'Do not speak.' ≃ (You should not to speak.)

(3) b-modals
  a. *Be-sai* *kong-ue.*
     NEG-MOD speak
     'Do not speak.' ≃ (You are not allowed to speak.)
  b. *Be-eng* *kong-ue.*
     NEG-MOD speak
     'Do not speak.' ≃ (You are not allowed to speak.)
  c. *Be-tang* *kong-ue.*
     NEG-MOD speak
     'Do not speak.' ≃ (You are not allowed to speak.)

On the surface of it, the two types of negative modals seem to share the same grammatical properties – they are both priority modals that can be used in imperatives/prohibitives. Therefore, the *m-*/*b-* distinction might seem unrelated to syntax or semantics. In fact, the literature on negation in TSM has often suggested that the surface distinction between *m-* and *b-*forms might be phonologically conditioned. For example, it has been proposed that the underlying negation form is /m/, and the surface forms [m] and [b] are conditioned by the element following the negative marker (Lin 2004, Tang 1994):

(4) a. *m* + *u* → *bo*
  b. *m* + *e* → *beh*
  c. *m* + *ai* → *mai*
  d. *m* + *beh*/abstract modal → *m*

While a phonological approach might be partially correct in assuming a single underlying negation form, it is not sufficient to account for the full paradigm of the negative modals. For example, the modal particles in the m-modal group can have two possible negative forms, *bo*-Mod and *m*-Mod, and the distinction is not purely phonological, but there are semantic and syntactic distinctions. Specifically, the *bo*-Mod forms cannot be used as prohibitives either directly or indirectly (5a). In this way they also differ from the *b*-modals, which can be used in prohibitives

in an indirect way (see the section below). With the negation being *bo-*, the modal elements *ai*, *thang*, and *ho* seem to maintain their substantial meanings, so *ai* means 'like/want', *thang* means 'chance/ability', and *ho* means 'good/easy'. Syntactically, they behave on a par with regular verbs/predicates, which are also negated by the negative form *bo-* 'NEG'. Therefore, even with a second-person subject, they cannot be used as prohibitives/imperatives (5b):

(5) a. **Bo-ai/bo-thang/bo-ho* *kong-ue*!
NEG-MOD speak
(intended:) 'Do not speak!'

b. *Li* *bo-ai/bo-thang/bo-ho* *kong-ue.*
2SG NEG-want/NEG-chance/NEG-good speak
'You do not like to speak/you had no chance to speak/you are not easy to talk to.'

Going back to the differences between the m-modals and the b-modals, one might argue that the modal force or the modal flavor is a factor leading to their differences. The expectation is not borne out, however. As shown in Lien (2013, 2015), when the modal particles are not negated, both m-modals (6a–c) and b-modals (6d) may express a variety of meanings associated with the root modality:

(6) a. *ai* 'need' (root necessity)
Ong-e *ai* *thak-tsheh.*
Ong-e MOD study
'Ong-e needs to study.'

b. *u-thang* 'have.chance/ability' (root possibility)
Ong-e *u-thang* *thak-tsheh.*
Ong-e MOD study
'Ong-e can study.'

c. *ho* 'had better/should' (weak root necessity)
Ong-e ho thak-tsheh a.
Ong-e MOD study SFP
'Ong-e had better study (now).'

d. *e-sai, e-eng, e-tang* 'able to, allowed to' (root possibility)
Ong-e *e-sai/e-eng/e-tang* *thak-tsheh.*
Ong-e MOD study
'Ong-e can/may study.'

What exactly distinguishes the m-modals and the b-modals in the imperatives/prohibitives, we argue, is whether they are used directively (or performatively). To foresee our conclusion, we argue that the m-modals are always used in a directive way (that is, they only occur in prohibitives), but not the b-modals. The latter is used

in a descriptive way and may only function like prohibitives in right contexts. The pragmatic distinction can be detected by identifying the source of the prohibition and performativity associated with the modals, and we argue that such differences have syntactic and semantic consequences in TSM.

2.2 Distinctions between m-modals and b-modals

Close scrutiny shows that although m-modals and b-modals are both priority modals in their truth-conditional meanings, their use-conditional meanings can be quite different. In particular, they differ in terms of their 'forces', or performativity (Kaufmann 2012, Ninan 2005). It has been observed that modals may have a 'descriptive' (or constative) use and a 'directive' (or performative) use.[2] In the former, the speaker is describing an obligation that is imposed upon the subject of the modal sentence (the obligation does not necessarily come from the speaker). In the latter, the speaker imposes an obligation on the addressee (who is the subject) of the modal sentence. Consider the following examples (from Kaufmann 2012: 58–59):

(7) a. You should do the shopping today (as far as I know).
[descriptive use of *should*]
b. You should close the door (now)!
[directive use of *should*]

The descriptive use of the priority modal *should* in (7a) is used to describe that there is an obligation or permission for the addressee to do shopping. The obligation/permission may come from the rules or regulations that are external to the speaker. For example, (7a) can be used in the pandemic scenario that we are all familiar with right now. Mary is confined at home and can only do grocery shopping on Tuesdays according to the local government regulation. Mary is not sure about the regulation and calls the helpline on Tuesday. The helpline assistant can utter (7a) to inform Mary of the official regulation (what the helpline assistant wants or desires is irrelevant in this case). The source of the obligation/permission here is deontic, and is external to the speaker. On the other hand, (7b) is most naturally understood in a directive sense. By uttering (7b), the speaker issues an obligation to

2. We use the term 'directive' instead of 'performative' (The latter is used in Kaufmann 2012). This is because 'performative' has been generalized to refer to other illocutionary acts like describing, declaring, and promising, etc., under the Performative Hypothesis (Austin 1962, Searle 1976), so even the descriptive modal may imply that the speaker is performing some illocutionary act (the speaker is describing, reporting, or declaring the rule to the addressee). The choice of terminology, however, does not affect the entirety of the arguments in Kaufmann (2012) or in this paper.

the addressee to close the door (which is comparable to *I want/order you to close the door*). The source of the obligation comes from the speaker's desire or preference, or is 'speaker-bouletic'.[3]

It has been argued that an imperative can be identified as a modalized sentence with a directive priority modal (Han 1998, Isac 2015, Kaufmann 2012):[4]

(8) Close the door! ≃ (You should) close the door! (where *should* is used in a directive way)

With this in mind, let us now turn to m-modals and b-modals. The m-modals are strictly directive, but the b-modals are functionally ambiguous and have both directive and descriptive uses.[5] Consider the following contrasts in (9) and (10), adapted from Han's (1998). First, it can be noted that the speaker cannot distance herself from her own prohibition in m-modals (9a), but she can distance herself from the deontic prohibition present with b-modals (since the prohibition may come from an external institution) (9b). Notice that TSM, like other Chinese languages, allows *pro*-drop, so the subject can be dropped even in non-imperative sentences:

(9) a. *(Li) be-sai thak-tsheh, tansi gua ai li thak.*
2SG NEG-MOD study but 1SG want 2SG study
'You cannot study, (but I want you to).'

---

3. Matthewson & Truckenbrodt (2018) observe a similar distinction in the modal particles in German. They argue that *soll* is external-bouletic (*soll p* = x wants p, where x is not the subject in p), and *muss* is purely deontic (*muss p* = p is required by rules or obligations):

(i) a. *Peter soll uns etwas mitbringen.*
Peter SOLL us something bring
'We want Peter to bring us something.' or 'Someone (Peter's wife) wants Peter to bring us something.'

b. *Ich muss noch das Gebäude abschließen.*
1SG must still the building lock
'I still have to lock the building.' [A rule says that the last person leaving must lock the building.]

The m-modals in TSM are a more restrictive version of *soll* since the external bouletic source is restricted to the speaker (*m-ai p* = I/we want ~p), and the b-modals in TSM are like *muss* (*be-sai p* = the rule requires ~p).

4. Portner (2007) also relates the interpretative possibilities of imperatives to the range of priority modals, but he does not identify the two in semantics. See discussion in Kauffman (2012) and Isac (2015).

5. This is not to say that the modal particles in the m-modals are inherently directive, but the distinction is reflected through the modal negative forms. The *bo*-Mod forms of the m-modals discussed earlier (*bo-ai, bo-thang, bo-ho*) are all descriptive modals.

b. *(Li) m-ai thak-tsheh, (#tansi gua ai li thak).*
2SG NEG-MOD study but 1SG want 2SG study
'Don't study, (#but I want you to).'

Second, the addressee can question the source of prohibition when the speaker uses the descriptive b-modal (10), since it is presupposed that the source of the prohibition does not always come from the speaker. On the other hand, it is infelicitous to question the source when the speaker uses the directive m-modals because it is presupposed that the source of the prohibition comes from the speaker, and therefore, (11b) is pragmatically odd. The addressee, on the other hand, can challenge the authority of the speaker by uttering (11b′):

(10) a. *(Li) be-sai ti-tsia thing-tshiann.*
2SG NEG-MOD in-here park-car
'You cannot park your car here.'
b. *Siang kong e?*
who say E
'Who says so?'
b′. *Hit te pai-a u sia.*
that CLF sign have write
'It is written on that sign.'

(11) a. *M-ai ti-tsia thing-tshiann.*
NEG-MOD in-here park-car
'Don't park your car here.'
b. #*Siang kong e?*
who say E
'Who says so?'
b′. *Si-an-tsuann gua ai tiann li-e?*
why 1SG need listen 2SG-POSS
'Why do I have to listen to you?'

Third, although both m-modals and b-modals allow a third person subject, the meanings are not entirely the same. In the b-modal case (12a), the speaker is describing the fact that Ong-e is not allowed to eat. On the other hand, in the m-modal case (12b), the sentence has a hortative reading (a subtype of imperative), so that the speaker imposes prohibition on the addressee, requiring the addressee not to allow the subject to perform some act (Alcázar & Saltarelli 2014).[6] The distinction can

6. Not every native speaker of TSM accepts a sentence like (12b) with a third person subject. Using the causative construction with *hoo* 'cause/let' is generally preferred, as in (i):

(i) *(Li) m-ai hoo Ong-e tsiah-png*!
2SG NEG-MOD let Ong-e eat
'Don't you let Ong-e eat!'

be further unraveled via tag questions. In (12a), the tag question is used to clarify whether Ong-e has the permission to eat or not, but in (12b), the tag question is used to enforce the addressee to continue to carry out the prohibition:

(12) a. *Ong-e be-sai tsiah-png, (kam e-sai?)*
Ong-e NEG-MOD eat Q MOD
'Ong-e is not allowed to eat. (Can he?)'
b. %*Ong-e m-ai tsiah-png, (kam e-sai?)*
Ong-e NEG-MOD eat Q MOD
'Don't let Ong-e eat! (Can you see to it that he does not eat?)'

Fourth, the b-modals can be preceded by an epistemic modal, but the m-modals cannot. Again, this can be explained by the fact that the b-modals are used descriptively, and the descriptive assertion can be quantified over by an epistemic modal (i.e. it is epistemically possible that *p* is legally necessary). On the other hand, the directive m-modals do not generate an assertion, and they cannot be quantified over by an epistemic modal:

(13) *Li kho-ling *m-ai/ok be-sai thak-tsheh.*
2SG probably NEG-MOD study
a. *'It is possible that don't you study.'
b. 'It is possible that you cannot study.'

Fifth, the descriptive b-modal sentence can be modified by a factive adverb like *khaksit* 'indeed', which the speaker uses to confirm the truth of the proposition. As predicted, the directive m-modal sentence is not compatible with *khaksit* 'indeed':

(14) *Li khaksit *m-ai/ok be-sai thak-tsheh.*
2SG indeed NEG-MOD study
a. *'It is indeed the case that don't study.'
b. 'It is indeed the case that you cannot study.'

Finally, the differences between m-modals and b-modals also lead to an intriguing asymmetry when they are embedded under different types of predicates. Specifically, the distinction shows up in two major types of predicates – the *believe*-type and the *persuade*-type (Li 1990). Li (1990) argues that the former type of predicate always embeds a finite clause, while the latter type embeds a control infinitive clause in Mandarin Chinese (see Liao & Wang 2020 for relevant discussion):

(15) a. *Believe*-type predicate
Zhangsan xiangxin/shuo/renwei/zhidao [ta hui qu shangxue.]
Zhangsan believe/say/think/know 3SG MOD go to.school
'Zhangsan believes/says/thinks/knows that he will go to school.'

b. *Persuade*-type predicate
Zhangsan quan/yaoqiu/jiao/qing/xiangyao Lisi$_i$ [PRO$_i$ qu shangxue.]
Zhangsan persuade/demand/tell/ask/want Lisi go to.school
'Zhangsan persuades/demands/tells/asks/wants Lisi to go to school.'

Now consider the m-modals and the b-modals in the embedded cases. We find that the m-modals are not able to be embedded under *believe*-type predicates (we use *m-ai* and *be-sai* for illustration, but other m-modals and b-modals behave like *m-ai* and *be-sai*, respectively):

(16) a. *Ong-e siongsin/kong/siunnkong/tsai-iann Li-e (kho-ling) *mai/^{ok}be-sai puahkiau.*
Ong-e believe/say/think/know Li-e probably NEG-MOD gamble
'Ong-e believes/says/thinks/knows that Li-e is (probably) not allowed to gamble.'

b. *Ong-e khokhng/iaukiu/kio/tshiann/ai Li-e (*kho-ling) mai/*be-sai puahkiau.*[7]
Ong-e persuade/demand/tell/ask/want Li-e probably NEG-MOD gamble
'Zhangsan persuades/demands/tells/asks/wants Lisi not to gamble.'

The distinction between (16a) and (16b) can now be captured by the fact that the b-modal is used descriptively, and the embedded clause is a descriptive assertion (an information state) about *Li-e* that can be believed, said, thought, or known by the attitude holder (or the matrix subject) *Ong-e*, and an epistemic modal/adverb may appear in the embedded clause as well. On the other hand, the m-modals are always used in a directive way, and in (16b), we have a case of the (reported) embedded imperative, in which the matrix subject *Ong-e* is the director (or speaker)

---

7. The use of *be-sai* in (16b) is marginally acceptable when the matrix predicate expresses a sense of commanding, like *kio* 'tell/order' or *bingling* 'order' and is infelicitous with other bouletic directive predicates. Our intuition is that when *be-sai* is used, the speaker has the relevant deontic authority to have his/her own desire be treated as a general rule (e.g., a teacher to her students), as in (i), and it is infelicitous when the speaker does not have a deontic authority to issue a rule, as in (ii):

(i) *Lau-su kio/bingling haksing-a be-sai/m-ai tsiah-hun.*
teacher tell/order students NEG-MOD smoke
'The teacher told/ordered the students not to smoke.' (as a rule)

(ii) *Bingiu kio gua m-ai/#be-sai tsiah-hun.*
friends tell 1SG NEG-MOD smoke
'My friend asked me not to smoke.'

and *Li-e* the addressee in the imperative sentence, so the source of the prohibition associated with the m-modal now comes from the relative speaker *Ong-e*.[8]

The asymmetry between the m-modals and the b-modals is reminiscent of the 'modal concord' cases discussed in Anand and Hacquard (2013), where it is proposed that epistemic modals are only licensed under representational attitude predicates (the *believe*-type predicates). Representational predicates are in general used by the speaker to represent how things are. So if a person says *I think that it is raining*, it is understood that the speaker is committed to the truth of the proposition [it is raining] and represents it through the statement (akin to the *word-to-world* direction of fit in the traditional literature, where the speaker gets the word to fit the world) (Bolinger 1968, Searle 1976). This type of predicate can embed an epistemic modal: *I believe that it might be raining* because the clause embedded under the representational predicate represents an information state (Yalcin 2007), which describes the knowledge or belief of the speaker, and the epistemic modal simply indicates how strong the speaker is committed to the truth of the embedded statement. On the other hand, non-representational predicates (like the desiderative predicates in the *persuade*-type) do not embed epistemic modals (**I demand that John might leave*) because the embedded clause does not describe the knowledge or belief of the speaker, but is instead a preference of the speaker that cannot be verified or falsified (*I asked John to leave, #what I asked of John is true*; see Portner 1997), and the speaker instigates the addressee to do something in accordance with what the speaker prefers or desires (viz. the *world-to-word* direction of fit, where the speaker gets the world to fit the word) (Anand & Hacquard 2013, Heim 1992, Portner 1997, Villalta 2008).

In TSM, modal concord shows up neatly in the realm of negative modals. The descriptive b-modal, which gives rise to descriptive information that allows for an epistemic modal (13), can be embedded under representational *believe*-type predicates (16a). On the other hand, the directive m-modals are embedded under directive *persuade*-type predicates (16b). The m-modals always have a directive use, and when embedded, they agree with the matrix predicate in performativity.

We submit that the main differences of the m-modals and b-modals arise from two semantic-pragmatic factors: (i) the source of the prohibition associated with the modal, and (ii) the inherent performativity of the modal. The distinctions of the m-modals and b-modals are summarized in the following table:

8. Within this analysis, the only difference between matrix imperatives and embedded imperatives is that the former is confined to the absolute speaker/addressee (1st person speaker and 2nd person addressee), while the latter is anchored to the relative (reported) speaker/addressee (Condoravdi & Lauer 2012, Han 1999, Stegovec 2019).

(17) Main distinctions between the m-modals and b-modals

	m-modals	**b-modals**
A. SOURCE OF PROHIBITION	Speaker-bouletic	External
a. speaker distancing herself from the source	No	Yes
b. addressee identifying the source	No	Yes
B. INHERENT PERFORMATIVITY	Directive	Descriptive
a. third-person subject	No (hortative)	Yes
b. occurring with epistemic modals	No	Yes
c. modified by factive adverbs	No	Yes
d. embedded under representational predicates	No	Yes

Based on these distinctions, we propose that prohibitive sentences with the m-modals are genuine imperative or prohibitive sentences. The speaker issues a prohibition to the addressee from performing certain action based on the speaker's desire or preference. On the other hand, prohibitive sentences with b-modals are deontic modal assertions that are used as imperatives/prohibitives only indirectly (and can be cancelled). The speaker asserts that there is an external prohibition, and the addressee is advised or commanded not to perform a certain action due to this external prohibition.

3. M-modals and control

From what we have observed, the m-modals have several distinctive properties and a more restricted distribution than the b-modals (which are the more typical descriptive modals). To recap, first, m-modals are always used in a directive way, and due to this, they occur only in (root or embedded) imperatives/prohibitives. Second, m-modals always anchor to the closest speaker. In the matrix case, the prohibition comes from the (unpronounced) 1st person speaker, who is understood as the director, and in the embedded case, the prohibition comes from the matrix subject, who is the director of the explicit directive predicate. In this section we will argue that these core properties of the m-modals can be accounted for if we analyze them as involving a directive modal particle in the complementizer position, similar to other proposals found in the literature on imperatives (Bennis 2007, Han 1998, Isac 2015, Kaufmann 2012, Potsdam 1998, Zanuttini 1997) in conjunction with the logophoric control of a perspectival PRO (Landau 2015, Stegovec 2019).

3.1 Directive modals as complementizer

A large body of literature on imperatives assumes that an illocutionary operator of some sort occupies a complementizer position, and either the verb or some auxiliary moves to the C position (see Han 1998, Isac 2015, Zanuttini 2008, among many others). Here we follow Kaufmann (2012) in assuming that the relevant illocutionary operator is actually a priority necessity modal element (with a directive use). Kaufmann's (2012) claim is syntactically supported in imperatives/prohibitives in TSM. As shown below, the modal particle is overtly represented in matrix and embedded imperatives/prohibitives:[9]

(18) a. *(Ong-e kio Li-e)* ***ai*** *se-ji.*
Ong-e tell Li-e MOD careful
'Be careful!' or 'Ong-e told Li-e to be careful.'
b. *(Ong-e kio Li-e)* ***m-ai*** *tsia-hun.*
Ong-e tell Li-e NEG-MOD smoke
'Don't smoke.' or 'Ong-e told Li-e not to smoke.'

The modal particle *ai* can be omitted in positive imperatives like (18a), but the negative modal particle *m-ai* is obligatory in prohibitives like (18b). In this respect, they are very much like the imperative *do* and *don't* in English. We suggest that these modal particles are base-generated in the modal complementizer (C_{Mod}) position in the left periphery (Roussou 2000, Roussou & Tsangalidis 2010), which occupies a lower C head in the split-CP theory (Rizzi 1997). In some previous approaches, evidence presented *against* treating the directive modal in the imperative as instantiating C has often been the fact that the imperative marker (or the surrogate subjunctive mood marker) can occur with an overt complementizer in Greek (19) and Korean (20) (data from Isac 2015, Rivero 1994, Zanuttini *et al.* 2012):

(19) a. *Thelo ena spiti pu na exi meghalo kipo.*
want.1SG a house that SUBJ have.3SG big garden
'I want a house that has a big garden.'

---

9. The same observation holds in Mandarin Chinese, where the modal element is *yao* (which is optional in positive imperatives) and *bie* (obligatory in prohibition):

(i) a. *(Yao) xiaoxin!*
MOD be.careful
'Be careful!'
b. *Bie chi-dao!*
NEG.IMP late-come
'Don't be late!'

b. *Na grafi.*
SUBJ write.3SG
'Make sure he write!'

(20) *Emma-ka Inho-eykey kongpuha-la-ko hasiess-ta.*
mother-NOM Inho-DAT study-IMP-COMP said(honorific)-DEC
'Mother told Inho to study.'

On the other hand, as contended in Roussou (2000) and Roussou & Tsangalidis (2010), such an argument is undermined if the split CP hypothesis is adopted, where the complementizer system consists of a series of functional projections. Based on Modern Greek, Roussou (2000) argues that even the complementizer itself can be split into different types of CPs, including (in a top-down fashion) subordinate C (C_{Sub}), illocutionary operator C (C_{Op}), modal C (C_{Mod}). The resulting CP structure is the following:

(21) $C_{Sub}P \gg TopicP \gg C_{Op}P \gg TopicP/FocusP \gg C_{Mod}P \gg FinP$

We propose that the TSM directive m-modals are base-generated in the C_{Mod} position (and subsequently raise to C_{Op} due to their clause-typing function). On the other hand, the b-modals, which are subject-oriented deontic modal particles, can be suggested to occupy an IP-internal position below TP and AspP (Cinque 1999, Hacquard 2006). Evidence for this claim includes their relative positions with respect to Topic/Focus and habitual adverbs that modify AspP, like *tiann-tiann* 'often'. Let us begin with Topic/Focus. We assume the topic/focus hierarchy in Badan and Del Gobbo (2011), where the Aboutness Topic occupies a higher position than the *even*-focus in Chinese (*lian*-NP in Mandarin Chinese and *len*-NP in TSM). Furthermore, we assume that the semantically bleached complementizer *kong* '(lit.) say' is a subordinate C (Simpson & Wu 2002). We predict that we can obtain the following hierarchy in TSM:

(22) $[C_{Sub}P \gg TopicP \gg C_{Op}P \gg TopicP/FocusP \gg C_{Mod}P \gg FinP]_{Split\text{-}CP}$
kong Aboutness-Top m-modal$_i$ *len*-Focus t_i
$[\gg Mod_{Epis} \gg (TP) \gg AspP\ Mod_{Deontic}]_{Split\text{-}IP}$
epistemic hab. adv. b-modal

The prediction is borne out, as confirmed by the following examples:[10]

(23) a. *kong* ≫ Aboutness-Top ≫ *m-ai*
Ong-e kio Li-e *kong tsit-bun tsheh m-ai thak.*
Ong-e tell Li-e COMP this-CLF book NEG-MOD read
'Ong-e told Li-e not to read this book.'

b. *m-ai* ≫ *len*-NP ≫ subject NP[11]
M-ai len tsit-bun tsheh li long bo-ai thak.
NEG-MOD even this-CLF book 2SG all NEG-want read
'Don't you not read even this book.'

Second, consider the relative positions among m-modals, b-modals, and the habitual aspectual adverb like *tiann-tiann* 'often':

(24) m-modal ≫ hab.adv ≫ b-modal
'don't' 'often' 'unable to'

a. *Li m-ai tiann-tiann be-tang siong-kho!*
2SG NEG-MOD often NEG-MOD attend.class
'Don't you often be unable to attend classes.' ≃ 'Please attend classes more often.'

b. **Li tiann-tiann m-ai be-tang siong-kho!*
2SG often NEG-MOD NEG-MOD attend.class

(25) a. *Li tiann-tiann be-tang siong-kho. Si-an-tsuann?*
2SG often NEG-MOD attend.class why
'You often cannot attend classes. Why?'

---

10. An anonymous reviewer points out that the occurrence of the aboutness topic suggests that the embedded *m-ai* clause may not be a control infinitive clause [cf. (15)] because the control infinitive clause cannot license a topic (e.g. **John told me this book to read*). While the constraint holds in English, it is observed that a left-dislocated topic (in the CLLD construction) may occur in the control infinitive clause in Romance, as in (i), where the particle *di* is an infinitive complementizer in Fin^0 (Rizzi 1997: 309):

(i) Gianni pensa, il tuo libro, [$_{\text{Fin}}$ di] conoscerlo bene.
Gianni think-3SG the your book di know-it well
'(lit.) Gianni thinks, your book, to know well.'

Based on this contrast, Haegeman (2012) argues that a topic can be licensed in the control infinitive clause (and in other embedded environments) if the topic is base-generated in TopicP. Following her analysis, we propose that the aboutness topic is also base-generated in TopicP in TSM/Chinese, and therefore, it may occur in the control infinitive clause (under the *persuade*-type predicate).

11. We include the 2nd person subject-NP here because the *even*-focus may also dislocate to an IP-internal position (below the subject). By including the subject NP in the matrix imperative sentence, we exclude the possibility that the *len*-NP in question is an IP-internal focus dislocation (Badan & Del Gobbo 2015, Paul 2005, Shyu 1995, 2001). Note that the subject can remain in a position below *len*-NP (and *m-ai*) only if *len*-NP shows up. We suspect that this is due to the Chinese 'V2-effect' (Tsai 2015).

b. ?*Li be-tang tiann-tiann bo-siong-kho*.[12]
2SG NEG.MOD often NEG-attend.class
'You are not allowed to not attend classes often.'

The order confirms our hypothesis that m-modals are modal complementizers that occupy a position higher than IP, and b-modals are deontic modals below AspP. The distribution also explains why only b-modals can appear under epistemic modals/adverbs and under past-tense temporal adverbs, whose temporal orientation is provided by the tense, rather than the utterance time (see also the analysis of root modality in Hacquard 2006):

(26) Epistemic-Adv ≫ TP-Adv ≫ b-modal
'probably' *when*-clause 'not allowed'
*Ong-e kho-ling se-han e si-tsun be-tang/*m-ai*
Ong-e probably childhood E time NEG-MOD
thak-tsheh.
study
'Ong-e probably was not allowed/able to study when he was young.'

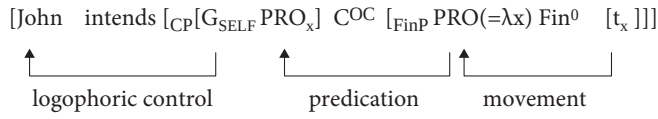
3.2 Logophoric PRO and directive modal complementizer

Having argued that the m-modals should be analyzed as modal complementizers, we can relate the syntax of such constructions to the semantic properties of the m-modals, namely, the modal source of prohibition is logophorically bound by the matrix subject (or by the speaker in the root clause). The analysis we adopt here is a mixed analysis combining ideas in Stegovec (2019) and Landau (2015) (see also Stephenson 2010). The basic idea is that the directive m-modal projects a null argument PRO that specifies the 'logophoric center' of the contextual backgrounds (or more specifically, the ordering source of the contextual background), and the PRO must be locally controlled from the attitude predicate (namely, a logophoric or perspectival PRO). This explains why the m-modals are found in the canonical control environment when they are embedded (under the *persuade*-type predicates in Li 1990).

Let us begin with the theory of control in Landau (2015). Landau argues that under attitude predicates, there are two tiers of control structures, including higher logophoric control (with an obligatory-control complementizer; C^{OC}) and lower predicative control (engaged in FinP):

12. The sentence seems acceptable. We guess that the habitual adverb can modify a lower aspectual position due to scope reasons (when the intended scope reading is mod > often) (see also Cinque 1999 for the proposal of two frequentative aspect positions).

(27) Syntax of logophoric control



The innovation of the theory is the higher logophoric controlled PRO, and the suggestion that a logophoric or *de se* complementizer C^{OC} is responsible for introducing the null argument PRO. In Landau's original analysis, the logophoricity is encoded as a presupposition of the special OC complementizer under the attitude verb, and the OC complementizer introduces a concept generator that realizes the *de se* presupposition (it refers the PRO to the attitude holder of the matrix predicate *John*) (see Landau 2015 for details). Here we support Landau's theory by identifying the logophoric complementizer as the modal complementizer. This move allows us to derive the *de se* presupposition of the logophoric complementizer quite straightforwardly, since it is the same presupposition found in the directive modal in imperative clauses (Kaufmann 2012, Stegovec 2019).

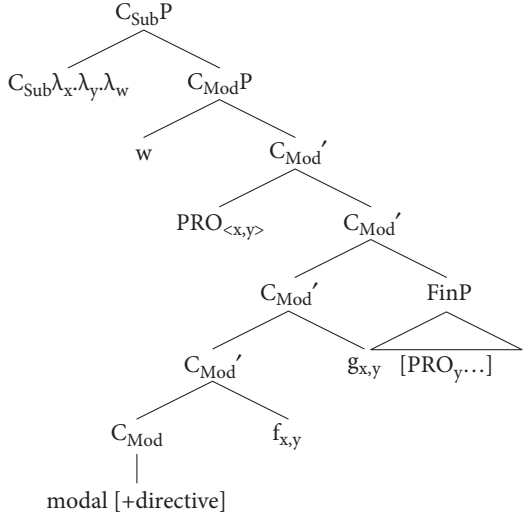
Kaufmann (2012) argues that the covert directive modal in the imperative clause carries certain presuppositions that restrict the modal backgrounds to the speaker or director (the one who issues the obligation) and the addressee (the one who carries out the obligation). It is these presuppositions that ensure the modal has a directive use (rather than a descriptive use) in imperatives/prohibitives. Specifically, the speaker or director is said to have the relevant authority (speaker authority condition), and the speaker or director has the knowledge that the prejacent proposition is possible (but not necessary) (speaker uncertainty condition), and most crucially for our analysis here, the ordering source of the conversational background always encodes the perspective from the speaker (in some cases, from the speaker and addressee's common perspective). That is, the ordering source condition requires that the covert directive modal is speaker-bouletic (ordered by the speaker's desire, wish, or preference). Adopting the theory of modality in Kratzer (1981, 1991), Kaufmann (2012) proposes that the directive modal operator, like other deontic modals, contains two contextual backgrounds, including the modal base *f* and the ordering source *g*. In the case of the directive modal, the modal base represents the facts available in the common ground (accepted by both the speaker and the addressee for the purpose of the conversation), and the ordering source contains a list of criteria that best serves the speaker's desire, wish, or preference (see also Han 1999). For example, if the speaker issues the imperative: *Close the door*, the modal base is restricted to the realistic facts (what is happening now in the conversation) like *the door is open*, *you just entered my office, the air conditioner is on*, and *it is noisy outside*, and the ordering source comes from the speaker's preference (they do not have to be consistent): *Normally, I prefer the door be open, but I prefer the door be closed when the air conditioner is on or when it is noisy outside*. The

imperative sentence, then has the following truth-condition (just like the modalized sentence *You should close the door*) – for all worlds w' that are compatible with the realistic facts in w (*you just entered and it is noisy outside*) and are considered optimal according to my preference in w (*I prefer my door to be closed when it is noisy outside*), the addressee closes the door in w'.

The descriptive deontic modal (b-modals in TSM), on the other hand, differs from the performative modal (m-modals in TSM) in that the speaker authority and speaker uncertainty conditions are not projected, and the ordering source presupposition does not attribute the conversational backgrounds obligatorily to the speaker and the addressee. In terms of the conversational backgrounds, the modal base of the descriptive modal is based on what the speaker knows, which is not necessarily restricted to realistic facts at the moment of the conversation (the rule *you should close the door* can be asserted regardless of whether the door is open or closed), and the ordering source may come from a set of rules set by the external institutions other than the speaker, so the ordering source comes from what is necessary in view of the external rules (e.g., the building has the following code: *Employees must keep the door closed all the time*). Therefore, the ordering source is not anchored to the speaker, and the subject of a descriptive modal sentence is not restricted to the 2nd-person addressee.

In order to better capture the strong ties to the speaker of the directive modals, Stegovec (2019) further argues that the presuppositions of the speaker perspective can be encoded in syntax as a perspectival PRO controlled by an attitude predicate, extending the analysis of Kaufmann (2012). Incorporating our proposal that the directive modal in TSM occupies the modal complementizer position, the syntax of the directive modal complementizer is suggested to be the following:

(28) Syntax of the directive modal complementizer



We skip some of the semantic details concerning attitude verbs and *de se* binding of PRO (see Pearson 2016 and Stegovec 2019 for details). For our purpose here, the crucial assumption is the projection of PRO as the 'center' of the conversational backgrounds associated with the directive modal (m-modal in TSM). We also differ slightly from Stegovec (2019) in assuming that the PRO can be doubly-centered to both the speaker and the addressee, adopting the analysis of object-control in Pearson (2016). Simply put, the modal base $f_{x,y}$ represents the realistic facts available for the speaker x and addressee y (or facts in the common ground), and the ordering source $g_{x,y}$ represents the criteria accepted by the speaker and/or addressee in order to pick out the optimal worlds compatible with the facts in the modal base. The perspectival $PRO_{<x,y>}$ is translated into a lambda abstraction at LF (as λx.λy. or λ<x,y>.), and this allows the variables associated with the higher perspectival $PRO_{<x,y>}$ to be logophorically bound by the arguments of the matrix attitude predicates (Chierchia 1990, Pearson 2016), while the lower PRO is predicatively bound by the object argument (Landau 2015):[13]

(29) *Ong-e*$_x$ *kio* *Li-e*$_y$ [$_{CSubP}$ $\lambda_{<x,y>}$ $PRO_{x,y}$ *m-ai* [$_{FinP}$ PRO_y
Ong-e ask Li-e NEG-MOD
kong-ue]].
speak
'Ong-e asked Li-e not to speak.'

As for root imperative sentences, these differ minimally from embedded imperative clauses in allowing an overt 1st person (inclusive), 2nd person, or addressee-oriented quantificational subject. With respect to this, we follow Zanuttini *et al.* (2012) in assuming that a root imperative projects a jussive phrase, which encodes the [1st] or [2nd] person feature, and the person feature allows the subject to be realized as *let's* (1st person plural) or optionally as *you* or *everyone* in English, and as *lan* '1PL', *li* '2SG', *lin* '2PL', or *tak-ke* 'everyone/you all' in TSM. Under our analysis, it is the perspectival PRO that can be realized by the overt minimal pronouns *lan* '1PL', *li* '2SG', *lin* '2PL', or *tak-ke* 'everyone/you all' in TSM, agreeing with the person feature on the jussive head. Note that the lower predicative PRO may agree with the [1PL] pronoun (in the exhortative case) (30a) or the [2SG]/[2PL] pronoun (in

13. Specifically, the doubly-centered $PRO_{<x,y>}$ is not directly bound by the arguments per se, but represents *de se* counterparts of the arguments present. We omit the details in the current paper, and refer readers to Pearson (2016) and Liao & Wang (2020) for relevant discussion.

the imperative case) (30b), and it is always bound by the closest argument through predication:[14,15]

(30) a. [$_{\text{JussiveP}}$ $\text{Op}_{\text{exhortative}}$ [$_{\text{CP}}$ (*Lan*$_{x,y}$) *m-ai* [$_{\text{FinP}}$ PRO_{x+y} *kong-ue*]]].
[1PL] [1PL] NEG-MOD [1PL] speak
'Let's not talk!'

b. [$_{\text{JussiveP}}$ $\text{Op}_{\text{imperative}}$ [$_{\text{CP}}$ PRO_{x} *Li*$_{y}$ *m-ai* [$_{\text{FinP}}$ PRO_{y} *kong-ue*]].
[2SG] [2SG] NEG-MOD [2SG] speak
'Don't (you) talk!'

In summary, our analysis successfully accounts for the following syntax-semantic properties of TSM m-modals. First, the m-modals are identified as modal complementizers. This explains why they are speaker-oriented and dominate other IP-elements like epistemic adverbs, aspectual adverbs, and deontic b-modals. Second, m-modals can only be used in a directive way and can only be embedded under a directive predicate. The former is accounted for through the presuppositions associated with the directive modal, where the modal backgrounds are restricted to the closest speaker and addressee, and the latter results from modal concord in TSM (and in Chinese in general), where the 'imperative' clause is embedded under the directive predicate. Third, the m-modals project a logophoric controlled PRO, which accounts for why m-modals are always anchored to the closest speaker and addressee, and why they are found in the typical control environments (Landau 2015); that is, under *persuade*-type predicates in TSM/Chinese (Li 1990).

14. We assume that the logophoric PROx (30b) is ultimately bound by the speaker, which is introduced by the Speech Act Phrase (SaP) in Speas & Tenny (2003). In fact, we may understood the Jussive Phrase as the Sentience Phrase in Speas & Tenny (2003) and Tenny (2006) (see also Isac 2015 for a similar approach). We leave this line of research for our future work.

15. As for the exhortative case, where a 3rd person occurs in the subject position, we tentatively assume that the 3rd person 'subject' is actually a topic, and it occupies a position between JussiveP and CP. We also assume that the hortative reading comes from a null causative light verb (Alcázar & Saltarelli 2014):

(i) [$_{\text{JussiveP}}$ Op [$_{\text{TopicP}}$ Li-e$_z$ [$_{\text{CP}}$ $\text{PRO}_{x,y}$ m-ai [$_{\text{FinP}}$ PRO_{y} CAUSE e$_z$ lai]].
Li-e NEG-MOD come
'Don't you let Li-e come!'

4. Conclusion

The m-modals and b-modals present in TSM have been shown to involve pragmatic, semantic, and syntactic distinctions. Pragmatically, the m-modals can only be used directively in prohibitives, but the b-modals can be used descriptively in assertions. Semantically and syntactically, the modal flavor of the m-modals is strictly speaker-bouletic, and the m-modals always anchor their contextual backgrounds to the closest speaker and addressee. We propose that the m-modal projects a logophoric PRO that behaves as a center of the contextual backgrounds, and the logophoric PRO is in turn logophorically bound either by the arguments of the attitude predicate when the m-modal is embedded, or by the jussive force operator, which provides a person feature that licenses the person feature in the logophoric PRO (allowing it to be optionally pronounced). Our analysis provides substantial support for the modal theory of imperatives/prohibitives (Han 1998, Kaufmann 2012) and for the theory of logophoric control (Landau 2015, 2018, Stegovec 2019). We also find an intriguing pattern of modal concord between the attitude predicate and the embedded modal particles in TSM that is consistent with ideas proposed in Anand & Hacquard (2013). While our research considers only a restricted set of modal particles in TSM, we hope that the study presented here will stimulate more research on related topics involving the syntax-pragmatics interface, both in TSM and other languages.

Acknowledgement

The paper is part of the project "On Finiteness and Speaker Anchoring in Mandarin Chinese" [109-2410-H-001-084-] supported by the Ministry of Science and Technology in Taiwan. In preparing the paper, we benefit a lot from discussion with Audrey Li during the TEAL-12 conference. We are also grateful for two anonymous reviewers and the editor Andrew Simpson for their helpful comments and suggestions. We also wish to thank Prof. Chin-fa Lien for sharing his papers with us. An earlier version of this paper was presented at 2020 NCL-LST Joint Conference. We appreciate the questions raised by Jo-wang Lin, Seng-hian Lau, and other audience members there. All errors remain ours alone.

References

Alcázar, Asier & Mario Saltarelli. 2014. *The syntax of imperatives*. Cambridge: CUP.

Anand, Pranav & Valentine Hacquard. 2013. Epicstemics and attitudes. *Semantics & Pragmatics* 6: 8:1–59. https://doi.org/10.3765/sp.6.8

Austin, John L. 1962. *How to do things with words*. Cambridge: Harvard University Press.

Badan, Linda & Francesca Del Gobbo. 2011. On the syntax of topic and focus in Chinese. In *Mapping the Left Periphery*, Paola Benincà & Nicola Munaro (eds), 63–90. Oxford: OUP. https://doi.org/10.1093/acprof:oso/9780199740376.003.0003

Badan, Linda & Francesca Del Gobbo. 2015. The *even*-construction and the low peripery in Mandarin Chinese. In *The Cartography of Chinese Syntax*, ed. Wei-Tien Dylan Tsai, 33–74. Oxford: OUP.

Bennis, Hans. 2007. Featuring the subject in dutch imperatives. In *Imperative Clauses in Generative Grammar: Studies offered to Frits Beukema*, Wim van der Wurff (ed), 113–134. Amsterdam: John Benjamins. https://doi.org/10.1075/la.103.04ben

Bolinger, Dwight. 1968. Post-poned main phrases: An English rule for the Romance subjunctive. *Canadian Journal of Linguistics-Revue Canadienne De Linguistique* 14(1): 3–30. https://doi.org/10.1017/S0008413100019629

Chierchia, Gennaro. 1990. Anaphora and attitudes *de se*. In *Semantics and Contextual Expression*, Renate Bartsch et al. (eds), 1–32. Dordrecht: Foris.

Cinque, Guglielmo. 1999. *Adverbs and Functional Heads: A Cross-Linguistic Perspective*. New York: OUP.

Condoravdi, Cleo & Sven Lauer. 2012. Imperatives: Meaning and illocutionary force. *Empirical Issues in Syntax and Semantics* 9: 37–58.

Hacquard, Valentine. 2006. Aspects of Modality. PhD dissertation, MIT.

Haegeman, Liliane. 2012. *Adverbial Clauses, Main Clause Phenomena, and Composition of the Left Periphery*. New York: OUP. https://doi.org/10.1093/acprof:oso/9780199858774.001.0001

Han, Chung-Hye. 1998. The Structure and Interpretation of Imperatives: Mood and Force in Universal Grammar. PhD dissertation, University of Pennsylvania.

Han, Chung-Hye. 1999. Deontic modality, lexical aspect and the semantics of imperatives. In *Linguistics in the Morning Calm*, Vol. 4, 479–495. Seoul: Hanshin.

Heim, Irene. 1992. Presupposition projection and the semantics of attitude verbs. *Journal of Semantics* 9: 183–221. https://doi.org/10.1093/jos/9.3.183

Isac, Daniela. 2015. *The Morphosyntax of Imperatives*. Oxford: OUP. https://doi.org/10.1093/acprof:oso/9780198733263.001.0001

Kaufmann, Magdalena. 2012. *Interpreting Imperatives*. Dordrecht: Springer. https://doi.org/10.1007/978-94-007-2269-9

Kratzer, Angelika. 1981. The notional category of modality. In *Words, worlds, and Contexts*, H. J. Eikmeyer & H. Rieser (eds), 38–74. New York: de Gruyter. https://doi.org/10.1515/9783110842524-004

Kratzer, Angelika. 1991. Modality. In *Semantik: Ein Internationales Handbuch Zeitgenossischer Forschung*, Arnim von Stechow & Dieter Wunderlich (eds), 639–650. Berlin: de Gruyter. https://doi.org/10.1515/9783110126969.7.639

Landau, Idan. 2015. *A Two-Tiered Theory of Control*. Cambridge, MA: The MIT Press. https://doi.org/10.7551/mitpress/9780262028851.001.0001

Landau, Idan. 2018. Direct variable binding and agreement in obligatory control. In *Pronouns in Embedded Contexts at the Syntax-Semantics Interface*, Pritty Patel-Grosz et al. (eds), 1–41. New York: Springer. https://doi.org/10.1007/978-3-319-56706-8_1

Li, Yen-hui Audrey. 1990. *Order and Constituency in Mandarin Chinese*. Dordrecht: Kluwer. https://doi.org/10.1007/978-94-009-1898-6

Liao, Wei-wen Roger & Yuyun Iris Wang. 2020. Attitudes, control, and the finiteness distinction in Chinese. *ms*. Academia Sinica and Ming Chuan University.

Lien, Chinfa. 2013. *Taiwan minnanyu qingtaici de fouding leixing tansuo* [Negative patterns of modals in Taiwanese Southern Min]. *Language and Linguistics* 14(2): 213–239.

Lien, Chinfa. 2015. Imperative negatives in earlier Southern Min and their later development. *Faits de Langues* 46: 187–200. https://doi.org/10.1163/19589514-046-01-900000014

Lin, Huei-ling. 2004. Lexical vs. syntactic negation in Taiwanese. *Concentric: Studies in Linguistics* 30(1): 107–128.

Matthewson, Lisa & Hubert Truckenbrodt. 2018. Modal flavour/modal force interaction in German: *Soll, solte, muss*, and *müsste*. *Linguistiche Berichte* 255: 4–57.

Ninan, Dilip. 2005. Two puzzles about deontic necessity. In *MIT Working Paper in Linguistics 51: New Work on Modality*, Jon Gajewski et al. (eds), 149–178. Cambridge, MA: Department of Linguistics and Philosophy, MIT.

Paul, Waltraud. 2005. Low IP area and left periphery in Mandarin Chinese. *Recherches linguistiques de Vincennes* 33: 111–134. https://doi.org/10.4000/rlv.1303

Pearson, Hazel. 2016. The semantics of partial control. *Natural Language & Linguistic Theory* 34(2): 691–738. https://doi.org/10.1007/s11049-015-9313-9

Portner, Paul. 1997. The semantics of mood, complementation, and conversational force. *Natural Language Semantics* 5: 167–212. https://doi.org/10.1023/A:1008280630142

Portner, Paul. 2007. Imperatives and modals. *Natural Language Semantics* 15(4): 351–383. https://doi.org/10.1007/s11050-007-9022-y

Portner, Paul. 2009. *Modality*. Oxford: OUP.

Potsdam, Eric. 1998. *Syntactic Issues in the English Imperative*. New York: Garland Pub.

Rivero, Maria Luisa. 1994. Clause structure and V-movement in the languages of the Balkans. *Natural Language & Linguistic Theory* 12(1): 63–120. https://doi.org/10.1007/BF00992746

Rizzi, Luigi. 1997. The fine structure of the left periphery. In *Elements of Grammar*, Liliane Haegeman (ed), 281–337. Dordrecht: Kluwer. https://doi.org/10.1007/978-94-011-5420-8_7

Roussou, Anna. 2000. On the left periphery: Modal particles and complementisers. *Journal of Greek Linguistics* 1: 65–94. https://doi.org/10.1075/jgl.1.05rou

Roussou, Anna, and Anastasios Tsangalidis. 2010. Reconsidering the 'modal particles' in Modern Greek. *Journal of Greek Linguistics* 10: 45–73. https://doi.org/10.1163/156658410X495817

Searle, John. 1976. Classification of illocutionary acts. *Language in Society* 5(1): 1–23. https://doi.org/10.1017/S0047404500006837

Shyu, Shu-ing. 1995. The Syntax of Focus and Topic in Mandarin Chinese. PhD dissertation, University of Southern California.

Shyu, Shu-ing. 2001. Remarks on object movement in Mandarin SOV order. *Language and Linguistics* 2(1): 93–124.

Simpson, Andrew & Zoe Wu. 2002. IP-raising, tone sandhi and the creation of sentence-final particles. *Journal of East Asian Linguistics* 11: 67–99. https://doi.org/10.1023/A:1013710111615

Speas, Margaret & Carol Tenny. 2003. Configurational properties of point of view roles. In *Asymmetry in Grammar*, Anna Maria DiSciullo (ed), 315–344. Amsterdam: John Benjamins. https://doi.org/10.1075/la.57.15spe

Stegovec, Adrian. 2019. Perspectival control and obviation in directive clauses. *Natural Language Semantics* 27(1): 47–94. https://doi.org/10.1007/s11050-019-09150-x

Stephenson, Tamina. 2010. Control in centered worlds. *Journal of Semantics* 27: 409–436. https://doi.org/10.1093/jos/ffq011

Tang, Tingchi. 1994. On the semantics and syntax of negatives in Southern Min. In *Studies on Chinese Morphology and Syntax*, Vol. 5, Tingchi Tang (ed), 119–169. Taipei: Student Book.

Tenny, Carol. 2006. Evidentiality, experiencers, and the syntax of sentience in Japanese. *Journal of East Asian Linguistics* 15(3): 245–288. https://doi.org/10.1007/s10831-006-0002-x

Tsai, Wei-Tien Dylan. 2015. A case of V2 in Chinese. *Studies in Chinese Linguistics* 36(2): 81–108. https://doi.org/10.1515/scl-2015-0006

Villalta, Elisabeth. 2008. Mood and gradability: An investigation of the subjunctive mood in Spanish. *Linguistics & Philosophy* 31(4): 467–522. https://doi.org/10.1007/s10988-008-9046-x

Yalcin, Seth. 2007. Epistemic modals. *Mind* 116(464): 983–1026. https://doi.org/10.1093/mind/fzm983

Zanuttini, Raffaella. 1997. *Negation and Clausal Structure: A Comparative Study of Romance Languages*. New York: Oxford University Press.

Zanuttini, Raffaella. 2008. Encoding the addressee in the syntax: Evidence from English imperative subjects. *Natural Language & Linguistic Theory* 26(1): 185–218. https://doi.org/10.1007/s11049-007-9029-6

Zanuttini, Raffaella, Miok Pak & Paul Portner. 2012. A syntactic analysis of interpretive restrictions on imperative, promissive, and exhortative subjects. *Natural Language & Linguistic Theory* 30(4): 1231–1274. https://doi.org/10.1007/s11049-012-9176-2

PART III

Syntax-semantics interactions

Skolemized topicality for indefinites and universal quantifier *mei*-phrases in Chinese

Shi-Zhe Huang
Haverford College, USA

This paper argues for a Skolemized topicality account for two seemingly unrelated phenomena in Chinese: (a) subject *mei*-phrases requiring *dou*/indefinites/reflexives in their predicates, and (b) indefinite subjects receiving specific reading. I present evidence that these subject phrases are in the topic position, which I argue is equipped with a Skolem function. Skolemization of the indefinites results in a constant, leading to a referential indefinite reading; and the effect of Skolemization on the *mei*-phrase results in the Skolem function seeking a free variable within its predicate to replace, which creates pairings/matchings with the variable introduced by the restrictor of *mei*. Distributivity is a natural consequence of Skolemization of *mei*-phrases in the topic position. Skolemized topicality might be viewed as Skolem Closure applied to the topic position in division of labor with Existential Closure applied to the open proposition.

1. Introduction

This paper sets out to argue for a single mechanism to account for two widely observed, but seemingly unrelated, phenomena in Mandarin Chinese (henceforth Chinese).

(1) The subject universal quantifier *mei*-phrase typically requires co-occurrences of *dou*/indefinites/reflexives in its scope, resulting in distributive reading (S.-Z. Huang, 1995 1996).

(2) Indefinite subjects of spacio-temporally anchored stage-level predicates (S.-Z. Huang 1996, 2004) have specific/referential interpretations (Fan 1985, Shyu 1995).

These two observations about subject *mei*-phrases and subject indefinites have led to substantial, but hitherto separate, efforts striving for explanations (Li 2014).

S-Z. Huang (1996) offers a Skolemized EVERY hypothesis, where EVERY stands for distributive universal quantifiers including *mei*, to account for the co-occurrence patterns. However, that hypothesis fails to capture, in a principled manner, the subject/object asymmetry of the *mei*-phrase with regard to distributivity. While a subject

https://doi.org/10.1075/la.272.08hua

mei-phrase requires one of the co-occurring elements, resulting in distributivity, an object *mei*-phrase in a simplex SVO sentence tends not to have distributive reading. There is a bit of debate on acceptability of *mei*-QPs in the object position, an issue we will discuss in more detail later in Section 4.1. Studying subject *mei*-phrases and subject indefinites together in terms of structural positions may lead us ultimately to accounting for the subject/object asymmetry of the *mei*-phrase, as well as accounting for specificity of subject indefinites, in a single swoop.

The path toward a single solution starts with the recognition that Chinese is a topic-comment language, which has been a widely accepted view since Chao (1968: 69). One commonly observed characteristic of topic-comment sentences is the requirement on the topic itself. As Chao (1968: 76) observes, the topic "is likely to represent the known while the predicate introduces something unknown." This requirement on the topic has been interpreted broadly to include definites, specifics, known information, kind denotations, generic expressions (Xu & Liu 2007, among many others), as well as categorical subjects under Kuroda (1972).

Given this general picture of topic-comment structure in Chinese, one would not typically associate indefinites and universal quantifier phrases with the topic position as they are not interpreted as definite or referential in standard semantics. However, some studies have done precisely that by allowing or even requiring these uncharacteristic candidates in the topic position. This paper makes use of these studies and offers a way to reconcile indefinites and universal quantifier phrases with the referentiality requirement of the topic position while simultaneously accounting for the two phenomena in (1) and (2) under the same mechanism.

Section 2 takes a closer look at the co-occurrence patterns between a *mei*-phrase and *dou*/indefinites/reflexives in its predicates. Section 3 walks us through the data that lead to the specific readings of subject indefinites. Building on the Skolemized EVERY hypothesis (S.-Z. Huang 1996) but recognizing its weaknesses, I propose in Section 4 the Skolemized topicality hypothesis, which takes away the Skolemization mechanism from the *mei*-phrase itself and places it on the topic position. The next two sections provide supporting evidence for placing subject *mei*-phrases and subject indefinites into the topic position. Section 5 takes us through Xu & Liu (2007) and Wu & Larson (2019), both of which argue strongly that universal quantifier phrases must be in the topic position. Section 6 presents works that show the possibility of treating indefinites as topics, based on Shyu (1995) and S.-Z. Huang (1996, 2004). Section 7 demonstrates how the Skolemized topicality hypothesis works with conditional sentences with *mei*-VP. Section 8 applies the Skolemized topicality hypothesis to Ba-constructions, which shows that this new hypothesis works in the sub-topic position as well. In Section 9 a comparison is made between the Skolemized topicality account and the simple topicality account in Xu & Liu (2007). Section 10 concludes this paper with a suggestion of "Skolem closure" on the topic position in division of labor with existential closure for the rest of the sentence.

2. The subject *mei*-phrase requiring co-occurrences of *dou*/indefinites/reflexives in its predicates

The following is a widely recognized minimal pair in the field:

(3) a. *每個學生畢業了。
mei-ge xuesheng biye-le.
every-CL student graduate-ASP
Intended meaning: 'Every student graduated.'

b. 每個學生都畢業了。
mei-ge xuesheng dou biye-le.
every-CL student dou graduate-ASP
'Every student graduated.'

The contrast in (3) suggests that the subject *mei*-phrase requires *dou*, an adverb that has been translated into English as 'all', in the predicate. However, as shown in S.-Z. Huang (1995, 1996), *dou* is optional when there is an indefinite (either nominal or adverbial), or a reflexive, inside its predicate:

(4) a. 每個廚師(都)做了一道菜。
mei-ge chushi (dou) zuo-le yi-dao cai.
every-CL chef dou make-ASP one-CL dish
'Every chef made a dish.'

b. 每個孩子(都)迷一个歌星。
mei-ge haizi (dou) mi yi-ge gexing.
every-CL child dou fancy one-CL pop star
'Every child fancies a pop star.'

c. 每個歌星(都)紅了一年。
mei-ge gexing (dou) hong-le yi nian.
every-CL pop-star dou starred-ASP one year
'Every pop star was popular for a year.'

d. 每個孩子(都)有自己的夢想。
mei-ge haizi (dou) you ziji-de mengxiang
every-CL child dou have self-Poss dream
'Every child has their own dreams.'

These sentences suggest that the *mei*-QP subject requires either a *dou*, or an indefinite, or a reflexive in its scope. For convenience, let us use *mei* A *dou* B as an abstract way to represent the three co-occurrence patterns exhibited in these *mei* sentences. In what follows, I will use *mei*-QP to stand for the *mei* phrases, where QP could be either a classifier phrase or a verb phrase. As for indefinites, only numeral *yi* 'one' is considered for its rough equivalent to the indefinite article function along with a classifier on a noun (S.-Z. Huang 2022, Footnote 12). I have decided to restrict my investigation of indefinites to *yi*-Cl-N because it can reliably introduce a variable

while Num-Cl-Ns with numbers higher than one cannot, which makes them unreliable candidates for this study.

From the facts in (4), S.-Z. Huang (1995) makes the conjecture that the three co-occurring partners of *mei*-QP have something in common and should be studied together.[1] The underlying pattern of *mei* A *dou* B is one of pairing/matching between two variables, one from the *mei*-phrase and the other from its predicate phrase, such that for every *x* there is a *y*. Since the restrictor for a *mei*-QP always introduces a variable,[2] what is critical is the availability of the second variable for pairing with the first variable. This generalization could be summed up as follows:

(5) Generalizations on *mei*-quantification in Chinese (S.-Z. Huang 1995, 1996)
The universal quantifier *mei*-QPs require something to pair within their predicates. Besides the widely observed *dou*, indefinites and reflexives are viable partners as well. These three pairing partners all introduce a viable variable for matching with the *mei*-QP.[3]

This generalization has led to my Double-Variable Hypothesis for distributive universal quantification, as laid out in my thesis and later work (S.-Z. Huang 2018b). Over the past twenty-five years, this generalization of pairings/matchings between *mei* and *dou*/indefinites/reflexives has been adopted in a number of works, whether or not the authors agree with my theoretical account. Zhang & Pan (2019) reviewed eight authors on their work on *mei* A *dou* B in Chinese, and these are: Huang (1996, 2005), Cheng (2009), Luo (2011), HH. Yuan (2018), Lin (1998), Yang (2001), Pan et al. (2009), and YL. Yuan (2012). Zhang & Pan evaluated each piece of work based on how well it could account for some or all of the three co-occurrence patterns stated in S.-Z. Huang's generalization. The two authors did so to advance their own analysis, which does not take *mei* as a universal quantifier and instead treats *dou* as one, following Lin (1998). Although I do not agree with their analysis, the point here is that we can take their method of evaluation of the literature as a validation of the generalization summarized in (5). It is worth noting that Lin (2020) has accepted our observation that in a sentence with a subject *mei*-QP, *dou* is

1. However, whatever these three partners of *mei*-QP share, they themselves cannot be universal quantifiers. For detailed discussions, see S.-Z. Huang (1995, 1996, 2005).

2. S.-Z. Huang (1996, 2005) follow Krifka (1995) and Chierchia (1998) in treating Chinese bare nouns as mass nouns denoting kind, and therefore are of type *e*, and treating classifiers as type <e,<e,t>>. Thus, a classifier phrase, which is type <e,t>, is predicative and can serve as a restrictor of a quantifier such as *mei*.

3. This generalization has moved us beyond the three partners, since it recognizes the importance of identifying the second variable for *mei*. Thus, it does not preclude other potential partners that might also contribute a viable second variable.

optional when there is an indefinite, contra Lin (1996, 1998), while casting doubt on the role of reflexives. I have responded to Lin's concerns in S.-Z. Huang (2022) and maintain the viability of reflexives as a source of variable *y* for *mei*-QP. Regardless of one's theoretical orientation or specific analysis of *mei* sentences, it seems reasonable to assume, based on Zhang & Pan's review, that there is a sufficient amount of agreement among Chinese linguists that the co-occurrence patterns constitute (some of) the core properties of subject *mei*-QP sentences.

3. Specificity of subject indefinites

3.1 Indefinite subjects

Zhu (1982: 97) provides the following sentence as an example with an indefinite subject that he claims one just doesn't say in Chinese:

(6) *一位客人來了。
yi-wei keren lai-le
one-CL guest come-ASP
'A guest arrived.'

Fan (1985) counters this view by providing a large number of examples, all of which contain an indefinite subject. The following are three sentences exemplifying, respectively, a sentence-initial indefinite subject, an indefinite subject preceded by a locative phrase, and an indefinite NP preceded by a time expression while serving as the subject of the matrix sentence and that of the subsequent sentence:

(7) 一位戰士從小轎車後座拿出一幅地圖來。
yi-wei zhanshi cong xiao jiaoche houzuo nachu yi-fu ditu lai
one-CL soldier from small sedan backseat take-out one-CL map come
'A soldier took out a map from the backseat of the sedan.'

(8) 北京三十個青年訪問了日本。
Beijing sanshi-ge qingnian fangwen-le riben
Beijing 30-CL youth visit-ASP Japan
'Thirty youths from Beijing visited Japan.'

(9) 今天早上，一輛急救車鳴著喇叭，飛快地駛進北京積水潭醫院。
jintian zaoshang yi-liang jijiu che ming-zhe laba, feikuai-de shi jin
toady morning, one-CL ambulance honk-ASP horn, very fast-DE drive into
Beijing jishuitan yiyuan
Beijing jishuitan hospital
'This morning, an ambulance honked and sped into the Beijing Jishuitan Hospital.'

3.2 Stage-level predicates (SLPs) with indefinite subjects enhanced by spacio-temporal anchoring (S.-Z. Huang 1996, 2004)

Shyu (1995: 151) makes the observation that only stage-level predicates (SLPs), not individual-level predicates (ILPs), license indefinite subjects in Fan's data, as shown in the contrast below:

(10) 一個小孩在慢慢地跑著。
yi-ge xiaohai zai manman-de pao-zhe
one-CL child at slow slow-DE run-ASP
'A child is slowly running.'

(11) ??一個小孩跑得很慢。
yi-ge xiaohai pao-de hen man
one-CL child run-DE very slow
'*A child runs slowly.'

S.-Z. Huang (1996, 2004) show that only spacio-temporally anchored SLPs make indefinite subjects feasible, and argue that spacio-temporal anchors include time, location, manner expressions as well as various other adverbial and modal expressions, following similar ideas from Parsons (1990). Such enhanced SLPs help us explain the contrast between (6) and (7)–(10). The latter group of sentences all have enhanced SLPs and an indefinite subject is fine, while the former has a bare SLP and the sentence is not so good.

Shyu (1995: 153) notes that the indefinite subjects in Fan's examples are "indefinite referentials," as they have to be interpreted referentially. Shyu's claim is in agreement with what is generally recognized in the field of Chinese linguistics: preverbal indefinite nominals tend to be specific, and I adopt her position for this study but will make a brief suggestion of a structural distinction between specific indefinites and non-specific indefinites to correspond to categorical and thetic judgments in Footnote 16.

Now that we have taken a closer look at the two phenomena listed in (1) and (2), we come to our central research questions:

(12) What accounts for the co-occurrence patterns between the subject *mei*-QP and its partners of *dou*/indefinites/reflexives, and the specificity of subject indefinites?

(13) Could there be a single mechanism for both phenomena?

This paper goes for a single mechanism account.

4. Proposal – Skolemized topicality for subject indefinites and universal quantifier *mei*-QPs

I propose the following hypothesis as the answer to both of the above-questions: The two seemingly unrelated phenomena in Chinese are manifestations of the same underlying mechanism in a topic-comment language such as Chinese. The Chinese topic position is equipped with a Skolem function. Subject indefinites and subject *mei*-QPs are in fact in the topic position. Skolemization of the topical indefinites results in a (Skolem) constant, leading to a referential indefinite reading; and the effect of Skolemization on the topical *mei*-QP results in the Skolem function seeking a free variable within its predicate (the comment part) to replace, which creates pairings/matchings, namely dependency relations, with the variable introduced by the restrictor of *mei*. Distributivity is a natural consequence of Skolemization of *mei*-QPs in the topic position. The Skolemization process, which will be defined later, also "individuates" each member of the restrictor set of *mei* (Richard Larson, personal communication). Thus, Skolemized topicality provides a pathway for indefinites and *mei*-QPs to be eligible for the topic position in terms of the referentiality requirement.

4.1 The Skolemized topicality hypothesis vs. the Skolemized EVERY hypothesis (S.-Z. Huang 1996, 2005)

Applying the Skolem function to Chinese is not new. S.-Z. Huang (1996, 2005) postulate the following hypothesis to capture the generalization in (5) by way of a Skolem function: Distributive Universal Quantification (**DUQ**) boils down to a dependency relationship that for every *x* there is a *y*. Distributivity is a matter of pairing/matching *x* with *y*. The dependent relationship could be captured through a Skolem function which ensures that the value of *y* is dependent on that of *x*.

The problem with the Skolemized EVERY hypothesis is its overgeneralization for Chinese. While it works perfectly well with subject *mei*-QPs, it makes too strong a prediction about the object *mei*-QPs, where there is no pairings/matchings, as attested by the following example:

(14) 拜登總統(*都)接見了每一位新任大使。
Biden zongtong (*dou) jiejian-le mei yi-wei xinren
Biden president *dou* *receive-ASP every one-CL newly appointed*
dashi
ambassador
'President Biden received every new ambassador.'

'Every new ambassador' has no co-occurrences with *dou*/indefinites/reflexives when used in the object position, and use of *dou* in its canonical preverbal position (the only possible position) is not allowed. I taken the *mei*-QP in the postverbal object position to be non-distributive. If a Skolem function is intrinsic to the meaning of *mei*-QP, the grammaticality facts in (14) would be unaccounted for. On the question whether a *mei*-QP is acceptable in the object position, there has been a lively debate as referred to in Li (2014:222). I would like to highlight a difference between accepting a *mei*-QP in the object position in general or accepting it with distributivity. Of the two "restrictive views" that Li mentions, Cheng (1991:162) accepts an object *mei*-QP only in a contrastive context, and even there there is no recognition that it retains distributivity. My own views on object *mei*-QPs have been finer tuned over the years. In S.-Z. Huang (1996) I held the view that distributive *mei*-QPs are unnatural in the object position without having variable bearing expressions in their scope. I provided evidence to show that they retain their distributivity in the post-verbal position if they can be paired with indefinites in their scope in double object constructions, for instance. Of course I was only concerned with the distributivity interpretation; I was not against accepting *mei*-QPs in the object position with non-distributive interpretations, a view I stated clearly in S.-Z. Huang (2005:40, Footnote 18). Thus, if distributivity is not intrinsic to the *mei*-QP, but rather seems to be tied to the position they occupy, the Skolemized topicality hypothesis captures this positional property in a more straightforward manner than the original Skolemized EVERY hypothesis.

Note that it is the postverbal position of the object that matters, not the grammatical relation. A topicalized *mei*-phrase which is grammatically the object of the verb exhibits the pairing/matching requirement with the obligatory appearance of *dou*:

(15) 每一位新任大使拜登總統*(都)接見了。
meiyi-wei xinren dashi Baideng zongtong
every-one-CL newly appointed ambassador Biden *President*
*(dou) jiejian-le
dou receive-ASP
'President Biden received every new ambassador.'

The Skolemized topicality hypothesis accounts for the subject/object asymmetry by placing the Skolemization mechanism squarely on the topic position, thus, decommissioning *mei* itself from requiring pairings/matchings. The generalization about the co-occurrence patterns listed in (5) still stands, since Skolemization still requires a variable inside the predicate to replace to create pairings/matchings with variable *x*. Only the source of Skolemization has been identified with the topic position. This Skolemized topicality hypothesis is thus superior to the Skolemized

EVERY hypothesis, because it not only handles the same generalization in (5), but also offers a principled account of the subject/object asymmetry of *mei*-QPs.

4.2 How a Skolem function works with topical indefinites and topical mei-QP

To understand how the Skolemized topicality hypothesis can accomplish accounting for *mei*-QP's pairing requirements of *dou*/indefinites/reflexives and specificity of subject indefinites, we need to understand how the Skolem function works. Now let us turn to the formal definitions of Skolem function and the process of Skolemization to give the Skolemized topicality hypothesis some clarity. We rely heavily on Winter (2008) and Goranko (2010).[4]

The following are definitions from Winter (2008) with slight changes for formatting purposes:

(16) In the logical tradition, Skolem functions are functions from (tuples of) *n* entities to entities.

(17) In linguistics with regard to restricted quantifiers, Skolem Functions are functions from *n*-tuples of entities and non-empty sets *A* to entities in *A*.

(18) When n=0 (no entity arguments) the function is a **choice function**: it chooses a fixed element from the non-empty set *A*.

According to Goranko (2010), Skolemization is a "procedure for systematic elimination of the *existential quantifiers* in a first-order formula in a prenex form,[5] by introducing new constant and functional symbols, called Skolem constants[6] and Skolem functions, in the formula."

---

4. Interested Chinese readers may turn to Jiang & Pan (2005), an excellent primer on formal logic and its application to natural language written in Chinese, for discussions of many of the formal notions in this paper.

5. Goranko defines prenex form as this: "A first-order formula $Q_1x_1\ldots Q_nx_nA$, where $Q_1 \ldots Q_n$ are quantifiers and A is an open formula, is in a prenex form. The Quantifier string $Q_1x_1\ldots Q_nx_n$ is called the prefix, and the formula A is the matrix of the prenex form."

6. In the linguistics literature, a Skolem constant is frequently treated as a choice function, a variant of Skolem function as it is defined in (18).The difference between the two is that a choice function is itself a function variable. We will see some application of choice functions in Section 8.

Skolemization in mathematical logic where quantifiers are not restricted:[7]

Example 1 of Skolemization, which introduces a Skolem constant:

Given the first-order logical formula (i): $\exists xP(x)$

The result of Skolemization of (i) is (i′): $P(c)$, where c is a new (Skolem) constant.[8]

Example 2 of Skolemization, which introduces a Skolem function:

Given the first-order logical formula (ii): $\forall x \exists yP(x, y)$

The result of Skolemization of (ii) is (ii′): $\forall xP(x, f(x))$, where f is a new unary function, called Skolem function.

Next, let us apply these Skolemization procedures to natural language.

Skolemization applied to natural language (NL):

Example 3 of Skolemization in NL, with an unrestricted existential quantifier:

(19) Someone died.

(20) $\exists xD(x)$

(21) D(c), where c is a (Skolem) constant that is picked out from the non-empty set of people.

Example 4 of Skolemization in NL, with unrestricted as well as restricted quantifiers. Note that R stands for a relationship among x, y, and z:

(22) Everyone gave everyone a present.[9]
For every two people x and y we can find a thing $f(x, y)$ that is a present that x gave y.

(23) $\forall x \forall y[\exists z{:}Present(z)][R(x, y, z)]$

(24) $\forall x \forall$y$[R(x, y, f(x, y, Present))]$
f maps pairs of people to presents

We can see that Skolemization that eliminates (or "removes" or "replaces" in the other two common terms used in mathematical logic) an existential quantifier that is scope free results in a formula with a Skolem constant. Skolemization that eliminates/removes/replaces an existential quantifier inside the scope of a universal quantifier results in a formula with a Skolem function. It is important to bear in mind that it is the existential quantifiers (in linguistics these are predicative

7. This part is largely drawn from Goranko (2010).

8. Essentially the procedure which results in a (Skolem) constant is the same procedure of applying a choice function as used in (42).

9. Note that Winter treats *some* and the indefinite article *a* the same way: these natural language expressions could be mapped into logical language as existential quantifiers, or as variables.

indefinites that introduce a variable) that get replaced in both procedures of Skolemization. In Examples 4, Skolemization leads to a dependency between the existentially introduced variable to the universally bound variable in whose scope the existentially introduced variable appears. Thus, the indefinite can only have a narrow scope.

So how does all this formalism bring us closer to answering the two research questions listed in (12) and (13)? The answers are already illustrated in the examples for the formalism. Skolemization of topical indefinites results in a specific reading by picking out a particular member from the non-empty set denoted by the predicative indefinite. Skolemization of topical *mei*-QPs results in the Skolem function seeking a free variable inside the predicate to replace, which results in creating a dependency relationship between the topical *mei*-QP and the variable-producing co-occurring partners of *mei*-QP. It is indeed a single mechanism underlying both phenomena.

For concreteness, let us see the Skolemized forms of the topical indefinites and topical *mei*-QPs. Note that as far as *mei* is concerned, these forms are identical under both the Skolemized EVERY hypothesis and the Skolemized topicality hypothesis since the difference between the two hypotheses is mainly structural, not semantic or logical. It is only the source of the Skolem function that has been changed. With this change, we can account for not only (1), but also (2). I choose (3b), (4b) and (10) to illustrate the Skolemized forms, respectively, and use English gloss for convenience. To save space, I will only present (4b) without *dou*[10]:

(25) $\forall x[\text{STUDENT}(x) \rightarrow \text{GRADUATED}(x, f(x)) \wedge \text{DOU}(f(x, \text{graduating event}))]$
where f: $x \rightarrow y$
In words: the Skolem function f maps students to events of graduation, with the event variable licensed by DOU.[11]

10. Optionality of *dou* in the presence of an indefinite within the predicate has implications on the interpretation of the indefinite itself. This is fully discussed in S.-Z. Huang (1996: 46–49, 2005). In a nutshell, it comes down to whether the variable the indefinite introduces is paired/matched with variable x or not by Skolemization. Without *dou*, the indefinite is the only source of variable y, and thus is paired/matched with x and has a narrow scope reading. With *dou* available, a sentence like (4b) is ambiguous. For the indefinite object in (4b), in addition to the narrow scope reading, the event variable licensed by *dou* can be paired/matched with variable x, freeing the indefinite to have a wide scope reading. The original examples discussed in S.-Z. Huang (1996: 68) show with lexical examples how to achieve a one-to-one reading for the narrow scope, and the three-to-one reading for the indefinite. S.-Z. Huang (2022) elaborates on this claim further, while offering a critique of Lin (2020) with regard to his treatments of indefinites.

11. Since the specifics of the sum operator account of *dou* are not essential to the new proposal, I will leave them out in the formal representation.

(26) $\forall x$[CHILD(x)→FANCY(x, f(x,pop stars))]
where f: $x \rightarrow y$
In words: the Skolem function f maps children to pop stars.

(27) BE WALKING SLOWLY(c), where c is a particular child that is picked out from the non-empty set of children through the procedure of Skolemization.

The above presentation shows how the formal mechanism of Skolemization works to make the Skolemized topicality hypothesis truly applicable to account for (1) and (2). Next, we provide direct evidence that *mei*-QPs (Section 5) and indefinites (Section 6) do appear in topic positions.

5. Universal quantifiers as topics in Chinese

5.1 Xu & Liu (2007)

This book-length treatment of topic structures in Chinese uses data from Mandarin and Shanghainese and is comprehensive and wide-ranging on the syntactic structure of topics and their major functions in discourse. The two authors adopt what they call a generalized topic-prominence theory, which not only gives prominence to topics but also recognizes/allows subjects (Xu & Liu 2007: 29–30).

5.1.1 *Xu & Liu's main points*

Of the many issues Xu & Liu cover, the most relevant points are: (a) Topic-prominent languages enjoy a high degree of grammaticalization of the structural positions of the topic. (b) Topics are a regular part of sentence structure in Chinese. (c) There could be multiple layers of topics within a single sentence in Chinese. Topics can be divided into main topics (T_m), subtopics (T_s), and even sub-subtopics (T_{ss}) in limited settings. Main topics appear in the clause initial position. Subtopics appear between the subject and the predicate, and sub-subtopics appear in postverbal positions, mainly in double object constructions and pivot constructions (兼語式 *jianyu-shi*). (d) Chinese has topic markers. (e) Topics have a referentiality requirement, which has diverse manifestations in Chinese, e.g., proper names, definites (including bare nouns, kind-denoting nouns, nominals with demonstratives, etc.), generics, specific indefinites, and known entities (including newly referenced entities. (f) Universal quantifiers in Mandarin have a strong tendency to appear in the topic position. Universal quantifiers in Shanghainese must appear in the topic position. (g) Universal quantifiers in the form of reduplicated classifiers in both Mandarin and Shanghainese must appear in the topic position.

5.1.2 *Mei-QP as topics (Xu & Liu 2007: 166–171)*

Xu & Liu support their rationale for treating universal quantifiers as topics by dialectal comparisons and some historical considerations.

Below is a minimal pair of sentences in Mandarin:

(28) 警察詢問過了每一個目擊者。
jingcha xunwen-guo-le mei-yi-ge mujizhe
police interview-ASP-ASP every-one-CL witness
'The Police interviewed every witness.'

(29) 每一個目擊者警察都詢問過了。
mei-yi-ge mujizhe jingcha dou xunwen-guo-le
every-one-CL witness police dou interview-ASP-ASP
'The Police interviewed every witness.'
(Or: As for every witness, the police have interviewed all of them.)

Xu & Liu (2007: 167) consider *mei*-QP a "strong universal quantifier."[12] They view its use in the object position in (28) to be in somewhat bookish style used in formal writings in modern times. Xu & Liu state that "this kind of sentence with postverbal positioning of universal quantifiers is not common in vernacular Mandarin and other dialects. It was not easy to find this kind of order in vernacular literature before the May 4th movement. It could be viewed as a byproduct of Westernization in terms of adopting the grammar of Western languages." They consider (29) the more natural order in spoken Chinese, as it aligns with other Chinese dialects, such as Shanghainese.

Shanghainese pattern (I use Mandarin pronunciation for convenience, except for 儕 *ze*, which is the Shanghainese counterpart of Mandarin *dou*):

(30) *警察問過勒每個目擊者。
jingcha wen-guo-le mei-ge mujizhe
police ask-ASP-ASP every-CL witness
'The Police interviewed every witness.'

(31) 每個目擊者警察儕問過勒。
mei-ge mujizhe jingcha ZE wen-guo-le
every-CL witness police ze ask-ASP-ASP
'The Police interviewed every witness.'
(Or: As for every witness, the police have interviewed all of them.)

The Shanghainese data is striking for the minimal contrast between the acceptable preverbal positioning of the object phrase 'every witness,' and the unacceptability of 'every witness' in the postverbal position, and the authors believe that Shanghainese

12. Their original Chinese phrase is 强式全量成分 *qiangshi quanliang chengfen*.

is more representative of other dialects, since they do not have a written medium and are less influenced by Western grammar.[13]

More importantly, when the universal quantifier is in the reduplicated classifier form, in both Mandarin and Shanghainese, such a quantifier MUST be in preverbal position, not in postverbal position (Xu 1995, Xu & Liu 2007: 168). Below are examples from Shanghainese:

(32) *警察問過勒個個目擊者。
jingcha wen guo-le ge-ge mujizhe
police ask-ASP-ASP Cl-CL witness
'The Police interviewed every witness.'

(33) 個個目擊者警察儕問過勒。
ge-ge mujizhe jingcha ZE wen-guo-le
CL-CL witness police ze ask-ASP-ASP
'The Police interviewed every witness.'
(Or: As for every witness, the police have interviewed all of them.)

Xu & Liu consider and reject the view that the preverbal *mei*-QP is in the subject position, not the topic position, as argued for by Lu (1986). They make a major distinction between topics and subjects in terms of theta role relations with the main predicate. They argue that subjects have closer affinity with the predicate and agentive expressions can serve as subjects without much constraint, whereas topical expressions have a wide variety of relationships with the predicate. They offer nine examples to support their position and we show two below:

(34) 每家大商場姨媽都帶著我買了一些東西。
mei-jia da shangchang yima dou dai-zhe wo mai-le
every-CL big department-store aunty dou take-ASP me buy-ASP
yi-xie dongxi
one-plural thing
'Aunty took me to every big department store to buy things.'

(35) 每個臉盆他都洗過腳了。
mei-ge lianpen ta dou xi-guo jiao-le
every-CL face-basin he dou wash-ASP foot-ASP
'He's used every face-washing basin to wash his feet.'

13. "Western grammar" is really too broad a description since there are too many different languages in Western nations. I take them to refer to English as the main linguistic influence. I do not find their claims about language change too far-fetched, as there are similar trends elsewhere in Chinese grammar. But a full exposition is beyond the scope of this paper.

The authors' main point is that in both of these sentences there is a typical subject (*aunty* and *he* respectively) that is the agent to the action. Because both sentences have a subject already, it is hard to argue that a locational expression (*every big department store)* and an instrumental expression (*every basin*) are fronted to serve as the subject (ibid. 169).

Based on these and other considerations concerning pause patterns and topic marker usage, Xu & Liu conclude that the best explanation of the facts is that universal quantifiers in Mandarin have a strong tendency to serve as topics (T_m or T_S) and their counterparts in Shanghainese must serve as topics (T_m or T_S) (ibid. p. 169).

5.2 *Mei*-QPs in the topic position for scoping – Wu & Larson (2019)

We now turn to some syntactic considerations in favor of placing universal quantifiers in the topic position.

Wu and Larson (2019) consider the following contrast which shows that Mandarin quantified subjects uniformly take scope over quantified objects (36a),[14] whereas Mandarin quantified objects permute scopally within VP (36b).

(36) a. 三個學生說每種語言。
San-ge xuesheng shuo mei-zhong yuyan.
three-CL student speak every-CL language
'Three students speak every language'. (3 > ∀; *∀ > 3)

b. 張三買了兩本書給每個人。
Zhangsan mai-le liang-ben shu gei mei-ge ren.
Zhangsan buy-ASP two-CL book for every-CL man
2 > ∀: 'There were two books that Zhangsan bought for everyone.'
∀> 2: 'For every person *x*, Zhangsan bought two (possibly different) books for *x*.'

Applying the theory of quantifier scope developed in Fox (2000), Wu and Larson (2019) argue that Mandarin quantified subjects take scope over quantified objects because they raise to a topic position at the left edge of the sentence (37). This high position puts subjects out of range for scope permutation under the theory of Fox (2000).[15]

14. Wu & Larson credit C.-T. J. Huang (1982) as having made this observation.

15. The details of the syntactic operations are left out here. Interested readers should go to the original article of Wu & Larson (2019).

(37) [$_{TopP}$ san-ge xuesheng [$_{TP}$ san-ge xuesheng [$_{vP}$ san-ge xuesheng jiang mei-zhong yuyan]]]

Developing proposals by Kuroda (1972), Wu and Larson (2019) associate a high topic position in Mandarin with interpretation as a "categorical subject" – subject of a predication of individuals. This idea of quantifier phrases occupying a higher position beyond scopal permutation would of course apply to *mei*-QP.

6. Indefinites as topics in Chinese

6.1 Specificity/referentiality of the indefinite subjects and TopicP

Shyu (1995)'s referentiality claim about Chinese subject indefinites is based on Kuroda's work on Japanese (Kuroda 1972, 1992), particularly his framework of categorical judgments vs. thetic judgments. In modern times, Kuroda (1972) is the first major work in linguistics that adopted the logical notion of categorical judgment and thetic judgment and applied them to natural language. In Kantian logic, a categorical judgment is a synthesis of the subject and predicate (Martin 2006). Kuroda's contribution rests in his insight in seeing Japanese sentences with a *wa*-marked topic as examples of categorical judgment (and Japanese sentences with a *ga*-marked subject as examples of thetic judgment). In particular, Kuroda (1972: 154), following descriptions from Brentano, treats categorical judgments as double judgments, namely two separate acts: "One, the recognition of that which is to be made the subject, and the other, the act of affirming or denying what is expressed by the predicate about the subject." Under this view, in a categorical judgment, the speaker's interest is primarily towards the subject, not just because the subject is a participant of the event, but because he wants to relate the happening of the event to this entity. In contrast, thetic judgment is "simply the act of recognition or rejection of the material of a judgment." In linguistic terms, it is a presentation of situations or events in its entirety without drawing attention to participants of the events.

There is apparently a connection between the notion "topic" as described by Chao, and the notion "categorical subject" as defined by Kuroda: both present an individual/entity that is already known and therefore is referential and a judgment/predication can be made with regard to that known individual/entity. For these authors, a topic/categorical subject appears before the comment/predicate, structurally speaking. In what follows, we will use topic and categorical subject interchangeably unless otherwise noted.

I agree with Shyu's judgment about referentiality/specificity of the indefinite subjects in Fan's data, at least these elements all can be referential/specific. As we

have seen in Section 3, it is the spacio-temporal anchoring of the SLPs that makes them license a referential indefinite. Based on this fact, I suggest that it is this anchoring mechanism that makes the SLP in such sentences project a TopicP, where an indefinite nominal phrase occupies the Spec of TopicP position.[16] Much syntactic leg work must be done to flesh out this idea, but let us assume that it can be done, as there are presumably syntactic tools to get it done. Alternatively, one could say that in a topic-prominent language such as Chinese, the topic position is always available for an indefinite, but only a spacio-temporally anchored SLP could be the predicate in the comment. This alternative is close to what has been proposed for the interplay between indefinite subject and existential for Chinese in S.-Z. Huang (1996, 2004), where indefinite subjects can always be bound off by existential closure; what matters is whether the SLPs are spacio-temporally anchored (constrained). More on this later.

16. We have to take the TopicP projection to be optional by the enhanced SLPs, since indefinites in such sentences are not always "referential" and function as topics. S.-Z. Huang (2004: 104) discusses a kind of sentence which could be called "hot news" sentences (McCawly 1971: 104):

(i) (看!) 一只猫爬到树上去了!

Such "hot news" sentences would fall under Kuroda (1972)'s typical thetic judgments which present an entire situation as a single act where the indefinite subject has a non-specific interpretation, rather than the categorical judgements which are double acts of first presenting the topic, which must be referential, and then presenting the predicate about the topic. Li (2014:217), adopting a position presented in Huang et al. (2009), discusses a similar, but not identical, sentence shown below:

(ii) (wo kanjian) (liang-zhi) mao zai yuanzi-li dajia.
I see two-Cl cat at yard-in fight
'(I saw that) (two) cats were fighting in the yard.'

and treats it as a thetic statement. However, Li interprets 'two cats' as specific, which is inconsistent with Kuroda's theory about thetic judgments. For both the interpretation of the argument of a perception verb and the thetic judgment itself, the focus is on the entirety of the scene or event. Treating 'two cats' as a specific indefinite amounts to drawing attention to it, which is contradictory to Kuroda's singlet-act view of thetic judgment. One of the complicating factors here is that we cannot make a direct comparison between (i) and (ii) because *yi-zhi-mao* in (i) has a one-CL-N structure while *liang-zhi mao* 'two cats' in (ii) is a N+1 Numeral Phrase. So once again the difference between the number 'one' and any number higher than one might be making the matter harder to tease apart, as Li's (2014) careful review of comparisons of *yi* vs. N+1 numbers has revealed. Due to space constraint this issue cannot be addressed fully here.

6.2 SLPs and Topic

Xiong (2008) adopts the notion of a "stage topic" from Erteschik-Shir (1997). Xiong agrees with S.-Z. Huang's observation about the necessity of anchoring SLPs by spacio-temporal expressions, but treats the event variable itself as a "stage topic" that licenses the indefinite subject. The problem with the "stage topic" view of the event argument is the intrinsic incompatibility between being a variable which does not have a value on its own, and being a topic whose reference must be "the subject matter to be talked about" in Chao's classic description.[17]

6.3 Xu & Liu (2007) on Indefinites as topics

Xu & Liu (2007) offer a nuanced view about indefinites as topics. On the one hand, they argue in principle that indefinites do not serve as topics. On the other hand, they recognize that indefinites in the form of one-CL-N can appear in the topic position but are all coerced into specific readings. Adjusting the predicates in two of their examples (Xu & Liu's (4b) and (5b) on p. 143) with spacio-temporal anchoring manner expressions in (38b) and (39b) below, we see the effect of topical coercion and the effect of SLP enhancement through spacio-temporal anchoring:

(38) a. ?一個小夥子啊，爬上了山頂。
yi-CL xiaohuozi a, pashang-le shanding
one-CL young man top-mkr, climb up-ASP mountain peak
'A young man climbed up to the top of the mountain.'

b. 一個小夥子啊，在別人前面爬上了山頂。
yi-CL xiaohuozi a, zai bieren qianmian pashang-le
one-CL young man top-mkr, at others ahead climb up-ASP
shanding
mountain peak
'A young man climbed up to the top of the mountain ahead of others.'

(39) a. ?一些水管呢，凍裂了。
yi-xie shuiguan ne, donglie-le
one-xie water pipe top-mkr, freeze crack-ASP
'Some water pipes cracked due to freezing.'

b. 一些水管呢，很快就凍裂了。
yi-xie shuiguan ne, hen kuai jiu donglie-le
one-xie water pipe top-mkr, very quick then freeze crack-ASP
'Some water pipes quickly cracked due to freezing.'

---

17. We have the same problems with similar proposals outside Chinese linguistics. Cresti (1995) argues for indefinite topics to account for specificity readings of indefinites in the scope of scoping elements. However, her account of specificity of indefinites allows the variable introduced by the predicative indefinites to serve as a topic, which Portner (2002) finds problematic, and I agree.

It is critical to note that both (38) and (39) have the indefinites marked by a topic marker, *a* or *ne*, proving that these indefinites are indeed in the topic position. However, the (b) sentences above are better than the (a) sentences, i.e, Xu & Liu's original sentences, because of the adverbial elements creating spacio-temporal anchoring. While the Skolemized topicality hypothesis takes care of the referentiality requirement for the topic position, we also see that the comment must meet certain conditions as well under our brief account of enhanced SLPs in episodic sentences based on S.-Z. Huang (1996, 2004).

Jiang (2012, Ch.3) makes a general claim about a number of nominals appearing in the topic positions to account for their definite or specific interpretations, including numeral constructions (NCs). However, she does not discuss indefinites of the kind under discussion here, namely the kind with numeral 'one' as in *yi*-Cl-N. So a direct comparison is difficult since our work reported here is restricted to *yi*-Cl-N.

The studies presented in Sections 5 and 6 show that topic positions do allow *mei*-QPs and indefinites. These studies offer empirical support for the Skolemized topicality hypothesis. In turn, the Skolemized topicality hypothesis offers a direct way to explain how indefinites and *mei*-QPs meet the referentiality requirement of the topic position.

7. On Mei-VP

There is an interesting sentence type that does not get discussed enough in the literature (S.-Z. Huang 1995, 1996: 178–185, 2005):

(40) 張三每寫完一篇文章，李四都請他大吃一頓。
Zhangsan mei xie-wan yi-pian wenzhang Lisi dou qing ta da-chi-yi-dun.
Zhangsan every write-finish one-CL article Lisi dou treat he big-eat-one-meal
'Each time Zhangsan finishes writing an article, Lisi treats him to a hearty meal.'

Here, *mei* appears in the preverbal position of a conditional clause, not the typical pre-CL-N position, directly inducing a pairing/matching of two events such that for every event of Zhangsan completing an article there is an event of Lisi treating him to a hearty meal.[18] Such a sentence is accounted for by the Skolemized EVERY hypothesis.[19] The LF representation of this sentence is provided below.

18. I note here that the preverbal *mei* cannot be interpreted as somehow related to *yi-pian wenzhang* 'an article' for the meaning of *every article*. For a fuller description of how *mei* works in the preverbal position, the reader is referred to S.-Z. Huang (1996, 2005).

19. Cheng (2009) discusses a sentence type from Lü (1980) that is similar but not identical to (40). The Skolemized topicality hypothesis can extend to Lü's data with only minor adjustments.

Let *x* stand for the event variable of the antecedent clause, and *y* for the event variable of the consequent clause, zs for Zhangsan, and ls for Lisi. The logical translation of (40) would be (41), which uses the English gloss for ease of presentation:

(41) $\forall x$[FINISH-WRITING-AN-ARTICLE (zs, *x*)→TREAT-TO-A-HEARTY-MEAL(zs, ls $f(x)$) ∧ DOU($f(x$, TREAT-TO-A-HEARTY-MEAL))]
Where *f* is a function that maps events to events.

The question arises as to how the Skolemized topicality hypothesis handles (40) since this is not a typical topic-comment construction. The answer can be found in Chao (1968), where the antecedent clause in a conditional is treated as a topic, and the consequent clause is treated as the comment.[20] As is stated earlier, the Skolemized topicality account of (40) would also have (41) as the logical form.

8. Testing the Skolemized topicality hypothesis on *Ba*-constructions

Portner (2002) discusses a ba-sentence involving a subject *mei*-QP and an indefinite nominal in the argument position of *ba*[21]:

(42) 每個學生*(都)把一個/這個老師得罪了。
mei-ge xuesheng dou ba yi-ge laoshi dezui-le
every-CL student dou ba one-CL teacher offend-ASP
'Every student offended a teacher.'

Portner makes two observations about (42) against S.-Z. Huang (1996). First, the argument of 把 *ba* must be definite or specific, as is widely assumed in the literature, so the indefinite in that position is not helping the subject universal quantifier phrase, and *dou* is required. Portner takes this as evidence that a specific indefinite does not license *mei*, only a non-specific indefinite one does. Second, Portner notices a covariation reading between the specific indefinite and the subject where every student offended a particular teacher. Portner claims that either his topical domain function account[22] or the choice function account would work to

20. Chao's position is elaborated in Xu & Liu (2007) and Shen (2012). Haiman (1978) offers a full account of how conditionals can be viewed as topics in other languages.

21. Descriptively, a *ba*-construction takes the direct object and places it immediately after *ba* and right before the verb (Li & Thompson 1981).

22. We have seen how choice function is defined in (18). Portner's topical domain function is defined by him as the idea that "specific interpretations of indefinites arise when the domain of quantification for the indefinite is a topic. In particular, when the sentence has a topic (overt or covert) which represents a small fixed set or function from contextual parameters to sets, and an indefinite quantifies over this set, the indefinite will seem to get a fixed reference and have wide scope." (Portner 2002: 275)

account for these two facts, since both recognize specificity in indefinites, whereas the Skolemized EVERY hypothesis proposed in S.-Z. Huang (1996) fails.

S.-Z. Huang (2018a) points out that Skolemization can only eliminate/remove/replace variables of entities, as defined in (16–18); it does not eliminate/remove/replace function variables, as they are of the wrong type. Specific indefinites are interpreted as choice functions or Skolem constant. They are, therefore, not eligible as the second variable for Skolemized universal quantification. In (42) and a number of other contexts where the indefinites must be interpreted as specifics (Zhang 2006), another source of the second variable must be found, most often through *dou*, which licenses the event variable. Otherwise, the sentences crash. As for the covariation reading between the specific indefinites and the *mei*-QPs, which seems unexpected under any Skolemization account since specific indefinites are not paired/matched with *mei*-QP through Skolemization, the answer is actually straightforward. Even though the subject *mei*-QP is not paired/matched with the specific indefinite itself, it is paired/matched with the event variable made available by *dou*, call it variable y_e, and each event contains a choice function for the specific indefinite tied to each event, thus a covariation reading obtains through this connection. For instance, the direct covariation reading for (42) under the Skolemization account is one where for every student there was an event where a particular teacher was offended. In other words, the covariation reading between the specific indefinite and the subject *mei*-QP obtains indirectly through the choice function in each event piggybacking on y_e. This is a case of backdoor covariation, so to speak.

(42) gives us a chance to test an aspect of the Skolemized topicality account as well. The post-*ba* position could be interpreted as a sub-subtopic position according to Xu & Liu (2007). If so, we would expect the two phenomena listed in (1) and (2) concerning *mei*-QP and specific indefinites to obtain in this position.

We have just seen that (42) is a case of indefinites in this topic position (post-*ba* position), where we get a choice function (or Skolem constant). The question we are interested in next is what happens when *mei*-QPs appear there. The Skolemized topicality hypothesis predicts that if a *mei*-QP appears in the post-*ba* position, which is being considered as a kind of a topic position, pairings/matchings are required, which leads to a search of the second variable. This prediction is born out, as shown by the following data:

(43) 李四把每一個老師*(都)得罪了。
Lisi ba mei-yi-ge laoshi dou dezui-le
Lisi ba every-one-CL teacher dou offend-ASP
'Lisi offended every teacher.'

(44) 李四把每台電腦 (都)檢查了一遍。
Lisi ba mei-tai diannao dou jiancha-le yibian
Lisi ba every-CL computer dou check-ASP once
'Lisi checked every computer once.'

(45) 李四把每個孩子$_i$(都)送回了自己$_i$的家。
Lisi ba mei-ge haizi dou songhui-le ziji-de jia
Lisi ba every-CL child dou take back-ASP self-DE home
'Lisi took every child back to their own home.'

We see the same co-occurrence patterns between *mei*-QPs and *dou*/indefinites/reflexives, as captured in the generalization stated in (5) about the main topic positions. This brief account of the effect of the *ba*-construction may provide a way to accommodate those postverbal *mei*-QPS that have exhibited covariation patterns, namely distributivity, with variable-bearing expressions in their scope, such as in a double object construction, as discussed in S.-Z. Huang (1996). A full examination of the sub-subtopic positions has to be left for future research.

9. Comparing Skolemized topicality with simple topicality proposed in Xu & Liu 2007

There is some similarity between the Skolemized topicality hypothesis and the views expressed in Xu & Liu (2007) regarding requiring universal quantifiers in the topic position and allowing indefinites in the topic position under some strict conditions. Xu & Liu do have a conjecture about how universal quantifiers meet the referentiality requirement on topics. They list multiple characteristics of referentiality, such as definiteness, specificity, old information, generics, kinds, and known-ness, and they show ample evidence that non-referential, non-specific, and non-generic expressions can still function as topics as long as they have been made "known" in the immediate discourse. The following is from Xu & Liu (2007: 157):

(46) a. 他不是要考研究生嗎?
ta bu shi yao kao yanjiusheng ma
he not be want apply graduate student QUESTION PARTICLE
'Isn't he going to apply for graduate schools?'

b. 研究生他不考,正在辦出國呢。
yanjiusheng ta bu kao, zheng zai ban
graduate student he not apply, right now at apply
chuguo ne
going abroad PARTICLE
'Graduate schools? No, he's not applying for that. He's getting ready for going abroad now.'

The point they make with regard to this example is that 'graduate school' in (46) has none of the characteristics of referentiality. However, the expression is just used in the question in (46a), so in (46b) this known notion can function as the topic.

Extending this idea of "known entity," Xu & Liu (2007: 170) make their conjecture regarding how universal quantifiers function as topics:

> Why do universal quantifiers have such strong tendency to function as topics in topic-prominent languages, and even become enforced to serve as topics? Perhaps it has something to do their super definiteness (强有定性 *qiang youding-xing*). … For instance, saying 'one person' or 'two persons,' the listener would not know necessarily who these expressions refer to. Saying universal quantifiers such as 'everybody,' the listener would have no such doubts; they know exactly what such a quantifier refers to: any entity that has the person property, namely all members of the human race, or anyone with this property in a given domain of discourse.

We may interpret their conjecture as stating that equipped with the restrictor of the universal quantifier, which could be viewed as a characteristic function, the listener would not fail to identify each member of the domain set of the quantifier. Viewed this way, Xu & Liu's conjecture is quite similar to my proposal in spirit as far as universal quantifiers are concerned.

So why not just adopt the basic tenet of their views? What is the motivation for including something as formal as a Skolem function in the topic position? The answer is that the simple topicality view does not take into consideration why there is the pattern of distributivity manifested through pairings/matchings of subject *mei*-QP with *dou*/indefinites/reflexives within the predicate VP. In contrast, for the Skolemized topicality hypothesis, these pairings/matchings, which are core characteristics of subject *mei*-QP sentences long under debate in Chinese linguistics, are the result of Skolemized topicality. Most importantly, the Skolemized topicality account provides a theoretical mechanism to capture the intuition of the "Super definiteness" Xu & Liu have attributed to *mei*-QP, as the Skolem function in the topic position makes each member of the restrictor set of *mei* "individuated" or "known" to become the categorical subject, namely the topic.

Furthermore, the Skolemized topicality account explains how indefinites acquire referential reading when appearing in the topic position. Xu & Liu have little to say about this. While I have justified the Skolemized topicality hypothesis, Xu & Liu's (2007) work has constituted a major portion of the empirical support for its justification and is duely recognized.

10. Conclusion

In this paper I have argued for a single mechanism to account for the two widely observed phenomena in Mandarin Chinese: a) subject *mei*-QPs requiring *dou*, indefinites or reflexives (or potentially other variable introducing phrases) in their predicates, and b) indefinite subjects receiving specific reading (or referential

reading) in sentences of Fan's (1985) variety. I have hypothesized that these patterns are the results of Skolemization of the topic position which is equipped with a Skolem function. Skolemization of indefinites and *mei*-QPs in the topic position leads to specificity and distributivity of the two phrases respectively in that position.[23]

One of the advantages of the Skolemized topicality hypothesis is that it allows us to treat distributivity of *mei* by way of a position, not strictly in terms of lexical meaning. Thus, the subject/object asymmetry that has long been felt but not fully or clearly articulated in the literature has found a proper airing. However, the debate is not over, since the work is not yet done. As our examination of (42) has demonstrated, there could be postverbal sub-subtopical positions where a *mei*-QP exhibits the same pairing patterns as we have seen in the main topic position. We do not yet know how much they differ from the main topic position and what constraints there are in their operation. A related question is whether other postverbal *mei*-related pairings that are discussed in S.-Z. Huang (1996) are also due to Skolemized topicality. And we have to remember that Xu & Liu have proposed sub-topics positions between the main topic and the predicate. How that will play out under the Skolemized topicality theory has not been touched here. These are some of the remaining issues to be looked into.

While the novel idea of searching for a single mechanism for the two phenomena listed in (1) and (2) is enticing, I am acutely aware that the scope of this study is extremely limited if the proposed hypothesis is evaluated against the vast number of layered complexities of Chinese nominal phrases, including quantifiers, indefinites, bare nouns, and numeral constructions that Li (2014) has masterfully synthesized from the literature from the past few decades, and thought-provokingly tackled from her own expertise, with finesse. The main motivation of my Skolemized topicality proposal here is to see if a radically different angle on subject indefinites and *mei*-QPs might provide a new path towards explaining some of the most recalcitrant issues in the Chinese linguistics field, and I do see some promises. For instance, Huang et al. (2009, Ch. 8) takes a serious look at Kuroda's paradigm of categorical vs. thetic judgments and evaluates its applications to Chinese nominal phrases. With regard to indefinite subjects, Li (2014:217) tells us that "Kuroda (1988) places a major subject in the Spec of IP position and allows the subject of a thetic-judgment type sentence to be in the Spec of VP." Considering an alternative, Li points out that "an existential closure has within its scope a subject in the Spec of VP position, not Spec of IP." Extending work from Huang et al. (2009), Li

23. It remains to be investigated how the Skolemized topicality hypothesis for subject indefinites and universal quantifiers differs from Liu's G-specificity, which also extends to indefinites and *mei*-QPs.

suggests that "examples that seem to allow an indefinite subject should be analyzed as a thetic-judgment type of sentence." Although I do not agree with the last point, as I explained in Footnote 16, and instead have argued to place specific indefinites in the topic position, and non-specific indefinites in a lower position in a clause, I do agree with the spirit of Huang et al. (2009) and Li (2014) in terms of a division of labor between categorical judgments and thetic judgments, and their connection with existential closure. In that regard, I see the potential for another kind of division of labor: between Skolem closure (a term I coined in this paper) and existential closure. We may see the Skolemized topicality as a manifestation of Skolem closure on the topic position, where it provides the mechanism to make otherwise unqualified phrases, both indefinites and universal quantifier *mei*-QPs, meet the referentiality requirement and result in categorical judgment, while leaving the existential closure to bind off free variables, including unspecific indefinite subjects, down below in the clausal structure to produce thetic judgment. In other words, if existential closure is an operation that rounds off the unbound variables with freely available existential quantification, perhaps Skolem closure closes off the topic position with a freely available Skolem function. In both cases, the mechanism kicks in ONLY when needed. Many related questions remain open in such a view of division of labor between Skolem closure and existential closure, which might parallel that between categorical judgment and thetic judgement. Complex as it may be, the prospect of a Skolem closure and existential closure collaborating with each other to form propositions/judgments in Chinese is intriguing. A full investigation along these lines remains the focus of my next project.

Last but not least, Kuroda (1972) attributed the concept of categorical judgment to Brentano (1874). But according to Martin (2006, CH.2), this concept was due to Kant, and Brentano had a radical plan to reduce Kant's synthesis, i.e., categorical judgment, to thesis, i.e., his (Breantano's) thetic judgment. We need to revisit this philosophical and linguistic debate particularly in terms of the true impact of Kuroda's contributions on that debate through his studies of Japanese, as they offer empirical evidence in favor of Kant's logic. The proposed Skolemized topicality hypothesis could also be viewed as providing additional support to the natural language's underlying mechanism for categorical judgments, and thus to the dichotomy of the two kinds of judgments (statements). Much further work is needed to test the Skolemized topicality hypothesis against a wider range of data from Chinese and against data from more topic-prominent languages.

Acknowledgements

It is a great honor to write this paper in celebration of Audrey Li, whose brilliant scholarship in linguistics and whose humble integrity as a human being are truly inspirational. It has been a great pleasure writing this paper as well – it was a source of solace during a challenging year when the world was surrounded by tragedy and turmoil. The mere thought of writing in honor of Audrey while writing this paper gave me peace and happiness. This paper started as a collaboration with Richard Larson, who was the first one who turned my attention to the topic position, and encouraged me to retell the Skolemization story in this connection as a possible way to account for the subject/object asymmetry of *mei*-phrases reported here. For reasons beyond human control during a year of pandemic, Richard couldn't continue our collaboration on this project, and I took a direction different from our initial plan. However, Richard's ideas have greatly impacted on how I look at *mei*-quantification, and are deeply appreciated and valued. And his generosity of letting me move forward with this project is gratefully acknowledge. I must also thank Andrew Simpson, who was extraordinarily patient, supportive, and generous as the editor. In particular, his detailed comments on the organization and contents of earlier drafts of this paper improved its quality immeasurably; I could not have worked with a better editor. Three linguists reviewed an earlier draft with constructive criticism and helpful suggestions, and they did so with a tight schedule. I cannot thank them enough for their generosity with their time. Hongchen Wu read an earlier draft and offered valuable comments and suggestions. I was ably assisted by Will Evans, my student research assistant, who helped me with formatting, font conversion, and reference double checking. Daniel Plesniak read through an earlier draft and made stylistic suggestions. I am indebted to them all. Needless to say, I am responsible for all errors.

References

Brentano, Franz. 1874/1995. *Psychology from an Empirical Standpoint (Routledge Classics)*. Taylor and Francis. Kindle Edition.

Chao, Yuen Ren (趙元任). 1968. *A Grammar of Spoken Chinese*. Los Angeles: University of California Press, Berkeley.

Cheng, Lisa L.-S. 1991. *On the Typology of Wh-Questions*, PhD dissertation, MIT [Later published in the Outstanding Dissertations in Linguistics Series. (1997) Garland Publishing, New York & London].

Cheng, Lisa L.-S. 1995. On *dou*-quantification. *Journal of East Asian Linguistics* 4: 197–234. https://doi.org/10.1007/BF01731509

Cheng, Lisa L.-S. 2009. On every type of quantificational expression in Chinese. In *Quantification, Definiteness, and Nominalization*, Monika Rathert and Anastasia Giannakidou (eds), 53 – 7 Oxford: Oxford University Press.

Chierchia, Gennaro. 1998. Reference to kinds across language. *Natural language semantics* 6.4: 339–405. https://doi.org/10.1023/A:1008324218506

Cresti, Diana. 1995. *Indefinite topics*. PhD dissertation, Massachusetts Institute of Technology.

Diesing, M. 1992. *Indefinites*. Cambridge, MA: MIT Press.

Erteschik-Shir, Nomi. 1997. *The dynamics of focus structure*. Cambridge University Press.

Fan, Jiyan (范繼淹). 1985. Wuding NP zhuyu ju (Sentences with indefinite NP subjects). *Zhongguo Yuwen* (Studies of the Chinese Language) 5: 321–328.

Goranko, Valentin. 2010. *First Order Logic: Prenex normal form. Skolemization. Clausal form*. DTU Informatics. September 2010.

Fox, Danny. 2000. *Economy and Semantic Interpretation*. Cambridge, MA: MIT Press.

Haiman, John. 1978. Conditionals are topics. *Language* 54(3): 564–589. https://doi.org/10.1353/lan.1978.0009

Heim, Irene 1982. *The Semantics of Definite and Indefinite Noun Phrases*, PhD dissertation, University of Massachusetts, Amherst.

Huang, C.-T. James. 1982. *Logical Relations in Chinese and the Theory of Grammar*. PhD dissertation, MIT.

Huang, C.-T. James, Li, Y.-H. Audrey, and Li, Y. 1982. *The Syntax of Chinese*. Cambridge, Cambridge University.

Huang, Shi-Zhe. 1995. *Dou* as an existential quantifier. In *NACCL-6 Proceedings, Volume I*. Jose Camacho & Lina Choueiri (eds), 85-99, GSIL at USC. (Paper presented at the Sixth North America Conference on Chinese Linguistics, USC, Los Angeles, 1994).

Huang, Shi-Zhe. 1996. *Quantification and Predication in Mandarin Chinese: A Case Study of Dou*, PhD dissertation, University of Pennsylvania.

Huang, Shi-Zhe. 2004. Wuding mingci zhuyu ju yu shijian lunyuan de quanxi (Indefinite NP subjects and the event variable in Mandarin Chinese). *Zhongguo Yuyanxue Luncong* (Studies in Chinese Linguistics) 3:93–110

Huang, Shi-Zhe. 2005. *Universal Quantification with Skolemization as Evidenced in Chinese and English*. Lewiston, New York: The Edwin Mellen Press.

Huang, Shi-Zhe. 2018(a). Referential Indefinites in Chinese: A Study of (Specific) Indefinites and Their Roles in Universal Quantification. *Paper presented at IACL-26*, University of Wisconsin, Madison.

Huang, Shi-Zhe. 2018(b). A Double Variable View of Universal Quantification. *Talk presented at Florian Schwarz's Semantics Lab*, Oct. 19. University of Pennsylvania.

Huang, Shi-Zhe. 2021. Mandarin adverb dou as a marker of partial order. *Manuscript*, Haverford College.

Huang, Shi-Zhe. 2022. "*Mei* A *dou* B" ji hanyu fuju de eryuan shuanbbiaohua ('*Mei* A *dou* B' and double marking of complex sentences in Chinese). *Zhongguo Yuwen* (Studies of the Chinese Language) 1:16-38.

Huang, Zanhui and Yan Jiang. 2009. The Function of *měi* in *měi*-NPs. In Yun Xiao, Smithfield (eds.), *Proceedings of the 21st North American Conference on Chinese Linguistics (NACCL-21)* Volume 2: 304–322. Rhode Island: Bryant University.

Jiang, L.J. 2012. *Nominal Argument and Language Variation*. PhD dissertation. Harvard University. MA.

Jiang, Yan (蔣嚴). 1998. Yuyong tuili yu "dou" de jufa/yuyi tezheng (Pragmatic inferences and the syntactic/semantic characteristics of *dou*). *Xiandai Waiyu* (Modern Languages) 1: 10–24.

Jiang, Yan, Haihua Pan (蔣嚴, 潘海華). 2005. *Xingshi Yuyixue Yinlun* (Introduction to Formal Semantics). 2nd edition. China Social Sciences Press.

Kamp, Hans. 1981. A theory of truth and semantic representation. In Groenendijk, et al. (eds.). *Formal Methods in the Study of Language*. Amsterdam: Mathematical Centre.

Krifka, Manfred. 1995. Common nouns: a contrastive analysis of Chinese and English. In Carlson, Gregory N., and Francis Jeffry Pelletier (eds.) *The generic book*. University of Chicago Press. Pp.398–411.

Kuroda, S. Y. 1972. The categorical and the thetic judgment: Evidence from Japanese syntax. *Foundations of language*, pp.153–185.

Kuroda, S. Y. 1998. Whether we agree or not. *Linguisticae Investigationes* 12: 1–47.
Kuroda, S. Y. 1992. *Japanese Syntax and Semantics: Collected Papers*. In Dordrecht/Boston/London: Kluwer Academic Publishers.
Lee, Thomas. 1986. *Studies on quantification in Chinese*. PhD dissertation, University of California, Los Angeles.
Li, Y.-H. Audrey. 2014. Quantification and Scope. In: Huang, C.-T. J., Li, Y.-H. A. & Simpson, Andrew (eds), *The Handbook of Chinese Linguistics*. Pp. 208–247.
Li, Charles N., and Sandra A. Thompson. 1981. *Mandarin Chinese: A functional reference grammar*. University of California Press.
Lin, Jo-Wang. 1998. Distributivity in Chinese and its implications. *Natural Language Semantics* 6: 201–243. https://doi.org/10.1023/A:1008299031574
Lin, Jo-Wang. 2020. Universal NPs, distributivity and dependent indefinites in Mandarin Chinese. *Making Worlds Accessible*: 72.
Liu, Feng-Hsi. 1990. *Scope dependency in English and Chinese*. PhD dissertation, University of California, Los Angeles.
Lu, Jianming (陸儉明). 1986. Zhoubianxing zhuyu ji qita (Subject universal quantifiers and related issues). *Zhongguo Yuwen* (Studies of the Chinese Language) 3.
Lü, Shuxiang 1980. *Xian-dai Hanyu Ba-bai Ci* (800 words of Modern Chinese). Hong Kong: Shang-Wu Publisher.
Luo, Qiong-peng, 2011. *Mei* and *dou* in Chinese: A tale of two quantifiers. *Taiwan Journal of Linguistics*, 9(2): 111–156.
Martin, Wayne. 2006. *Theories of Judgment: Psychology, Logic, Phenomenology (Modern European Philosophy)*. Kindle Edition. https://doi.org/10.1017/CBO9780511487613
McCawley, James D. 1971. Tense and time reference in English. in: Fillmore, C. & Langendoen (eds.). *Studies in linguistic semantics*. New York: Holt, Rinehart & Winston, pp.96–113.
Pan, Haihua et.al. 2009. The distributive constraint and semantic interpretation of a mei-NP ("Mei NP"de fenbu xianzhi jiqi yuyi jieshi). In Gong Cheng (程工) and Danqing Liu (劉丹青) (eds.), *Hanyu de Xingshi yu Gongneng Yanjiu* (Formal and Functional Studies in Chinese), Beijing: The Commercial Press. Pp. 110 – 22.
Parsons, Terrence. 1990. *Events in the Semantics of English: A Study in Subatomic Semantics*. Cambridge MA: The MIT Press
Portner, Paul 2002. Topicality and (non)specificity in Mandarin. *Journal of Semantics* 19: 275–287. https://doi.org/10.1093/jos/19.3.275
Shen, Jiaxuan (沈家煊). 2012. "ling ju" he "liushui ju" – wei Zhao Yuanren Xiansheng danchen 120 zhounian er zuo (On minor sentences and flowing sentences in Chinese: In commemoration of the 120th birthday of Yuenren Chao). *Zhongguo Yuwen* (Studies of the Chinese Language) 5: 403–415.
Shyu, Shu-Ing. 1995. *The syntax of focus and topic in Mandarian Chinese*. PhD dissertation, University of Southern California.
Tsai, W.-T. D. 1994. *On economizing the theory of A-bar dependencies*. PhD dissertation. MIT, Cambridge, MA.
Tsai, W.-T. D. 2001. On subject specificity and theory of syntax-semantics interface. *Journal of East Asian Linguistics* 10:129-168.
Winter, Yoad. 2008. Skolem functions in Linguistics. *Syntax, Semantics, and Discourse: The Theory of Interface*. Workshop in memory of Tanya Reinhart.
Wu, Hongchen and Richard Larson. 2019. *Quantifier scope and topicality in Mandarin*. Ms. Stony Brook University.

Xiong, Zhongru (熊仲儒). 2008. Hanyu zhong wuding zhuyu de yunzhun tiaojian (Conditions licensing indefinite subjects in China). *Journal of Anhui Teachers University (Social Science Edition)* 36(5): 541–548.

Xu, Liejiong. 1995. Definiteness effects on Chinese word order. *Cahiers de linguistique-Asie orientale* 24.1: 29–48. https://doi.org/10.3406/clao.1995.1465

Xu, Liejiong, and Danqing Liu (徐烈炯 & 劉丹青). 2007. *Huati de Jiegou yu Gongneng* (The Structures and Functions of Topics). Shanghai: Shanghai Education Press. (Enhanced version of Xu & Liu, 1998.)

Yang, Rong. 2001. *Common nouns, classifiers, and quantification in Chinese*. PhD dissertation, Rutgers, The State University of New Jersey-New Brunswick.

Yuan, Huahong. 2018. Distributive quantifier *mei* in Mandarin Chinese. In Yun-fang Wu et al. (eds.), *Revised Selected Papers from Chinese Lexical Semantics 18th Workshop*, Leshan, China. May 18 – 20, 2017. Springer. CLSW2017:97–111. https://doi.org/10.1007/978-3-319-73573-3_8

Yuan, Yulin (袁毓林). 2012. "mei" he "dou" de yuyi peihe he zhiyue guanxi (Semantic cooperation and restriction of *mei* and *dou*). In *Hanyu Juzi de Jiaodian Jiegou he Yuyi Jieshi* (Focus Structures and Semantic Interpretation of Chinese Sentences). Beijing: The Commercial Press. Pp.120–145.

Zhang, Lei & Haihua Pan (張蕾, 潘海華). 2019. "mei" de yuyi de zai renshi (A reanalysis of the semantics of *mei* 'every'). *Dangdai Yuyanxue* (Contemporary Linguistics). 21(4): 492–514.

Zhang, Niina Ning. 2006. Representing Specificity by the Internal Order of the Indefinites. *Linguistics* 44(1): 1–21. https://doi.org/10.1515/LING.2006.001

Zhu, Dexi (朱德熙). 1982. *Yufa Jiangyi* (Lectures on Grammar). Beijing: The Commercial Press.

Chinese comparatives

Commentary on clausal vs. phrasal analyses[1]

Jo-Wang Lin
Academia Sinica, Taipei, Taiwan

This article aims to make a contribution to the recent debate between the phrasal and clausal analyses of Chinese comparatives, focusing on Lin (2009) for the phrasal approach and Liu (2011, 2014), Hsieh (2017) and Erlewine (2018) for the clausal approach. I show that problems such as lack of independent support for the rule of backward predicate deletion, subcomparatives, embedded standards and verbal comparatives remain difficult challenges to the new clausal analyses and that counter-arguments against the phrasal approach do not necessarily hold. To the contrary, a fine tuning of Lin's original phrasal analysis of *bi* not only avoids an important criticism made by Liu (2011) but can be extended to analyze verbal-comparatives in a way that the clausal analyses cannot.

1. Introduction

Studies of comparative constructions have made much progress in syntax and semantics over the last three decades. Chinese comparatives are no exception. Many new analyses have been proposed for them, in particular, in the past 15 years or so. This development leads to a debate between a clausal approach and a phrasal approach to Chinese comparatives. The goal of this article is to make a contribution

1. Parts of this article have been presented at the following conferences: the 69th annual conference of the Chinese Linguistic Society of Japan, Ochanomizu University, November 2–3, 2019; the 12th International workshop on Theoretical East Asian Linguistics, Macau University, July 9–10, 2019; the International Symposium on Formal Approaches to Meaning in Chinese, June 22–23, 2019, Beijing Language University, Beijing; International Workshop on Degrees and Grammar: An East Asian Perspective, Nanjing University, March 16–17, 2019; The colloquial speech at Chinese Academy of Social Sciences, Beijing, April 22, 2019. I would like to thank all the audiences there, especially Chris Kennedy, for their inspiring questions, comments and suggestions. I would also like to extend my gratitude to anonymous reviewers and Michael Yoshitaka Erlewine and Andrew Simpson for their suggestions to improve the article. All remaining errors are mine alone.

https://doi.org/10.1075/la.272.09lin

to this debate by examining the different analyses, focusing specifically on my own phrasal analysis proposed in Lin (2009) and the clausal analyses proposed recently by Liu (2011, 2014), Hsieh (2017) and Erlewine (2018). Those clausal analyses represent the newest development in studies of *bi*-comparatives in Mandarin Chinese.

To discuss the debate, let me start with some background knowledge of the syntax and semantics of comparatives in general. Comparatives are often assumed to involve degree comparison (von Stechow 1984a, b; Kennedy 1997; Heim 2000; Bhatt & Pancheva 2004; Schwarzschild and Wilkinson 2002; Kennedy 2001, among many others). For example, sentence (1) is said to have the truth conditions in (2).

(1) John is happier than Bill.

(2) a. *max*(λd. John is d-happy) > *max* (λd. Bill is d-happy)
b. Paraphrase: The maximal degree of John's happiness exceeds the maximal degree of Bill's happiness.

On this degree approach to comparatives, gradable predicates have a degree argument of type *d* and denote a relation between individuals and degrees as illustrated by (3), where *happiness* is a measure function that maps an individual to his degree on the scale encoded by the adjective *happy* (Cresswell 1976; Heim 1985, 2000; Kennedy 1997, 2007; Kennedy & McNally 2005; Rullmann 1995; von Stechow 1984a, among many others).

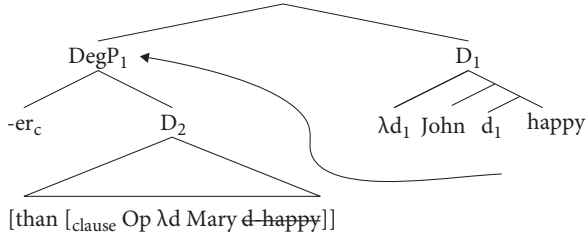
(3) $[\![happy]\!] = \lambda d.\lambda x.\ \text{happiness}(x) \geq d$

On this analysis of gradable predicates, the literature has provided two ways to obtain the truth conditions in (2). One approach assumes that the comparative morpheme $-er_c$ is a two place operator taking two clausal degree expressions of type <d,t> as its arguments and asserting that the maximal degree of one degree expression (D_2) exceeds the maximal degree of the other one (D_1), as shown below.

(4) $[\![-er_C]\!] = \lambda D_{1<d,t>}.\lambda D_{2<d,t>}.\ \max(D_2) > \max(D_1)$

This approach requires a very abstract syntax, as the standard of comparison is assumed to be derived from a full clause that denotes a set of degrees by moving an abstract degree wh-operator (cf. Bresnan 1973; Chomsky 1977; Heim 1985; Lechner 2001, among others). This standard clause, together with the comparative morpheme $-er_c$, forms a generalized quantifier over degrees. This degree generalized quantifier undergoes quantifier raising to create a degree expression for the target clause. The predicate in the standard clause is then deleted by identity to the predicate in the target clause. The derivation is schematically represented as in (5).

(5) $[[-er_c$ [than OP λd_1 [Mary is d_1-happy]]]$_2$ [λd_2 John is d_2-happy]]
= max(λd.John is d-happy) > max(λd.Mary is d-happy))



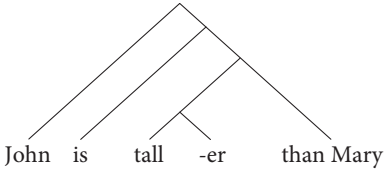
The other approach to obtain the same truth conditions is to let the semantics go hand in hand with the surface syntax. On this approach, the comparative morpheme *–er$_p$* is a three place operator. It first takes a gradable predicate as its argument, followed by the standard and target of comparison as the second and third argument, as shown below.

(6) $[\![-er_P]\!] = \lambda G_{<d,et>}.\lambda y_e \lambda x_e.\ \max(\lambda d_1.G(d_1)(x)) > \max(\lambda d_2.G(d_2)(y))$

This approach is known as a phrasal approach, as the standard is assumed to be a phrase, as it is in surface syntax.

The phrasal approach involves no wh-movement, no degree abstraction and no deletion. There are variants of this approach (Heim 1985; Bhatt & Takahashi 2007, 2011; Kennedy 1997). Illustrated below is one possible instantiation of the phrasal approach, where *–er$_p$* takes the gradable predicate as its first argument and the standard DP and the subject DP a second and the third argument.

(7)



a. $[\![-er_P$ tall$]\!]$
$= \lambda G_{<d,et>}.\lambda y_e \lambda x_e.\ [\max(\lambda d_1.G(d_1)(x)) >$
$\max(\lambda d_2.G(d_2)(y))](\text{tall'})$
$= \lambda y_e \lambda x_e.\ \max(\lambda d_1.\text{tall'}(d_1)(x)) > \max(\lambda d_2.\text{tall'}(d_2)(y))$

b. [[John is–er tall than Mary]]
$= \lambda y_e \lambda x_e.[\max(\lambda d_1.\text{tall'}(d_1)(x)) >$
$\max(\lambda d_2.\text{tall'}(d_2)(y))](\text{Mary'})(\text{John'})$
$= \max(\lambda d_1.\text{tall'}(d_1)(\text{John'})) > \max(\lambda d_2.\text{tall'}(d_2)(\text{Mary'}))$

With the above summary of English comparatives in mind, let us now consider Chinese comparatives. As (8) and (9) illustrate, there is no overt comparative morphology comparable to the English morpheme *–er*. Instead, the morpheme *bi* 'compare/than' marks the construction as a comparative construction. A special property of Chinese comparatives is that they may compare multiple items such as (9) where *Zhangsan* and *Lisi*, *jintian* and *zuotian* and *zai xuexiao* and *zai jiali* are compared respectively (cf. Tsao 1989; Lin 2009; Liu 2011).

(8) Zhangsan bi Lisi gao
Zhangsan BI Lisi tall
'Zhangsan is taller than Lisi.'

(9) Zhangsan jintian zai xuexiao bi Lisi zuotian zai jiali kaixin
Zhangsan today at school BI Lisi yesterday at home happy
'Zhangsan is happier at school today than Lisi was at home yesterday.'

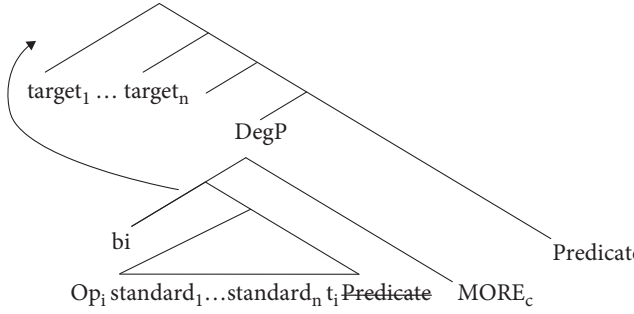
Both the clausal and the phrasal analyses have been extended to analyze Chinese comparatives. A modern representative of the clausal approach was proposed by Liu (1996) (For earlier analyses, see the references cited in Liu (1996, 2011)) and was later challenged by Xiang (2003, 2005), Erlewine (2007), Lin (2009), Guo (2012), Gu & Guo (2015) and Guo & Gu (2017). The clausal approach has recently been revived by Liu (2011, 2014), Hsieh (2017), Luo (2017) and Erlewine (2018). The purpose of this article is to compare the phrasal approach, in particular Lin's (2009) analysis, and the clausal approach which Liu (2011, 2014), Hsieh (2017) and Erlewine (2018) adopt. I will examine the different challenges the two approaches meet and provide a fine-tuned revision of Lin's (2009) phrasal analysis, showing that it still stands a very good chance of being on the right track.

2. Recent analyses of Chinese comparatives

I am aware that many different analyses of Chinese comparatives are available, but due to space constraint, this article focuses on only the clausal analyses proposed recently by Liu (2011, 2014), Hsieh (2017) and Erlewine (2018) and the phrasal analysis proposed by the author in Lin (2009).

Both Liu (2011, 2014) and Hsieh (2017) assume that the *bi*-constituent is an adjunct adjoined to the main predicate of comparison. According to their analyses, in particular Liu's, there is a covert degree morpheme MORE_{C} in the tree diagram which has a meaning quite similar to English *–er*. Liu (2011) takes this morpheme to have the same status as the Chinese overt comparative morpheme *geng* and argues that only comparatives with multiple standards such as (9) involve clausal comparison and comparative deletion. By contrast, constructions such as (8) involving only one standard are analyzed as phrasal comparatives.

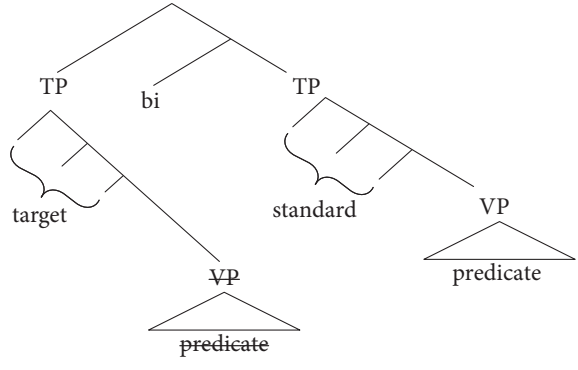
(10) Liu (2011, 2014) & Hsieh (2017): null degree-operator movement, degree abstraction, predicate deletion



On the other hand, Erlewine (2018) proposes that *bi* is categorically a clausal conjunction and the two clauses it connects follow the regular rules of Chinese clausal syntax. The standard TP is the complement of *bi* and the target TP is the specifier, as shown in (12). Another big difference is that Erlewine assumes that the degree argument is the last argument of the gradable predicate as given in (11), in contrast to the standard denotation of *happy* as in (3). As a consequence, both the standard and target TPs are degree expressions but no degree operator movement is needed.

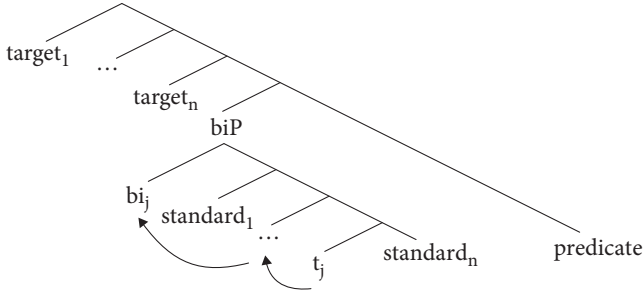
(11) ⟦*happy*⟧ = λx.λd. x is d-happy

(12) Erlewine (2018): no degree operator movement, no degree abstraction, predicate deletion, degree last



As for the phrasal approach to Chinese comparatives, I focus on the phrasal analysis proposed by the author (Lin 2009), for that analysis has been the major target of criticisms in recent clausal analyses. According to Lin (2009), Chinese is a dyadic comparison language which only allows arguments of gradable predicates, but not adjuncts, to serve as compared items. The comparative morpheme *bi* is defined in such a way that it semantically takes a series of standard constituents as its arguments that are parallel to the target constituents and syntactically *bi* raises from a lower head position to a higher one, as shown by (13).

(13) Lin (2009): no degree operator movement, no degree abstraction, no predicate deletion, *bi*-movement



On this analysis, though there is only one predicate in syntax, the target constituents and the standard constituents will both become the arguments of the predicate in semantic computation due to the semantics of *bi* to be discussed later, yielding truth conditions with a form of 'max(λd.predicate(d)(target$_n$)…(target$_1$) > max(λd.predicate(standard$_n$)…(standard$_1$))'.

3. Challenges to the clausal approach

This section discusses three major challenges that the clausal approach to Chinese comparatives faces.

3.1 Problems with comparative deletion

One shared and the most important component of all the clausal analyses of Chinese comparatives is that they resort to some version of backward predicate deletion to derive the surface forms. Yet, the proponents of the clausal analyses except Liu (2011) do not provide arguments to justify the proposed rule of predicate deletion in Chinese syntax. In this section, I review Liu's arguments, elaborating why his argumentation is not valid.

Liu argues that backward predicate deletion is possible in Chinese as illustrated by (14a). He also notes that though the backward VP deletion requires a head licensor such as *yao* 'want' (cf. the contrast between (14a) and (14b)), a head licensor for predicate deletion is not always needed, as (15) illustrates.

(14) a. Yinwei ni ye yao ~~qu~~, suoyi wo cai yao qu
because you also want go so I then want go
'Because you will go, I will go.'

b. *Yinwei ni ye ~~qu~~, suoyi wo cai qu
because you also go so I then go
'Because you go, I will go.'

(15) Zhangsan jintian chufa, Lisi mingtian ~~chufa~~.
Zhangsan today set.off Lisi tomorrow set.off
'Zhangsan sets off today, and Lisi tomorrow.'

The problem with the above argumentation is that even if (15) is acceptable, it involves forward VP deletion, not backward VP deletion as required by comparative deletion. Backward VP deletion without a head licensor is not allowed, as shown by (16).

(16) a. *Zhangsan jintian ~~chufa~~, Lisi mingtian chufa
Zhangsan today set.off Lisi tomorrow set.off
'Zhangsan sets off today and Lisi sets off tomorrow.'
b. *Zhuren yinwei xiaozhang zuotian ~~fa~~ ~~nu~~ jintian ye genzhe
director because principal yesterday get angry today also follow
fa nu
get angry
'The director also got angry today because the principal got angry yesterday.'

Also note that comparative deletion mostly involves APs rather than VPs but Chinese APs do not allow backward deletion even with the presence of the auxiliary copular verb *shi* 'be', as evidenced by (17).

(17) a. *Yinwei Lisi zuotian (shi) ~~hen~~ ~~kaixin~~, suoyi Zhangsan jintian
because Lisi yesterday be very happy so Zhangsan today
hen kaixin
very happy
'Because Lisi was happy yesterday, Zhangsan is happy today.'
b. *Zhangsan zuotian (shi) ~~bukaixin~~, Lisi jintian ye (shi) bukaixin
Zhangsan yesterday be unhappy Lisi today also be unhappy
'Zhangsan was unhappy yesterday and Lisi was also unhappy today.'

Another challenge to the comparative deletion rule in Chinese is the difficulty in reconstructing comparatives with an overt differential phrase. Consider (18).

(18) Zhangsan jin nian bi Lisi qu nian zhong liang gongjin
Zhangsan this year than Lisi last year heavy two kilogram
'This year Zhangsan is two kilograms heavier than Lisi was last year.'

Unlike English comparatives, overt differential phrases in Chinese comparatives such as *liang gongjin* 'two kilograms' in (18) appear in a post-adjectival position and are often assumed to be the complements of the gradable predicates. Under this traditional assumption, one possibility for a clausal approach to reconstruct (18) is to reconstruct the AP consisting of the adjective and the differential phrase such as (19).

(19) *[Zhangsan jin nian [$_{DegP}$ [bi Lisi qu nian ~~zhong liang gongjin~~] [AP zhong liang gongjin]]]

However, this kind of reconstruction is clearly incorrect, because *liang gongjin* 'two kilograms' in the standard constituent must be construed as either Li's actual weight or as a differential phrase, but neither analysis expresses the meaning of (18).

Perhaps one may argue that the differential phrase does not originate as the complement of the adjective but instead as the complement of a covert degree morpheme $MORE_{CD}$, forming part of a degree generalized quantifier as represented in (20) in a way similar to English differential comparatives, rather than forming a constituent with the adjective.

(20) a. [Zhangsan jin nian [[$_{DegP}$ [bi OP_i Lisi qu nian t_i zhong] [$MORE_{CD}$ [liang gongjin]]] zhong]]
b. LF: [[$_{DegPj}$ [bi OP_i Lisi qu nian t_i zhong] [$MORE_{CD}$ [liang gongjin]]] [Zhangsan jin nian t_j zhong]]
c. $[\![MORE_{CD}]\!] = \lambda d.\lambda P_{<d,t>}.\lambda Q_{<d,t>}.max(Q) = max(P) + d$
d. max(λd.Zhangsan is d-heavy this year) = max(λd. Lisi was d-heavy last year) + 2 kilograms

In (20a) and its logical form (20b), a result of QR-ing the whole DegP, the differential phrase is discontinuous from the adjective and therefore they do not form a constituent. As we can see from (20d), given an appropriate denotation of $MORE_{CD}$, the truth conditions of (18) can be obtained from the LF (20b). On this analysis, since the differential phrase and the adjective do not form a constituent, the identity deletion problem discussed above arguably does not arise. The problem, however, does not really disappear, because the presumed structure (20a) is not the surface form that we saw in (18). For the above analysis to work, there must exist a story for how (20a) can be turned into the surface form of (18). One imaginable route is to assume that the differential phrase is moved to a position after the adjective or the adjective tucks into the degree generalized quantifier at PF rather than in overt syntax. Yet this raises a serious question pertaining to the motivation of such reordering and the landing site of the differential phrase. It is also important to note that if the reordering took place in overt syntax, then the LF required to generate the right truth conditions would be destroyed and the issue of reconstruction would surface again. In light of the above difficulty, constructions such as (18) constitute a true challenge to the clausal approach for Chinese *bi*-comparatives.

Since the problem is brought about by the overt differential expression, one may wonder whether it is possible not to reconstruct the differential phrase but to reconstruct only the adjective as shown below.

(21) Zhangsan jin nian [bi OP_i Lisi qu nian t_i zhong] zhong liang gongjin
Zhangsan this year BI Lisi last year heavy heavy two kilogram

The problem with this suggestion is that reconstruction of the adjective alone should not be allowed. Consider (22).

(22) Zhangsan mai-le liang-ben shu, Lisi ye shi [$_{VP}$…]
Zhangsan buy-ASP two-CL book Lisi also be
'Zhangsan bought two books and Lisi did, too'

In (22), the predicate in the second sentence is deleted under identity with the predicate in the first sentence. Significantly, the deleted VP must be completely parallel to the VP '*mai-le liang ben shu*' in the first sentence; so Lisi must buy two books as well. The deleted VP cannot be construed as *mai-le shu* 'buy books' with the number of books unspecified. In other words, there is a strict identity requirement with respect to predicate deletion. This makes it impossible not to reconstruct the differential phrase to the comparative *bi*-clause as (21) suggests.

In contrast to the clausal approach, the phrasal approach as proposed by Lin (2009) does not have the reconstruction problem because no comparative deletion is needed at all. All that is required is an appropriate denotation of $MORE_{PD}$, which takes the adjective as the first argument and the differential phrase a second argument and the standard DP and the target subject a third and fourth argument (with other possible arguments being ignored), as illustrated below.

(23) $[\![\text{MORE}_{\text{PD}}]\!] = \lambda G_{<d,et>}.\lambda d.\lambda y_e \lambda x_e.\ \max(\lambda d_1.G(d_1)(x)) = \max(\lambda d_2.G(d_2)(y)) + d$

3.2 Problems with subcomparatives and embedded standards

There are two important arguments for a clausal analysis of English comparatives. One argument is the existence of subcomparatives such as (24) (cf. Bresnan 1975).

(24) This table is wider than that desk is long.

In this construction, since the standard constituent is clearly a clause, (24) proves the existence of clausal comparatives in English.

Another argument for clausal comparatives in English and degree operator movement is the possibility of embedding the standard constituent as illustrated by (25) (Chomsky 1977). This example shows that English comparatives may involve long distance wh-movement of some kind.

(25) Zhangsan is happier than Lisi thinks Mary is.

Significantly, Xiang (2003) points out that unlike English comparatives, Chinese allows neither subcomparatives nor embedded standards. Consider (26) and (27).

(26) *Zhe-zhang shuzhuo [bi na-zhang zhuozi chang] kuan.
this-CL desk than that-CL desk long wide
'This desk is wider than that table is long.'

(27) *Zhangsan (jintian) bi [Lisi renwei [Wangwu (zhuotian) _]] kaixin
Zhangsan today than Lisi think Wangwu yesterday happy
'(Today) Zhangsan is happier than Lisi thinks that Wangwu was (yesterday).'

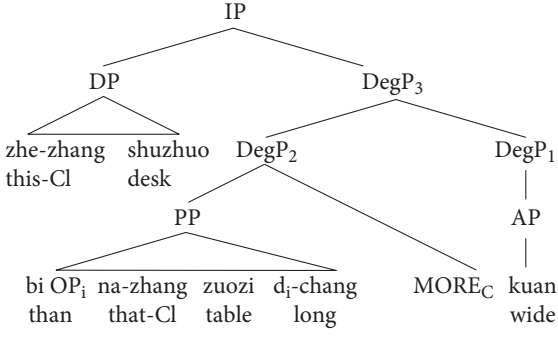
Based on the ungrammaticality of the above two constructions, Xiang (2003) and Lin (2009) argue that a clausal approach to Chinese comparatives is implausible.

3.2.1 *Liu's (2011) new answer and its problems*

The challenge of subcomparatives and embedded standards have recently been considered by Liu (2011), Hsieh (2017) and Erlewine (2018). In what follows, I examine their new accounts of the two constructions.

Liu's account of the lack of subcomparatives in Chinese rests on two assumptions. First, following Paul (1993), he assumes that the standard constituents must be c-commanded by their contrasting target correlates. Second, standard CPs are taken to be adjuncts adjoined to DegP rather than specifiers of APs.[2]

(28)



According to Liu, in (28), the target constituent *zhe-zhang shuzhuo* 'this desk' c-commands the contrasting standard constituent *na-zhang zhuozi* 'that table', but the target AP *kuan* 'wide' does not c-command the standard AP *chang* 'long' and it is the failure of c-command in question that makes subcomparatives in Chinese impossible.

---

2. Liu (2011: 1790; 2014: 358) assumes the following syntactic structure:

(i) [$_S$[$_{DP}$ Zhangsan] [$_{DegP}$ bi [$_{DP}$ Lisi]] [$_{DegP}$ [$_{AP}$ kaixin]]]

(28) is parallel to (i) in terms of structure. Note that though Liu does not spell out *MORE*$_C$ in (i), he (2014: 347–348) explicitly assumes that the *bi*-phrase and the comparative degree morpheme form a syntactic constituent and undergo quantifier raising at LF.

However, from the syntactic structure in (28), it is not clear why the matrix predicate AP *kuan* 'wide' does not c-command the AP *chang* 'long' in the *bi*-clause. Despite the non-branching intervening $DegP_1$ projection above AP, every branching node dominating the former also dominates the latter. In fact, since Liu assumes that the degree morpheme forms a degree generalized quantifier with the standard clause, it is not clear why the intervening $DegP_1$ should be there. If it were not there, it would be obvious that the matrix AP c-commands the AP in the *bi*-clause. The c-command relation will not hold only at LF after the *bi*-clause and $MORE_C$ undergoes quantifier raising. However, after quantifier raising $DegP_2$ at LF, the target constituent, in this case *zhe-zhang shuzuo*, will fail to c-command the standard constituent *na-zhang zuozi*. Either way, an account for the lack of subcomparatives in terms of failure of c-command is problematic. So there is no true explanation of why subcomparatives are not allowed in Chinese under Liu's analysis.

As for the problem of embedded standards, Liu (2011) attributes the lack of them in Chinese comparatives to the minimality constraint of his proposed comparative predicate deletion rule. According to him, this rule deletes all the subelements of the complement clause of *bi* except those that are in contrast to the corresponding target correlates. Moreover, the deleted elements must be e-given in the sense of Merchant (2001). To use Liu's (2011: 1787–1788) own statement, "the salient site must be as minimal as possible", containing only "(A) a degree variable, and (B) a minimal predicate that can form with the standard constituents a clause the same as (or parallel to) the minimal clause containing the *bi* phrase in the basic type". Given the above conditions, (27) is not allowed because the standard clause is not minimal containing an additional non-parallel matrix clause. However, it is significant to note that even if we try to make the complement clause of *bi* and the main clause fully parallel, the sentence is still ill-formed, as shown in (29).

(29) *Zhangsan renwei [Lisi jintian [bi [Wangwu yiwei [Mali zuotian
Zhangsan think Lisi today than Wangwu think Mary yesterday
~~kaixin~~]]] kaixin
happy happy
'Zhangsan thinks Lisi is happier today than Wangwu thinks that Mary was yesterday.'

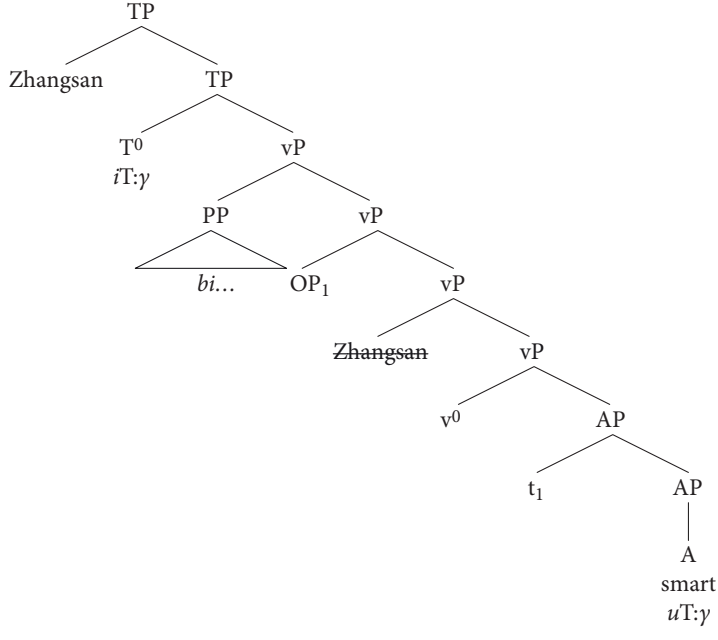
Clearly, it is not the parallelism that is at issue, but the minimality stipulation. Yet, the minimality requirement is nothing but a redescription of the fact. It does not explain why Chinese has this requirement but other languages, say English, do not. This requirement itself is a mystery that calls for an explanation.[3]

3. An anonymous reviewer of Liu's (2011) article raised the same question. In footnote 22, Liu briefly responded to this question.

3.2.2 *Hsieh's (2017) solution and its problems*

The main ingredients of Hsieh's analysis are as follows. Syntactically, *bi* heads a PP adjoined to the matrix VP and the predicate in the *bi*-constituent is obligatorily deleted under an identity condition. The specifier of the predicate AP is a degree operator, which is raised and adjoins to vP, leaving a trace behind. The degree operator movement is an instance of A′-dependency. Moreover, comparative deletion is parallel to sluicing and is subject to constraints on sluicing such as Merchant's (2008) MaxElide, which dictates that a constituent containing an A′-trace can be deleted only if it is the maximal possible deletable constituent. Most importantly, he assumes that the complement of *bi* is a small clause that lacks all the higher functional projection such as CP, TP and AspP. According to Hsieh, it is precisely the lack of the higher functional projections that is responsible for the lack of subcomparatives and embedded standards in Chinese. Both problems have to do with feature checking, it is suggested. In Hsieh's view, verbal elements such as verbs and adjectives carry an unvalued feature *u*T, which can be valued via Agree with the closest valued T-feature. An unvalued feature may avoid crash after spell-out when it is eliminated. For example, in (30), the unvalued feature *u*T of the matrix AP *congming* 'smart' is valued via the interpretable feature of the matrix T head.

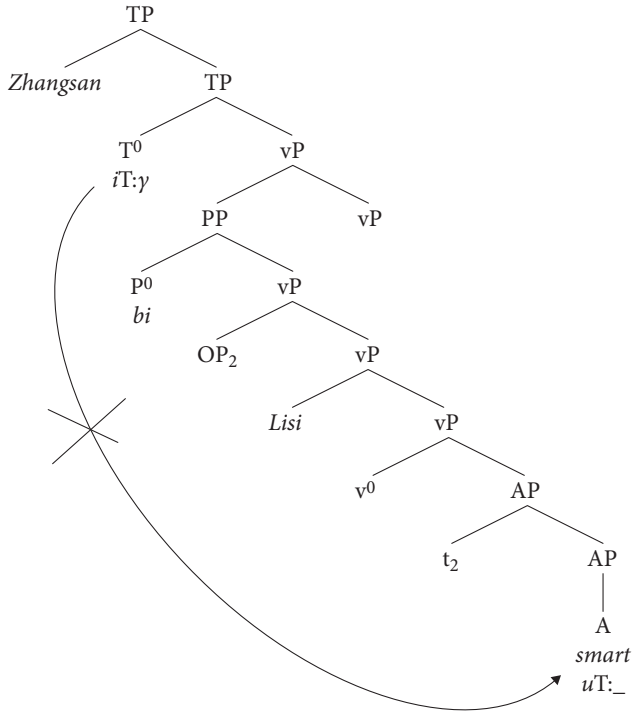
(30)



By contrast, since the complement of *bi* lacks any functional projection such as AspP or TP, the AP contained in it is not able to be valued in its own small clause. For example, in (31), the *bi*-clause does not have a T projection, so the unvalued

feature of the AP *congming* 'smart' must target the matrix T for agree. However, according to Hsieh, this is not allowed because the *bi*-constituent is an adjunct, hence a syntactic island for Agree. The only way to avoid crash at PF is thus to delete the AP inside the *bi*-constituent.

(31)



Given the above valuation analysis, Hsieh's answer to the problems of subcomparatives and embedded standards is very simple. Chinese does not have these two constructions because overt predicates in a *bi*-clause are not able to be valued within their own small clause. For example, the adjective *chang* 'long' in (26) and the verb *renwei* 'think' in (27) are not able to get valued with an interpretable T without violating island conditions.

Hsieh's above account for the impossibility of subcomparatives and embedded standards is quite interesting, but its plausibility faces challenges. The main idea of his account is that local feature valuation of an expression in a *bi*-clause cannot be completed in the *bi*-clause due to its defective clausal status, but global valuation is blocked because a *bi*-clause constitutes an island for feature valuation. Unfortunately, if this view were correct, many well-formed constructions would be wrongly ruled out. Take a wh-question for example. A wh-phrase must agree with an interrogative feature in Comp as Pesetsky & Torrego's (2007) following schema illustrates.

(32) Formation of an interrogative CP

But now consider a comparative question such as (33).

(33) Zhangsan bi shei gao (ne)?
Zhangsan than who tall Q
'Whom is John taller than?'

In (33), the wh-expression *shei* in the *bi*-constituent should agree with the matrix Comp but this feature valuation would be wrongly blocked because a *bi*-constituent would be an island to which feature valuation is sensitive.

A similar problem arises for polarity licensing such as (34).

(34) Wo *(meiyou) bi renhe ren duo he ban di shui
I not than any person more drink half drop water
'I did not drink a half more drop of water than anybody.'

The polarity item *renhe ren* 'any person' in (34) must agree with or be valued by the negation marker *meiyou* 'not', but the negation marker is in the main clause rather than in the *bi*-constituent.

I conclude that though feature valuation might help explain the impossibility of subcomparatives and embedded standards, this is only at the cost of incorrectly ruling out many other well-formed non-comparative constructions. This casts a serious doubt on Hsieh's answer to the problem of subcomparatives and embedded standards.

4.3 Erlewine's (2018) account and problems

As noted, Erlewine proposes that *bi* is categorically treated as a clausal conjunction. The standard TP is the complement of *bi* and the target TP is the specifier. In addition, he assumes that a rule of obligatory comparative deletion, given in (35) below, deletes a semantically identical predicate in the *bi*-clause to derive the surface form.

(35) Compare Deletion Requirement (CDR) (Erlewine 2018: 454):
In a *bi* comparative, elide a local predicate of the target TP under identity with a local predicate of the standard TP. If the target TP has no elidable local predicate, the derivation is illicit.

(36) Definition: Local predicate
Given a TP β, α is a local predicate of β iff (a) α is a VP or a predicative AP, (b) β dominates α, and (c) there is no TP which is dominated by β dominates α.

It is important to note that according to Erlewine (2018), all comparatives must apply the rule of comparative deletion. The derivation is illicit when the deletion rule fails to apply even when the structural description is not met. This is why (37) is ruled out.

(37) *[$_{TP1}$ Wo de yizi gao] bi [$_{TP2}$ ni de zhuozi kuan]
I GEN chair tall BI you GEN table wide
Intended: 'My chair is taller than your table is wide.'

The forced obligatory application of comparative deletion, however, is a stipulation rather than an explanation. One might wonder why there is no similar requirement for English comparatives. For English, there might be an obligatory comparative deletion under identity, but there is no forced application to subcomparatives.

As for the problem of embedded standards, Erlewine claims that they are not allowed because the antecedent is not a local predicate in the *bi*-clause.

(38) *[$_{TP1}$ Yuehan ~~gao~~] bi [$_{TP2}$ Mali renwei [$_{TP3}$ ta$_i$ gao]]
John tall BI Mary think he tall
Intended: 'John is taller than Mary thinks he is.'

The locality account, again, is a stipulation rather than a true explanation just like Liu's minimality stipulation. Why must Chinese be so strange in this aspect? Why does English not have the same locality requirement?

In addition to the above problems, Erlewine's (2018) syntax and semantics of Chinese comparatives give rise to other problems. One problem has to do with the distribution of *dou*. As is well-known, universal DPs in Chinese are normally accompanied by *dou*, as shown by (39). Now consider (40a). Erlewine's proposed syntax of Chinese comparatives would assign (40a) the structure (40b).

(39) Meige ren *(dou) qingchu
every.Cl person all clear
'Everyone is clear.'

(40) a. Meige ren bi wo dou (geng jia) qingchu
every.Cl person than I all more clear
'Everyone is clearer than I am.'
b. [$_{TP1}$ meige ren ~~qingqu~~] bi [$_{TP2}$ wo dou (geng jia) qinchu]

But the structure (40b) must be wrong because in this structure *dou* is associated with the subject *wo* 'I' rather than *mei-ge ren* 'everyone'.

Another syntactic problem is related to the reflexive *ziji* 'self', which must be bound by a c-commanding subject. Consider (41), whose structure is (42) under Erlewine's analysis. In (42), clearly, *Zhangsan* does not c-command *ziji* in the second clause because the former is the subject of an embedded clause.

(41) Zhangsan$_i$ bi Lisi$_j$ hai geng bu liaojie ziji$_i$
Zhangsan than Lisi still more not understand self
'The degree to which Zhangsan understands himself is less than the degree to which Lisi understands him.'

(42) [Zhangsan$_i$ ~~bu liaojie ziji$_i$~~] bi [Lisi$_j$ hai geng bu liaojie ziji$_i$]
No c-command

The last problem with Erlewine's analysis is a semantic one. When the target of comparison is a downward entailing DP such as (43a), the structure that his analysis gives, i.e., (43b), would not obtain the right truth conditions.

(43) a. Meiyou ren/henshao ren bi wo geng mingbai
No person/few person than I more understand
'No one/few people understand(s) it better than I do.'
b. Erlewine's structure
[Meiyou ren/henshao ren ~~mingbai~~] bi [wo geng mingbai]
no person/few person than I more understand

The meaning that (43b) would get is something like 'The degree to which no one/few people understands it is greater than the degree to which I understand it'. This is clearly not the meaning of (43a).

The only way for Erlewine's analysis to obtain the right truth conditions is to scope out the downward-entailing DPs via quantifier raising out of their containing clause. Under this analysis, (43a), for example, would mean that no person x is such that he understands it better than I do. However, this proposal is impossible because the scope of downward entailing DPs is restricted to their containing clause – a constraint known as the clause-boundedness constraint. For example, (44a) does not have a reading on which the DP *meiyou ren* 'no one' scopes out the *if*-clause and (44b) does not have a reading on which *meiyou ren* scopes out the sentential subject.

(44) a. [Ruguo meiyou ren lai], wo hui hen shangxin
if no person come I will very sad
'If no one comes, I will be sad.'
*'No person x is such that if x comes, I will be sad.'
b. [Meiyou ren lai] rang ta hen shangxin
no person come make him very sad
'(The fact) that no person$_i$ came made him$_{j/*i}$ sad.'
*'No person x is such that x's coming made x sad.'

5. Remarks on arguments against the phrasal analysis

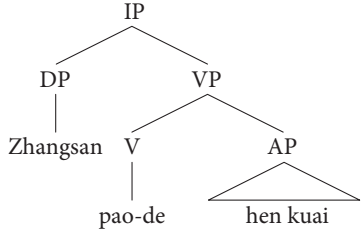
Both Liu (2011) and Erlewine (2018) provide arguments against the author's phrasal analysis set out in Lin (2009). This section reviews Erlewine's arguments first. There are two major types of arguments from Erlewine against the phrasal analysis. One type of argument is related to how comparatives involving a complex predicate of the form 'verb+de+AP' are generated and the other type of argument has to do with movement chains involving object preposing, *bei* passives and verb copying constructions. I review these two types of arguments in turn below.

5.1 Arguments based on complex predicate constructions

The verb-de-AP construction is illustrated by (45). In (45a) the post-verbal AP *hen kuai* introduced by *de* is functionally a manner or degree modifier of the verb *pao* but syntactically the *de*-AP is a complement of the verb to which *de* encliticizes as shown by (45b) (Huang 1988, Huang et al 2009.)

(45) a. Zhangsan pao de hen kuai
Zhangsan run DE very fast
'Zhangsan runs/ran very fast.'

b.



When this construction interacts with a *bi*-constituent, it shows some interesting properties. First, what are compared can be the subject and the verb. Consider (46a).

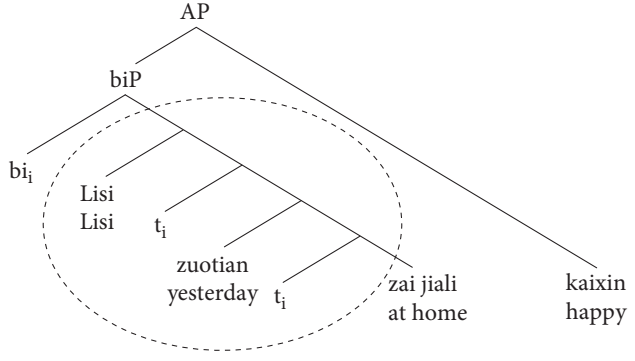
(46) a. Zhangsan pao de bi feiji fei de kuai
Zhangsan run DE than plane fly DE fast
'Zhangsan runs faster than planes fly.'

b. [$_{TP1}$ zs [$_{VP1}$ run[DE [$_{\sout{AP1}}$ ~~fast~~]]]]bi [$_{TP2}$ plane [$_{VP2}$ fly [DE [$_{AP2}$ fast]]]]

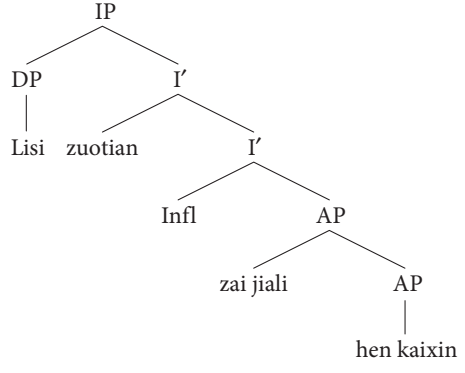
Erlewine argues that under his analysis (46a) can be derived as (46b) by deleting the lower local AP predicate of the target clause but no phrasal analysis including Lin (2009) is able to derive this structure, because neither *Zhansasn pao de* nor *feiji fei de* in (46a) is a constituent given Huang's (1988) and Huang et al's (2009) analysis of the complex predicate construction in (45) (see Erlewine 2018, note 13).

Erlewine's criticism above is based on a misinterpretation of the author's phrasal analysis. According to my work in Lin (2009), compared items must form layers of standard constituents whose head is *bi* but the notion of constituency that I refer to should not be understood in the traditional sense of syntactic structure. This position is clear in comparatives with multiple standards such as *Zhangsan jintian zai xuexiao bi Lisi zuotian zai jiali kaixin* 'Zhangsan is happier at school today than Lisi was at home yesterday'. In a traditional syntactic structure such as (48) below, the subject, the time phrase and the location expression do not form a constituent. But in (47), the author's proposed structure for *bi*-comparatives, the three phrases under discussion do form a constituent as the dotted oval indicates.

(47)

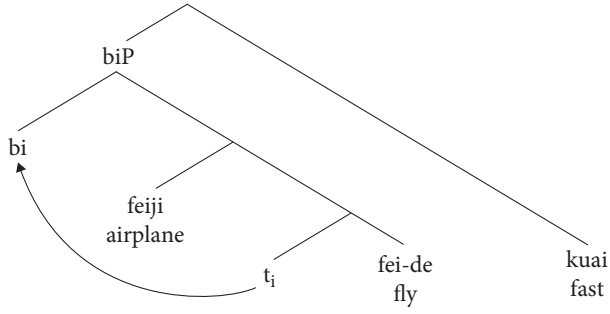


(48)



Therefore, as long as *feiji* 'airplane' and *fei* 'fly' are arguments of *kuai* 'fast' in (46a), as required by the author's phrasal analysis, there is no problem that they form a constituent in a *bi*-phrase, as shown below.

(49)



So the question is: can *feiji* 'planes' and *fei-de* 'fly' be arguments of *kuai* 'fast'? Before answering this question, reconsider the structure of (45b), which Erlewine assumes, and how it is semantically composed. It is important to note that intuitions of surface grammatical relation may not necessarily correspond to semantic argument structure. Take a quantificational sentence such as (50) for example.

(50) Everyone laughed.

Syntactically *everyone* is the subject and *laughed* the predicate of the sentence. But this relation of predication might turn out to be reversed when doing semantic composition due to semantic types. It has been widely assumed since Montague (1973) that quantificational expressions are semantically generalized quantifiers of type <<e,t>,t>, i.e., a set of properties, and intransitive verbs denote properties of type <e,t>. In other words, in terms of semantic composition, *everyone* is the predicate and *laughed* its argument.

With this as background, I would like to argue that the denotation of the post-verbal AP in (45) is in fact semantically a predicate that takes the verb as its argument, though syntactically the post-verbal *de*-AP might be a complement of the verb. This assumption will save the author's phrasal analysis from Erlewine's criticism above.

What does *hen kuai* 'very fast' denote? Let us assume that in additional to individual arguments, verbs contain an eventuality argument represented by the variable *s* and there are measure functions such as FAST mapping an eventuality to a degree of speed just as adjectives such as *tall* map an individual to a degree in height. Given this, *hen kuai* 'very fast' can have a denotation such as (51).

(51) $[\![\textit{hen kuai}]\!] = \lambda P_{<e,<s,t>>}.\lambda x \exists d \exists s[P(x)(s) \wedge \text{FAST}(s) \geq d_c]$

In other words, *hen kuai* 'very fast' is a two-place predicate. Its first argument is a verb of type <e,<s,t>>> and the second argument is an individual. Take (45) for example. On the assumption that *de* is semantically vacuous and syntactically encliticizes to the preceding verb, in (45) the verb *pao* 'run' is the first argument of *hen*

kuai 'very fast'and *Zhangsan* its second argument. The truth conditions assert that there is an eventuality *s* of Zhangsan's running and the speed of *s* is greater than the contextually determined standard.

Granted that the above analysis of eventuality modifiers such as *de-hen kuai* is plausible, Erlewine's argument above against the author's phrasal analysis is flawed, because he misunderstands what I mean by constituency of a layered *bi*-phrase in Lin (2009).

Erlewine's second argument against the author's phrasal analysis again has to do with the 'verb+de+AP' construction. Consider (52).

(52) a. Yuehan pao de bi feiji kuai (Erlewine 2018: 460)
John run DE than airplane fast
'John runs faster than airplane/the speed of an airplane.'

b. [$_{TP1}$ John [$_{VP}$ pao DE [$_{AP}$ ~~kuai~~]]] bi [$_{TP}$ feiji [$_{AP}$ kuai]]

On the assumption that airplanes cannot be described using the verb *pao* 'run', Erlewine claims that the standard clause in (52) contains only the AP *kuai* 'fast' but not the verb *pao* 'run' and the derivation of (52a) involves deletion of the lower predicate *kuai* in the target clause as in (52b). Since the author's phrasal analysis requires that the targets and the standards contain equal number of parallel constituents, he claims that (52a) is a problem with the phrasal analysis.

The above argument against the phrasal analysis is a very interesting one, but not necessarily a correct one. An important assumption behind that argument is that the verb *pao* 'run' can never apply to *feiji* 'airplanes', but this assumption is problematic. As long as one searches the internet, it is very easy to find examples such as the following.

(53) a. Huoche pao-de kuai haishi feiji pao-de kuai?
train run-DE fast or planes run-DE fast
'Are trains faster or are airplanes faster?'

b. Shijie shang you-mei-you bi feiji pao-de kuai de che?
world in have-not-have than airplane run-DE fast REL car
'Are there cars that run faster than airplanes in the world?'

c. Huoche han feiji shei pao-de kuai?
train and airplane who run-DE fast
'As for trains and airplanes, which run faster?'

In light of the above examples, one can argue that (52a) is derived by deleting the second occurrence of *pao* in the standard clause.

Even for bullets and sound, which people normally won't think of using *pao* 'run' to describe their manner of motion, we can easily find examples of the following sort on the internet:

(54) a. Zidan han shengyin, shei pao de kuai?
bullet and sound who run DE fast
'As for bullets and sound, who runs faster?'
b. Shengyin pao de hen kuai
sound run DE very fast
'Sound runs very fast.'

This suggests that the verb *pao* 'run' in examples such as (52)–(54) might be only a metaphoric cover term of manner of motion rather than denoting actual running. If this line of thought is plausible, then (55) is not a problem with the phrasal analysis either.

(55) Ren keyi pao-de bi zidan kuai ma?
human can run-DE than bullet fast Q
'Can humans run faster than bullets?'

Finally, it is worth noting that in (52) and (55), the verb *pao-de* may also follow the *bi*-DP instead of preceding it without changing the meaning of the sentence. So (56a) and (56b) mean the same thing as (52a) and (55), respectively.

(56) a. Yuehan bi feiji pao de kuai (Erlewine 2018: 460)
John than airplane run DE fast
'John runs faster than an airplane.'
b. Ren keyi bi zidan pao de kuai ma?
human can than bullet run DE fast Q
'Can humans run faster than bullets?'

These examples indicate that even for Erlewine (2018), he has to assume that airplanes and bullets must be able to "run". Given this, his counter-argument against the phrasal analysis based on (52a) is not a successful one.

5.2 Erlewine's (2018) Arguments based on movement chains

Erlewine's second type of arguments against the phrasal analysis comes from consideration of constructions which have been analyzed as movement dependencies in previous literature, such as object preposing, *bei* passives and verb copying. According to him, the above constructions may all form *bi*-comparatives, generating a form of the following type, where both A and B are related to the presumably trace position *t*:

(57) […A…] bi […B…] […t…]
target standard predicate

He argues that such examples are problematic for a phrasal analysis as there is only one trace position but unproblematic for a clausal analysis as there are underlyingly two separate instances of the predicate in the syntax.

To illustrate, consider object preposing. In Mandarin Chinese, objects of transitive verbs are canonically postverbal, so preverbal objects are often assumed to be fronted from their postverbal base position via the rule of object preposing (Ernst & Wang 1995; Paul 2002), which is subject to Tsao's (1989) animacy restriction, illustrated below.

(58) a. *Wo Zhangsan xihuan
I Zhangsan like
'I like Zhangsan.'
b. ?Wo mao xihuan
I cat like
'I like cats'
c. Wo daishu xihuan
I algebra like
'I like algebra.'

Interestingly, Tsao (1989: 169–170) observes that preposed objects (secondary topics) may function as compared items in *bi*-comparatives and are subject to the same animacy restriction.

(59) a. Wo daishu bi jihe xihuan
I algebra than geometry like
'I like algebra more than I like geometry.'
b. ?Wo mao bi gou xihuan
I cat than dog like
'I like cats more than I like dogs.'
c. *Wo Zhangsan bi Lisi xihuan
I Zhangsan than Lisi like
'I like Zhangsan more than I like Lisi.'

Erlewine (2018: 463) further points out that a combination of animate-inanimate objects in *bi*-comparatives is judged equally deviant.

(60) a. *Wo Zhangsan bi daishu xihuan
I Zhangsan than algebra like
'I like Zhangsan more than I like algebra.'
b. *Wo daishu bi Zhangsan xihuan
I algebra than Zhangsan like
'I like algebra more than I like Zhangsan.'

From the above data, he concludes that both the object in the target and the object in the standard are derived from a postverbal position, because they are subject to the same animacy restriction on object preposing.

The above argument for the clausal analysis is again an interesting one, but it is not necessarily one which goes against the phrasal analysis. It depends on whether the animacy restriction should be taken as a condition on derivations or a condition on representations. Note that when a pronoun or an epithet is substituted for the trace of a preposed object, the sentence is equally deviant. Consider (61)

(61) a. *Zhangsan Lisi_i xihuan ta_i
Zhangsan Lisi like him
Intended: 'Zhangsan likes Lisi.'
b. *Zhangan Lisi_i taoyan na jiahuo_i
Zhangsan Lisi dislike that guy
Intended: 'Zhangsan dislikes Lisi that guy.'

(61a) is ill-formed on its intended reading according to which Lisi is understood as the object. When Lisi is understood as the subject and Zhangsan the object, the sentence is grammatical. Similarly, (61b) is ill-formed on the reading 'Zhangsan dislikes Lisi' but is well-formed on the reading 'Lisi dislikes Zhangsan'. Now if we take the presence of the object pronoun or epithet to indicate that there is no movement involved, then the animacy restriction on object preposing should be restated as a condition on representations as shown in (62), which bans a preverbal animate object from being related to a transitive verb.

(62) *$[_{\text{IP}}\ \text{DP}_{\text{subject}} \ldots [_{\text{XP}}\ \text{DP}_{\text{Object}} \ldots \text{Verb}_{\text{tr}} \ldots]]$, when $\text{DP}_{\text{object}}$ is animate and construed as the internal argument of Verb_{tr}.[4]

Under this view, whether or not there is a trace does not matter, because (62) is not a condition on movement chains. The condition is to rule out a representation where a transitive verb is related to a preverbal object DP that follows the subject.[5] It applies to constructions where there is a gap as well as one with a co-indexed pronoun or epithet, and to not only simplex sentences but also comparative

4. It is not clear to me which projection a preposed object DP is adjoined to. I use XP to represent the projection that immediately dominates the preposed object DP.

5. If the preposed object DP is preceded by a preposition such as *ba*, it will not be ruled out by (62) because what is immediately dominated by XP is a PP containing the object DP rather than the object DP itself.

sentences.[6] Given this representational view, the phrasal analysis is immune from Erlewine's criticism that a phrasal analysis is not able to explain the parallel animacy restriction on simplex and comparative sentences.

Another argument that Erlewine provides is based on Chinese passives such as (63).

(63) Zhangsan bei Lisi da-le
Zhangsan BEI Lisi hit-ASP
'Zhangsan was hit by Lisi.'

Following Huang (1999) and Huang et al (2009), Erlewine assumes that long passives in Mandarin Chinese do not involve A-movement as English passives but A′-movement of a null operator to a position between *bei* and the agent as shown in (64).

(64) Zhangsan [bei [Op_i [Lisi da-le t_i]]]

In (64), the operator movement yields a property by λ-abstracting the base object position. This property is then applied to the subject (Huang 1999).

What is interesting about *bei*-passives is that they may enter comparative constructions generating two constrasting agents introduced by *bei*, as illustrated by (65), cited in Erlewine (2018: 466).

(65) Yuehan bei baba bi bei mama ma de geng can
John BEI father than BEI mother scold DE more severe
'John was scolded by his father more severely than by his mother.'

According to Erlewine, to explain (65), two instances of operator movement must be postulated with one in the target clause and another in the standard clause and this is a problem for the phrasal analysis because there is only one gradable predicate in the syntax. Moreover, adopting Liu's (2011) view, Erlewine argues that (65) cannot be dealt with by a phrasal analysis because *bei* and the agent do not form a constituent in the structure proposed by Huang (1999).

The above argument against the phrasal analysis is not conclusive, however. Shi (2005) has convincingly argued that many existing arguments against analyzing

---

6. It should be noted that normally Chinese does not use inanimate pronouns, so it is more difficult to test whether an inanimate pronoun can be linked to a preposed object. It sounds to me that (i) is marginally acceptable.

(i) ?Ni na-zhi $shouji_i$ hao reng-le ta_i le ba
You that-CL mobile.phone better throw-ASP it Asp Par
'You better throw that mobile phone.'

bei as a preposition and *bei*+agent as a constituent are not cogent. Take Huang's (1999: 431) sentence in (66) for example. He uses the coordination test to show that the string of words following *bei* can be conjoined with a similar string of words to the exclusion of *bei*, thus excluding the possibility that *bei* and the agent DP form a constituent.

(66) Ta bei [Zhangsan ma-le liang sheng], [Lisi ti-le yi jiao]
he BEI Zhangsan scold-ASP two voice Lisi kick-ASP one foot
'He was scolded by Zhangsan twice, and kicked by Lisi once.'

Yet, as pointed out by Shi (2005: 43), when a preposition occurs repeatedly, it may sometimes be omitted, as is shown by (67), taken from one of the many examples that he provides.

(67) Zhengfu cong Shanghai diaolai-le yaowu, (cong) Beijing
government from Shanghai collect-ASP medicine from Beijing
diaolai-le zhangpeng, (cong) Ningpou diaolai-le bianzhidai
collect-ASP tent from Ningpou collect-ASP knitted.bag
'The government collected medicine from Shanghai, tents from Beijing and knitted bags from Ningpou.'

(66)can be another instance of the same phenomenon by deleting the second occurrence of *bei*, as the sentence *Ta bei Zhangsan ma-le liang sheng, bei Lisi ti-le yi jiao* is fully grammatical.

In fact, Shi (2005: 44) provides examples showing that *bei* and the agent DP form a constituent and may enter coordinated constructions. I reproduce one of his examples below:[7]

(68) Tongzhimen de jingli yidian yidiandi bei shen xue, bei bingwo,
colleague DE energy one.bit one.bit BEI deep snow BEI ice.hole
bei buting de chuanqi han diejiao xiaomojin-le
BEI non.stop DE breath and fall drain-ASP
'The energy of our colleagues was drained bit by bit by the deep snow, by the ice hole and by the non-stop breath and falls. '

In addition to the coordination test, there are other tests to show that *bei* and the agent DP form a constituent. For example, they may serve as a fragment answer, as shown by (69).

7. Liu (2011) argues that examples such as (68) might involve right node raising.

(69) Q: Zhangsan bei shei pian-le?
Zhangsan BEI who cheat-ASP
'By whom was Zhangsan cheated?'
A: bei Lisi
BEI Lisi
'by Lisi'

Second, two coordinated *bei*-DP's can license the use of *dou* indicating that the two *bei*-DP's form a plural entity as illustrated below.

(70) Zhangsan bei Lisi han bei Wangwu dou ge pian-guo liang ci
Zhangsan BEI Lisi and BEI Wangwu all each cheat-ASP two times
'Zhangsan was cheated twice respectively by Lisi and by Wangwu.'

It is important to note that though the coordinator *han* 'and' may conjoin two PPs or DPs, it is not able to conjoin two sentences. In other words, (70) may not be derived by backward VP deletion. In fact, two conjoined *bei*-DPs are parallel to two conjoined *dui*-DPs. As we see below in (71), two conjoined *dui*-DPs may also form a plurality and hence license the use of *dou*.

(71) Zhangsan dui Lisi han dui Wangwu dou yiyang hao
Zhangsan to Lisi and to Wangwu all same good
'Zhangsan is equally good to Lisi and to Wangwu.'

Returning to (65), under the phrasal analysis, one does not need to postulate two instances of the predicate in the syntax to obtain the right truth conditions. The semantics of *bi* is responsible for distributing the single gradable predicate in syntax to the two *bei*-DPs in semantic computation. That is, the two instances of the same predicate surface in semantics, not in overt syntax. So the issue raised by Erlewine is only an apparent one in the author's phrasal analysis.

Another argument very similar to the one based on passives discussed by Liu (2011) comes from *ba*-constructions in which a preposed object DP is preceded by the morpheme *ba*. The syntactic status of *ba*-constructions has been controversial (see for instance, Yue-Hashimoto 1971; Bender 2000; Chao 1968; Travis 1984; Li 1990; Huang 1982; Koopman 1984; Goodall 1986; Zou 1993; Sybesma 1999). Huang et al (2009: 195) analyze *ba* as a functional light verb taking VP as its complement and the DP following it the specifier of VP, as illustrated by Liu's (2011: 1791) example below.

(72) [Zhangsan$_i$ [$_{baP}$ t$_i$ [$_{ba'}$ ba [$_{VP}$ qian [$_{V'}$ v [$_{VP}$ kan-de zhong]]]]]]
Zhangsan BA money regard-DE important
'Zhangsan regards money important.'

Ba-construction may also form *bi*-comparatives as illustrated by Liu's example in (73):

(73) Zhangsan ba qian bi ba shengming kan-de zhong
Zhangsan BA money than BA life regard-DE important
'Zhangsan regards money as more important than life.'

Based on the syntactic analysis of *ba*-constructions in (72), Liu argues that a phrasal analysis of *bi*-comparatives is not able to generate (73) because *ba* and its following preposed object DP do not form a constituent. The conclusion of this argument is flawed, however, because there is evidence in support of the constituency of a *ba*-DP. Consider the following two examples taken from the internet resources by google searching.

(74) Youci gen laoban cheng Delta-de meiguo guonei hangban, ta shi
one.time with boss take Delta's American domestic flight he be
zui gao-de dengji, yushi ba ta han ba wo dou sheng cang le,
most high status so BA him and BA me all upgrade class Asp
ba ling yige yong dianshu mai de ganhui jingji cang
BA another one.Cl use reward.point buy REL drive.back economic class
'One time I took American airline's domestic flight with my boss. He had the highest status, so the airline upgraded him and me to a better class but drove another one to his economic class who bought the ticket with his reward points.'

(75) Wo yi bu gaoxing, jiu keyi ba ni han ba ni xiang zhao de
I once not happy then may BA you and BA you want find REL
ren liu zai shan li, tianwang laozi ye guan-bu-liao wo
person leave in mountain inside emperor old.guy also unable.to.control me
'Once I am not happy, I then may leave you and the person that you are looking for in the mountain. Even the emperor is not able to control me. '

In both (74) and (75), two *ba-DPs* are conjoined by the coordinator *han* 'and', indicating that *ba* and its following DP form a constituent. The constituency of a *ba*-DP is particularly clear in (74). Note that the two coordinated *ba*-DPs in (74) are followed by *dou*. As is well-known, *dou* must be associated with a plural entity. This is possible only when the two *ba*-DPs in (74) are each a constituent so that they can be conjoined to form a plurality.

On the other hand, like *bei*-passives, arguments for the complementation structure in (72) can be counter-argued. For example, Liu argues that the VP following *ba* can be coordinated with a similar string of words excluding *ba* such as (76), thus supporting the assumption that the preposed object DP does not form a constituent with *ba*.

(76) Zhangsan ba yiqi kan-de zhong, jinqian kan-de qing
Zhangsan BA personal-loyalty look-DE important money look-DE belittle
'Zhangsan regards personal loyality important, and think of money light.'

(76), however, is not decisive. It can be equally explained by an analysis treating *ba* as a preposition which forms a PP with its following DP. Under this analysis, the second occurrence of *ba* can be omitted in a way parallel to the omission of the second occurrence of *bei* in (66). In fact, insertion of another occurrence of *ba* before *jinqian* 'money' in (76) is perfectly acceptable, as illustrated by (77).

(77) Zhangsan ba yiqi kan-de zhong, (ba) jinqian
Zhangsan BA personal-loyalty look-DE important BA money
kan-de qing
look-DE belittle

(77) shows that what is coordinated can be two VPs of the following form:

(78) [$_{VP}$ [$_{PP}$ ba yiqi] [$_{VP}$ kan-de zhong]], [$_{VP}$ [$_{PP}$ (ba) jinqian] [$_{VP}$ kan-de qing]]

I conclude that (76) cannot prove that a *ba*-DP sequence is not a constituent. If a *ba*-DP forms a constituent, then it is straightforward to derive (73) under a phrasal analysis.

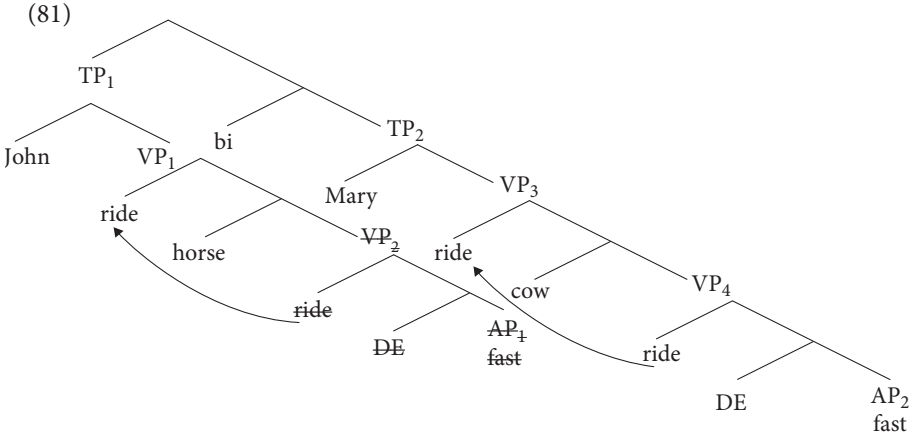
Erlewine's third argument against the phrasal analysis comes from consideration of comparatives involving verb copying constructions such as (79) discussed in Liu (1996).

(79) Yuehan qi ma bi Mali qi niu qi de kuai
John ride horse BI Mary ride cow ride DE fast
'John rides a horse faster than Mary rides a cow.'

In this construction, both the target and the standard superficially look clausal as they each contain a verb and an object. Liu (1996) argues that (79) can be easily derived through a derivation with two instances of verb-copying construction such as (80) by deleting one instance of V-de-AP. Adopting the assumption that verb-copying constructions are derived via verb movement without deleting the lower copy (cf. Huang 1988 and Cheng 2007), Erlewine (2018: 469) recasts Liu's analysis of (79) as (81) within his framework.

(80) [Yuehan qi ma [bi Mali qi niu ~~qi de kuai~~] qi de kuai]

(81)

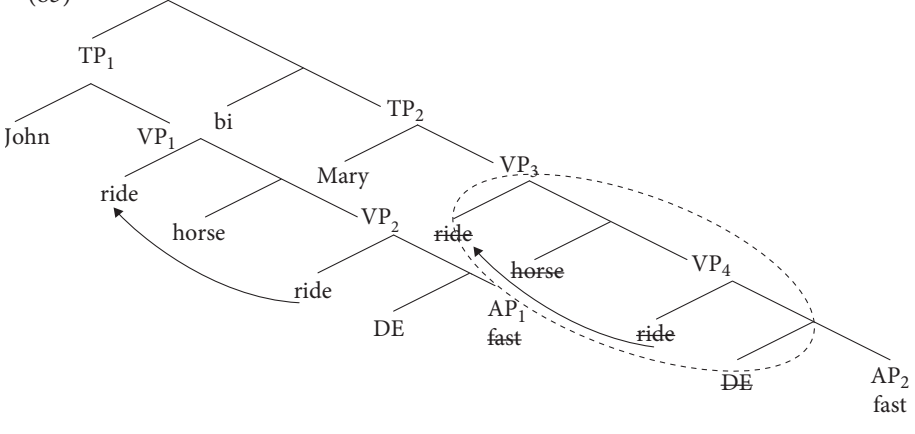


If the syntactic derivation of (79) is as described above, it does constitute a great challenge to the phrasal analysis.

But now consider comparatives such as (82). In this sentence, what is deleted is not the first occurrence of V-DE-AP but the first occurrence of AP and the second occurrence of V-DP-V-de, as represented in (83). In other words, the derivation of (82) involves not only comparative deletion of AP but forward deletion of V-DP-V-de under identity.

(82) Yuehan qi ma qi de bi Mali kuai
John ride horse ride DE BI Mary fast
'John rides a horse faster than Mary does.'

(83)



What is crucial here is the forward deletion of the second occurrence of ride-horse-ride-DE. It is normally assumed that only constituents can be deleted, but as shown in (83), the string of words that undergoes forward deletion, i.e., the dotted oval, actually does not form a constituent under Erlewine's analysis of verb-copy constructions regardless of whether or not *de* is cliticized to the verb. This fact indicates that the structure of verb-copying constructions is not a simple matter. What the correct structure of verb-copying constructions is remains to be determined. Indeed, various analyses have been proposed in previous works and it is beyond the scope of this article to discuss them. For a recent review of those analyses, see Bartos (2019). Though I will not pursue or really argue for it, if *qi-ma-qi-(de)* in (82) can be a constituent, something like [$_{VP}$ [$_{VP}$ qi ma qi de] [$_{AP}$ hen kuai]], as the deletion fact implies, (79) and (82) will not be a problem for the phrasal analysis.

To sum up, Erlewine (2018) has provided many interesting arguments against the phrasal analysis involving movement chains and verb-copying constructions. Yet, as discussed, those arguments do not necessarily prove that the phrasal analysis is on the wrong track. To the contrary, some related facts inspired by his discussion show that evidence points to the other direction.

6. Liu's (2011) arguments against Lin's (2009) analysis

6.1 *Rang*-constructions

Liu (2011) also provides very challenging and difficult examples for the phrasal approach to Chinese comparatives. One of them has to do with the pivotal comparative construction in (84). (84) is a so-called verbal comparatives in which a comparative morpheme *duo* 'many' is attached to a transitive verb taking a differential DP as its complement (cf. Li 2015).

(84) Wo rang ni bi ni rang ta duo zhu-le san tian
I let you than you let him more stay-ASP three day
'I let you stay for three more days than you let him.' Liu (2011: 1784)

Following Tang (2010: 184–187), Liu assumes that the verb *rang* in (84) selects a VP as its complement and therefore it is difficult to analyze *wo rang ni* 'I let you' or *ni rang ta* 'You let him' as a constituent. According to him, this challenges the author's phrasal analysis.

Liu's argument here has two problems. To put aside the question of whether or not (84) is really grammatical[8], the same construction would constitute a similar

8. For some people, this sentence is unacceptable and for some others, it is understandable but not fully natural. There are also people who accept it.

challenge to his reduction analysis. (84) is in fact an exceptional pivotal construction rather than the norm. Many informants told me that other pivotal comparative sentences with verbs such as *jiao* 'ask', *qing* 'ask', *quan* 'persuade', *bi* 'compel', etc. are much worse than (84). For example, for many people, (85) is not even understandable.

(85) *Wo qing/quan/bi/jiao ni bi ni qing/quan/bi/jiao
I ask/persuade/compel/ask you than you ask/persuade/compel/ask
ta duo zhu-le san tian
him more stay-ASP three day
'I asked/persuaded/compelled/asked you to stay for three more days than you asked/persuaded/compelled/asked him.'

If the structure of pivotal constructions is like what Tang (2010) proposes with the pivotal verb taking a VP complement, then the ungrammaticality of (85) follows directly from a phrasal analysis. Yet Liu's analysis would wrongly predict that (85) should be as equally grammatical as (84) because they have the same structure. In other words, if a phrasal analysis owes an account for the grammaticality of (84), then a clausal analysis owes an account for the ungrammaticality of (85). In this sense, the latter analysis is no better than the former one and is perhaps even worse because almost every pivotal verb except *rang* 'let' cannot be used in the same construction as (84).

A second problem with (84) is that this sentence is not a regular *bi*-comparative but a verbal comparative. A verbal comparative requires that the verb be followed by an overt differential complement. Earlier I showed that a clausal approach is not able to derive comparatives with a differential phrase. Take (86) as another illustration. The underlying structure before comparative predicate deletion cannot be as given, because this structure will not give the sentence the right truth conditions.

(86) Wo rang ni [bi [ni rang ta ~~zhu-le~~ ~~san~~ ~~tian~~] duo zhu-le
I let you than you let him stay-ASP three day more stay-ASP
san tian
three day
'I let you stay for three more days than you let him.'

6.2 Reason clauses

Another challenge to my proposed phrasal analysis that Liu makes is related to reason clauses in comparatives. According to the author's proposal in Lin (2009), only arguments of predicates can function as the target and standard constituents for Chinese comparatives. So manner adjuncts and reason clauses may not serve as compared items. For example, (87) is judged to be unacceptable.

(87) *Mama yinwei Xiaoming shuo huang bi yinwei ta tou qian
mother because Xiaoming say lie than because he steal money
geng shengqi
more angry
'Mother was angry more because Xiaoming told a lie than because he stole money.' (Lin 2009: 18)

Yet, in contrast to the author's observation in Lin (2009), Liu (2011: 1783) claims that the following sentences are acceptable.[9]

(88) a. Mama yinwei Xiaoming$_i$ shuo huang bi baba yinwei ta$_i$ tou
Mother because Xiaoming say lie than father because he steal
dongxi haiyao shengqi.
thing even angry
'His$_i$ mother gets angry more because Xiaomingi lies than his$_i$ father gets angry because he$_i$ steals things.'

b. Laoban yinwei ta jingchang chidao bi yinwei ta ouer
boss because he often late than because he sometimes
fan cuo hai geng shengqi.
make mistake even more angry
'The boss is even more angry because he is often late than because he sometimes makes mistakes.'

I will not attempt to adjudicate on the grammaticality judgement dispute between Lin (2009) and Liu (2011) with respect to the occurrence of reason clauses in comparatives. When read carefully, the two sentences in (88) are understandable but I am not sure that they are perfectly natural Chinese sentences.[10]

Granted that the two sentences in (88) are acceptable, the question to ask is whether or not a phrasal analysis is able to account for them. Here is an attempt. Assume that the author's claim in Lin (2009) is correct that Chinese is an argument comparison language. A consequence of this is that the reason clauses in (88) would be arguments of the predicate of comparison. I would like to argue that this is a possible conclusion. Let us first consider the following sentences.

---

9. On the other hand, Liu (2011) says nothing about manner adjuncts. His clausal analysis, as well as other clausal analyses, falsely predicts that manner adjuncts are able to function as compared items.

10. Many informants that I asked have the same intuition that examples of the sort in (88) are not natural. In written sentences, they can be understood but in colloquial speech, this kind of sentence is rarely heard.

(89) a. [(Yinwei) ni de huangyan][rang shiqing bian de
because you DE lie make matter become DE
hen fuza]
very complicated
'Your lies make the matter very complicated.'

b. Laoban$_i$ [yinwei Mali chang chidao] [rang ta$_i$ hen shengqi]
boss because Mary often late make him very angry
'Mary's often being late makes the boss very angry.'

The verb *rang* 'make' is a causal verb that requires two arguments, one being the cause argument and the other being the consequence argument. In (89a), the *yinwei*-phrase is the cause. I claim that it is also the external argument of the verb *rang*. With or without *yinwei* 'because', the sentence is equally grammatical.

Next, consider (89b). This sentence is similar to (89a) except that the object DP of the verb *rang* 'make', i.e., *laoban* 'boss', is preposed (topicalized) to a position before the *yinwei*-clause, leaving a pronoun behind. One can reconstruct the noun phrase *laoban* back to the position of the pronoun, as in (90). As one can see, (90) and (89a) are almost completely parallel in terms of syntactic structure.

(90) [Yinwei Mali chang chidao] [rang laoban hen shengqi]
because Mary often late make boss very angry
'Mary's often being late makes the boss very angry.'

In other words, the *yinwei*-clause in (89b) is still the external argument of the causal verb *rang* 'make' just as the *yinwei*-DP in (89a) and the DP *laoban* in fact is not the external argument but a topicalized internal argument. Now notice that the construction in (89b) may form a *bi*-comparative, as illustrated below.

(91) Laoban$_i$ [yinwei Mali chang chidao] bi [yinwei ta ouer fan
boss because Mary often late than because she sometimes make
cuo] hai geng rang ta$_i$ shengqi
mistake even more make him angry
'The boss is made even more angry because Mary is often late than because she sometimes makes mistakes.'

If my reasoning above is correct, the *yinwei*-clause in (91) can be the external argument of the causative verb *rang* 'make' and the DP *laoban* 'boss' the preposed internal argument of 'make-angry'. Since the *yinwei*-clauses in (91) is an argument of the main predicate, it follows from the author's phrasal analysis that it can function as a compared item.

Notice that (91) is completely parallel to Liu's example (88b) except that (91) has an overt causative verb *rang* and the pronoun *ta* 'him' linked to the preposed DP *laoban*. Now suppose that the causative verb and the pronoun in (91) are dropped

because the presence of *yinwei* has already made the causal relation obvious. Then we will derive (88b). Under this analysis, the reason clauses in (88) are not adjuncts but the external arguments of the dropped causative verb, just as the reason clause is in (91). It should be noted that expressions such as *yinwei* 'because', *suoyi* 'so', *ruguo* 'if', *suiran* 'though', *danshi* 'but' and so on are often deleted as long as the meaning of a given sentence can be clearly inferred from the context. So the proposed deletion of the causative verb should not be that surprising. Perhaps it is the deletion of the causative verb that brings about grammaticality judgement variations among different informants. Analyzed this way, Liu's examples in (88) are compatible with the phrasal analysis that the author proposed in Lin (2009) rather than constituting counterexamples to it.

6.3 Object comparison in multiple standard comparatives

Different from his earlier (1996) treatment of *bi*-comparatives, Liu (2011, 2014) argues for a hybrid analysis according to which *bi*-comparatives with one standard involve a phrasal comparison, whereas *bi*-comparatives with more than one standard involve a clausal comparison. According to him, one distinguishing property between phrasal comparatives and clausal comparatives lies in object comparison. He claims that phrasal comparatives allow object comparison, whereas clausal comparatives do not, as illustrated by the contrast between (92a) and (92b).

(92) a. Zhangsan shuxue bi wuli xihuan
Zhangsan mathematics than physics like
'Zhangsan likes mathematics more than physics.'

b. *Zhangsan (xianzai) shuxue bi Lisi (yiqian) wuli xihuan
Zhangsan now mathematics than Lisi before physics like
'Zhangsan likes mathematics now more than Lisi liked physics before.'

I am not certain that the contrast claimed above is genuine. Object comparison often appears in *de*-constructions such as those in (93).

(93) a. Wo niurou bi ta zhurou chi de geng duo
I beef than he pork eat DE more many
'I eat beef much more than he eats pork.'

b. Zhangsan shuxue bi Lisi wuli xue de geng hao
Zhangsan mathematics than Lisi physics study DE more good
'Zhangsan studies mathematics much better than Lisi studies physics'

However, Liu argues that the *de*-constructions under discussion involve a verb copying construction with a backward deletion of the first verb, as is shown in (94). Therefore, he takes examples such as (93a,b) as not involving true preposed object comparison.

(94) Zhangsan xianzai [[$_V$ ~~xue~~] [$_{DP}$ shuxue]][$_V$ xue]-de [$_{Result}$ geng hao]]
(Liu 2011: 1775)

One problem with this analysis is that as mentioned, there is no independent evidence to support backward VP or backward verb deletion in Mandarin Chinese. Moreover, there are examples of object comparison which do not involve verb copying and deletion. For example, consider the two examples in (95). (95a) is not a regular *bi*-comparatives but an inferiority comparative. (95b) shows that a preposed object DP may sometimes need a preposition such as *dui* 'to' to accompany it, and such PPs support object comparison in comparatives with multiple standards.

(95) a. Wo zhurou mei you ta niurou nayang chang chi
I pork not have he beef that often eat
'I do not eat pork as often as he eats beef.'

b. Dongshizhang dui pinpai jingying bi zongjingli
chairman toward brand management than general.manager
dui renshi guanli hai geng zhongshi
toward human.resources management still more value
'The chairman values brand management much more than the general manager values human resources management.'

I conclude that Liu's use of object comparison to differentiate clausal comparison from phrasal comparison need to be reconsidered.

7. A Revision of Lin (2009)

As mentioned, Chinese comparatives may compare more than one item in a single comparative construction. To capture this, in Lin (2009), I proposed that the morpheme *bi* not only is responsible for the comparative meaning, i.e., the greater-than relation, but is also a standard-introducer that projects layered standard phrases each of which is an argument of the predicate of comparison. That is, the above two components of meanings are lumped together as a single meaning of *bi* as shown by (96) below. (96b) is a generalized and more simplified version of (96a), where $\vec{a}$ represents a series of arguments (See Lin (2009) for more details of the generalized version).

(96) a. $[\![bi]\!] = (\lambda 1)^i(\lambda i)^j(\lambda w)^k\lambda x\lambda\wp_{<d,<(1),<(i),<(e),<e,t>>>>>}(\lambda l')^i(\lambda i')^j(\lambda z)^k\lambda y[\iota_{max}d$
$[\wp(d)(l')(i')(z)(y) > \iota_{max}\, d\, [\wp(d)\ (l)(i)(w)(x)]$

b. $[\![bi]\!] = \lambda\vec{a}_i\lambda\ \wp_{<d,<\vec{a},t>>>}\lambda\vec{a}_{i'}[\iota_{max}\, d\, [\wp(d)(\vec{a}_{i'})> \iota_{max}\, d\, [\wp(d)\,(\vec{a}_i)]$,
where $|\vec{a}| \geq 1$.

Though this analysis might work well for those *bi* comparatives without an overt degree morpheme such as *Zhangsan bi Lisi gao* 'Zhangsan is taller than Lisi', as pointed out by Liu (2011), it might be problematic for sentences with an overt

comparative morpheme such as *geng* in *Zhangsan bi Lisi geng gao* 'Zhangsan is even taller than Lisi'.[11] For this kind of example, it is clear that *bi* is only an element that introduces the standard(s) of comparison. This view might be correct. Equality comparatives such as (97) or negative inferiority comparatives such as (98) point to the same conclusion.

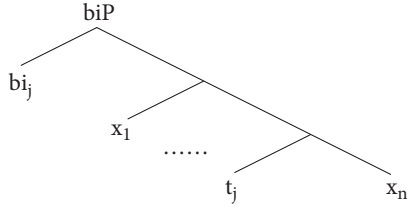
(97) Zhangsan gen Lisi yiyang gao
Zhangsan with Lisi same tall
'Zhangsan is as tall as Lisi.'

(98) Zhangsan bu xiang Lisi nayang tiexin
Zhangsan not like Lisi that sweet
'Zhangsan is not as sweet as Lisi.'

In (97), *gen* 'with' is a standard-introducer and *yiyang* 'same' a degree morpheme; in (98), *xiang* 'like' is a standard-introducer and *nayang* 'that manner' a degree morpheme. These two examples show that there is a division of labor between a standard-introducer and a degree morpheme. Given this, it is reasonable to say that in *bi*-comparatives, *bi* is only a standard-introducer and the degree meaning is the job of a covert degree morpheme when there is no overt one present.

In light of the above discussion, I would like to revise the original semantics of *bi* given in (96), letting *bi* be a pure standard-introducer. A first attempt is to say that a *bi*-phrase adjoined to the predicate of comparison introduces an n-tuple symbolized as '$\vec{a}$' below, i.e., an ordered set of n elements ($x_1 \ldots x_n$), in contrast to a series of target constituents symbolized as '$\vec{a}$'. This n-tuple will serve as the standard(s) of comparison in semantic composition.

(99) a.



b. $[\![\text{bi}]\!] = \lambda x_n \ldots \lambda x_1.(x_1, \ldots, x_n)$

c. $[\![\text{biP}]\!] = (x_1 \ldots x_n) = \vec{a}$

On the other hand, we can abstract the degree meaning from the original denotation of *bi* in (96) and get the degree meaning of the covert MORE_P, as given below:

11. Note that *geng* is not necessarily a comparative morpheme. It can be the case that it only carries a presupposition that both the target and the standard satisfy the description of the predicate of comparison and the comparative meaning is the job of the covert $MORE_C$.

(100) $[\![\text{MORE}_P]\!] = \lambda\wp_{<d,<\vec{a},t>>>}\lambda\vec{a}\lambda\vec{a'}[\iota_{max}\, d[\wp(d)(\vec{a'})] > \iota_{max}\, d[\wp(d)\,(\vec{a})]]$,
where '$\vec{a}$' and '$\vec{a'}$' represent a series of standard and target constituents, respectively.

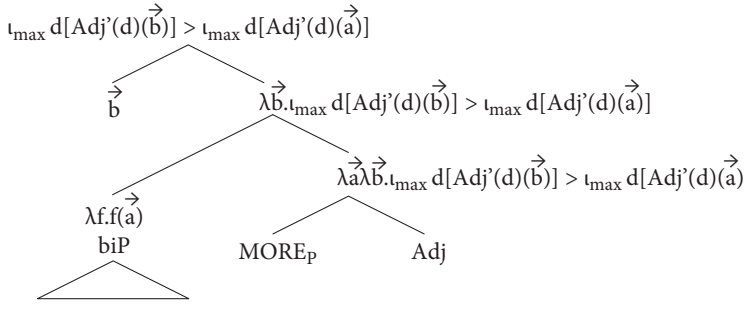
In the above solution, the task of *bi* is only to form a series of arguments that are in contrast to the target arguments. By contrast, the comparative degree morpheme, be it overt or covert, is the core of the semantics of degree. It takes the predicate of comparison as the first argument to form a comparative predicate. This comparative predicate then requires two arguments, one being a series of standard arguments and the other being a series of target arguments, to compare their degrees with respect to the dimension denoted by the predicate.

Such a solution is not the only imaginable one. Thanks to Chris Kennedy (personal communication), an alternative approach would be to treat *bi* as denoting a relation between a series of arguments and a comparative predicate as given in (101). In this analysis, *bi* is a mediator that connects a comparative predicate and makes a series of standard arguments available for it.

(101) $[\![\text{bi}]\!] = \lambda\vec{a}\lambda f.f(\vec{a})$, where $|\vec{a}| \geq 1$.

Under this analysis of *bi* and the denotation of the degree morpheme in (100), the semantic computation of a comparative would look like (102).

(102)



No matter whether we adopt the first or second solution, the phrasal approach as defended by Lin (2009) is now immune from Liu's criticism that there should be a division of labor between a standard-introducer and a degree operator.

Before ending this section, I would like to show that a phrasal approach may also deal with verbal comparatives successfully, which as remarked, are a challenge to a clausal approach.

Li (2015) is the first to provide a detailed analysis of verbal comparatives in Chinese. Since the differential phrase in a verbal comparative can be a definite DP or proper name, she argues that a non-degree-based approach to such constructions fares better than a degree-based approach. I will basically follow her approach in pursuing a non-degree-based approach to differential verbal comparatives.

According to Li (2015), one requirement of verbal comparatives is that except for the differential phrase, every element in the set of objects associated with the standard of comparison must correspond to one element of the same sort in the set of elements associated with the target of comparison. That is, there is a similarity requirement between compared items in terms of relevant properties. This requirement explains why (103) is acceptable in situation 1 and 2 below but sounds odd in situation 3 and 4.[12]

(103) Zhangsan (jintian) bi Lisi (zuotian) duo-mai-le yi-ben shu/aoman
Zhangsan today than Lisi yesterday more-buy-ASP one-CL book/pride
yu pianjian
and prejudice
'Zhangsan bought one more book today than Lisi did yesterday.'
'Zhangsan bought the additional book, Pride and Prejudice, that Lisi didn't.'

(104) a. Situation 1
The set of things Zhangsan bought: {novel 1, novel 2, novel 3, novel 4}
The set of things Lisi bought: {novel 1, novel 2, novel 3}
b. Situation 2
The set of things Zhangsan bought: {pen, hat, tape, novel}
The set of things Lisi bought: {pen, hat, tape}
c. Situation 3
The set of things Zhangsan bought: {pen, hat, tape, novel}
The set of things Lisi bought : {apple, cloth, battery}
d. Situation 4
The set of things Zhangsan bought: {novel 1, novel 2, novel 3, novel 4}
The set of things Lisi bought: {novel 1, novel 2, pen }

In light of this requirement, I define a matching function which is injective, one to one and order-preserving as given in (105), which is similar to Li's (2015) use of a mapping function.

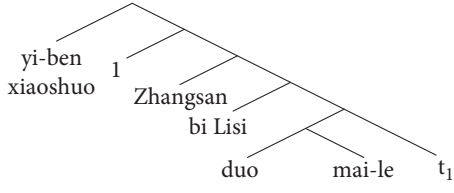
(105) Matching Function (definition adopted from Luo 2011: 128)
Let A and B be sets, π: A → B is a matching function *iff*
i. i. $\forall x \in A\ \exists!y(y \in B \rightarrow \pi(x) = y)$

12. The interpretation of verbal comparatives also has an exhaustiveness requirement not discussed in Li (2015). This requirement dictates that the referent of the differential object is the only object that is true of the target of comparison but not true of the standard of comparison. Take (103) for instance. The novel denoted by the differential DP *yi-ben shu* 'one book' must be the only additional book that Zhangsan bought. Due to space constraint, I will not discuss how this exhaustiveness effect is captured.

ii. For $\forall x_1, x_2 \in A, x_1 \leq x_2 \Rightarrow \pi(x_1) \leq \pi(x_2)$
iii. $\forall x_1, x_2 \in A: x_1 \neq x_2 \rightarrow \pi(x_1) \neq \pi(x_2)$

With the above matching function in mind, let us now see how the meaning of *duo* 'many/more' in differential verbal comparatives can be defined when it combines with a transitive verb as in (103). I analyze *duo* in (103) as the core of the sentence with *n* arguments depending on whether time, location, and so on are also present (see Lin (2009) for more discussions on this point). But for the sake of illustration and simplicity, let us ignore time and location, as this does not affect the analysis. When these expressions are present, we only need to add more variables to the argument structure. I also assume that at LF the differential phrase is raised to the periphery position, so (103) has a structure like (106) with the category labels ignored.

(106)



In this configuration, *duo* takes the transitive verb as its first argument, followed by the differential phrase as the second argument. After that, the standard of comparison and the target of comparison are the third and fourth arguments. Here is the denotation of *duo* that is required to compute the semantics of (106).

(107) $[\![\text{duo}]\!] = \lambda P_{<e,<e,t>>}\lambda k_e\lambda y_e\lambda x_e\exists\pi_{<e,e>}[\forall Q_{<e,t>}\forall u_e[Q(u) \wedge P(u)(y) \rightarrow Q(\pi(u)) \wedge P(\pi(u))(x)] \wedge P(k)(x) \wedge \neg\exists u_e[\pi(u) \leq k \wedge P(u)(y)]]$, where π is a matching function as is defined in (105).

In (107), the variables *P*, *k*, *y*, *x* correspond to the transitive verb, the differential phrase, the standard of comparison and the target of comparison, respectively. The symbol '≤' stands for a part-of relation. The first part of the denotation involving universal quantification captures the type-matching requirement. It says that for every property *Q* that an object *u* has such that the standard of comparison has a *P* relation to *u*, the target of comparison has the same *P* relation to *u*'s counterpart via the matching function π and *u*'s counterpart is also a *Q*. This guarantees that if the standard of comparison buys a novel, then the target of comparison must also buy a novel and if the standard of comparison buys a pen, then the target of comparison must also buy a pen and so on and so forth. The second part captures the differential comparative meaning. It says that the differential phrase *k* has a *P* relation to the target of comparison and *k* contains no counterpart element in the domain of π that bears the same *P* relation to the standard of comparison. In

other words, only the target of comparison has a *P* relation to *k* but the standard of comparison has no element from the domain of π which can be mapped to (part of) *k* and which bears a *P* relation.

To illustrate, (108) is the semantic composition of (103).

(108) a. $[\![\text{duo mai-le}]\!]^g = \lambda k_e \lambda y_e \lambda x_e \exists \pi_{<e,e>} [\forall Q_{<e,t>} \forall u_e [Q(u) \wedge \text{bought'}(u)(y) \rightarrow Q(\pi(u)) \wedge \text{bought'}(\pi(u))(x)] \wedge \text{bought'}(k)(x) \wedge \neg \exists u_e [\pi(u) \leq k \wedge \text{bought'}(u)(y)]]$

b. $[\![\text{duo mai-le } t_1]\!]^g = \lambda y_e \lambda x_e \exists \pi_{<e,e>} [\forall Q_{<e,t>} \forall u_e [Q(u) \wedge \text{bought'}(u)(y) \rightarrow Q(\pi(u)) \wedge \text{bought'}(\pi(u))(x)] \wedge \text{bought'}(g(t_1))(x) \wedge \neg \exists u_e [\pi(u) \leq g(t_1) \wedge \text{bought'}(u)(y)]]$

c. $[\![\text{ Zhangsan bi Lisi duo mai-le } t_1]\!]^g = \exists \pi_{<e,e>} [\forall Q_{<e,t>} \forall u_e [Q(u) \wedge \text{bought'}(u)(\text{Lisi'}) \rightarrow Q(\pi(u)) \wedge \text{bought'}(\pi(u))(\text{Zhangsan'})] \wedge \text{bought'}(g(t_1))(\text{Zhangsan'}) \wedge \neg \exists u_e [\pi(u) \leq g(t_1) \wedge \text{bought'}(u)(\text{Lisi'})]]$

d. $[\![1 \text{ Zhangsan bi Lisi duo mai-le t\_1}]\!]^g = \lambda k_e \exists \pi_{<e,e>} [\forall Q_{<e,t>} \forall u_e [Q(u) \wedge \text{bought'}(u)(\text{Lisi'}) \rightarrow Q(\pi(u)) \wedge \text{bought'}(\pi(u))(\text{Zhangsan'})] \wedge \text{bought'}(k)(\text{Zhangsan'}) \wedge \neg \exists u_e [\pi(u) \leq k \wedge \text{bought'}(u)(\text{Lisi'})]]$

e. $[\![\text{yiben xiaoshuo}]\!]^g = \lambda P_{<e,t>} \exists y_e [\text{novel'}(y) \wedge P(y)]$

f. $[\![\text{yiben xiaoshuo 1 Zhangsan bi Lisi duo mai-le } t_1]\!]^g = \exists y_e \exists \pi_{<e,e>} [\text{novel'}(y) \wedge [\forall Q_{<e,t>} \forall u_e [Q(u) \wedge \text{bought'}(u)(\text{Lisi'}) \rightarrow Q(\pi(u)) \wedge \text{bought'}(\pi(u))(\text{Zhangsan'})] \wedge \text{bought'}(y)(\text{Zhangsan'}) \wedge \neg \exists u_e [\pi(u) \leq y \wedge \text{bought'}(u)(\text{Lisi'})]]$

The final truth conditions in (108f) amount to the following: For every *u* that has the property *Q* such that Lisi bought *u*, Zhangsan bought *u*'s counterpart which is also a Q and there is a y that is a novel and Zhangsan bought *y* and there is no entity u that Lisi bought which can be mapped via π to any part of y.

When the indefinite differential DP in (103) is replaced with a definite differential DP such as *zhe-ben xiaoshuo* 'this novel', the result is pretty much the same except that the variable *y* in (108f) is replaced by the referent denoted by *zhe-ben xiaoshuo* 'this novel' and the existential quantifier binding *y* is taken away. To save space, I will not repeat the details. It suffices to emphasize that the proposed analysis is not only a phrasal analysis but is non-degree-based. I conclude that a phrasal analysis is able to deal with both regular *bi*-comparatives and differential verbal *bi*-comparatives. This is a plus that a clausal approach lacks.

8. Conclusion

This article provides a comprehensive review of the recent debate between the clausal and phrasal approaches to Chinese comparatives. I examined how the different analyses of the clausal approach such as Liu (2011, 2014), Hsieh (2017) and Erlewine (2018) meet the challenges imposed by subcomparatives and embedded standards and argued that their new solutions to those two types of constructions are not successful. In addition, evidence was presented to show that most, if not all, of their arguments for the clausal approach are not cogent. In particular, it was shown that there is no evidence for the rule of backward predicate deletion in Mandarin Chinese, which is required by any analysis under the clausal approach. The existing counter-arguments against the phrasal approach were also reviewed and shown not to necessarily hold. To the contrary, evidence based on comparatives with a differential phrase was presented to challenge the clausal approach. Finally, this article concludes by fine-tuning the author's earlier semantic proposal. I showed that the new semantics not only circumvents the problems of that earlier proposal but may deal with differential verbal comparatives in a way that the clausal approach may not.

References

Bartos, Huba. 2019. The V-copy construction in Mandarin: A case temporally reopened. In *Interfaces in Grammar*, Jianhua Hu & Haihua Pan (eds), 167–205. Amsterdam: John Benjamins. https://doi.org/10.1075/lfab.15.07bar

Bender, Emily. 2000. The syntax of Mandarin ba: reconsidering the verbal analysis. *Journal of East Asian Linguistics* 9(2): 105–145. https://doi.org/10.1023/A:1008348224800

Bhatt, Rajesh & Pancheva, Roumyana. 2004. Late merger of degree clauses. *Linguistic Inquiry* 35(1):1–45. https://doi.org/10.1162/002438904322793338

Bhatt, Rajesh & Takahashi, Shoichi. 2007. Direct comparisons: Resurrecting the direct analysis of phrasal comparatives. In *Proceedings of SALT 17*, Tova Friedman & Masayuki Gibson (eds), 19–36. Ithaca: Cornell University. https://doi.org/10.3765/salt.v17i0.2958

Bhatt, Rajesh & Takahashi, Shoichi. 2011. Reduced and unreduced phrasal comparatives. *Natural Language & Linguistic Theory* 29(3): 581–620. https://doi.org/10.1007/s11049-011-9137-1

Bresnan, Joan. 1973. Syntax of the comparative clause construction in English. *Linguistic Inquiry* 4(3): 275–343.

Bresnan, Joan. 1975. Comparative deletion and constraints on transformations. *Linguistic Analysis*1(1): 25–74.

Chao, Yuen-Ren. 1968. *A Grammar of Spoken Chinese*. Berkeley: University of California Press.

Cheng, Lisa Lai-Shen. 2007. Verb copying in Mandarin Chinese. In *The Copy Theory of Movement*, Norbert Corver & Jairo Nunes (eds), 151–174. Amsterdam: John Benjamins. https://doi.org/10.1075/la.107.07che

Chomsky, Noam. 1977. On *wh*-movement. In *Formal Syntax*, Peter Culicover, Thomas Wasow & Adrian Akmajian (eds), 71–132. New York: Academic Press.

Cresswell, M. J. 1976. The semantics of degree. In *Montague grammar*, Barbara Hall Partee (ed), 261–292. New York: Academic Press. https://doi.org/10.1016/B978-0-12-545850-4.50015-7

Erlewine, Michael Yoshitaka. 2007. A New Syntax-Semantics for the Mandarin *Bi* Comparative. MA thesis, University of Chicago.

Erlewine, Michael Yoshitaka. 2018. Clausal comparison without degree abstraction in Mandarin Chinese. *Natural Language & Linguistic Theory* 36(2):445–482. https://doi.org/10.1007/s11049-017-9383-y

Ernst, Thomas & Wang, Chengchi. 1995. Object preposing in Mandarin Chinese. *Journal of East Asian Linguistics* 4(3): 235–260. https://doi.org/10.1007/BF01731510

Goodall, Grant. 1986. On argument structure and L-marking with Chinese ba. In *Proceedings of NELS 17*, Bernadette Plunket & Joyce McDonough (eds), 232–242. Amherst: Graduate Linguistics Student Association.

Gu, Yang & Guo, Jie. 2015. On the internal structure of comparative constructions: From Chinese and Japanese to English. In *Chinese syntax in a cross-linguistic perspective*, Yenhui Audrey Li, Andrew Simpson & Weitien Dylan Tsai (eds), 334–374. Oxford: Oxford University Press.

Guo, Jie. 2012. Form and meaning: Chinese adjectives and comparative constructions. PhD dissertation, The Chinese University of Hong Kong.

Guo, Jie & Gu, Yang. 2017. Hanyu bijiaoju yinjieci de gongneng tezheng zaixi [The properties of standard introducers in Chinese comparative constructions revisited]. *Yuyan Kexue* 16(6): 586–597.

Heim, Irene. 1985. Notes on comparatives and related matters. *Unpublished manuscript*, University of Texas at Austin.

Heim, Irene. 2000. Degree operators and scope. In *Proceedings of SALT 10*, Brendan Jackson & Tanya Matthews (eds), 40–64. Ithaca: Cornell University. https://doi.org/10.3765/salt.v10i0.3102

Hsieh, I-Ta Chris. 2017. On arguments against comparative deletion in Mandarin.*Tsing Hua Journal of Chinese Studies* 47(2): 255–287.

Huang, C.-T. James. 1982. Logical relations in Chinese and the theory of grammar. PhD dissertation, Massachusetts Institute of Technology.

Huang, C.-T. James. 1988. *Wo pao de kuai* and Chinese phrase structure. *Language* 64 (2): 274–311. https://doi.org/10.2307/415435

Huang, C.-T. James. 1999. Chinese passives in comparative perspective. *Tsing Hua Journal of Chinese Studies* 29: 423–509.

Huang, C.-T. James, Li, Y.-H. Audrey & Li, Yafei. 2009. *The Syntax of Chinese*. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9781139166935

Kennedy, Christopher. 1997. Projecting the adjective: The syntax and semantics of gradability and comparison. PhD dissertation, University of California, Santa Cruz.

Kennedy, Christopher. 2001. Polar opposition and the ontology of 'degrees'. *Linguistics and Philosophy* 24(1):33–70. https://doi.org/10.1023/A:1005668525906

Kennedy, Christopher & McNally, Louise. 2005. Scale structure, degree modification and the semantics of gradable predicates. *Language* 81(2):345–381. https://doi.org/10.1353/lan.2005.0071

Kennedy, Christopher. 2007. Modes of comparison. In *Proceedings of CLS 43*, Malcolm Elliott, James Kirby, Osamu Sawada, Eleni Staraki & Suwon Yoon (eds), 141–165. Chicago: Chicago Linguistic Society.

Koopman, Hilda. 1984. The syntax of verbs: from verb movement rules in the Kru languages to universal grammar. PhD dissertation, Tilburg University.

Lechner, Winfried. 2001. Reduced and phrasal comparatives. *Natural Language & Linguistic Theory* 19(4):683–735. https://doi.org/10.1023/A:1013378908052

Li, Shan. 1994. *Xiandai Hanyu Beiziju Yanjiu* [A Study of Passives in Modern Chinese]. Beijing: Beijing Daxue Chubanshe.

Li, Y.-H. Audrey. 1990. *Order and Constituency in Mandarin Chinese*. *Studies in Natural Language and Linguistic Theory*. Dordrecht: Kluwer Academic Publishers.

Li, Xiao. 2015. Degreeless comparatives: the semantics of differential verbal comparatives in Mandarin Chinese. *Journal of Semantics* 32(1): 1–38. https://doi.org/10.1093/jos/fft013

Lin, Jo-wang. 1998. Distributivity in Chinese and its implications. *Natural Language Semantics* 6(2): 201–243. https://doi.org/10.1023/A:1008299031574

Lin, Jo-Wang. 2009. Chinese comparatives and their implicational parameters. *Natural Language Semantics* 17(1): 1–27. https://doi.org/10.1007/s11050-008-9033-3

Liu, Chen-Sheng Luther. 1996. A note on Chinese comparatives. *Studies in the Linguistic Sciences* 26: 217–235.

Liu, Chen-Sheng Luther. 2011. The Chinese bi comparative. *Lingua* 121(12): 1767–1795. https://doi.org/10.1016/j.lingua.2011.07.002

Liu, Chen-Sheng Luther. 2014. Comparatives. In *The handbook of Chinese linguistics*, C.-T. James Huang, Y.-H. Audrey Li & Andrew Simpson (eds), 342–366.Wiley Blackwell. https://doi.org/10.1002/9781118584552.ch13

Luo, Qiongpeng. 2011. *Mei* and *dou* in Chinese: A tale of two quantifiers. *Taiwan Journal of Linguistics* 9(2): 111–158.

Luo, Qiongpeng. 2017. Hanyu "bi" zi bijiaoju de jufa han yuyi wenti [The syntax and semantics of Mandarin *bi* comparatives]. *Xiandai Waiyu* 3: 324–335.

Merchant, Jason. 2001. *The Syntax of Silence: Sluicing, Islands, and the theory of Ellipsis*. New York : Oxford University Press.

Merchant, Jason. 2008. Variable Island Repair under Ellipsis. In *Topics in Ellipsis*, Kyle Johnson (ed), 132–153. Cambridge: Cambridge University Press.

Montague, Richard. 1973. The proper treatment of quantification in ordinary English. In *Approaches to Natural Language*, K.J.J. Hintikka, J.M.E. Moravcsik & P. Suppes (eds), 221–242. Dordrecht: Reidel. Reprinted in Montague 1974, 247–270. https://doi.org/10.1007/978-94-010-2506-5_10

Paul, Waltraud. 1993. A non-deletion account of the comparative construction in Mandarin Chinese. *Cahiers de Linguistique – Asie Orientale* 22 (1): 9–29. https://doi.org/10.1163/19606028-90000361

Paul, Waltraud. 2002. Sentence-internal topics in Mandarin Chinese: The case of object preposing. *Language and Linguistics* 3 (4): 695–714.

Pesetsky, David & Torrego, Esther. 2007. The syntax of valuation and the interpretability of features. In *Phrasal and Clausal Architecture: Syntactic Derivation and Interpretation*, Simin Karimi, Vida Samiian & Wendy K. Wilkins (eds), 262–294. Amsterdam : John Benjamins. https://doi.org/10.1075/la.101.14pes

Rullmann, Hotze. 1995. Maximality in the semantics of wh-constructions. PhD dissertation, University of Massachusetts Amherst.

Schwarzschild, Roger & Wilkinson, Karina. 2002. Quantifiers in comparatives: A semantics of degree based on intervals. *Natural Language Semantics* 10(1):1–41. https://doi.org/10.1023/A:1015545424775

Shi, Dingxu. 2005. "Bei" ziju de guishu [On "bei" passives in Chinese]. *Hanyu Xuebao* 1: 38–48.
Sybesma, Rint. 1999. *The Mandarin VP*. Dordrecht: Kluwer Academic Publishers. https://doi.org/10.1007/978-94-015-9163-8
Tang, Sze-wing. 2010. *Xingshi Hanyu Jufaxue [Formal Chinese Syntax]*. Shanghai: Shanghai Educational Publishing house.
Travis, Lisa. 1984. Parameters and effects of word order variation. PhD dissertation, Massachusetts Institute of Technology.
Tsao, Feng-fu. 1989. Comparison in Chinese: A topic-comment approach. *Tsing Hua Journal of Chinese Studies* 19(1):151–189.
von Stechow, Arnim. 1984a. Comparing semantic theories of comparison. *Journal of Semantics* 3(1–2):1–77. https://doi.org/10.1093/jos/3.1-2.1
von Stechow, Arnim. 1984b. My reaction to Cresswell's, Hellan's, Hoeksema's and Seuren's comments. *Journal of Semantics* 3(1–2):183–199. https://doi.org/10.1093/jos/3.1-2.183
Xiang, Ming. 2003. A phrasal analysis of Chinese comparatives. In *Proceedings from the Annual Meeting of the Chicago Linguistic Society* 39, Number 1, 739–754. Chicago: Chicago Linguistic Society.
Xiang, Ming. 2005. Some topics in comparative constructions. PhD dissertation, Michigan State University.
Yue-Hashimoto, Anne. 1971. Mandarin syntactic structures. *Unicorn* 8:1–149. Princeton: Chinese Linguistics Project and Seminar, Princeton University.
Zou, Ke. 1993. The syntax of the Chinese Ba construction. *Linguistics* 31(4): 715–736. https://doi.org/10.1515/ling.1993.31.4.715

Head dependency and degree words in Mandarin

Niina Ning Zhang
National Chung Cheng University

In Mandarin Chinese, the degree word *ji* 'extremely' can occur either to the left of a gradable expression, like other degree words, or at the end of a sentence, followed by the particle *le*. Meanwhile, head dependencies have been recognized to be either syntactic or non-syntactic, and syntactic head dependencies can be established by either a movement chain or a non-movement dependency. This short paper argues for two dependencies in the *ji*-final construction in Mandarin: one is seen in the syntactic Focus Agree dependency of the non-temporal sentence-final *le*, and the other is seen in the non-syntactic head dependency of the degree word *ji*.

1. Introduction

To date, various types of head dependencies have been recognized in the literature. With regard to head *movement*, it has been argued that this can be either syntactic or morphological (Harizanov & Gribanova 2019; cf. Arregi & Pietraszko 2020). The former head dependency type has semantic effects but does not form a morphological cluster, whereas the latter has no semantic effect but does form a morphological cluster (Harizanov and Gribanova 2019). For example, the movement of *has* in (1a) is syntactic, whereas the movement of *mangeait* 'eat' in (1b) is morphological, according to Harizanov & Gribanova.

(1) a. Has Paul <has> arrived on campus?
b. Astérix mangeait souvent <mangeait> du sanglier.
Asterix eat.3.IMPF often of boar
'Asterix often ate boar.'

Non-movement head dependencies are seen in, for example, the tense-Agree relation between T and v in English sentences in which T is not realized by any overt element, as in the translation of (1b). This Agree relation is syntactic, valuing or

https://doi.org/10.1075/la.272.10zha

licensing the tense feature of v. Considering the table in (2), we might wonder whether there is any fourth type of head dependency that is both (a) non-syntactic, and (b) not established via movement. In other words, is it possible to merge, rather than move, a head element to a non-canonical position without any semantic effect?

(2) Head dependency patterns

	Movement	**Non-movement**
Syntactic	e.g., (1a)	e.g., T-v tense-Agree in (1b)'s English translation
Non-syntactic	e.g., (1b)	**?**

In order to answer this question, we investigate the relation between the two positions of the degree word *ji* 'extremely' in Mandarin. (3a) and (3b) mean the same, but *ji* occurs in its canonical position in (3a), i.e., preceding the gradable expression *piaoliang* 'beautiful', but it follows *piaoliang*, and is followed by the particle *le* in (3b).[1] The latter construction, which is not canonical, is called the JI-LE construction in this paper. I will call the relation between the *ji* in its canonical position (as seen in (3a)) and the *ji* in the non-canonical position (as seen in (3b)) JI-JI relation.

(3) a. Taiwan ji piaoliang. *Canonical*
Taiwan extremely beautiful
b. Taiwan piaoliang ji-le. *The JI-LE construction*
Taiwan beautiful extremely-PRT
a & b: 'Taiwan is extremely beautiful.'

Section 2 examines the JI-JI relation. I report certain formal properties of *ji* in the JI-LE construction. Section 3 investigates formal properties of the sentence-final *le* in the construction. Based on new observations and analysis of the properties of the two crucial functional elements, in Section 4, I propose that the two positions of *ji* in (3a) and (3b) establish a non-movement head dependency and consequently are an instantiation of the fourth cell in (2), predicted to occur but so far undocumented (to the best of my knowledge). Section 5 is a brief summary.

1. The JI-LE construction is different from the *zhi-ji* 'to-extreme' construction, such as (i). In the latter construction, *ji* is not followed by *le*. I have been told that in the *zhi-ji* construction, the final *ji* might be a nominal. I do not discuss this construction in this paper.

(i) Ci ren kewu zhi ji.
this person annoying to extreme
'This person is extremely annoying.'

2. Observations on *ji* in the JI-LE construction

In this section, I present four formal properties of the degree word *ji* in the JI-LE construction.

First, degree words can typically be predicates in other constructions (e.g., Corver 2000; Liu 2018), but *ji* in the JI-LE construction cannot serve as a predicate. For example, an A-not-A form of the auxiliary *shi* 'be' can regularly occur between a subject and a predicate, as seen in (4a), but it may not occur between an XP and *ji-le*, as seen in (4b). Additionally, a negation word can occur between a subject and a predicate, as seen in (5a), but it may not occur between an XP and *ji-le*, as seen in (5b). Adverbs may also occur between a subject and a predicate, as seen in (6a), but may never occur between an XP and *ji-le*, as seen in (6b). Thus, *ji-le* is not a predicate of the preceding XP.

(4) a. Taiwan shi-bu-shi piaoliang ji-le?
Taiwan be-not-be beautiful extreme-PRT
'Is Taiwan extremely beautiful?'
b. *Taiwan piaoliang shi-bu-shi ji-le?

(5) a. Taiwan bu-shi piaoliang ji-le.
Taiwan not-be beautiful extreme-PRT
'Taiwan is not extremely beautiful.'
b. *Taiwan piaoliang bu-shi ji-le.

(6) a. Taiwan {ye/queshi} piaoliang ji-le.
Taiwan also/indeed beautiful extreme-PRT
'Taiwan is {also/indeed} extremely beautiful.'
b. *Taiwan piaoliang {ye/queshi} ji-le.

Second, the two possible positions of *ji* do not correlate with any semantic effect. (3a) and (3b) mean the same. In the language, some other elements may also have multiple positions, but their different positions may correlate with different meanings. For example, the focus marker *zhi* 'only' is next to the adverbial *gen wo* 'with me' in (7a), but next to the verb *jie* 'borrow' in (7b). The two examples have different meanings in the default prosodic pattern.

(7) a. Ta zhi gen wo jie qian.
3SG only with 1SG borrow money
'He borrows money only from me.'
b. Ta gen wo zhi jie qian.
3SG with 1SG only borrow money
'He only borrows money from me.'

Third, there is no evidence for a rightward head movement relation between the canonical position of *ji* in (3a) and the non-canonical position of *ji* in (3b).

Fourth, there is also no evidence to show that the gradable expression moves to the left of *ji* to derive the JI-LE construction (cf. the *de-hen* construction; N. Zhang 2020).

Therefore, *ji* in (3b) can be assumed to be base-generated in the *ji-le* cluster in the sentence-final position, and merging *ji* in this position has no semantic effect. The JI-JI relation does not look like a syntactic relation.

3. Observations on S-*le* in the JI-LE construction

In this section, I show how the sentence-final *le* (S-*le*) in the JI-LE construction is different from the S-*le* seen in non-degree word constructions.

It is well-recognized that S-le expresses a change-of-state temporal reading (Li & Thompson 1981). However, the S-*le* of the JI-LE construction does not have any temporal or change-of-state meaning. This non-temporal S-*le* also occurs in the *tai* 'too', *ke* 'very', and *guoyu* 'exceeding' constructions, as seen in (8a), (8b), and (8c), respectively. *Tai* and *guoyu*, and *ke* in this use, as well as *ji*, are all degree words. They all occur with gradable expressions. Thus, the non-temporal S-*le* is associated with a degree word.

(8) a. Zhe ge xiaoxi tai youren le. (B. Zhang 2010: 250)
this CL news too attractive PRT
'The news it very attractive.'

b. Zher de fengjing ke mei le. (*ditto.*)
here DE scenery very beautiful PRT
'The scenery here is very beautiful.'

c. Ta guoyu zi-xin le.
he exceeding self-confident PRT
'He is over confident.'

My analysis of this non-temporal S-*le* has the following three parts.

A. All degree words intensify a gradable XP in their c-command domain, in addition to ruling out a comparative reading of the XP (see Liu 2010, Grano 2012, L. Zhang 2019, and N. Zhang 2021 for discussions of the latter function).

B. The non-temporal S-*le* has a Focus Agree relation with a degree word (cf. Shu, to appear). This is a syntactic dependency.

(9) … DEG … le

Focus Agree

C. The position of the non-temporal S-*le* is parallel to that of the word *eryi* 'only' (Erlewine 2017; N. Zhang 2019).

(10) Taiwan (zhi-shi) piaoliang eryi.
Taiwan only beautiful only
'Taiwan is only beautiful.'

Eryi always allows the focus marker *zhi-shi* 'only' to occur (N. Zhang 2019: fn. 3). It is higher than the surface position of the subject, c-commanding *zhi-shi*. We thus see a parallel correlation in the focus construction in (11a) and the degree construction in (11b):

(11) a. [… *zhi-shi* … *eryi*]
b. [… DEG … *le*]

Importantly, the non-temporal S-*le* and *eryi* never co-occur. It is possible that they compete for the same syntactic position, and both have a focus Agree relation with a focus-relevant element in the clause.

(12) a. *Taiwan (tai/zhi-shi) piaoliang le eryi.
Taiwan too/only beautiful PRT only
b. *Taiwan (tai/zhi-shi) piaoliang eryi le.
Taiwan too/only beautiful only PRT

Thus, the non-temporal S-*le* has a Focus Agree relation with a degree word, and this relation is a syntactic relation.

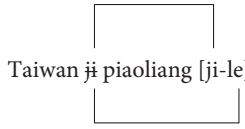
4. The head dependencies in the JI-LE construction

Based on the discussion in the previous sections on *ji* and the S-*le* in the JI-LE construction, I now propose my analysis of the *ji*-dependencies in the construction.

Since the JI-JI relation **is not derived** by movement, and since the Focus Agree relation between a degree word and the S-*le* **exists independently**, I claim that there is a non-syntactic and non-movement head dependency between the canonical position of a degree word and *ji* in the JI-LE construction. Thus, there are two dependencies associated with the cluster *ji-le*: there is a head dependency between the canonical position of a degree word and the clause-final *ji*, as shown by the lines above the example in (13); and there is a Focus Agree relation between the canonical position of a degree word and the clause-final *le*; as shown by the lines below the example in (13). The former relation is not syntactic, whereas the latter relation is.

head dependency (non-syntactic)

(13) head dependency (non-syntactic)



Focus Agree (syntactic)

This analysis captures the properties of the JI-LE constructions. Specifically, first, since the JI-JI relation is not syntactic-semantic, *ji* is interpreted in its canonical position, i.e., the low link of the dependency. Second, the low link of the dependency is obligatorily deleted, as in other kinds of head dependencies. Third, the high link forms a morphological cluster with *le*, as in a non-syntactic head movement.

The head dependency between the two positions of *ji*, i.e., the JI-JI relation, is parallel to the non-syntactic head movement, as in the French example in (1b), in two aspects: it is not semantic, and its high link forms a morphological cluster with another element. But the dependency is not derived by movement of any kind.

Two additional issues need to be clarified. One is that if the lower link of the JI-JI relation is obligatorily deleted, there is no null element in this relation. Also, we do not assume that the S-*le* has an Agree relation with any null element in the construction. Meanwhile, the obligatory deletion is not random. Therefore, the unacceptability of (14) is expected.

(14) *Taiwan ji piaoliang [~~ji~~-le].

Obligatory deletion is independently observed in other constructions, such as comparative constructions in English, as shown in (15a). In such deletion, the choice of the deleted link is not random, as shown by the acceptability contrast between (15a) and (15b).

(15) a. David is more ambitious than Joe is ~~ambitious~~.
b. *David is more ~~ambitious~~ than Joe is ambitious.

The other issue is the nature of the Head Movement Constraint (Travis 1984) in the syntactic and non-syntactic head dependencies. It seems that the constraint does not play a role in distinguishing the two types of head movement in (1a) and (1b). See Harizanov & Gribanova (2019) for a discussion of the issue. Since neither of the two dependencies in the JI-LE construction is a movement one, we do not discuss this constraint in our argumentation.

5. Conclusion

There is a head dependency between the canonical position of a degree word and *ji* in the JI-LE construction. The high link of the dependency forms a cluster with the non-temporal S-*le*, and the low link of the dependency gets deleted. The dependency is not syntactic and not a movement dependency. Consequently, the lower-right cell of the table in (2) may occur and is attested in the JI-LE construction in Mandarin.

Acknowledgments

Although I have never been Audrey Li's student, my academic life has long been influenced by her. I especially admire her research methodology: argumentation is always so logical and rich in evidence. For the research for my own contribution to her festschrift, I am grateful to the anonymous reviewers and Andrew Simpson for comments and suggestions. Remaining inadequacies are mine.

References

Arregi, Karlos & Asia Pietraszko. 2020. The ups and downs of head displacement. *To appear in Linguistic Inquiry*. lingbuzz/004096. https://doi.org/10.1162/ling_a_00377

Corver, Norbert. 2000. Degree adverbs as displaced predicates. *Italian Journal of linguistics* 12(1):155–191.

Erlewine, Michael Yoshitaka. 2017. Low sentence-final particles in Mandarin Chinese and the final-over-final constraint. *Journal of East Asian Linguistics* 26.1: 37–75. https://doi.org/10.1007/s10831-016-9150-9

Grano, Thomas. 2012. Mandarin hen and universal markedness in gradable adjectives. *Natural Language & Linguistic Theory* 30(2): 513–565. https://doi.org/10.1007/s11049-011-9161-1

Harizanov, Boris, and Vera Gribanova. 2019. Whither head movement?. *Natural Language & Linguistic Theory* 37(2): 461–522. https://doi.org/10.1007/s11049-018-9420-5

Li, Charles N., and Sandra A. Thompson. 1981. *Mandarin Chinese: A functional reference grammar*. Berkeley: University of California Press.

Liu, Chensheng. 2018. The relation between *hen* and *hen*. *Paper presented at the 12th Workshop on Formal Syntax & Semantics*, Kaohsiung, May 27–28.

Lü, Shuxiang. 1999. *Xiandai Hanyu Babai Ci* [800 words in Modern Chinese], Beijing: Shangwu Press.

Shu, Chih-hsiang. To appear. The focus component in degree constructions: some remarks on the *tai* construction (in Chinese). *Journal of Taiwanese Languages and Literature* 14.

Zhang, Bin. 2010. *Xiandai Hanyu miaoxie yufa* [Descriptive grammar of Modern Mandarin], Beijing: Shangwu Press.

Zhang, Linmin. 2019. The semantics of comparisons in Mandarin Chinese. In Sae-Youn Chao (ed.), *Proceedings of GLOW in Asia VII & SICOGG XXI: Universal Grammar and its Cross-linguistic Instantiation*. 616–625. *lingbuzz/004755*.

Zhang, Niina Ning. 2019. Sentence-final aspect particles as finite markers in Mandarin Chinese. *Linguistics* 57(5), 967–1023. https://doi.org/10.1515/ling-2019-0020

Zhang, Niina Ning. 2020. Low predicate inversion. *Journal of East Asian Linguistics* 29 (2): 159–207. https://doi.org/10.1007/s10831-020-09208-6

Zhang, Niina Ning. 2021. Two categorial issues of degree constructions in Mandarin. *Journal of East Asian Linguistics* 30(3), to appear.

Constraints on the representation of anaphoric definiteness in Mandarin Chinese

A reassessment

Andrew Simpson and Zoe Wu
University of Southern California / Pasadena City College

There is increasing evidence that languages may use distinct forms to encode definiteness in instances of anaphoric and non-anaphoric definiteness, for example, distinct determiners, or bare classifier vs. bare noun patterns. This chapter considers a recent, prominent claim in Jenks (2018) that such distinctions are systematically encoded in Mandarin Chinese via the presence vs. absence of demonstratives with a noun, and regulated by a principle *Index!,* which requires the use of overt marking of referential indices. The chapter argues that there is greater optionality in the forms used to represent definite NPs in Mandarin than assumed in Jenks' characterization, and that alternations between definite bare nouns and demonstrative-marked nouns are affected by issues of discourse coherence and parsing expectations.

1. Introduction

Much interest has recently been focused on the ways that languages may represent definite reference in different ways, depending on the nature of definiteness that is highlighted in specific contexts. In contrast to English, French and Spanish, which employ a single determiner for all typical instances of definite reference, languages such as Fering (Schwarz 2009, 2013) have been noted to have two distinct definite determiners, and these are used in different discourse situations. Fering's 'D-Article' (*di, det, dön*) is used in instances of anaphoric reference and when a referent is visible, while its 'A-article' (*a, at*) occurs with referents which are unique in a particular situation or a broader context, also with generic noun phrases, and in instances of bridging reference (where an element is identified by means of a connection to some other discourse referent). Related patterns have been reported in other varieties of Germanic (standard and regional forms of German, Dutch, Scandinavian (Ebert 1971a/b, Schwarz 2013, Löbner 2011, Ortmann 2014), Hausa (Afroasiatic; Jaggar

https://doi.org/10.1075/la.272.11sim

1985), Akan (Niger-Congo, Arkoh, and Matthewson 2013) and Lakhota (Siouan; Lyons 1999), as well as other languages. A broad generalization which emerges from these works is that one mode of representation is typically used in instances of anaphoric reference, when an element refers back to another individual/object previously introduced into the discourse – 'anaphoric definites' – while a second representational form generally occurs in instances of non-anaphoric definiteness when a noun phrase refers to a unique individual in a particular situation/context – 'unique (non-anaphoric) definites'. In Chinese, such distinctions have also been noted to occur, and speakers of varieties of Wu Chinese have been found to selectively use either bare nouns or nouns combined with a classifier in ways that mirror the unique vs. anaphoric division in languages with definite determiners (Li and Bisang 2012, Simpson 2017).

Extending the scope of such studies in Chinese, a recent prominent work focused heavily on Mandarin, Jenks (2018), has suggested that a parallel division in the representation of definiteness may be performed by the presence vs. absence of *demonstratives* with a noun. Jenks argues that anaphoric definites in Mandarin require the presence of a demonstrative as the result of a principle *Index!* which necessitates that referential indices are projected in anaphoric relations. Unique (non-anaphoric) definites, by way of contrast, are noted to occur as bare nouns, not requiring any referential index. Such differences are illustrated in (1) and (2). In example (1), the anaphoric linking of *nansheng* 'male student' to its antecedent in the preceding sentence requires the use of a demonstrative, whereas the interpretation of *shichang* 'market' as a unique non-anaphoric definite is encoded without a demonstrative, by means of a bare noun.

(1) jiaoshi li zuo-zhe yi ge nansheng he yi ge nüsheng.
classroom inside sit-PROG one CL boy and one CL girl
'There are a boy and a girl sitting in the classroom.'
wo zuotian yudao #(na ge) nansheng.
I yesterday meet that CL boy
'I met the boy yesterday.' (Jenks 2018: 510)

(2) wo xianzai qu shichang mai dongxi.
I now go market buy thing
'I'm going to the market now to buy some things.'

Such a difference in the way that definiteness is represented in Mandarin Chinese is noted to exhibit a potentially confounding complication, however, relating to the syntactic position occupied by the definite noun phrase. Jenks suggests that 'Mandarin shows a general requirement for demonstratives with anaphoric definite noun phrases with the exception of subject positions, which also allow a bare

noun.' (Jenks 2018: 511). In such cases, it is proposed that the subjects are in fact topics and that the status of a noun phrase as a topic pragmatically neutralizes the effect of *Index!* The present chapter takes Jenks study of definiteness in Mandarin as its starting point and investigates further the issue of optionality in the way that anaphoric definite reference can be encoded in Mandarin – either by means of a demonstrative or with a bare noun. Considering a wider body of empirical patterns, it is noted that bare nouns may actually be used in instances of anaphoric definite reference in a much broader range of syntactic positions than assumed in Jenks' characterization, which calls into question the status of the principle *Index!* as an across-the-board constraint in Mandarin Chinese and leads to a reassessment of the way Mandarin should typologically be categorized in terms of the strategies it employs to encode anaphoric definiteness. The chapter compares Mandarin with other languages and varieties which more rigidly require the overt representation of definiteness, such as English, French, and Cantonese, and argues that Mandarin, by comparison, is still at a much earlier stage of development in the grammaticalization of definiteness-marking in which genuine optionality is grammatically permitted in the encoding of NPs interpreted as anaphoric definites, although such optionality may be conditioned by certain, additional discourse factors.

The structure of the chapter is as follows. Section 2 introduces the critical oppositions examined in the chapter, and how two representational forms may be used in various languages to encode anaphoric and unique, non-anaphoric definiteness. Section 2 also presents Jenks' Mandarin Chinese data set and his characterizations of this data, along with the key ideas of the analysis in Jenks (2018). Section 3 then adds a more extended set of patterns from Mandarin probing the ways that anaphoric noun phrases may be encoded in both argument and adjunct positions, and concludes that the use of bare nouns in such positions is in principal significantly more available than suggested by the data reviewed in Section 2, leading to questions about the generalizations drawn from Jenks' more restricted data set. Section 4 compares Mandarin with three other languages/varieties which similarly lack definite determiners – Korean, Hindi, and Cantonese – and reports on similarities and differences in the representation of definite anaphoric noun phrases across these languages, with the goal of establishing how *Index!* may (or may not) apply as a cross-linguistic constraint. Section 5 summarizes what has been concluded from earlier sections and offers a different assessment of optionality attested in the representation of anaphoric definiteness.

2. Two ways to encode definiteness

Studies of languages which allow for definiteness to be represented in different ways have repeatedly observed that one form is regularly used in instances of anaphoric definite reference, and a second pattern occurs with situationally or globally unique definites, whose identity is not established by any discourse-anaphoric relation. The pioneering work in this area was carried out in Ebert (1971a, b) and Schwarz (2009), where Fering and German were noted to use different determiner forms to encode anaphoric and non-anaphoric unique definite NPs, as illustrated in the Fering examples (3) and (4) from Ebert (1971b, reproduced in Schwarz 2013)

(3) Oki hee an hingst keeft. *A/Di hingst haaltet.
Oki has a horse bought the/the horse limps
anaphoric definite reference
'D-article' used
'Oki has bought a horse. The horse limps.'

(4) Ik skal deel tu a/*di kuupmaan. *non-anaphoric unique definite*
I must down to the/the grocer *'A-article' used*
'I have to go down to the grocer.'

Following similar observations in other languages with overt determiners (Löbner 2011, Arkoh, and Matthewson 2013, Ortmann 2014), work on various numeral classifier languages has established that languages which do not have definite articles may also make use of two distinct overt forms to represent anaphoric and non-anaphoric definite NPs. Simpson and Biswas (2016) document a definiteness split Bangla, where the combination of a classifier and noun (with no accompanying numeral) – a 'bare classifier pattern' – is used for anaphoric definite reference, as illustrated in (5), while a bare noun occurs in instances of non-anaphoric definiteness, as seen in (6).

(5) kalke ram Ek Ta kalo Tupi ar Ek Ta Sada Tupi kinechhe. kalo
yesterday Ram 1 CL black hat and 1 CL white hat bought black
Tupi *(Ta) or bORo hoechhe.
hat CL his big be
'Yesterday, Ram bought a black hat and a white hat. The black hat is too big for him.'

(6) Context: Every day on planet Varg, a security vehicle delivers one new prisoner to guards from the camp. Today the vehicle drives up, the back doors open out and no-one is inside.
The guard says:
kOedi kothay?
prisoner where
'Where is the prisoner?'

In different varieties of Wu Chinese, both Li and Bisang (2012) and Simpson (2017) note that bare noun and classifier + noun patterns are used in the same way, the former for situational/globally-unique definites, and the latter for anaphoric definiteness, as shown in (7) and (8) from Simpson (2017) with Jinyun Chinese:

(7) dʑiɔsɔ zõniɛɪ ji-dzaɪ njiəm mɔ-də. gɯlɛ gõ dzaɪ njiəm ha
Zhangsan yesterday 1-CL cow sell-ASP they say CL cow NEG
dɔ dʑiɛkõ.
be healthy
'Zhangsan sold a cow yesterday. They say the cow was not healthy.'

(8) Context: A firefighter at the scene of a car crash:
dʑiɔsɨyɛ leɪ tɕieɪkeɪ a? ŋə niɔ-a-dʑyo.
driver at where PRT I cannot-see
'Hey, where's the driver? I can't see him.'

These works make the point that the referential distinctions encoded via the selective use of determiners in Germanic, Akan and other languages may be reproduced by other means in languages where determiners have not developed, highlighting the fundamental nature of such distinctions. Simpson and Biswas (2016: 28) conclude their study of Bangla with the comment:

> This demonstrates that a classifier language such as Bangla which has neither definite or indefinite determiners is interestingly able to adapt another aspect of its functional inventory (the presence/absence of a classifier with a noun) to achieve highly similar results in the representation of different components of definiteness, suggesting that such referential complexity is significantly shared across languages at an underlying level, and simply realized by different overt mechanisms.
>
> (Simpson and Biswas 2016: 28)

Given such findings in (certain) languages where bare classifier patterns are present and used in frequent opposition to bare nouns to represent definite NPs, it would not be unexpected to attest the deployment of other elements to encode anaphoric vs. non-anaphoric definiteness in languages without determiners, and this is precisely what is suggested in Jenks (2018) for Mandarin Chinese, in its use of demonstratives with nouns vs. simple bare noun forms, as described and illustrated in 2.1.

2.1 Jenks (2018) and Mandarin Chinese

Jenks (2018) first observes that non-anaphoric unique definites occur as bare nouns (when not referenced with pronouns/pro), both in the case of immediate-situation definites, where an entity/individual is the only referent of its type in a particular situation, and with larger situation definites, where there is reference to an entity/individual that is unique in a broader context. Examples such as (9) and (10) illustrate

this patterning, drawn from other works on the structure and interpretation of noun phrases in Chinese. (9a/b) from Cheng and Sybesma (1999: 510) are examples of immediate-situation definites, while (10) an instance of a larger situation definite.

(9) a. Hufei he-wan-le tang.
Hufei drink-finish-ASP soup
'Hufei finished the soup.'
b. gou yao guo malu.
dog want cross road
'The dog wants to cross the road.' (Cheng and Sybesma 1999: 510)

(10) yueliang sheng shang lai le.
moon rise up come ASP
'The moon has risen.' (Chen 2004: 1165)

Jenks then presents a further range of elicited data suggesting that anaphoric definites are regularly coded in Mandarin by means of a demonstrative combined with a classifier and a noun, and may not occur as bare nouns, except when such referents occupy the (matrix) subject position. Jenks' examples demonstrating this distribution are reproduced in (11a–e). (11a) establishes a context in which two new referents are introduced in the context. (11b,c,e) indicate ways in which one of these two new referents can be referred back to by means of a demonstrative combined with a noun, but not with just a bare noun in direct object, indirect object and embedded subject position. (11d) shows that either a demonstrative-noun combination or a bare noun is, however, possible when the anaphoric definite occurs in matrix subject position.

(11) a. jiaoshi li zuo-zhe yi ge nansheng he yi ge nüsheng.
classroom inside sit-PROG one CL boy and one CL girl
'There are a boy and a girl sitting in the classroom.'
b. wo zuotian yudao #(na ge) nansheng.
I yesterday meet that CL boy
'I met the boy yesterday.'
c. wo dai gei #(na ge) nansheng yi ge liwu.
I bring give that CL boy one CL present
'I'm bringing a gift for the boy.'
d. (na ge) nansheng kanqilai you er-shi sui zuoyou.
that CL boy look have two-ten year or.so
'The male student looks twenty years old or so.'
e. wo bu renwei ?(na ge) nansheng hen youqu.
I NEG think that CL boy very interesting
'I don't think that boy is very interesting.'

Jenks' analysis of this paradigm builds on work in Chierchia (1998), Yang (2001), Dayal (2004, 2011), and Jiang (2012), and assumes that Mandarin employs type-shifting to effect the definite interpretation of bare nouns, but only in unique definite environments, resulting in the use of bare nouns to represent immediate and larger situation (non-anaphoric) definites (examples 9, 10). To account for the argued general absence of bare nouns in anaphoric definite reference, Jenks suggests that the relevant type-shifting operation available with nouns is unable to introduce a referential index necessary for anaphoric linking and identification. Demonstratives, however, are possible in such contexts, it is suggested, because such elements can introduce a referential index, licensing anaphoric construal with an appropriate antecedent, as in (the demonstrative variants of) examples (11b, c, and e). Demonstratives furthermore must occur in such cases of definite anaphoric reference, it is argued, because all referential indices must be represented overtly due to a principle which Jenks (2018: 524) dubs *Index!*

(12) *Index!*
Represent and bind all possible indices.

Finally, with regard to the exceptional case of subjects, Jenks proposes that bare nouns in subject positions are actually (continuing) topics and the 'pragmatic function of topic marking overrides and neutralizes the effect of *Index!* in such environments…: topics do not need to be indexed because they are salient members of the question under discussion' (Jenks 2018: 525). Anaphoric definites may therefore be realized in subject position either as demonstrative-classifier-noun combinations, or as bare nouns.

The patterns reported in Jenks characterize Mandarin as an interesting extension of the paradigms found in other languages in which anaphoric and unique definites are systematically coded in different ways by means of determiners or classifiers in opposition to bare nouns or nouns marked with a second, distinct determiner. Jenks' analysis is theoretically well-worked out and opens up new avenues for the cross-linguistic study and analysis of definiteness splits, bringing demonstratives into consideration as a marking strategy which may contrast with the use of bare nouns in languages without definite articles. However, with regard to Mandarin, Section 3, will now show that the descriptive conclusions in Jenks (2018) are actually not well-supported when a wider body of data is examined. This subsequently calls into question the formal status of *Index!* as a general principle regulating the representation of definite reference.

3. Probing the potential use of bare nouns as anaphoric definites in Mandarin

The Mandarin examples considered in Jenks (2018) involve a comparison of demonstrative and bare noun patterns of anaphoric definiteness in subject, object, and indirect object positions (11b–e). Here we will first look at the potential use of both forms of representation when an anaphoric definite occurs in other, pre-verbal positions, introduced by elements such as *ba* 把, *ti* 替, *gen* 跟 and *zai* 在 , before also reconsidering the acceptability of bare nouns as anaphoric definites when occurring as direct and indirect objects. Where semantically plausible, we present examples in which the animacy of the target noun is varied in order to ensure that human vs. non-human distinctions are not an interfering factor.[1]

3.1 NPs introduced by *ba* 把

When an anaphoric definite occurs as the object of *ba* 把 in pre-verbal position, as illustrated in examples (12–14), speakers consulted by the authors uniformly confirmed that either a demonstrative or a bare noun pattern is fully acceptable, hence bare nouns are not excluded from occurring in such a position when referring anaphorically to an element in a preceding sentence, and there is genuine optionality in the use of either demonstrative or bare noun pattern.

(12) a. jiaoshi-li zuo-zhe yi-ge nan-sheng he yi-ge
classroom-inside sit-ASP one-CL male-student and one-CL
nǚ-sheng.
female-student
'In the classroom were sitting a male student and a female student.'

b. wo ba (na-ge) nan-sheng ma-le yi dun.
I BA (that-CL) male-student scold-ASP one session
'I scolded the boy.'

(13) a. wo zuotian shouyang-le yi-zhi xiaogou he yi-zhi xiaomao.
I yesterday adopt-ASP one-CL puppy and one-CL kitten
'Yesterday I adopted a puppy and a kitten.'

b. wo ba (na zhi) xiaogou guan-zai huayuan-li.
I BA (that-CL) puppy enclose-at garden-inside
'I shut the puppy in the garden.'

1. In Bangla, for example, similar patterns are affected by animacy restrictions (Simpson and Biswas 2016) and animacy-related factors need to be carefully controlled for.

(14) a. wo zuotian mai-le yi-tai diannao he yi-tai dianshi.
I yesterday buy-ASP one-CL computer and one-CL TV
'I bought a computer and a TV set yesterday.'
b. wo ba (na-zhi) diannao fang-zai shufang-li.
I BA (that-CL) computer put-at study-inside
'I put the computer in the study.'

3.2 NPs introduced by *ti* 替

When an anaphoric definite is introduced with *ti* 替 in pre-verbal position, the same result as with *ba* 把 was obtained. Native speakers indicated that there is optionality in the way that the anaphoric definite may be represented, and either a bare noun or a demonstrative-marked noun may occur:

(15) a. wo you yi-zhi xiaogou he yi-zhi xiaomao.
I have one-CL puppy and one-CL kitten
'I have a puppy and a kitten.'
b. xiaogou changchang ti (na-zhi) xiaomao zhua laosu.
puppy often for (that-CL) kitten catch mouse
'The puppy often catches mice for the kitten.'

(16) a. women gongsi you yi-ge kuaiji he yi-ge gongguan.
our company have one-CL accountant and one-CL PR
'Our company has an accountant and a PR (Public Relations Officer).'
b. wo ti (na-ge) kuaiji zuo-le yi-ge baobiao.
I for (that-CL) accountant make-ASP one-CL report
'I made a report for the accountant.'

3.3 NPs introduced by *gen* 跟

Optionality in the use of demonstrative and bare noun patterns as anaphoric definites was similarly found with NPs that are introduced by *gen* 跟 in pre-verbal position:

(17) a. wo you yi-zhi xiaogou he yi-zhi xiaomao.
I have one-CL puppy and one-CL kitten
'I have a puppy and a kitten.
b. wo changchang gen (na-zhi) xiaogou qu sanbu.
I often with (that-CL) puppy go stroll
'I often go walking with the puppy.'

(18) a. women gongsi you yi-ge kuaiji he yi-ge gongguan.
our company have one-CL accountant and one-CL PR
'Our company has an accountant and a PR (Public Relations Officer)."
b. wo gen (na-ge) kuaiji qu chuchai.
I with (that-CL) accountant go on-business-trip
'I went on a business trip with the accountant.'

3.4 NPs introduced by zai 在

Similar to the patterning with *ba, ti,* and *gen*, (inanimate) anaphoric definites combined with *zai* 在 in pre-verbal position are also free to occur either as bare nouns or in demonstrative-classifier-noun combinations:

(19) a. wo mai-le yi-ge fangzi he yi-jian gongyu.
I buy-ASP one-CL house and one-CL apartment
'I bought a house and an apartment.'
b. wo zai (nei-ge) gongyu-li fang-le henduo
I at (that-CL) apartment-inside put-ASP many
piaoliang-de dongxi.
pretty-DE things
'I put a lot of pretty things in the apartment.'

Across the four positional categories examined here which were not considered in Jenks (2018), it is therefore found that bare nouns may indeed occur as anaphoric definites and there is no complementary distribution between the demonstrative and bare noun pattern. Rather, there is optionality in the way that anaphoric definites may be encoded in Mandarin, contra the expectations of *Index!* which requires the use of demonstratives (or some other overt morpheme such as a determiner) when anaphoric definiteness can be represented with such an element.

3.5 Revisiting direct and indirect objects

In Jenks (2018), it is conceded that subjects may occur as bare nouns in contexts of anaphoric definiteness, following similar observations made in Jiang (2012). However, the legitimate use of bare nouns as anaphoric definites in subject position is argued to contrast with their potential occurrence in direct object and indirect object position, where it is suggested that only the demonstrative-classifier-noun pattern is acceptable. A consideration of further data relating to direct and indirect objects indicates that this is actually not the case, and bare nouns are in fact widely accepted by speakers as anaphoric definites in both such post-verbal positions, as shown in (20–24).

(20) a. wo zuotian shouyang-le yi-zhi xiaogou he yi-zhi xiaomao.
I yesterday adopt-ASP one-CL puppy and one-CL kitten
'Yesterday I adopted a puppy and a kitten.'
b. wo bijiao xihuan (na-zhi) xiaomao.
I comparatively like (that-CL) kitten
'I like the kitten more.'

(21) a. wo zuotian mai-le yi-tai diannao he yi-tai dianshi.
I yesterday buy-ASP one-CL computer and one-CL TV
'I bought a computer and a TV set yesterday.'
b. wo bijiao xihuan (na-tai) diannao.
I comparatively like (that-CL) computer
'I like the computer more.'

(22) a. jiaoshi-li zuo-zhe yi-ge nan-sheng he yi-ge
classroom-inside sit-ASP one-CL male-student and one-CL
nǚ-sheng.
female-student
'In the classroom were sitting a male student and a female student.'
b. wo gei (na-ge) nan-sheng yi-ge pingguo, gei (na-ge)
I give (that-CL) male-student 1-CL apple give (that-CL)
nǚ-sheng yi-ge juzi.
female-student 1-CL orange
'I gave the male student an apple and the female student an orange.'

(23) a. fangjian-li you yi-zhi xiaogou he yi-zhi xiaomao.
room-inside have one-CL puppy and one-CL kitten
'There was a puppy and a kitten in the room.'
b. wo gei (na-zhi) xiaogou yi-jian maoyi, gei (na-zhi) xiaomao
I give (that-CL) puppy one-CL sweater give (that-CL) kitten
yi-ge wanju.
one-CL toy
'I gave the puppy a sweater and the kitten a toy.'

(24) you yi-ge xuesheng baifang-le Piao jiaoshou de bangongshi. Meixiangdao
have one-CL student visit-ASP Park professor DE office unexpectedly
Piao jiaoshou zhi tongma-le xuesheng yi-dun, ranhou jiu ba ta gan chu qu
Piao professor only scold-ASP student 1 CL then just BA 3 chase out go
'A student visited Prof. Park's office. However, Prof. Park unexpectedly just scolded him and chased him out of the office.'
(Roger Liao, personal communication)[2]

2. Roger Liao (personal communication) also notes that bare nouns can also be used as donkey pronouns in object position in Mandarin, contra what is suggested in Jenks (2018):

3.6 Conclusions, consequences and extensions

The observations made in 3.2–3.5 above indicate that the empirical generalizations concerning bare nouns and their potential use as anaphoric definites offered in Jenks (2018) do not seem to be correct once a broader array of data is considered. Whereas Jenks (2018: 501) suggests that 'anaphoric definites are realized with a demonstrative, except in subject position', it is not the case that the subject position is a single exception to the enforced use of demonstratives, and bare nouns are judged to be acceptable in a full range of syntactic positions. This then clearly calls into question the status of the principle *Index!* which requires that indices be represented overtly in anaphoric relations, wherever this is possible. As things stand, from the fuller paradigm presented in 3.2–3.5, it may well appear that there is no substantial justification for *Index!* as a principle governing the realization of anaphoric definite reference in Mandarin, and no reason to compare and equate the use of demonstratives in Mandarin in anaphoric dependencies with the forced use of definite determiners in languages such as English, French etc (as discussed in Chierchia 1998). This, we feel, is indeed the right general conclusion once Mandarin patterns are examined more holistically and a wider set of data is investigated with native speakers. The use of bare nouns as anaphoric definites is not restricted in the way suggested in Jenks (2018) and no principle barring their occurrence in non-subject positions is appropriate for Mandarin. Optionality in the representation of anaphoric definites either by overt means, employing a demonstrative, or without such overt coding, as simple bare nouns, is in principle permitted in the language in all sentential positions, suggesting that Mandarin has not grammaticalized any overtness requirement on the realization of anaphoric definiteness, unlike the obligatory occurrence of overt definite articles for all instances of definiteness in west European languages.

At such a point, one might conclude that there is nothing more to investigate in the domain of anaphoric definiteness and its representation in Mandarin, characterizing the language as one in which speakers freely use either demonstratives or

---

(i) mei-ge shouyang gou de ren dou yao dai gou qu kan shouyi.
every-CL adopt dog DE person all need take dog go see veterinarian
'Everyone who has adopted a dog needs to take the dog to see a vet.'

Example (ii) additionally shows a bare noun used as a donkey pronoun in pre-verbal object-of-*gei* position. The context for (ii) would be a festival where people dress the buffaloes they own:

(ii) mei-ge yang shuiniu de renjia dou gei shuiniu chuan-shang-le yifu.
every-CL keep buffalo DE family all give buffalo wear-up-ASP clothing
'Every family who has a buffalo put clothes on it.'

bare nouns to encode referential noun phrases linked to some linguistically-present antecedent. However, there is, in fact, more to consider here and certain additional confounding complexity which must at least be recognized, and ideally should (in some measure) be explained. The issue is that the acceptability of the bare noun pattern in instances of anaphoric definite reference which is under discussion here does appear to vary somewhat according to context, ranging from full acceptability (leading to the conclusion that such patterns are in principle well-formed), to hesitation among speakers and uncertainty about whether such forms should be classed as acceptable or not. In the latter cases, speakers are typically unwilling to class examples as ungrammatical (unlike instances of the omission of articles in English-type languages), but it is suggested that the use of bare nouns as anaphoric definites in certain sentences may sometimes sound rather unnatural and would not typically be used, there being a preference in such cases for use of the demonstrative pattern. While the use of bare nouns in examples presented in 3.2 –3.5 above were all readily accepted by the speakers we consulted, we experienced mixed reactions to Jenks' original data, in particular to example (11b), repeated below. Informants frequently indicated that they were not sure how to class (11b) when a bare noun was used and suggested that they themselves would not use a bare noun in such a context, although it did not seem ungrammatical. This reaction was clearly different to the way that the data (12–23) was judged, which speakers were regularly quick to judge as acceptable, raising questions both about why the bare noun strategy seems unnatural in certain contexts but is broadly available in other instances (in all syntactic positions), and what kinds of lesson can be drawn with regard to the construction and comparison of data within a single language and across different languages. We will attempt an answer to the first, challenging question in 3.7 below, and then add some suggestions about researching this area of language.

(11) a. jiaoshi li zuo-zhe yi ge nansheng he yi ge nüsheng.
classroom inside sit-PROG one CL boy and one CL girl
'There are a boy and a girl sitting in the classroom.'

b. wo zuotian yudao #(na ge) nansheng.
I yesterday meet that CL boy
'I met the boy yesterday.'

3.7 Discourse constraints on the bare noun pattern in anaphoric definiteness

We believe that speakers' preference for a demonstrative form in certain instances and their suggestions that a bare noun may not sound fully natural are actually due to two factors, which may conspire with each other in various constructed examples. The first of these is a preference found elsewhere in anaphoric reference in Chinese and other languages for the use of more explicit representational forms when there are major or minor breaks in the coherence of sentences comprising a particular discourse (discussed below). The second factor we believe to be relevant is the tendency and expectation for (post-verbal) objects in Chinese to be interpreted by default as indefinite in reference, unless otherwise marked as definite or construed as specific/definite due to the specificity of the event described in a sentence. In what follows, we elaborate on these two factors and the ways they may lead to preferences in the use of either bare nouns or demonstrative patterns in the representation of anaphoric definites.

It can first be noted that the demonstrative-classifier-noun pattern is clearly more explicit in its coding of definiteness than the use of a bare noun, as the former is unambiguously definite (and singular) in specification, while bare nouns may be interpreted as either definite or indefinite (and singular or plural). The occurrence of a demonstrative with a noun provides listeners with an instruction to search for a local antecedent in the discourse (if manual pointing is not involved, causing a hearer to look for a local reference in his/her visual area). Such a parsing instruction is not present with bare nouns, which can be interpreted in various ways, and this difference introduces a hierarchical relation in the pair of forms potentially available for definite anaphoric reference – where a more explicit referential form is felt necessary in a particular context, the expectation is that a demonstrative pattern will naturally be preferred, whereas bare nouns may be used as anaphoric definites in discourse contexts (shortly to be described) when there is less call for an explicitly marked definite form. Approaching the bare noun vs. demonstrative patterning from such a perspective, we suggest that there is an important comparison that can be made with other sets of referential elements and the preferences for their use which relate to the availability of a range of forms which are referentially more vs. less explicit. Specifically, in studies of anaphoric reference in Chinese and other pro-drop languages (Givón 1983, Chen 1986, Christensen 2000, and Pu 2011), it has frequently been argued that a hierarchy of representational forms exists and governs speakers' selection of null subjects/objects (pro, 'zero anaphora'), overt pronouns, or full NPs in instances of anaphoric reference, there being a preference for less explicit forms (pro, or overt pronouns) for discourse referents that are highly activated and salient, and more explicit forms (full NPs) when a referent becomes less activated/salient. In attempting to account for the relative acceptability/

preference for use of pro vs. overt pronouns vs. full NPs as less vs. more explicit forms of reference, it has been proposed that this can be attributed to aspects of *discourse coherence* and the ways that the semantic-pragmatic relation of sentences to each other affects the activation level of referents within a particular discourse. The more tightly 'connected' that sentences are to each other in terms of shared event time, location, action, speaker perspective and other properties, the greater probability that speakers will opt for use of less explicit referential forms, as discourse referents remain activated and salient through closely-bound sequences of sentences. By way of contrast, where there are breaks in discourse coherence caused by switches in event time, place and perspective-shift, it is argued that speakers will select a more explicit means of reference (e.g. full NPs) to compensate for the lowering of individual referents' activation level. In previous work carried out by the authors of the current chapter (investigating pronoun preference strategies in Mandarin Chinese – Simpson, Li and Wu 2016: 3), we described the line of research pursued in Chen (1986), Tai (1978), Pu (1995, 2011) and Li and Thompson (1979), in following way:

> These works suggest that major and minor discontinuities in discourse structure cause alternations in the different anaphoric forms of reference that speakers regularly use. Zero anaphora/zero pronouns are described as typically being used when a topical referent remains in focal attention across many sentences in succession in a 'topic chain', in which the sentences all 'cohere' well and describe a closely related sequence of events (Chen 1986), or are otherwise semantically closely linked with each other (Tai 1978). Overt pronouns are argued to occur when anaphor-antecedent relations are structurally interrupted by minor breaks and discontinuities in discourse structure, caused by changes in temporal, spatial or action continuity, from transitions in description of a referent's physical activities to his/her mental activity, and from switches in narration from background to foreground information (Pu 2011). Such disruptions are suggested to affect speakers' attention on a referent, lowering its activation level and favoring the use of a more explicit form of reference – an overt pronoun rather than zero anaphora. More major breaks in the episodic structure of a discourse/narrative, often corresponding with paragraph breaks in writing, are described as resulting in the use of repeated full NPs to refer back to topical referents in a story line. (Simpson, Li and Wu 2016: 3)

Two examples from Tai (1978) illustrate how preferences in the choice of anaphoric forms may be linked to discourse coherence. In (25), speakers are reported to (often) prefer the use of a pro subject to an overt pronoun (which is felt to be less natural, though not ungrammatical), as a tight semantic connection is perceived to hold between the two clauses, whereas in (26), there is less of a (perceived) close connection between the two clauses and an overt pronoun is frequently noted to be preferred over the use of pro:

(25) xiao Mei jie-le hun, pro/?ta sheng-le liang-ge haizi.
little Mei connect-ASP wedding pro/3 bear-ASP 2-CL child
'Little Mei got married and had two children.'

(26) lao Zhang zuotian lai kan wo, ta/?pro dai-le yi-ben zazhi gei wo.
old Zhang yesterday come see me 3/pro bring-ASP 1-CL magazine for me
'Yesterday old Zhang came to see me and he brought me a magazine.'

Returning to the alternation between bare nouns and demonstratives which are the focus of the present chapter, we suggest that similar features of discourse coherence to those highlighted above are also at play in guiding speaker preference for one form over the other in various contexts, and may be responsible for differences in speaker reaction to examples which are otherwise not syntactically distinguished. Where discourse coherence (gauged approximately in terms of shared time, location, and speaker perspective) is high, we posit that bare nouns will be judged fully acceptable in instances of anaphoric definite reference to salient individuals, while the more explicit demonstrative pattern will be preferred when there are breaks in coherence and continuity, and bare nouns will be viewed as less natural and dispreferred. Taking a specific example to illustrate this, Jenks' pair of sentences (11a/b) repeated again below involve a shift in time and (presumably) place between the situation described in (11a) and the event in (11b), which took place on a preceding day (and most probably in a different location). Speakers report that they feel little close connection between the content of (11a) and (11b) and indicate that they would prefer the use of the demonstrative pattern in such cases, so as to make it very clear that the 'boy' mentioned in (11b) is intended to refer to the boy in (11a). The shift in time and location between these juxtaposed sentences arguably constitutes a break in the coherence of the discourse that is significant enough to render a less explicit form of reference less than optimal, and speakers typically avoid the bare noun pattern in such a context.

(11) a. jiaoshi li zuo-zhe yi ge nansheng he yi ge nüsheng.
classroom inside sit-PROG one CL boy and one CL girl
'There are a boy and a girl sitting in the classroom.'

b. wo zuotian yudao #(na ge) nansheng.
I yesterday meet that CL boy
'I met the boy yesterday.'

Further examples can be created where bare nouns are felt to be less natural than the use of a demonstrative pattern and where there are shifts in time or place or perspective between two paired sentences, with the first sentence containing an

indefinite noun phrase and the second an anaphoric definite intended to refer back to the indefinite NP.

(27) a. wo jintian zai gongyuan renshi-le yi-ge yisheng he yi-ge kuaiji
I today in park meet-ASP 1-CL doctor and 1-CL accountant
'Today in the park I met a doctor and an accountant.

b. zuotian #(na-ge) yisheng zai women jia-fujin mai-le
yesterday DEM-CL doctor at 1.PL home-nearby buy-ASP
yi-suo fangzi.
1-CL house
'Yesterday the doctor bought a house in our neighborhood.'

(28) a. wo zai xuexiao ganggang kandao-le yi-zhi mao.
I at school just-now see-ASP 1-CL cat
'I just saw a cat in school.'

b. Zhangsan zuotian shuo #(na-zhi) mao tou-le hen duo
Zhangsan yesterday say DEM-CL cat steal-ASP very many
dongxi chi.
thing eat
'Yesterday Zhangsan said that the cat stole many things to eat.'

(29) a. wo jintian mai-le yi-tai dianshi.
I yesterday buy-ASP one-CL TV
'Today I bought a computer and a TV set.'

b. zuotian baihuogongsi ba #(na-tai) dianshi jiang-le liangbai
yesterday department store BA DEM-CL television lower-ASP
kuai.
200 dollar
'Yesterday the department store reduced the price of the computer by $200.'

Calculating precisely how much of a time/location/perspective shift may result in a discontinuity significant enough to make bare nouns feel less natural as anaphoric definites and less preferred than demonstrative patterns will not be attempted here and is a task that would require considerable data analysis, complicated further by the fact that there is also certain speaker variability in the judgement of relevant examples. However, given that discourse coherence effects of the type alluded to here have been argued to constrain preferences in the choice of other anaphoric elements such as pro, pronouns and full NPs in a variety of studies, we believe such an approach is likely to be on the right track and is the kind of explanation that can make sense of variable speaker reactions to the use of bare nouns and demonstratives in patterns of anaphoric definiteness.

A second factor we believe also plays a potentially significant role in constraining the natural use of bare nouns as anaphoric definites is the tendency for

object positions in Chinese (and other languages) to be the locus of new information and indefinite noun phrases (Chao 1968, Li and Thompson 1981, Givón 1983, Lambrecht 1994, Erteschik-Shir 2007). In some varieties of Chinese from the Wu and Min areas, it is reported that definite NPs may either not occur in post-verbal positions (e.g. Li and Bisang on Fuyang Wu) or are ordinarily preposed to some position preceding the verb (as, for example, in Taiwanese), and for Mandarin it has regularly been observed that objects which are definite in reference are very frequently displaced from post-verbal position to initial or preverbal topic or focus positions, or introduced with pre-verbal *ba* constructions (Chao 1968, Li and Thompson 1981). NPs in post-verbal position are therefore commonly indefinite in reference.[3] This general aspect of information structure can be assumed to establish a default parsing strategy, where NPs which are not explicitly marked as definite in reference will be interpreted by hearers as indefinite and discourse-new, unless other aspects of the containing discourse strongly favor a definite interpretation. As bare nouns in Mandarin can be interpreted as definite, indefinite or generic in reference, it may be expected that speakers will tend to avoid the use of a bare noun as an anaphoric definite in object position and instead prefer the use of a demonstrative as a way to override a default indefinite interpretation – *unless* a definite interpretation is otherwise naturally made salient by properties of the context. In charting speaker reaction to the use of bare nouns and demonstrative-marked nouns in various sentence-internal positions, the current investigation observed that speakers exhibited hesitation in judging sentences to be acceptable more frequently when bare nouns occurred (as anaphoric definites) in post-verbal object position, rather than other positions, though typically speakers concluded that such examples were in fact acceptable and grammatical after certain reflection. We take this slight hesitation as indication that the *tendency* to construe objects as indefinite,

---

3. In one particular construction, an NP which can be interpreted as definite in subject position may *not* be given a definite interpretation in object position. Sequences of numeral+classifier+noun are generally interpreted as indefinite in reference, but it is also possible for such constituents to be construed as definite in situations of anaphoric definite reference, as in (i)

(i) liang ben shu zai nali?
2 CL book be where
'Where are the two books?'

However, it is not possible for such a definite interpretation to occur in object position, and numeral+classifier+noun sequences can only be interpreted as indefinite in post-verbal positions, as illustrated in (ii):

(ii) ni mai-le liang ben shu ma
you buy-ASP 2 CL book Q
Only: 'Did you buy two books?'
Not: 'Did you buy the two books?'

new information and the expectation that they will have such an interpretation may sometimes interfere with their construal as anaphoric definites, although such an interpretation is grammatically licensed and available as an interpretation when also contextually natural within a sufficiently coherent segment of discourse.[4]

We therefore posit that aspects of discourse coherence and also expectations relating to the positioning of in/definite information may affect speaker reactions to example sentences in instances of anaphoric definiteness and skew judgments in ways that do not reflect the grammaticality of such forms. The potential effect of such confounds emphasizes the need for researchers to consider a wide range of data when examining patterns such as the representation of discourse referents, to help avoid extra-grammatical interference in the characterization of language-particular paradigms. Additionally, the *cross-linguistic comparison* of such phenomena will benefit greatly, we believe, from care being taken to investigate example sentences which are as similar as possible in different languages rather than the use of data that is not obviously equivalent (where distortions may arise as the result of variable discourse factors), as has sometimes occurred in previous studies. Section 4 of the chapter now reports on a comparison of Mandarin with three other languages/varieties, Korean, Hindi and Cantonese, with replications of the same data presented in sections 2 and 3. We use this investigation to establish a preliminary impression of the ways that other languages without articles may represent anaphoric definites and specifically whether bare noun patterns are available as options alongside other more explicit modes of representation – hence whether the optionality identified here in Mandarin may also perhaps occur in other languages.

4. The representation of anaphoric definites in Korean, Hindi, and Cantonese

Korean, Hindi, and Cantonese resemble Mandarin in not having any definite article. This raises the question of how anaphoric definites may be represented in such language varieties and whether there is any optionality in the use of demonstrative and bare noun patterns (or the 'bare classifier' pattern found in Cantonese). Sections 4.1 and 4.2 report that both Korean and Hindi appear to pattern like Mandarin in regularly permitting either a demonstrative+noun or a bare noun to be used in instances of anaphoric definite reference, hence the same (or a very similar) kind

4. Jenks example (11b) as a follow-on to (11a) therefore resists an easy anaphoric definite interpretation when a bare noun occurs due to both of the factors mentioned here, which conspire to reduce the acceptability of such an interpretation in such examples. The bare noun in (11b) occurs in post-verbal object position, and the sequence of (11a–b) lacks the discourse coherence of other more acceptable examples, with a significant backward shift in both time and location.

of optionality as that noted in Mandarin in Section 3. It can consequently be concluded that Mandarin, as characterized in the current study, is not exceptional in allowing for either of two representational strategies for anaphoric definites, subject to appropriate discourse licensing. Cantonese, by way of contrast, does not appear to tolerate optionality in the representation of anaphoric definites, and enforces the exclusive use of its bare classifier pattern and no occurrence of bare nouns in contexts of anaphoric definiteness. In Cantonese, the representation of definiteness has therefore been fully grammaticalized (with the bare classifier pattern), as in languages with definite determiners such as English, whereas Mandarin, Korean and Hindi remain in a more fluid state, with alternative modes of representation not constrained by any hard principles of syntax.

4.1 Korean

Considering Korean, an investigation of the same patterns of data examined in Section 3 for Mandarin results in the conclusion that either a demonstrative+-noun pattern or a bare noun is widely acceptable in instances of anaphoric definiteness. In examples (15–21) below, we present the acceptable occurrence of a bare noun as anaphoric definite in a range of syntactic positions, including subject, direct object, indirect object, and different adjunct positions. In all such cases, native speaker consultants reported that a demonstrative+noun would also be acceptable. Korean therefore appears to pattern like Mandarin Chinese (under further scrutiny), allowing for optionality in the use of a demonstrative and bare noun pattern in contexts of anaphoric definiteness, and such alternations are not restricted by syntactic position.[5] [6]

Target (anaphoric definite) in subject position

(30) a. kyosil-ey nam-haksayng-kwa ye-haksayng-i
classroom-LOC male-student-and female-student-NOM
anc-aissessta.
sit-were sitting
'In the classroom were sitting a male student and a female student.'

5. The potential use of bare nouns as anaphoric definites has also very recently been reported in Kang and Park (2020), though just with a single example (Example 5, p. 454).

6. We can also report that our brief survey of Korean with ten speakers from Pusan University did not detect any very obvious effects of discourse coherence on the use of bare nouns as anaphoric definites. However, we would not be surprised if such factors were to condition other speakers' judgments, and one additional speaker we consulted was less automatic in her acceptance of bare nouns in all of the cases tested. Further investigation is therefore warranted, we suggest. Many thanks indeed to Soyoung Park for her help in facilitating this short study of Korean.

b. nam-haksayng-un sumu-sal cengto toye pointa.
male-student-TOP 20-year or so become look
'The male student looks about 20 years old.'

Target (anaphoric definite) in direct object position

(31) a. kyosil-ey nam-haksayng-kwa ye-haksayng-i
classroom-LOC male-student-and female-student-NOM
anc-aissessta.
sit-were sitting
'In the classroom were sitting a male student and a female student.'

b. na-nun nam-haksayng-ul honnayessta.
I-TOP male-student-ACC scolded
'I scolded the male student.'

(32) a. na-nun ecey kangaci-wa koyangi-lul ipyanghayssta.
I-TOP yesterday puppy-and kitten-ACC adopted
'Yesterday I adopted a puppy and a kitten.'

b. na-nun kangaci-lul cengwen-ey katwuessta.
I-TOP puppy-ACC garden-LOC shut
'I shut the puppy in the garden.'

(33) a. na-nun ecey khempyuthe-wa thibi seytu-lul sassta.
I-TOP yesterday computer-and TV set-ACC bought
'I bought a computer and a TV set yesterday.'

b. na-nun khempyuthe-lul kongpu pang-ey nohatwuessta.
I-TOP computer-ACC study room-LOC put
'I put the computer in the study.'

Target (anaphoric definite) in indirect object position

(34) a. kyosil-ey nam-haksayng-kwa ye-haksayng-i
classroom-LOC male-student-and female-student-NOM
anc-aissessta.
sit-were sitting
'In the classroom were sitting a male student and a female student.'

b. na-nun nam-haksayng-eykey sakwa-lul, ye-haksayng-eykey
I-TOP male-student-DAT apple--ACC female-student-DAT
kyul-ul cwuessta.
tangerine-ACC gave
'I gave the male student an apple and the female student a tangerine.'

Target (anaphoric definite) in PP benefactive position

(35) a. na-eykey-nun kangaci-wa koyangi-ka issta.
I-DAT-TOP puppy-and kitten-NOM be
'I have a puppy and a kitten.'

b. kangaci-nun congcong kongyangi-lul-wyhay cwyi-lul capa-cwunta.
puppy-TOP often kitten-for mice-ACC catch-give
'The puppy often catches mice for the kitten.'

Target (anaphoric definite) in PP comitative position

(36) a. na-eykey-nun kangaci-wa koyangi-ka issta.
I-DAT-TOP puppy-and kitten-NOM be
'I have a puppy and a kitten.'

b. na-nun congcong kangaci-wahamkkey sanchayk-ul hanta.
I-TOP often puppy-with walking-ACC do
'I often go walking with the puppy.'

4.2 Hindi

For Hindi, we also tested the same set of data examined in Mandarin and Korean to see how anaphoric definites would be encoded, either via a demonstrative+noun pattern or with bare nouns, or with either such forms of representation. As with Korean and Mandarin, the target anaphoric definite was placed in a full range of syntactic positions, to check whether the syntactic position of the target might affect its mode of representation. Illustrative examples with bare nouns are given in (37–41). The broad generalization found in the data investigated with ten native speakers was that bare nouns are widely acceptable as anaphoric definites in Hindi.[7] Speakers regularly accepted either a bare noun or a demonstrative pattern, with a common preference typically being expressed for the bare noun pattern, or, in certain instances (examples 25 and 26), a strong majority of speakers accepting only the bare noun pattern. The responses gathered in this study suggest that the use of a bare noun for anaphoric definites occurs as a broadly acceptable pattern, and for the majority of speakers consulted was furthermore a preferred alternative to the use of a demonstrative. There was one curious exception to this clear patterning found in our group of speakers. For example (41), our consultants oddly reversed their preferences and indicated that either they preferred a demonstrative over a bare noun pattern, or they only found a demonstrative acceptable/natural in this context. Interestingly, example (41) corresponds in meaning to Jenks' (2018) Mandarin example numbered (11a/b) in the current chapter, which our Mandarin consultants also hesitated to accept with use of a bare noun. Above in Section 3 we suggested that this may be due to a reduced level of discourse coherence and a time/location continuity break between the two conjoined sentences, favoring the

7. Many thanks to Bhamati Dash for helping facilitate this study of Hindi with other native speakers.

use of a more explicit demonstrative in place of a bare noun. The observation that such a discontinuity also triggers a different, reversed judgment from speakers of Hindi who otherwise find bare nouns very acceptable (or even preferable to the use of a demonstrative) suggests to us that similar aspects of discourse coherence may condition speaker acceptance of bare nouns vs. demonstratives in Hindi as well as Mandarin. When discourse discontinuities were avoided in examples (37–40), speakers readily accepted or preferred bare nouns as anaphoric definites, whereas they expressed an opposite reaction to the sentence pairing in (41), adapted from Jenks' data set, where a more significant break in discourse continuity occurs.

Target (anaphoric definite) in subject position

(37) a. kaksha-me ek laDkaa aur ek laDkii betihe the
classroom-in one boy and one girl sitting were
'In the classroom were sitting a boy and a girl.'

b. laDka takriban bees saal ka hai
boy approximately 20 year LNK be
'The boy looks twenty years old or so.'

Target (anaphoric definite) in direct object position

(38) a. kal mein ek kutte aur ek billi-ko ghar lekar aaya
yesterday I one dog and one cat-ACC home bring came
'Yesterday I adopted a dog and a cat (lit. 'brought a dog and cat home').'

b. mei-ne kutte-ko bagiche-me band kar diyaa
I-ERG dog-ACC garden-LOC close do gave
'I shut the dog in the garden.'

Target (anaphoric definite) in indirect object position

(39) a. kaksha-me ek laDkaa aur ek laDkii betihe the
classroom-in one boy and one girl sitting were
'In the classroom were sitting a boy and a girl.'

b. mei-ne laDke-ko ek sev diyaa
I-ERG boy-DAT 1 apple gave
'I gave the male student an apple.'

Target (anaphoric definite) in PP locative position

(40) a. mei-ne kal ek computer aur ek tv kharidaa
I-ERG yesterday one computer and one TV bought
'I bought a computer and a TV set yesterday.'

b. mei-ne computer studyroom-me rakh diyaa
I-ERG computer study-LOC put gave
'I put the computer in the study.'

Target (anaphoric definite) in postpositional object position

(41) a. kaksha-me ek laDkaa aur ek laDkii betihe the
classroom-in one boy and one girl sitting were
'In the classroom were sitting a boy and a girl.'

b. mein kal laDke-se milii thii
I-ERG yesterday boy-with met did
'Yesterday I met the boy.'

4.3 Cantonese

Having identified a much greater optionality in the use of bare nouns as anaphoric definites in Mandarin than suggested in recent literature, and also found similar optionality to be present in both Korean and Hindi, we decided to revisit Cantonese, a variety in which it has long been reported that definiteness is regularly represented with the combination of a classifier and a noun – the bare classifier pattern described in Section 2 for Bangla and Jinyun Wu Chinese (examples 5–8). Works such as Cheng and Sybesma (1999, 2005) have well documented the use of this pattern in Cantonese and contrasted it with the occurrence of bare noun patterns in Mandarin, pointing out that Cantonese makes use of the combination of a classifier and noun (with no accompanying numeral) to encode definite reference in positions where Mandarin would use a bare noun, as in (42) and (43):

(42) *(*zek*) *gau soeng gwo maalou.* (Cantonese)
CL dog want cross road
'The dog wants to cross the road.' (Cheng and Sybesma 1999)

(43) *gou xiang guo malu.* (Mandarin)
dog want cross road
'The dog wants to cross the road.' (Cheng and Sybesma 1999)

Cheng and Sybesma's seminal studies of Cantonese did not set out to distinguish contexts of anaphoric vs. situational definiteness and the potential effects such contexts might have on the ways that definites are encoded in Cantonese. The question we wished to reach an answer to as an extension of the chapter's current investigation is whether any variation in the use of a bare classifier pattern might occur in contexts of anaphoric definiteness, and whether speakers might perhaps also accept the use of bare nouns in such contexts if data parallel to that used in Section 3 for Mandarin were to be tested with speakers of Cantonese. The results of probing such patterns in Cantonese confirm the default assumption present in Cheng and Sybesma (1999, 2005) that anaphoric definites, like unique definites, are regularly encoded with the bare classifier pattern, and bare nouns are not acceptable.

This is illustrated with a subset of the data tested with informants in (44) – (49). The brief study of Cantonese carried out here also asked consultants whether a demonstrative-classifier-noun pattern could be used in instances of anaphoric definiteness, and the results indicated that this was in many cases not felt to be natural. The broad generalizations emerging from the data are that: (a) the most natural pattern used to represent anaphoric definites in Cantonese is indeed the bare classifier pattern,[8] (b) bare nouns are not acceptable in such contexts, and (c) demonstratives are often not acceptable substitutes for the bare classifier pattern.[9] Cantonese is consequently much more rigid in its representation of anaphoric definiteness than Mandarin, Korean and Hindi, and the required use of the bare classifier pattern blocks any potential use of bare nouns in contexts of anaphoric (and non-anaphoric unique) definiteness. This is represented in the following examples modeled on the Mandarin patterns examined in Section 3.

Target (anaphoric definites) in subject and benefactive positions

(44) a. ngo5 jau5 jat1-zek3 gau2-zai2 tung4 jat1-zek3 maau1zai2
I have one-CL puppy and one-CL kitten
'I have a puppy and a kitten.'

b. {ʔgo2-zek3/*ø} gau2zai2 sing4jat6 bong1 {ʔgo2-zek3/zek3/*ø} maau1zai2
DEM-CL/CL/ø puppy often for DEM-CL/CL/ø kitten
zuk1 lou5syu2
catch mouse
'The puppy often catches mice for the kitten.'

Target (anaphoric definite) in direct object position

(45) a. ngo5 cam4jat6 maai5-zo2 jat1-bou6 din6nou5 tung4 jat1-bou6 din6si6
I yesterday buy-ASP one-CL computer and one-CL TV
'I bought a computer and a TV set yesterday.'

b. ngo5 bei2gaau3 zung1ji3 {ʔgo2-bou6/bou6/*ø }din6nou5
I comparatively like DEM-CL/CL/ø computer
'I like the computer more.'

---

8. Jenks (2018) also reports that the bare classifier pattern is used for anaphoric definites in Cantonese, though with a more restricted data set than examined here.

9. More specifically, as indicated in examples (44–49), demonstratives were felt to be acceptable when the target anaphoric definite occurred as indirect object (46) and pre-verbal object of *zoeng3* (47) (equivalent to Mandarin *ba*), but not natural when an anaphoric definite occurred as subject (44), direct object (45), benefactive object (44), or as the pre-verbal objects of *tung4* 'with' (48) or *hai2* 'in' (49). It is currently not clear how to make good sense of this uneven distribution in acceptability.

Target (anaphoric definite) in indirect object position

(46) a. fo3sat1-leoi5min6 co5-zo2 jat1-go3 naam4zai2 tung4
classroom-inside sit-ASP one-CL boy and
jat1-go3 neoi5zai2
one-CL girl
'In the classroom were sitting a boy and a girl.'

b. ngo5 bei2-zo2 jat1go3 ping4gwo2 {go2-go3/go3/*ø} naam4zai2,
I give-ASP 1-CL apple DEM-CL/CL/ø boy
bei2-zo2 jat1-go3 caang2 {go2-go3/go3/*ø} neoi5zai2
give-ASP 1-CL tangerine DEM-CL/CL/ø girl
'I gave the boy an apple and the girl a tangerine.'

Target (anaphoric definite) in pre-verbal zoeng3 object position[10]

(47) a. fo3sat1-leoi5min6 co5-zo2 jat1-go3 naam4zai2 tung4
classroom-inside sit-ASP one-CL boy and
jat1-go3 neoi5zai2
one-CL girl
'In the classroom were sitting a boy student and a girl.'

b. ngo5 zoeng3 {go2-go3/go3/*ø} naam4zai2 naau6-zo2 jat1 caan1
I BA DEM-CL/CL/ø boy scold-ASP one session
'I scolded the boy.'

Target (anaphoric definite) as pre-verbal object of tung4 'with'

(48) a. ngo5dei6 gung1si1 jau5 jat1-go3 wui6gai3 tung4
our company have one-CL accountant and
jat1-go3 gung1gwaan1
one-CL PR
'Our company has an accountant and a Public Relations Officer.'

b. ngo5 soeng5-go3-jyut6 tung4 {?go2-go3/go3/*ø} wui6gai3 heoi3
I last-CL-month with DEM-CL/CL/ø accountant go
gung1gon3
on-business-trip
'Last month I went on a business trip with the accountant.'

Target (anaphoric definite) as pre-verbal object of hai2 'in'

(49) a. ngo5 maai5-zo2 jat1gaan1 nguk1 tung4 jat1-go3 daan1wai2
I buy-ASP 1-CL house and 1-CL apartment
'I bought a house and an apartment.'

10. Equivalent to the Mandarin *ba* construction.

b. ngo5 hai2 {?go2-gaan1/gaan1/*ø} nguk1-jap6min6 fong3-zo2 hou2do1
I in DEM-CL/CL/ø house-inside put-ASP many
hou2leng3 ge3 je5
pretty-DE things PRT
'I put a lot of pretty things in the house.'

Having extended our Mandarin-based study into other languages/varieties without definite articles and seen clear similarities and differences between Mandarin, Korean, Hindi and Cantonese, we now bring the findings of the chapter together in Section 5 and summarize the conclusions that can be drawn about overt/covert representational forms of anaphoric definiteness.

5. Summary and conclusions

This chapter set out to re-examine the descriptive generalization offered in Jenks (2018) that bare nouns in Mandarin Chinese may only be used as anaphoric definites in subject and topic positions, as a partial reflex of the principle *Index!*, which requires that all referential indices be overtly represented, in Mandarin this being satisfied by the use of a demonstrative. Considering a broader range of data than presented in Jenks' study, Section 3 established that bare nouns may actually be judged to be acceptable as anaphoric definites in all syntactic positions in Mandarin Chinese, contra the expectations of *Index!* Examining the contrasts found between judgments elicited from our consultants and those reported in Jenks (2018), it was suggested that the naturalness of bare nouns in contexts of anaphoric definiteness in Mandarin may be affected by two additional factors – the degree of discourse coherence existing between sentences which contain the antecedent and anaphoric definite expression, and default expectations that bare nouns in object positions introduce new information and so should be interpreted as indefinite. The effects of discourse coherence on speakers' choices of representational forms have elsewhere been invoked as an explanation of preferences in the use anaphoric elements such as pro, overt pronouns, and full NPs, and may lead speakers to prefer more explicit forms of reference where there are minor or major breaks in discourse continuity. Here we have suggested that similar aspects of discourse structure may affect the choice of representational forms in other instances of anaphoric definiteness when pronouns/pro are not possible choices (due to reasons of ambiguity when there are two potential referents in a preceding sentence) and sometimes lead speakers to a preference for a more explicit, demonstrative form, over the use of a bare noun, although the latter is a choice formally permitted by the grammar. The selection of an explicitly definite form, signaled by the presence of a demonstrative, may also,

for certain speakers, be preferred as a way to over-ride default expectations that nouns in object positions in Mandarin are indefinite in reference. We believe that a combination of these factors may account for variability in speaker reaction to data involving the use of bare nouns as anaphoric definites, and when such factors are effectively controlled for, the correct observation is that both representational forms (bare nouns and demonstrative patterns) are *grammatically* licensed to occur in all syntactic positions in Mandarin. The principle *Index!* and its requirement of the use of overt markers of indices (such as demonstratives) is consequently too rigid as a constraint on Mandarin Chinese, and genuine optionality regularly occurs in the ways that anaphoric definites may be encoded – either by means of bare nouns or with demonstrative patterns.

The chapter also extended its study of Mandarin further to consider related patterns in three other language varieties, Korean, Hindi, and Cantonese. In doing do, we hoped to be able to situate Mandarin relative to other languages without articles and the way they may represent anaphoric definites. In 4.3, Cantonese was confirmed as a variety in which anaphoric definites are rigidly encoded with a bare classifier pattern (classifier + noun) and not with bare nouns. Because situational definites in Cantonese are also commonly represented with the bare classifier pattern (as noted in Jenks 2018), Cantonese appears to require a rule blocking the use of bare nouns in (all) contexts of definiteness, as suggested in Chierchia (1989) for languages which do have definite articles, such as English, French and German. Such a blocking principle justified for Cantonese will necessarily have to be language-specific, however, as bare nouns are readily available as definites in other languages such as Mandarin, Korean, and Hindi, and so should not be blocked by any grammatical principle requiring that definiteness be expressed overtly wherever possible. In Mandarin, as noted above, there is optional alternation between bare nouns and more 'explicit' demonstrative patterns in contexts of anaphoric definiteness, and similar patterns were observed in Korean and Hindi, hence no absolute blocking principle is warranted for these languages and *Index!* cannot be assumed to have a universal, cross-linguistic application. Languages appear to vary, genuinely, in allowing optionality in the representation of definiteness, with certain language having grammaticalized a formal, strict requirement that definiteness be expressed by overt means (English, French, Cantonese etc), and others allowing for alternations which are syntactically licensed but may be conditioned by additional factors relating to discourse structure (Mandarin, Korean, and Hindi). As work in this area continues in the future, inspired by Jenks (2018) paper, we believe it will be interesting to see what further variation may be found in other languages without articles when comparable patterns of data are examined, and whether bare nouns might even turn out to be cross-linguistically more common than demonstrative patterns in the representation of anaphoricity.

References

Arkoh, Ruby & Matthewson, Lisa. 2013. A familiar definite article in Akan. *Lingua* 123: 1–30. https://doi.org/10.1016/j.lingua.2012.09.012

Bisang, Walter. 1993. Classifiers, quantifiers and class nouns in Hmong. *Studies in Language* 17. 1–51. https://doi.org/10.1075/sl.17.1.02bis

Chao, Yuen-Ren. 1968. *A grammar of spoken Chinese*. Berkeley: University of California Press.

Chen, Ping. 1986. Referent introducing and tracking in Chinese narratives. PhD dissertation, UCLA.

Chen, Ping. 2004. Identifiability and definiteness in Chinese. *Linguistics* 42:1129–1184. https://doi.org/10.1515/ling.2004.42.6.1129

Cheng, Lisa L-S. & Sybesma, Rint. 1999. Bare and not-so-bare nouns and the structure of NP. *Linguistic Inquiry* 30: 509–542. https://doi.org/10.1162/002438999554192

Cheng, Lisa L-S. & Sybesma, Rint. 2005. Classifiers in four varieties of Chinese. In *The Oxford Handbook of Comparative Syntax*, Richard Kayne and Guglielmo Cinque (eds), 259–292. Oxford: Oxford University Press.

Chierchia, Gennaro. 1998. Reference to kinds across languages. *Natural Language Semantics* 6:339–405. https://doi.org/10.1023/A:1008324218506

Christensen, Matthew. 2000. Anaphoric reference in spoken and written Chinese narrative discourse. *Book of Chinese Linguistics* 28:2:303–336.

Dayal, Veneeta. 2004. Number marking and (in)definiteness in kind terms. *Linguistics and Philosophy* 27:393–450. https://doi.org/10.1023/B:LING.0000024420.80324.67

Dayal, Veneeta. 2011. Bare noun phrases. In *Semantics: An international handbook of natural language meaning*, Claudia Maienborn, Klaus von Heusinger, and Paul Portner (eds), 1088–1109. Berlin: Mouton de Gruyter.

Diesing, Molly. 1992. *Indefinites*. Cambridge, Mass: MIT Press.

Ebert, Karen. 1971a. Referenz, Sprechsituation und die bestimmten Artikel in einem Nordfriesischen Dialekt (Fering). [Reference, speech situation, and the definite article in a north Frisian dialect (Fering)] *Studien und Materielen* 4, Bredstedt: Nordfriisk Institut.

Ebert, Karen. 1971b. Zwei Formen des bestimmten Artikels. [Two forms of the definite article] In *Probleme und Fortschritte der Transformationsgrammatik*, [Problems and progress in transformational grammar] Dieter Wunderlich (ed), 159–74, Munich: Hueber.

Erteschik-Shir, Nomi. 2007. *Information structure: The syntax-discourse interface*. Oxford: Oxford University Press.

Givón, Talmy. 1983. *Topic continuity in discourse: quantitative cross-linguistic studies*. NewYork: John Benjamins. https://doi.org/10.1075/tsl.3

Givón, Talmy. 1984. *Syntax: a functional-typological introduction*. Amsterdam: John Benjamins. https://doi.org/10.1075/z.17

Jaggar, Philip. 1985. Factors governing the morphological coding of referents in Hausa narrative discourse. PhD dissertation,UCLA.

Jenks, Peter. 2018. Articulated definiteness without articles. *Linguistic Inquiry*. 49:501–536. https://doi.org/10.1162/ling_a_00280

Jiang, Li. 2012. Nominal arguments and language variation. PhD dissertation, Harvard University.

Jiang, Li. 2014. A parametric analysis of nominal arguments. In *Chinese syntax in a cross-linguistic perspective*, Audrey Li, Andrew Simpson and Dylan Tsai (eds), 51–72. Oxford: Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199945658.003.0002

Kang, Arum, & Park, Myung-Kwan. 2020. (In)definiteness in Korean without an article. *Korean Book of Linguistics* 45, 451–475.

Lambrecht, Knud. 1994. *Information structure and sentence form*. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511620607

Li, Charles & Thompson, Sandra. 1979. Third person pronouns and zero anaphora in Chinese discourse. In *Syntax and semantics 12: Discourse and syntax*, Talmy Givon (ed), 311–335. New York: Academic Press.

Li, Charles & Thompson, Sandra. 1981. *Mandarin Chinese: a functional reference grammar*. Berkeley: University of California Press.

Li, Xuping & Bisang, Walter. 2012. Classifiers in Sinitic languages: from individuation to definiteness-marking. *Lingua* 122:335–55. https://doi.org/10.1016/j.lingua.2011.12.002

Löbner, Sebastian. 2011. Concept types and determination. *Book of Semantics* 28: 279–333. https://doi.org/10.1093/jos/ffq022

Ortmann, Albert. 2014. Definite article asymmetries and concept types: semantic and pragmatic uniqueness. In *Frames and concept types*, Thomas Gamerschlag, Doris Gerland, Rainer Osswald, & Wiebke Petersen (eds), 293–321. New York: Springer.0. https://doi.org/10.1007/978-3-319-01541-5_13

Pu, Ming-Ming. 1995. Anaphoric patterning in English and Mandarin narrative production. *Discourse processes* 19:279–300. https://doi.org/10.1080/01638539509544918

Pu, Ming-Ming. 2011. *Discourse anaphora: a cognitive functional approach*. Munich: Lincom Europa.

Schwarz, Florian. 2009. *Two types of definites in natural language*. PhD dissertation, University of Massachusetts, Amherst.

Schwarz, Florian. 2013. Two types of definites cross-linguistically. *Language and Linguistics Compass*, 534–558.

Simpson, Andrew. 2017. Bare classifier/noun alternations in the Jinyun (Wu) variety of Chinese and the encoding of definiteness. *Linguistics* 55:2: 305–332.. https://doi.org/10.1515/ling-2016-0041

Simpson, Andrew, Soh, Hooi Ling, & Nomoto, Hiroki. 2011. Bare classifiers and definiteness: a cross-linguistic investigation. *Studies in Language* 35:168–93. https://doi.org/10.1075/sl.35.1.10sim

Simpson, Andrew & Biswas, Priyanka. 2016. Bare nominals, classifiers, and the representation of definiteness in Bangla. *Linguistic Analysis* 40:3–4:167–198.

Simpson, Andrew, Li, Yan, & Wu, Zoe. 2016. Grammatical roles, Coherence Relations, and the interpretation of pronouns in Chinese. *Lingua Sinica* 2:2: 1–20. https://doi.org/10.1186/s40655-016-0011-2

Tai, James H.-Y. 1978. Anaphoric restraints in Mandarin Chinese narrative discourse. In *Anaphora in discourse*, John Hinds (ed), 279–338. Edmonton, Alberta: Linguistic Research.

Yang, Rong. 2001. *Common nouns, classifiers, and quantification in Chinese*. PhD dissertation, Rutgers University.

Noncanonical arguments via the high applicative

Yafei Li
University of Wisconsin

This article develops a new account of Chinese NCAs. The representative analyses of the phenomenon in the literature were evaluated, accompanied with facts, some new, that help sort out the linguistic and extra-linguistic properties of the NCAs. The proposed account consists of two core elements: bare lexical roots without light verbs (in their popular sense) at either lexical or syntactic level of derivation, and the conditional use of the high applicative. All relevant facts are derived from the collaboration of these two elements once extra-linguistic factors are duly recognized and either incorporated into the analysis or set aside to avoid unnecessary distractions.

0. Introduction

The examples in (1–2) illustrate the much-discussed phenomenon of noncanonical arguments in Chinese:

(1) haizi chi bingjiling.
child eat ice.cream
'Children eat ice cream.'

(2) a. gonggong shitang chi cuci da wan.
public cafeteria eat coarse.porcelain big bowl
'One eats with a big coarse porcelain bowl in a public cafeteria.'
b. cuci da wan chi gonggong shitang.
coarse.porcelain big bowl eat public cafeteria
Same as (2a) in truth value, with a subtly different flavor.
c. shanchuanhuhai chi tianran qinghuai.
mountain.valley.lake.ocean eat nature feelings.
'Dining in the wild outdoors generates one's emotional attachment to nature.'

https://doi.org/10.1075/la.272.12yaf

d. paichang chi siren huisuo, hansuan chi
luxurious.show.off eat private club poor.shabbiness eat
jiebian xiaotanr.
street.side food.stall
'For a luxurious showoff, dine at a private club; if you are poor and shabby, eat at a street-side food stall.'

Compared with the default type of example (1) where the subject is Agent and object is Theme, (2) shows the object to be interpreted as Instrument (2a), Location (2b, 2d) and Purpose (2c). At least on the surface, what appears to occupy the preverbal subject position is also thematically flexible, being Location in (2a), Instrument in (2b) and Purpose in the first clause of (2d). *Shangchuanhuhai* 'the wild outdoors, nature' in (2c) may be classified under Location, but as any native speaker of Chinese can attest, its precise semantic relation with the eating event is not easily captured with any single thematic label. This fact, to be discussed later, is made even more obvious by the subject of the second clause of (2d). No proper single name comes to mind for the relation between *hansuan* 'being poor and shabby' and the verb. In the rest of this paper, the NPs with these non-Agent/Theme readings will be called non-canonical arguments (NCAs).[1]

The occurrence of NCAs in Chinese has long been noted, with the first systematic effort to account for them within the principles-parameters model of linguistics presented in Lin 2001 which inspired subsequent works by Chen and Li (2016), Huang, Li and Li (2009), A. Li (2014), Sun (2010) and Zhang (2018), among others. The current paper has two goals in mind: (i) to examine the miscellaneous facts brought up in this line of research with the hope to build a relatively robust empirical basis for subsequent investigations, and (ii) to demonstrate how the NCA facts can be treated in Li's (2021) theory on the conditional use of Pylkkänen's (2008) high applicatives.

1. A reviewer notes that "in isolation, the examples in (2) all sound unacceptable to me". My response is two-fold. First, Chinese is known for being highly context-sensitive, to the degree that even an otherwise "grammatical" example would sound very strange without what the field of Chinese linguistics sometimes refers to as a *jiejuci* 'sentence-finishing word'. To illustrate, even a simple "canonical" sentence like (1) actually sounds very unnatural "in isolation". This factor, however, can be put aside when the concern is merely on the interpretability of the thematic arguments and when the readers are trained linguists. Second, the NCAs represent a highly marked construction in the first place, with specific contextual/semantic demands for interpretation (Sun and Li 2020). The markedness is amplified by "new examples" that need to be concocted to test the boundaries of the phenomenon. Thus, willingness to entertain this extra factor when assessing such examples, including mentally constructing a supporting scenario, is a must for seeing what can(not) be accommodated by the NCAs. What matters most is that one can find contexts for (2) but the comparable NCAs are impossible in a language like English no matter what.

1. On the facts and the existing analyses

One important aspect of the NCA data has to do with whether the preverbal non-Agent NP is indeed the grammatical subject. The question arises from Chinese being a *pro*-drop language without inflectional morphology to help identify the subject, leaving room for the possibility that the preverbal NPs in (2) result from topicalization in sentences with null subjects. On the pro-subject side, my own research uses unacceptable Agent-oriented adverbs as an indicator that there is no hidden agentive *pro* in the NCAs (Huang, Li and Li 2009, Section 2.2.2), and A. Li (2014: 302–304) brings in control (from Her 2009), the natural lack of pause after the preverbal NP and the incompatibility of topicalization inside a relative clause to support the same conclusion. On the pro-topic side, Zhang (2018: note 5) rejects the adverb test, attributing its licensing to a thetic judgment while topicalization, taken to create the non-agentive preverbal NP, results in a categorical judgment.

Regarding the "sentence-initial topics" (A. Li: note 9) not being tolerated inside a relative clause, it should be noted that logically, the preverbal NP in the NCAs does not have to be clause-initial even if it is not the subject:

(3) a. shibing-men da wan he jiu.
soldier-PL big bowl drink liquor
'The soldiers drink wine with big bowls.'
b. [da wan he jiu]-de shibing-men
big bowl drink liquor-DE soldier-PL
'the soldiers who drink wine with big bowls'
c. [shibing-men da wan he]-de jiu
soldier-PL big bowl drink-DE liquor
'the wine that soldiers drink with big bowls'
d. [da wan he]-de jiu
big bowl drink-DE liquor
'the wine that one drinks with a big bowl'

If (3a) is good with *da wan* 'big bowl' before V but after the Agent subject, the occurrence of this same NP inside a relative clause, as in (3b) or (3c), is unrelated to any sentence-initial topic, which in turn lends to treating (3d) as (3c) minus an overt Agent subject.

This caveat notwithstanding, I still see reasons to side with treating the preverbal NP as the subject in the NCAs. First, it is not true, at least *prima facie*, that Agent-oriented adverbs are incompatible with categorical judgment. Consider a simple case:

(4) a. nazhi cuci wan ta (guyi) chi yuzijiang.
that coarse.porcelain bowl 3s deliberately eat caviar
'That coarse porcelain bowl, s/he (deliberately) ate caviar with it.'

b. nazhi cuci wan (*guyi) chi yuzijiang.
that coarse.porcelain bowl deliberately eat caviar
'That coarse porcelain bowl is for (deliberately) eating caviar.'

The intrumentally interpreted NP *nazhi cuci wan* 'that coarse porcelain bowl' in (4a) is placed before the Agent subject *ta* 's/he' and is thus most plausibly analyzed as the topic, and topicalization is the stereotypical representative of a categorical sentence since Kuroda (1972). Therefore, that the NCA counterpart of (4a), namely (4b), deteriorates drastically with *guyi* 'deliberately' cannot be attributed to the Instrument NP being a topic. Secondly, the native speakers I consulted agree on a subtle but consistent contrast shown in (5) which, to my knowledge, has not been reported previously:

(5) (zai) zhejia haohua canting chi tamen-de hei yuzijiang.
P this luxurious restaurant eat their black caviar
'Dining in this luxurious restaurant is for their black caviar.'

Without the preposition *zai*, (5) is a case of NCA which can serve naturally as a standalone sentence making a neutral judgment by, for instance, a food connoisseur giving a recommendation to a tourist. On the other hand, when *zai* is present, (5) remains grammatical but acquires one of two flavors: it becomes an imperative sentence or an incomplete one prompting a bigger syntactic context (e.g. as the first conjunct or the clausal subject). And a simple explanation is available for this contrast. When *zai*-less, the preverbal NP is (or can be) the subject and (5) acts like another well-formed finite – and thus standalone – sentence. With P around, however, *zai zhejia haohua canting* 'at this luxurious restaurant' is a PP that necessitates an agentive *pro* for the verb *chi* 'eat'. Since Chinese has no agreement morphology on V to help license *pro* as in Romance languages, a *pro* subject turns (5) either into an imperative or into an embedded clause so as to have *pro* legitimately bound or become arbitrary. Critically, there must be no agentive *pro* subject in the *zai*-less NCA variant; or one should experience no contrast at all.

Taking NCAs to have non-canonical subject and object, we review the representative analyses of the phenomenon.

1.1 Lin's (2001) original theory: Bare roots plus s-syntactic light verbs

The core of Lin's (2001) theory consists of two assumptions: (a) that Chinese allows its bare roots not to be merged with light verbs at the lexical level (cf. Hale and Keyser's (1993) l-syntax) and (b) that the merging may happen in the syntactic component with each semantically/thematically specific light verb introducing the corresponding NCA. While having bare lexical roots participate in syntax started becoming a popular trend along with Distributed Morphology (especially

see Marantz 1997), it is insightful of Lin to associate this idea with NCAs (and thereby to deviate from the mainstream application of bare roots to non-NCA languages; see relevant discussions later), which inspired a series of my own works (Chen and Li 2016, Huang, Li and Li 2009: Chapter 2, Sun and Li 2010, 2020,). Meanwhile, the (b) portion of the theory raises a question.

It is quite common that an NCA either simultaneously carries multiple semantic relations with the verb or holds an obscure one:

(6) a. Mengjiangnü ku changcheng.
Mengjiangnü cry Great.Wall
b. Junwang si sheji.
emporer.and.king die the.state

For anyone knowing the story behind (6a), the postverbal NP is the location where the girl *Meanjianü* wept, the reason for her weeping (since her husband died while building the Great Wall) and the object which her immense grief was aimed at. Similarly, (6b) is most accurately paraphrased as a king or emperor should die both for and with his country. As for (2c) above, in addition to the obvious locative relation between the preverbal subject *shanchuanhuhai* 'the wild outdoors' and the verb *chi* 'eat', there is an extra flavor in the interpretation of the sentence which seems to me to make the subject the Source of obtaining one's emotional attachment to nature through dining.

When a single overt NP holds more than one semantic relation with a verb, there are three logically possible explanations in the general theoretical framework of syntax. The first is to attribute each semantic relation to a specific light verb as Lin does, with the structurally highest of them supporting an overt NP argument and the rest supporting *pro* arguments coindexed with the overt one. But the very syntactic nature of these light verbs is that they are all parts of a mono-clausal structure, which rules out bound *pro*s under Binding Condition B. The second option is structurally identical to the first except that, the *pro*s are replaced with the traces of the overt NP, in effect moving the latter through the Spec positions of the multiple light verbs. But the θ-criterion prohibits this route of derivation. These two scenarios exhaust the uses of multiple light verbs and leave us with the third option: there is only one light verb providing one of the semantic relations between the NCA at hand and the verb; all other semantic extras result from the context and/or common knowledge. However, if some such semantic/thematic relations are available without light verbs being the source, why would one need any light verb for the NCAs in the first place?[2]

2. The same reviewer makes the suggestion that two light verbs are "conjoined under the same node". My questions are: (i) is there independent evidence that light verbs can act this way? (ii) what about those examples where the precise "thematic" relation between the verb and the NCA

1.2 My own analysis: Bare roots with no light verbs at all

This last question for Lin's theory of NCAs led to my own analysis (see the references above): bare lexical roots plus no light verb whatsoever. Provided that syntax licenses the NPs in the subject and object positions, their semantic relations with the verbal root are left for unavoidable contextual factors and common knowledge to determine – if these factors favor a semantically complex interpretation between, say, the object NP and V, then nothing prevents the NCA from having such an interpretation.

Lin's (2014: 94) objection to this light-verb-less approach[3] is that it is not "any more restricted" than his own: "The proposal that the verbal root itself can freely take arguments appears to lack restrictions too, and it is hard to see how one could come up with a specific set of syntactic or semantic principles that would substantially restrict the possible and impossible arguments under this approach." But if two alternative theories are equally unrestricted, the simpler one should be preferred given Occam's razor, and a theory that does not hypothesize a whole set of light verbs is obviously simpler than one that does. The issue boils down to whether either theory can account for "the possible and impossible arguments". Let us look at this from two perspectives.

Pending actual examples to be given later, some Bantu languages such as Kichaga allow a single applicative suffix to the verbal root (in the traditional morphological sense) to introduce any one of a range of semantic "arguments", from Benefactive and Malfactive to Locative and Instrumental. To my knowledge, however, this suffix is not known to encode a specific locative relation such as 'behind'. Thus, a comprehensive analysis of the applicative construction is obliged to distinguish the possible and impossible arguments as well. I do not have such an analysis but do see an intuitive direction to pursue: lack of explicit lexical encoding prevents us from distinguishing 'behind' from 'in front of' or 'outside' from 'to the left of'; all we have is the generic spatial relation if the corresponding NP is best understood as referring to a place such as the beach. The same reasoning holds for the NCAs where again there is no lexical manifestation of the relation between such an NP and the bare verbal root. If each distinct semantic relation is indeed paired with a dedicated structural entity *aka* light verb as Lin's – and A. Li's; see below – theory

---

is not even clear, such as the subject of the second clause in (2d)? (iii) why is this solution any better than simply leaving the semantic interpretation to context and knowledge of the world? I return to these issues in 2.3.

3. Lin's second criticism (ibid) is my use of light verbs inside lexical items which "do not add meaning and have no direct bearing on theta-roles", and that "it is not clear why they must occur in the first place." Since this part of the theory is not the concern of the current article, I will put it aside, referring the reader (and Lin) to Borer's (2005) similar idea applied to clausal structure.

hypothesizes, why do Bantu languages characteristically employ a single applicative affix for multiple kinds of oblique arguments.

Pairing each light verb with a particular NCA may seem supported with the fact that Chinese has corresponding, and similarly generic, verbs as well: *zai* for location, *na* for instrument and *wei* for purpose, etc. But caution is called for regarding the value of this parallelism. To begin with, a real assessment relies on using these words with other lexical verbs because a light verb, by definition, is never the sole element of a predicate. I will use *na* 'take/with' for a case study by comparing it with the causative *rang* 'let, make' given that causation not only is manifested cross-linguistically as lexical verbs but is also in the widely recognized set of semantic elements behind light verbs:

(7) a. ni keyi na/rang Li Kui xiahu neixie qiangdao.
2S can take/make LK intimidate those bandit
'You can use LK to/make LK intimidate those bandits.'

b. wo keyi */[??]na/rang Li Kui he Lu Zhishen xiahu
2S can take/make LK and LZ intimidate
gezi-de shibing.
each.self's soldier
'You use LK and LZ to/make LK and LZ their own soldiers.'

c. na/*rang Li Kui, ni keyi xiahu neixie qiangdao.
take/make LK 2S can intimidate those bandit
Intended reading: Comparable to (7a) plus topicalization.

(8) a. ni hennan na zhege fangfa manzu kehu.
2S hardly take this method satisfy customer
'It's hard for you to satisfy the customers with this method.'

b. *zhege fangfa, ni hennan na t manzu kehu.
this method 2S hardly take satisfy customer

(9) a. ni hennan rang chuzhongsheng zuo gaozhong-de shuxueti.
2S hardly make middle.schooler do high.school-DE math.problem
'It's hard for you to make middle schoolers do high school math.'

b. (?)chuzhongsheng, ni hennan rang t zuo gaozhong-de
middle.schooler 2S hardly make do high.school-DE
shuxueti.
math.problem
Same as (9a) plus topicalization.

With (7a) as the control, (7b) has the anaphor *gezi* 'each self' bound by *LK and LZ* after the causative *rang* 'make' vs. the instrumental *na* 'take'. The judgments I collected vary somewhat, but *na* is always perceived less acceptable/natural than *rang*. (7c) tests the constituency of *na/rang* and the NP immediately after them and the

contrast is sharp: while [*na* NP] can be fronted together given the right discourse context, [*rang* NP] is absolutely impossible. The extractability of this NP, all by itself, is tested with (8–9) where true minimal pairs are difficult to come by. It is clear, though, that the NP can move only when after *rang*.[4]

The contrasts in (7) through (9) all point at a single conclusion: whereas the causative *rang* 'make' is the main verb (as expected), *na* and the subsequent NP form a standardly positioned adjunct phrase, call it XP, to the following verb V (*xiahu* 'intimidate' in (7), for instance). As such, the NP inside XP doesn't c-command the object of V in (7b) for the purpose of Binding Condition A, the entire XP can be extracted in (7c), and movement out of XP in (8b) exhibits the typical island effect. On the other hand, the opposite behaviors with *rang* all result from *rang* being the main verb. The question now is, with the well-understood causation, both the lexical form and its light verb counterpart share the same overall structure by taking the projection of another lexical verb as complement; if there is indeed an instrumental light verb in the same head-complement relation with the lexical root as in Lin's theory, why does its lexical variant have a different structural status? Or turning the question around, if the Instrument-introducing function is lexicalized into a pre/postposition, a morphological case or *na* in Chinese that heads an adjunct, shouldn't these facts argue against using a light verb to encode this semantic content while giving it a structural representation paralleling that of CAUSE? Ultimately, is there independent evidence for the purported existence of multiple light verbs? We return to these considerations later.

1.3 A. Li's theory: A thematic hierarchy via light verbs

In terms of facts, A. Li (2014) summarizes the evidence for the preverbal and postverbal NPs of the NCA construction being the syntactic subject and object of the clause. She further argues that despite the rather liberal interpretations of these NCA arguments, they are nonetheless arranged according to the hierarchy of "agent (experiencer) > temporal > locative > instrument > theme" (p. 317, (55)) which is implemented with the correspondingly cascaded light verb (Lv) phrases (p. 321, (62)).

---

4. (8b) becomes perfect if *na* is replaced with *na lai* 'take come'. What is critical here is where *lai* is located without NP extraction:

i. ni hennan na zhege fangfa lai manzu guke.
2s hardly take this method come satisfy customer
'It's hard for you to use this method for satisfying customers.'

While I am not aware of any specific analysis of this use of *lai* 'come', my native speaker's intuition suggests the morpheme to (be able to) turn what follows it into some kind of expression of purpose, which in turn would make *na* 'take' the main verb of the sentence and thus permit its object NP to be extracted. See Chen and Li 2016 for related discussion.

This hierarchy generally matches the ones adopted in Grimshaw 1990 and Li 2005, among many others, that are found in languages without NCAs. So it must be rooted in some basic mechanism in the human language faculty or even general human cognition. Below are a sample of her examples ((48, 51, 52), respectively):[5]

(10) Time > Location vs. Location > Time
  a. wanshang mai lubiantan hen hao; zhaoshang mai __ bu hao.
  evening sell street.stall very good morning sell not good
  'It is good to sell at street stalls in the evening, not good to sell (at street stalls) in the morning.'
  b. lubiantan mai wanshang hen hao; *baihuogongsi mai __
  street.stall sell evening very good department.store sell not
  bu hao.
  good

(11) Location > Instrument vs. Instrument > Location
  a. shiwai kan wangyuanjing hen hao; shinei kan __ bu hao.
  outdoors see binoculars very good indoors see not good
  'It is good to watch with binoculars outside the room, not good to watch (with binoculars) inside the room.'
  b. wangyuanjing kan shiwai hen hao; *xianweijing kan __ bu hao.
  binoculars see outdoors very good microscope see not good

(12) Instrument > Theme vs. Theme > Instrument
  a. da guozi zhu niurou hen hao; xiao guozi zhu __ bu hao.
  big pot cook beef very good small pot cook not good
  'It is good to cook beef with big pots, not good to cook with small pots.'
  b. niurou zhu da guozi hen hao; *jirou zhu __ bu hao.
  beef cook big pot very good chicken cool not good

Since object-deletion is allowed only in one thematic sequence but not in the otherwise possible reversal, what is allowed must somehow represent the basic hierarchy. Based on this test, A. Li proposes to derive the superficial "free ordering" among NCAs (such as (2a–b)) with the structures in (13) (= her (88) plus my notational revisions):

(13) Assuming X is thematically higher than Y,
  a. $[_{TP}$ X … $[_{vP}$ *v*-Lv-V … Y]]
  b. $[_{TP}$ Y … $[_{vP}$ *v*-Lv-V [X t_Y …]]]

5. Throughout this paper, A. Li's examples for placing the Agent argument in the object position are put aside. As she notes herself in note 18, the postverbal Agent "is no longer an agent" due to its unique semantic and syntactic properties.

The lexical verb V is raised from "…" to adjoin to the NCA-introducing Lv and eventually to (the non-agentive) *v*.

(13a) complies with the thematic hierarchy and the object Y can be deleted as in any other thematically unmarked context (such as a clause with the default Agent-subject and Theme-object). (13b) is for the superficially reversed arrangement where the thematically lower Y occurs as the subject. According to A. Li, such cases result from moving Y to the Spec of TP position. Object-deletion applied to X in the structure yields a superficial manifestation non-distinguishable from (14) – her (89) – because Lv and the deleted X cannot be heard anyway:

(14) $[_{TP}$ Y … $[_{vP}$ *v*-V t_Y …]]

Since (14) is structurally simpler than (13b), derivational economy always favors (14) and thus the structurally more complex option of deletion becomes unavailable in the b-examples of (10–12).

It is not clear to me how (13b) can be derived by escaping the well-established minimality condition (Chomsky 1995, Li, Shields and Lin 2012, Rizzi 1990) when Y moves across X to the Spec of TP, all involving argument positions. This theoretical issue aside, my own informants both confirm the contrast in (10–12) and find the b-examples there to become more acceptable once the right contexts are provided. (15a, b, c) respond to (10b, 11b, 12b), respectively:

(15) a. lubiantanr mai xiayeban shijian mei wenti, keshi women
street.stall sell after.nightshift time no problem but we
zhezhong da shangdian ye mai __ jiu xingbutong, yinwei
this.kind big store also sell then not.work because
meiren gei jiabarfei.
no.one give overtime.pay
'There is no problem to sell at street stalls during the hours after (other companies') nightshifts, but it won't work to sell in big stores like ours because no one would give us overtime pays.'

b. ?shi jinshi yanjing kan shiwai haishi laohua jing kan __,
be near.sight glasses see outdoor or.be reading glasses see
shoushizhe zixing jueding.
test.subject on.your.own decide
'Whether to look with near-sight glasses in the outside or with reading glasses, the test subjects can pick your own choice.'

c. shi jin niurou zhu da guo shuodetong, ?ban jin jirou
ten pound beef cook big pot make.sense half pound chicken
ye zhu __ jiu mei biyuao le.
also cook JIU not necessary LE
'It makes sense to cook the beef in the big pot because of its large quantity. But there is no need to cook the chicken meat (in the big pot).'

These examples do not falsify A. Li's thematic hierarchy because, after all, they demand noticeably more linguistic and situational context may still sound marginal. What they indicate is that the hierarchy is not uniformly encoded in UG. The two ends of it, Agent and Theme clearly result from UG. By the current understanding, Theme is part of VP while Agent is introduced by *v*. Precisely because they are given distinctive structural representations, the two arguments cannot be swapped regardless of context. In comparison, all other "oblique" arguments indeed respect a hierarchy, presumably fundamentally determined by human cognition, but are unlikely to be equally encoded into the argument-introducing system of UG. Otherwise, reversing the hierarchy in (15) should not be a matter of heavy contextual dependency or marginality; they should be just as absolutely irreversible as Agent and Theme when the verb is in the active form.

This conclusion is fully consistent with treating NCAs as bare roots *sans* light verbs in syntax. Since no UG mechanism comparable to *v*P forces a rigorous structural line-up, the only factor at work is the general conceptual hierarchy that determines the most natural arrangements of the NCAs. Not banned by UG, reversing them is possible provided that it is imposed on us through a grammatical means (e.g. when both the subject and object are explicitly present so as to leave us with no other alternative) or with a richly provided situational context like (15). Since object-deletion in the b-examples of (10–12) benefits from not enough contextual aid, the marked hierarchical reversal is not favored. In other words, though questioning A. Li's use of multiple light verbs in the same way as *v*, I adopt the essence of her explanation for (10–12): when more than one possible structure is possible, the winner is always the one that looks the grammatically most straightforward in some intuitive sense.

1.4 Zhang's (2018) ergative verb approach

Zhang's analysis of NCAs takes a different approach, its essence consisting of three claims: Ramchand's (2001) tripartite representation of argument structure in (16a), the obligatory unergative status of the lexical verb and the noncanonical object being an event kind-classifying element (KCE), with the last two claims embodied in (16b):

(16) a. $[_{\text{initP}}$ DP1 init $[_{\text{procP}}$ DP2 proc $[_{\text{resP}}$ DP3 res …]]]
b. $[_{\text{initP}}$ DP1 init $[_{\text{procP}}$ DP2 proc NCA]]

In (16a–b), DP1 is the causer, DP2 the undergoer and DP3 the "resultee". The overall logic is that if the verb is unergative and starts as *proc* (= process; cf. Vendler's (1967) activity predicates], its complement position becomes available for an NCA which serves as a classificatory modifier for the events denoted by the verb,

structurally represented in (16b). As a welcome byproduct, (16b) also makes the verb look "transitive" in the presence of the NCA and the separate subject of the unergative verb. The justifications for (16b) are rather extensive, but I found much disagreement with the examples used and/or the conclusions drawn from them. Given the limited space, only a few cases will be looked into.

As evidence for the verb being unergative, Zhang demonstrates with the following examples that NCAs are incompatible with unaccusative and causative verbs:

(17) a. *Li-Qi lai huoche. (Zhang's (23))
LQ come train
Intended reading: 'Li-Qi came by train.'
b. *dizhen shui shui-dai. (Zhang's (28b))
earthquake sleep sleep-bag
Intended reading: 'The earthquake made us sleep in sleeping bags.'

But each of (17a–b) has an independent reason to be prohibited.

Supposedly, (17a) contains an unaccusative verb and an instrumental NCA. What is important is that *huoche* 'train' cannot be introduced with the Instrument-introducing *yong* 'use, with', in contrast with good instrumental NCAs that can, as any speaker of Chinese can verify:

(18) *yong huoche lai
use train come

I admit to not understanding the precise mechanism determining what qualifies for a true Instrument, but the underlying intuition seems straightforward: when no explicit grammatical means such as prepositions are used in the case of NCAs and thus no semantic subtlety can be expressed, language can only rely on stereotypical argument types like Instrument, Location, etc. no matter how these argument types are defined. The relation between *come/arrive* and *train* clearly does not fall into this type because of (18). Meanwhile, there is enough evidence that unaccusative verbs can indeed take NCAs. We already have (6b) where *si* 'die' is used. More are shown in (19):

(19) a. deng si, si guo ke hu? (SIMA Qian, *Shi Ji*)
equally die die country may Q
'Now that we'll die anyway, mightn't we die in connection with[6] the country?

6. There is no consensus on the exact semantic relation encoded in this case between *die* and *country*, further confirming the earlier observation that multiple or obscure "thematic" relations can be encoded in a single NCA.

b. can hua piao xishui, ku ye luo qiu.han.
impaired flower float stream dried leaf fall autumn.coldness
'(Naturally) damaged flowers floated (away) with the stream, dried leaves fell in (and because of) the autumn's cold temperature.'

c. da kuai de lurou dong binggui, zhexie zhurou dong bingxiang.
big chunk DE venison freeze freezer this pork freeze refrigerator
'Have the big chunk of venison frozen in the freezer and this piece of pork in the refrigerator.'

All the four verbs, *si* 'die', *piao* 'float (away)', *luo* 'fall' and *dong* 'freeze' are unaccusatives, and their noncanonical objects have the readings of Purpose, Location, Time, Instrument or some combination of them.

The purported clash between NCAs and causation can be similarly refuted. First, verbs like *shui* 'sleep' does not have a causative use in Modern Chinese to begin with:

(20) *anmianyao shui pingren.
hypnotics sleep patient
Intended reading: 'Hypnotic medication make patients sleep.'

So the unacceptability of (17b) has nothing to do with NCAs. In fact, with verbs that are independently ergative, namely alternating between the unaccusative and causative uses, NCAs are indeed possible. My own judgment of (19c) is that the verb *dong* 'freeze' seems open to either the unaccusative or the causative use depending on whether the active role of whoever places the meat in the appliances is intended or not. The next example uses *hua* 'melt' which seems to offer a causative reading too:[7]

(21) zhe kuai bing suiran juda, danshi dianreqi hua shangwu,
this chunk ice though huge but electric.heater melt morning
yique pengqiang hua xiawu, wanfan qian jiu meiyou le.
acetylene torch melt afternoon dinner before then non.existent PRT
'Although this chunk of ice is huge, it will disappear before dinner if we melt it with an electric heater in the morning and with the acetylene torch in the afternoon.'

Achievement verbs like *shu* 'lose' and *ying* 'win' also argue against Zhang's association of atelic verbs with NCAs as stated in (16b):

7. Which happens to be another example that reverses A. Li's thematic hierarchy since Instrument is the subject and Time is the object.

(22) wo ying-le zhanchang, ni shu-le qingchang.
I win-ASP battle.field you lose-ASP love.arena
'I won in the battlefield, and you lost in the arena of love.'

In sum, no matter what advantages Ramchand's analysis of argument structure has elsewhere, it does not seem to bear on NCAs in Chinese which seem to be more sensitive to contextual factors and common knowledge than the event structure of the verbs.

Zhang's arguments for treating noncanonical objects as event kind-classifying elements are equally undermined once we look beyond her particular examples. Again, only two cases are examined here. According to her, "a KCE must have root features, to encode a property that is different from another class, and thus never occurs in the form of an overt pronoun" (ibid: 1421). But counterexamples are easy to come by:

(23) A-Qi hai zai chi fumu, *ta-didi ye zai chi tamen.
A-Q still PROG eat pareants 3S-brother also PROG eat them
(Zhang's (13))
'A-Qi is still living on his parents, and his brother is living on them too.'

(24) a. guoqu san nian ni yizhi zai chi fumu, xianzai ni dasuan
past three year you always PROG eat parents now you intend
chi women ma?
eat us Q
'You've been living on your parents in the past three years. Now you want to live on us?'

b. fanzheng zhishi couhe yi wanshang. ni shui chuang ba. wo
anyway only make.do a night you sleep bed prt I
shui ta jiu xing.
sleep it just all.right
'We only want to manage through one night anyway. You sleep on the bed. It'll be all right that I sleep on this.'

(24a) uses the same verb *chi* 'eat' and lexical object *fumu* 'parents' to set up the context, but the pronoun *women* 'us' is a perfect NCA. (24b) is no less natural if the speaker points at a big sofa to spend the night on. Apparently, grammar does not prevent pronouns from being NCAs.

The contrast below is taken by Zhang to also follow from her KCE analysis (her (14a–b)):

(25) a. Lili yao mai zhi mao-bi.
Lili want buy CL brush-pen
'Lili wants to buy a calligraphy brush.'
b. *Lili yao xie zhi mao-bi.
Lili want write CL brush-pen
Intended reading: 'Lili wants to write with a calligraphy brush.'

The unacceptability of (25b) is attributed to the noncanonical object being kind-classificatory. As such, it acts semantically like a modifier and not an argument to the lexical verb, which in turn means that it "cannot be bound by Existential Closure" (Zhang: 1432) whereas a classifier-initial nominal like the postverbal NP in (25) relies on Existential Closure (ibid).

But (25b) can be made appropriate with a context, so can the classifier-initial NCA in general:

(26) a. zhe beizi xie-guo ge-zhong bi. Jintian xie zhi
this life write-ASP every-kind pen today write CL
mao-bi shishi.
bruch-pen a.try
"I've written with all kinds of pens my whole life. I'll give it a try today to write with a calligraphy brush.'
b. gongsi shitang de fancai qianpianyilü, suoyi zuotian qu
company cafeteria DE food always.same so yesterday go
chi-le jia xin-kai de canguan.
eat-ASP CL new-opened DE restaurant
'The food in the company's cafeteria is monotonous, so I went to eat at a newly opened restaurant yesterday.'
c. tingshuo ni jingtong henduo bingren. pi ba da dao rang
hearsay you skilled.with many weapon slash CL big sabre let
zanmen qiaoqiao.
us see
'We heard that you are skilled with many kinds of arms. Do some cleaving with a big sabre and show us (as proof).'

These examples do not necessarily deny that NCAs may share certain properties with KCEs. What can be concluded is that the specific analysis of NCAs as an instance of KCEs lacks robust empirical support. All in all, I have too much disagreement with what the facts are about NCAs to regard (16b) and its accompanying claims as a viable option to decipher this rather unique phenomenon in Chinese.

2. An applicative-based alternative account

To me, the previous assessments of the existing analyses and the relevant facts suggest that NCAs are the result of both some UG-type of factors at work and a substantial element of linguistic and extra-linguistic contexts, some yet to be better understood. The second half of this article will focus on the more controllable UG side of NCAs. Specifically, I will explicate an analysis in Li (2021) which extends my own view of NCAs (see 1.2 above). An imminent question is why NCAs must look "transitive", with both a subject and an object. Placing a verb or a lexical root in a typical clausal context is enough for the construction to have the *potential* to support two arguments given the various ideas proposed so far (Burzio's generalization, Chomsky's (1995) *v*, the extended function of Asp by Borer (2005) and Pesetsky and Torrego (2004), among others). What needs to be answered is why being transitive is a must. As noted briefly earlier, Zhang's (16b) indeed gives an answer: as long as the subject of the construction must be agentive (Zhang: Section 2.3), the presence of a noncanonical object automatically makes the clause look transitive. But I have given multiple examples to show that her (16b) lacks solid empirical support, in addition to the proof from Chen and Li 2016, Huang, Li and Li 2009 and A. Li 2014 that the preverbal noncanonical NP indeed functions as the subject. It is the goal of this section to demonstrate how the various properties of NCAs including its unique transitivity can be derived from a bare lexical root, no light verbs plus a high applicative head from Pylkkänen (2008).

2.1 High applicatives and their use in a low-applicative language

Bantu languages are well-known for adding an applicative suffix to the verbal root so as to bring in an extra argument. The associated grammatical properties of this phenomenon naturally shed light on how to view double-object verbs in languages like English, as shown in (27). The core motivation for Pylkkänen's further division into high and low applicatives is given in (28):

(27) Chichewa (Marantz 1993: 121)

a. Chitsiru chi-na-gul-ir-a atsikana mphatso.
fool AGR-PAST-buy-APPL-FV girls gift
'The fool bought the girls a gift.'

b. *Chitsiru chi-na-gul-ir-a mphatso atsikana .
fool AGR-PAST-buy-APPL-FV gift girls

(28) a. Kichaga (Bresnan and Moshi 1993: 50)
N-a-i-zric-ia mbuya.
FOC-2S-PRES-run-APPL-FV friend
'He is running for a friend.'

b. *He ran a friend.
Intended reading: 'He ran for a friend.'

The Benefactive (or Goal in some cases) argument *atsikana* 'girls' in (27a) must occur between the verb and its Theme argument *mphatso* 'gift', as is equally obligatory in English (see the translation). The reversed order of the two objects in (27b) would be possible only if the Benefactive is accompanied by a preposition (Baker 1988), again patterning with *The fool bought a gift for the girls* in English. It is plausible, then, to think of the English double-object construction as containing a phonologically empty applicative affix to the lexical verb. At the same time, however, some Bantu languages such as Kichaga allow the applicative to add to intransitive verbs as well, shown in (28a), which English rejects completely. Consequently, Pylkkänen proposes to distinguish the high applicative in Kichaga from the low applicative in English (and Chichewa). The former is situated above VP and imposes no further semantic restrictions on V (other than performing event identification with VP); the latter is structurally a sister of V and inherently connects its own applied argument – and thereby demands – to the Theme of V.

Like English, Chinese shows the same pattern as the low applicative, not only with respect to the word order alternations (e.g. *song liwu gei tamen* 'send gift to them' vs. *song tamen liwu* 'send them gift') but also the inherent semantic relation between the Theme argument *liwu* and the applied argument *tamen*, with a transfer of possessor entailed through the sending event. But there seems to be another similarity between the two languages: the *-ee* suffix and a subset of NCAs.

Unlike *-er/or* which rather cleanly introduces an Agent argument, the V-*ee* words seem to have interpretations all over the spectrum. *Employee* is taken to denote people who are employed, i.e. the Theme/Patient, *donatee* defines the Goal of donating (Merriam-Webster online), while *standee* and *escapee* seem to refer to the Agent. Since *-ee* is nominal, it also raises another question: cross-linguistically, an N-V word (order irrelevant) refers to the event of V-*ing* when N is understood as the semantic object (e.g. noun-incorporation (Baker 1988, 1996) and English compounds such as *student-employing*). Why is it, then, that *employee* does not denote events of employing people? The first clue is from the definition of *standee by Random House Webster's College Dictionary* (1991): "a person who stands, as in a public conveyance, usu. because all seats are occupied". It appears that a standee is after all not a typical Agent but rather one whom standing is imposed on or happens to. Then an employee can be understood as one to whom employment happens, which immediately extends to a donatee or grantee. Note that the interpretations of these last two words cannot be simply attributed to *-ee* denoting [+human] so that the Theme of *donate* does not qualify. To the extent that *sendee* can be said at all, it must mean "the person to whom something is sent" (*www.dictionary.com*) even though we send humans to other places all the time. *Escapee* seems a bit hard to

get annexed this way, but it is perhaps no accident that in Chinese, *tao* 'escape' can occur in the locative-inversion construction that a typical unergative verb cannot:

(29) a. jianyu li zuijin tao-le liangge fanren.
prison in lately escape-ASP two inmate
Literally: 'There have escaped from the prison two inmates lately.'
b. *jiaoshi li tan-zhe haojiwei fangwen xuezhe.
classroom in talk-ASP several visiting scholar

Minimally, (29) indicates that a verb with the meaning of 'escape' has the option of treating its single argument as a non-Agent.

Since this use of *-ee* is not dependent on the verb having a grammatically manifested separate Theme argument, it would fall into the category of high applicative if we think in these terms. Then two desirable consequences follow. First, the high applicative is known to be semantically/thematically versatile (Bresnan and Moshi 1993: 49), which will give us enough leeway for handling the (actually somewhat obscure) interpretations of *-ee*. Second, since *-er* is the nominal variant of the Agent-providing *v*, both structurally outside the projection of V (for the fundamental reason behind this setup, see Li (2021)), it must be the head of V-*er* – rather than V being the head, resulting in the whole word denoting a set of individuals and not of events. In a similar fashion, the high applicative is structurally located above VP and thus comparable to *v* with respect to its relation with the verb. It is only expected that its nominal version, *-ee*, heads the V-*ee* cluster as well and makes the latter denote individuals. The next question is how, being a language with the low applicative, English lets in the high applicative *-ee*. I suppose (30) to capture this shift of grammatical means:

(30) In a low-applicative language, a high applicative is used only with operations whose nature is to disable the low applicative.

In English, *-ee* as a means of word-formation targets V and not VP, effectively preventing the verbal root from forming a projection with its object at the point of being merged with *-ee*. Since the low applicative is defined to rely on the Theme object, the absence of the latter means no low applicative is possible to begin with. That is, the suffixing of *-ee* to V destroys the very condition for properly using the low applicative and thus satisfies (30) simply by *–ee* acting as itself.

Moving to Chinese, it is the essence of my analysis of NCAs that verbs in clauses with such arguments are truly used as bare roots, having no light verb support of either Hale and Keyser's (1993) l-syntactic kind in it (Lin 2001) or the s-syntactic kind in the clausal structure. Since there is a general consensus among researchers who adopt the light verb approach that the Theme argument is, in one way or another, enabled by a light verb, dissociating a bare root from any light verb equals

to depriving it of having a thematic Theme. It is this very process, I suggest, that qualifies the use of the high applicative strategy as conditioned by (30). The logic is the same as in English: the absence of a Theme means removing the very foundation for the low applicative, thus opening the space for the high applicative. Specifically, I suggest that Chinese uses a phonologically empty high applicative, call it $Appl_H$, paralleling its equally soundless low counterpart.

2.2 How does syntax deal with a bare lexical root?

To begin with, a bare root *r* is arguably the best candidate for encoding a concept, say the concept of driving. If this concept-encoding *r* needs a light verb to bring out or provide the Theme or Agent θ-role to participate in the structure-building of a clause, it is equally plausible, in fact logically compelled, that *r* also needs some grammatical assistance to tie the concept to another grammatical entity, namely the event role. This is presumably what those category-providing elements such as *v*/V are taken to do. In brief, *r* merely encodes an agrammatical concept while V, the default lexical manifestation of *r*, also contains the grammatical elements – conveniently called light verbs in the current case – which equip *r* with grammatical traits such a lexical category and whatever θ-role(s) V ends up having. Suppose all this reasoning to be true. It follows then that a bare root simply cannot be directly inserted into the complement position of T because T needs an event position to bind (Higginbotham 1985) so as to produce '$\exists e_s$:past(e).V(e)…', for instance. There must be some "intermediate" grammatical head which merges with *r* first so as to construct a constituent with both the concept from *r* (e.g. the concept of driving) and an event role to be bound by T in the general sense of θ-saturation (and become modifiable by adverbs via Davidsonian semantics, etc.). All properties of NCAs start from here.

As long as NCAs are tied with bare roots, it is simple logic that most languages do not have bare roots in their syntax, contra such popular theories as Distributed Morphology (e.g. Marantz 1997 and many subsequent works) because none of them have NCAs. See Li (2021) for detailed discussions. With this being the starting point, a fundamental question is why on earth Chinese uses bare roots. It is one thing to say that for some diachronic reason (e.g. Sun and Li 2020) Chinese allows *r* in the clausal structure, but it is a different matter to figure out the motivation for using this clearly marked option in clause-construction. The most plausible answer is that the bare root option is made use of so that we can enjoy the freedom of having NCAs in addition to the default Agent and Theme arguments. The rest is just logic and UG at work.

In order to have an NCA while still respecting UG, *r* is brought into the process of clause-construction. But *r* has no event role for T to bind, forcing it to solicit help

from some head which can provide it. *v* is always the default choice. But Chinese, like English, also has (30) in place and a high applicative, as Pylkkänen argues, has the semantics in (31a), which differs from Kratzer's (1996) expression of *v* (which she calls Voice) only in the thematic contents of the arguments they introduce:

(31) a. $[\![\text{Appl}_H]\!] = \lambda e \lambda x.\textbf{Extra-arg}(e, x)$
b. $[\![v]\!] = \lambda e \lambda x.\textbf{Agent}(e, x)$

That is, Chinese actually may merge *r* with either element in (31) to bring an event role into the clausal structure, in the same way that *r* merges with an l-syntactic light verb to acquire the event role (among other things). (32) illustrates the bare root √KAI 'drive' and *v* in (31b):

(32) a. √KAI
$[\![\sqrt{\text{KAI}}\,]\!] = \textbf{drive}$
b. V = light-verb + √KAI
$[\![\text{V}]\!] = \lambda x \lambda e.\textbf{drive}(e) \,\&\, \textbf{Theme}(e, x)$
c. $[\![v + \sqrt{\text{KAI}}]\!] = \lambda x \lambda e.\textbf{drive}(e) \,\&\, \textbf{Agent}(e, x)$

With (31–32) for semantics, mergers of √KAI 'drive' with *v* or Appl_H give us three logical possibilities (the precise structure is irrelevant for the current discussion; see Li (2021) for detailed discussions):

(33) a. … T [$_{vP}$ Agent *v*+*r* NCA]
b. … T [$_{AppIP}$ Appl-arg Appl_H+*r* NCA]
c. … T [$_{vP}$ Agent *v* [$_{AppIP}$ Appl-arg Appl_H+*r* NCA]]

(33a) is obviously the least marked scenario, with *v* being UG's default setup in a clause and *r* used so as to bring in an NCA. Two facts follow immediately: that *an Agent subject and a noncanonical object is by far the most common form of NCAs* (let's call it Fact 1), and that *such sentences always appear "transitive"* (Fact 2). If no NCA were introduced into the structure, there would be no point of using *r* in the first place, as we reasoned earlier. With the NCA in place, *v* licenses it with Case (Chomsky 1995) while T licenses *v*'s own Agent argument. (33b) is understandably more marked than (33a) since it hinges on (30) while the default applicative in Chinese is the low version. What is critical here is that Appl_H is used so as to provide the event-role required by T. That is, the motivation for *r* is to bring in an NCA; the motivation for Appl_H is to satisfy T. Appl_H makes the applied argument (Appl-arg in (33b)) necessary while *r* and the NCA come and go together. Again, the end product is a "transitive" construction with Appl_H Case-licensing the NCA and T, the applied argument. But unlike *v*, Appl_H is a thematically versatile argument-introducer, giving the superficial fact of *the subject and object both being NCAs* (Fact 3). Since there is no further grammatical means to regulate the

structural relation between NCA and Appl-arg, their distributional compatibility with the extra-linguistic thematic hierarchy (see 1.3 on my discussion of A. Li) remains "conceptual", with *a contra-hierarchy interpretation more restricted* as A. Li has demonstrated via object-deletion but not entirely forbidden as is typically between Agent and Theme (Fact 4).

Given the perceived Theme interpretation in English derivational words such as *employee*, which I argued above to result from the nominal high applicative *-ee*, one can expect the subject of (33b) to be liable to a similar reading. As for the NCA, nothing prevents it from being understood as Theme since Theme is one of the multiple factors (e.g., Instrument, Location, Time, …) affiliated with the event concept (see 1.2 above and Chapter of Huang, Li and Li 2009). This is *why specific instances of (33b) may (appear to) have a Theme subject or object* (call this Fact 3.5 ☺). Put together, (33a–b) also explain in a trivial manner why *a noncanonical object is never the Agent* (Fact 5): the semantic source of Agent is *v* and not *r*. If *r* encodes the concept of an inherently telic event, the Agent from *v* is automatically taken to be the causer while applied argument remains versatile (Fact 5.5), as we showed in 1.4.

The last scenario, (33c), is ruled out in principle in the framework of the Minimalist Program (Chomsky 1995). The markedness of an operation or structure corresponds to computational cost. And there is an intuitive sense that using Appl_H is more "costly" than using *v* in Chinese, again because the default applicative in the language is Appl_L. Since both *v* and Appl_H are merely means to satisfy T in the NCA construction, one of them is sufficient for the job and the competition always favors *v* over Appl_H. In other words, (33c) creates a redundancy given the single motivation for having *v*/Appl_H and computational efficiency always avoids the redundancy by removing the more costly element. The situation forms a contrast with (33b). While Appl_H remains a costly means, there is no less costly candidate existing side by side in the same construction, making it impossible to compare computational costs in the derivation of this particular structure. In essence, this resembles *do*-support in English. As a language-specific and thus more costly strategy, *do*-support becomes a good choice in those structural contexts where there is no cheaper option to pick. In sum, we derive the fact that the NCA construction is obligatorily transitive because in form, it can be neither intransitive *nor ditransitive* (Fact 2.5).

2.3 Appl_H vs. light verbs

The similarity between accounting for NCAs with a high applicative and with a set of light verbs is obvious, both incurring extra structure above VP (or the bare root) and both permitting a wide range of oblique thematic relations. The primary difference lies in independent evidence, a factor in evaluating theoretical claims that

is especially critical at the current stage of linguistics because there is simply too much uncertainty and what we have as a "theory" includes extremely powerful and thus potentially over-generating apparatuses. One such powerful tool is to allow hypothetical underlying constituents and structures that are not overtly manifested. If we step out of technicalities, the most popular ideas in modern linguistics that are not from Chomsky are almost always those that increase the power of the theory and thus give researchers more freedom to toy with analyses. A continual contribution that Chomsky has been making to the field can be described by analogizing the history of the generative enterprise to a huge pulsating heart: once it gets a jump start, the expanding phase is when everyone involved adds apparatuses to the system, some being dangerously powerful; the contracting phase is always marked by a new theoretical model put forward by Chomsky every ten-some years. It is likely out of the same consideration that Chomsky's works have always been cautious about pairing lexico-semantic decompositions with underlying (and inevitably more elaborate) structure, from the era of Generative Semantics till now.

This is why independent evidence is of great significance, and such evidence is hard to come by for multiple light verbs. First recall the comparison between the causative *rang* 'make, let' and the instrumental *na* 'take, hold' in (7–8). Hypothesizing a phonologically empty causative light verb taking a verbal projection as complement has independent evidence because an overt version of the same or comparable structural nature is widely observed. But the same logic does not hold between *na* and the hypothesized instrumental light verb because *na* as a head apparently does not c-command the lexical verb. A reviewer tries to bypass this disparity by noting the historical verbal origin of typical Chinese prepositions so that one may assume "that representations of light verb structure reflect the original historical head-complement structure." But where is the proof that *na* used to take a verbal complement (in addition to the NP after it)? It was further noted that "the literature provides many examples which show that overt elements and their covert counterparts do not have exactly the same grammatical properties." But the same literature spends no less effort *to prove* such dissimilarities, not merely to assume them (recall the huge literature on pro, PRO and overt pronouns, for instance). With respect to light verbs, shouldn't one expect to see proof that NCAs could not be accounted for short of hypothesizing light verbs, each introducing a dedicated argument and all c-commanding lexical verbs? Only then would the claimed difference between the instrumental light verb and *na* be "proven". At this point, however, such proof is unavailable because there are alternatives that account for the facts without using dedicated light verbs.

The morphological high applicative, on the other hand, is widely distributed among multiple language families (Pylkkanen 2008, Pacchiarotti 2017). Every Bantu language that I have read about in the literature uses the same lexical form

to express a wide range of thematic relations, leaving the actual interpretation to the clausal context (i.e. the choice of the verb and its arguments). And given the fact that Chinese and English default to a low-applicative (see Pylkkanen for English; Chinese patterns with English in this regard), the condition in (30) plus the general principles of UG (i.e. θ-saturation and computational cost) correctly restrict the uses of $Appl_H$ and *v* to no more than once per NCA construction. In this context, another fact about Bantu applicatives is worth introducing. While "the applicative suffix can be attached twice to the verb root to introduce two applied phrases" in many Bantu languages according to Pacchiarotti (ibid: 155),[8] the only example among hundreds in her dissertation to manifest this is (34a), to be compared with the typical mono-applicative (34b–d):

(34) Tswana (ibid: 156–170; quoted from Creissels 2004)

a. Lorato o-tlaa-ape-el-el-a bana motogo mo pitseng
Lorato AGR-FUT-cook-APPL-APPL-FV child porridge LOC pot
e tona.
LNK big
'Lorato will cook porridge for the children in the big pot.' (Benefactive and Locative)

b. Mpho o-j-ets-e Kitso dinawa.
Mpho AGR-eat-APPL.PERF-FV Kitso bean
'Mpho ate the beans on Kitso' (Malefactive)

c. Nama e-šab-el-a bugobe.
meat AGR-flavor-APPL-FV porridge
'The meat is used to flavor the porridge.' (Instrument; cf. *The key opened the lock*.)

d. Ke-tlaa-tabog-el-a ko tseleng.
AGR-FUT-run-APPL-FV LOC road
'I will run to the road.' (Locative)

Pylkkänen offers convincing arguments that the Benefactive-introducing applicative is the low type (see 2.1 above). If Pacciarotti's data are not accidental, it seems that a Bantu clause accommodates no more than one high applicative and one low applicative each. Now consider what (34) mean to the comparison between the light-verb and high-applicative approaches to NCAs.

---

8. This discussion specifically excludes what Pacchiarotti calls pseudo-applicatives which are "irregular and non-productive" and "do not introduce an applied phrase to the argument structure of the verb root" (ibid: 141). In other words, this type is irrelevant to NCAs. In the examples, FV = final vowel, LNK = linking word (cf. *de* in Chinese). Unfortunately, no reference to Creissels 2004 is given by Pacchiarotti.)

If the light verbs for NCAs correspond to both applicative forms or if the very rare (34a) is not truly representative and (at least some) Bantu languages do permit multiple high applicatives, then we must *not* ignore the fact that each applicative can independently license an oblique argument in addition to the original argument of the verbal root. This runs directly counter to what we see with Chinese NCAs where the construction looks obligatorily transitive and transitive only, namely what I named Facts 2 and 2.5 in 2.2, because an NCA is introduced only at the cost of suppressing the default argument of the transitive verb. Thus, there is no simple conversion from the light verbs to the applicatives in this scenario. Alternatively, let (34) reflect the real maximal distribution of the high and low applicatives so that only one instance of each is allowed per clause. There is no inherent conflict between this option and using Appl_{H} to explain NCAs as long as there exist pure low-applicative languages as Pylkkänen has established and that (30) holds for some of them. Nor would I object Appl_{H} to be called a light verb (or vice versa). But such a theory is incompatible with any account of the NCAs which insists in pairing each NCA with a light verb. Since both the subject and object can be NCAs and there is no requirement such that at least one of them must be a Goal/Benefactive, two light verbs must be permitted per clause which both correspond to the high applicative, in direct conflict with the premise of the second scenario.

In sum, it might be trivial to call my proposed mechanism behind the NCAs Appl_{H} or a light verb; but such a light verb Lv must deviate from its original conception in significant ways: (i) because of (33a), Lv is *not* a prerequisite for NCAs to happen; (ii) Lv can only occur *once* per clause given (33b); (iii) Lv leaves its semantic content determined *contextually* rather than encoding specific thematic information – otherwise it would be rather odd that Bantu languages employ a single morphological form for multiple kinds of thematic relations; (iv) Lv draws its theoretical legitimacy from *independently* witnessed facts, contra the practice of postulating invisible elements merely on the basis of mere lexical semantic decomposition. Collectively, these properties define a very different linguistic entity from the light verbs in the NCA literature, keeping not much more from the latter than a namesake.

3. Conclusion

This article is an expansion of the analysis of Chinese NCAs in Li (2021). The representative analyses of the phenomenon were critically reviewed, accompanied with facts, some new, that help sort out the linguistic and extra-linguistic properties of the NCAs. The proposed account consists of two core elements, bare lexical roots without light verbs (in their popular sense) at either lexical or syntactic level

of derivation, and the conditional use of the high applicative. All relevant facts are explained with the collaboration of these two elements once extra-linguistic factors are duly recognized.

References

Baker, Mark. 1988. *Incorporation: A Theory of Grammatical Function Changing*. Chicago IL: Chicago University Press.

Baker, Mark. 1996. *The Polysynthesis Parameter*. New York: Oxford University Press.

Borer, Hagit. 2005. *The Normal Course of Events*. Oxford: Oxford University Press.

Bresnan, Joan and Lioba Moshi. 1993. Object asymmetries in comparative Bantu syntax. In *Theoretical Aspects of Banta Grammar*, Sam Mchombo (ed), 47–91. Stanford, CA: CSLI Publications.

Chen, Zhe and Yafei Li. 2016. Looking at vP from the Chinese perspective. *Foreign Language Teaching and Research* 4: 483–497.

Chomsky, Noam. 1995. *The Minimalist Program*. Cambridge, MA: MIT Press.

Grimshaw, Jane. 1990 *Argument Structure*. Cambridge, MA: MIT Press.

Hale, Kenneth and Jay Keyser. 1993. On argument structure and the lexical expression of syntactic relations. In *The views from Building 20*, K. Hale and S. J. Keyser (eds), 53–109. Cambridge, MA: MIT Press.

Her, One-soon. 2009. Apparent subject-object inversion in Chinese. *Linguistics* 47(5): 1143–1181. https://doi.org/10.1515/LING.2009.040

Higginbotham, James. 1985. On semantics. *Linguistic Inquiry* 16: 547–593.

Huang, James, Audrey Li and Yafei Li. 2009. *The Syntax of Chinese*. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9781139166935

Kratzer, Angelika. 1996. Severing the external argument from the verb. In *Phrase Structure and the Lexicon*, Johan Rooryck and Laurie Zaring (eds), 109–137. Dordrecht: Kluwer. https://doi.org/10.1007/978-94-015-8617-7_5

Kuroda, S.-Y. 1972. The categorical and the thetic judgment. *Foundations of Language* 9: 153–185.

Li, Audrey. Thematic hierarchy and derivational economy. *Language & Linguistics* 15(3): 295–339.

Li, Yafei. 2005. *X0: A Theory of the Morphology-Syntax Interface*. Cambridge, MA: MIT Press.

Li, Yafei. (2021) *Universal Grammar and Iconicity*. Cambridge: Cambridge University Press.

Li, Yafei, Rebecca Shields and Vivian Lin. 2012. Adverb classes and the nature of minimality. *Natural Language and Linguistic Theory* 30: 217–260. https://doi.org/10.1007/s11049-011-9158-9

Lin, Jonah. 2001. Light verb syntax and the theory of phrase structure. PhD dissertation, University of California, Irvine.

Marantz, Alec. 1993. Implications of asymmetries in double object constructions. In *Theoretical Aspects of Bantu Grammar*, Sam A. Mchombo (ed), 113–150. Stanford, CA: CSLI Publications.

Marantz, Alec. 1997. No escape from syntax: Don't try morphological analysis in the privacy of your own lexicon. *UPenn Working Papers in Linguistics* 4(2): 201–225.

Pacchiarotti, Sara. 2017. *Bantu applicative construction types involving *-id: Form, function and diachrony*. PhD dissertation, University of Oregon.

Pesetsky, David, and Esther Torrego. 2004. Tense, case and the nature of syntactic categories. In *The Syntax of Time*, Jaqueline Guéron and Jaqueline Lecarme (eds), 495–538. Cambridge, MA: MIT Press.

Pylkkänen, Liina. 2008. *Introducing Arguments*. Cambridge, MA: MIT Press. https://doi.org/10.7551/mitpress/9780262162548.001.0001

Ramchand, Gillian. 2008. *Verb Meaning and the Lexicon: A First Phase Syntax*. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511486319

Rizzi, Luigi. 1990. *Relativized Minimality*. Cambridge, MA: MIT Press.

Sun, Tianqi, and Yafei Li. 2010. Licensing non-core arguments in Chinese. *Chinese Language Studies* 334: 21–33.

Sun, Tianqi, and Yafei Li. 2020. An analysis on the mechanism of oblique object constructions in Chinese: The monosyllabic constraint and the "bare root" theory. *Contemporary Linguistics* 22(2): 199–216.

Vendler, Zeno. 1967. *Linguistics in Philosophy*. Ithaca, NY: Cornell University Press. https://doi.org/10.7591/9781501743726

Zhang, Niina. 2018. Non-canonical objects as event kind-classifying elements. *Natural Language and Linguistic Theory* 36: 1395–1437. https://doi.org/10.1007/s11049-017-9397-5

Applied objects in Mandarin and the nature of selection

Richard K. Larson and Chong Zhang
Stony Brook University / Kasisto AI

This article examines a range of data involving non-canonical objects in Mandarin mono- and di-transitive sentences. It argues that these represent *applied object constructions*, in which an oblique argument is "promoted" to the status of a direct object. The core theoretical apparatus employed is that of Larson (2014), which recasts θ-roles as formal syntactic θ-features and θ-role assignment as θ-feature agreement and provides a general account of structure projection and argument inversions like those involved with applied objects. We show that this approach can bring together a wide range of constructions in Mandarin. We conclude with a discussion of these results for the broader understanding of selection. Mandarin non-canonical objects strongly suggest a purely syntactic approach to selection, rather than the semantic approach which is more typically assumed.

1. Introduction

Languages are known to express a wide range of senses via the two different syntactic forms in (1). Applicative form deploys v/V-projections, often marked by special verbal morphology (*-APPL*). Oblique form uses an additional class of non-verbal heads, typically prepositions (P).

(1) Applicative *Form*: α V-APPL β γ
Oblique *Form*: α V γ [P β]
Sense Expressed: CAUSED POSSESSION, BENEFACTIVE/MALEFACTIVE/ SUBSTITUTIVE, INSTRUMENTAL, CAUSED MOTION/LOCATION, STIMULATIVE, MANNER, REASON

Some languages favor the latter (e.g., English); some favor the former (e.g, Igbo (Emenanjo 1976)); some show robust alternation (e.g., Kinyarwanda (Kimenyi 1980)). The syntactic relation between the forms – derivation vs. separate projection – has been controversial.

https://doi.org/10.1075/la.272.13lar

In this paper we consider a range of data involving "oblique arguments" in Mandarin mono- and di-transitive sentences, which diverge in both subtle and dramatic ways from comparable English forms. We propose an account of these constructions based on Larson (2014), which recasts θ-roles as formal syntactic θ-features and θ-role assignment as θ-feature agreement and provides a general account of structure projection and argument inversion. Our core proposal is that Mandarin oblique arguments should be analyzed uniformly as applied objects, which have raised from the position of obliques, sometimes inverting around another argument in the process. We provide a precise account of raising in these cases within the framework of the Minimalist Program, which typically involves a probe-goal mechanism, but which, as we show, can also operate through what we identify as "transitive agreement". We observe that our proposal, while drawing together a large set of Mandarin constructions, also raises significant questions about the nature of selection – in particular the extent to which it is semantically based. We argue that the facts of Mandarin "oblique arguments" suggest a strongly distributional view of selection, one which departs sharply from the usual semantically-based picture familiar since Frege (1893).

In Section 2.0 we survey the domain of oblique arguments in Mandarin, looking at monotransitives with circumcumstantial θ-roles, monotransitives with possessive θ-roles and ditransitives. In Section 3, we sketch the core technical apparatus that we adopt from Larson (2014), which construes θ-roles as formal features and θ-role assignment as formal feature agreement. In Section 4, we return to the constructions reviewed in Section 2, and show, case by case, how each may be derived under the technical assumptions we have introduced. Finally, in Section 5 we turn to the view of selection, specifically its thoroughly syntactic character as compared to semantically based, "Fregean" views common in the literature. We note that in their greater apparent freedom in association with θ-features, Mandarin verbs resemble English nominals. We tentatively suggest that this freedom correlates with the greater categorial plasticity of Mandarin: the fact that a single lexical item can appear in multiple categorial roles.

2. Oblique arguments in Mandarin

2.1 Monotransitives with circumstantial roles

Lin (2001) draws attention to interesting monotransitive paradigms in Mandarin like (2a–d). (2a) exhibits a "canonical" patient object. whereas (2b–d) exhibit "non-canonical," objects bearing various oblique thematic roles, including instrument, location and time (resp.).[1]

(2) a. Wo chi niu-rou mian.
I eat beef noodle
'I eat beef noodle.'
b. Wo chi **da-wan**.
I eat big-bowl
'I eat with/using a big bowl.'
c. Wo chi **guanzi**.
I eat restaurant
'I dine at a restaurant.'
d. Wo chi **xiawu**.
I eat afternoon
'I dine in the afternoon.'

As many subsequent authors have noted (Barrie and Li 2014; Li 2011, 2014; Zha ng 2005) although the boldfaced items in (2b–d) resemble circumstantial adverbs semantically, they pattern like direct objects syntactically, e.g., in being separable from V by ASP (showing non-incorporation) (3a), in co-occuring with duration/frequency phrases (3b), in combining with V + affected object (3c), and in being relativizable (3d):

(3) a. Ta hua-guo na-mian qiang.
he draw-ASP that-CL wall
'He has drawn on that wall.'
b. wo shang xingqi chi-le san-ci/tian mian/fandian.
I last week eat-LE three-times/day noodle/restaurant
'I ate noodles/at restaurants three times/days last week.'

1. As discussed by Lin (2001), Barrie and Li (2014), and Li (2014), non-canonical objects involve a number of distinctive features beyond their thematic role. For many speakers, acceptability of examples like (2b–e) is highly dependent on presentation with appropriate pragmatic context. Furthermore, there are issues of conventionalization so that, for instance, *chi da-wan* 'eat with large bowl' is readily acceptable whereas *chi da kuaizi* 'eat with large chop sticks' is not. In other words, some verb–non-canonical object combinations appear to have the status of collocations. We return to these issues in Section 4.

c. wo jiu hua-le ta san-zhang zhi.
I only paint-LE him three-CL paper
'I only painted on three pieces of paper (on him) (he was affected).'
d. ta chi de (canting) dou shi haohua canting.
he eat DE (restaurant) all be fancy restaurant
'(The restaurants where) he ate were fancy restaurants.'

In presence of a canonical agent or experiencer subject, non-canonical and canonical objects seem to "compete" insofar as only one is permitted. Compare (2a–e) and (4a–e), from Li (2014):

(4) a. *Wo chi da-wan niu-rou mian
'I eat beef noodle with a big-bowl.'
b. *Wo chi guanzi niu-rou mian
'I eat beef noodle in a restaurant.'
c. *Wo chi xiawu niu-rou mian
'I eat beef noodle in the afternoon.'
d. *Wo chi xiawu guanzi
'I eat in a restaurant in the afternoon.'
e. *Wo chi xiawu guanzi da-wan niu-rou mian
'I eat beef noodle with a big-bowl in a restaurant in the afternoon.'

Interestingly, absence of a canonical agent or experiencer subject yields more possibilities. Both canonical and non-canonical objects can "promote" to subject status. Li (2014) gives alternations like (5)–(8), where argument order appears to invert:

(5) a. xiao bei he lücha
small cup drink green.tea
'Use the small cup to drink the green tea.' INSTRUMENT > THEME
b. lücha he xiao bei
green.tea drink small cup
'Green tea is drunk with small cups.' THEME > INSTRUMENT

(6) a. da dianyingyuan kan dongzuo pian; xiao dianyingyuan kan katong pian.
big theater watch action film small theater watch cartoon film
'Big theaters are for watching action films;small theaters are for watching cartoons.' LOCATION > THEME
b. dongzuo pian kan da dianyingyuan; katong pian kan xiao dianyingyuan.
action film watch big theater cartoon film watch small theater
'Action films are to watch in big theaters; cartoons are to watch in small theaters. ' THEME > LOCATION

(7) a. wanshang mai lubiantan.
evening sell street.stall
'Sell at street stalls in evenings.' TIME > LOCATION

b. lubiantan mai wanshang.
street.stall sell evening
'Sell at street stalls in evenings.' LOCATION > TIME

(8) a. zaoshang qie zhe-ba dao.
morning cut this-CL knife
'Cut with this knife in the morning.' TIME > INSTRUMENT

b. zhe-ba dao qie zaoshang.
this-CL knife cut morning
'This knife is to cut with in the morning.' INSTRUMENT > TIME

These phenomena sharply distinguish Mandarin from English, in which the equivalents of (2b–d) would all demand oblique syntax – i.e., the presence of a preposition. Furthermore, with P present there would be no "competition". As the glosses of (4a–e) show, the patient object is fully compatible with all of the obliques. Finally, pairs like (5)–(8), in either order, are simply unavailable in English with anything resembling their Mandarin grammar.

2.2 Monotransitives with possessive roles

Mandarin grammar also includes monotransitives of the famous type shown in (9a)–(11a), whose analysis, and even whose appropriate English gloss, has been highly controversial.[2] The subject in such examples has been analogized to so-called "ethical dative' arguments, under which they receive the gloss as in (9b)–(11b). An alternative is to understand them as "split-possessives" under which the gloss in (9c)–(11c) are correct:

(9) a. Wangmian si le fuqin.
Wangmian die ASP father

b. 'Wangmian had his father die on him' *Ethical Dative gloss*

c. 'Wangmian's father died.' *Split Possessor gloss*

(10) a. Jianyu pao le fanren.
Jail run ASP convicts

b. 'The jail had its convicts escape on it.' *Ethical Dative gloss*

c. 'The jail's convicts escaped.' *Split Possessor gloss*

2. For discussion of Wangmian sentences, see Xu (1999,2001), Han (2000), Pan and Han (2005), Shen (2006), Ren (2009), and Yu and Lu (2011).

(11) a. Zhangsan shaihong le lian.
Zhangsan sunburn ASP face
b. Zhangsan had his face sunburn on him.' *Ethical Dative gloss*
c. Zhangsan's face sunburned.' *Split Possessor gloss*

Zhang (2015b) observes that subject and objects in so-called "Wangmian sentences" seem to involve the stronger relation of possession rather than the weaker about-ness relation of ethical datives. She notes examples like (12a)–(13a), which might be expected to be good as ethical datives (12b)–(13b), but are in fact anomalous in a way comparable to true possessives (12c)–(13c):

(12) a. #Wangmian si le Lisi.
Wangmian die ASP Lisi
b. 'Wangmian had Lisi die on him.' *Ethical Dative gloss*
c. #'Wangmian's Lisi died.' *Split Possessor gloss*

(13) a. #Zhangsan pao le fanren.
Zhangsan run ASP convicts
b. 'Zhangsan had the convicts escape on him.' *Ethical Dative gloss*
c. 'Zhangsan's prisoners escaped.' *Split Possessor gloss*

Zhang (2015b) notes further that the verb in "Wangmian constructions" must be one whose surface subject is derived – i.e., an unaccusative like *si* 'die' and *pao* 'escape' or a middle like *shaihong* 'sunburn'. Unergatives like *dapenti* 'sneeze' or *dahandajiao* 'shout' are disallowed (14a–b):

(14) a. *Wangmian dapenti le fuqin.
Wangmian sneezed ASP father
'Wangmian's father sneezed.'
b. *Jianyu dahandajiao le fanren.
Jail shouted ASP convicts
'The jail's convicts shouted.'

Again, these phenomena sharply distinguish Mandarin from English, in which the equivalents of (9)–(11) would all demand explicit possessive syntax – i.e., the presence of a genitive.

2.3 Ditransitives

English and Mandarin pattern more similarly with respect to oblique arguments in ditransitive constructions. Mandarin exhibits an alternation involving a prepositional dative (PPD) (15a) and a double object construction (DOC1) (15b) that appears quite parallel to that in English:[3]

(15) a. Zhangsan song/jie le [liang bai kuai qian] [PP gei Lisi].
Zhangsan give/lend PERF two hundred CL money to Lisi
'Zhangsan gave/lent two hundred dollars to Lisi.'
b. Zhangsan song/jie le [Lisi] [liang bai kuai qian].
Zhangsan give/lend PERF Lisi two hundred CL money
'Zhangsan gave/lent Lisi two hundred dollars.'

Nonetheless, as noted by Gu (1999), the situation is more complex. Alongside (9a–b) we also get (16a) with no English counterpart (DOC2) and (16b) with very "un-English" word order (*Pre-V Dative*).

(16) a. Zhangsan song gei/jie gei le [Lisi] [liang bai kuai qian].
Zhangsan give to/lend to PERF Lisi two hundred CL money
'Zhangsan gave/lent Lisi two hundred dollars.'
b. Zhangsan [gei Lisi] song/jie le [liang bai kuai qian].
Zhangsan to Lisi give/lend PERF two hundred CL money
'Zhangsan gave/lent two hundred dollars to Lisi.

The basic paradigm in (15)–(16) including "incorporated *gei*" recurs with various other Mandarin datives (17)–(18), and with benefactives (19), although sometimes with degradation (18b) or meaning shift (19b) in the "bare" DOC form (DOC1).

(17) a. Zhangsan xie le [yi feng xin] [PP gei Lisi]. *PPD*
Zhangsan write PERF one CL letter to Lisi
'Zhangsan wrote a letter to Lisi.'
b. Zhangsan xie le [Lisi] [yi feng xin]. *DOC1*
Zhangsan write PERF Lisi one CL letter
'Zhangsan wrote a letter to Lisi.
c. Zhangsan xie gei le [Lisi] [yi feng xin]. *DOC2*
Zhangsan write to PERF Lisi one CL letter
'Zhangsan wrote a letter to Lisi.

3. For discussion of Mandarin ditransitives, including datives and double object constructions, see Zhu (1979), Huang and Mo (1992), Tang (1998), Huang and Ahren (1999), 顾阳 (1999), 陆俭明 (2002), 邓思颖 (2004), Feng (2005), Zhu (2005), Liu (2006), Huang (2007), Djamouri & Paul (2009), and Tsai (2007, 2014).

d. Zhangsan [gei Lisi] xie le [yi feng xin]. *Pre-V Dative*
Zhangsan to Lisi write PERF one CL letter
'Zhangsan wrote a letter to Lisi.'

(18) a. Zhangsan mai le [yi ben shu] [$_{PP}$ gei Lisi]. *PPD*
Zhangsan sell PERF one CL book to Lisi
'Zhangsan sold a book to Lisi.'

b. ??Zhangsan mai le [Lisi] [yi ben shu]. *DOC1*
Zhangsan sell PERF Lisi one CL book
'Zhangsan sold a book to Lisi.'

c. Zhangsan mai gei le [Lisi] [yi ben shu]. *DOC2*
Zhangsan sell to PERF Lisi one CL book
'Zhangsan sold a book to Lisi."

d. Zhangsan [gei Lisi] mai le [yi ben shu]. *Pre-V Dative*
Zhangsan for Lisi buy PERF one CL book
'Zhangsan Zhangsan sold a book to Lisi."

(19) a. Zhangsan mai le [yi ben shu] [$_{PP}$ gei Lisi]. *PP Dative*
Zhangsan buy PERF one CL book for Lisi
'Zhangsan bought a book for Lisi."

b. Zhangsan mai le [Lisi] [yi ben shu]. *DOC1*
Zhangsan buy PERF Lisi one CL book
'Zhangsan bought a book from Lisi/?for Lisi."

c. Zhangsan mai gei le [Lisi] [yi ben shu]. *DOC2*
Zhangsan buy for PERF Lisi one CL book
'Zhangsan bought a book for Lisi."

d. Zhangsan [gei Lisi] mai le [yi ben shu]. *Pre-V Dative*
Zhangsan for Lisi buy PERF one CL book
'Zhangsan bought a book for Lisi."

This survey of oblique argument behavior, though brief, raises simple but intriguing questions. How might we make sense of the specific behaviors of the Mandarin examples and of their divergences (both subtle and sharp) from the corresponding English forms?

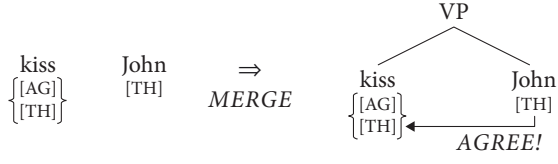
In the next section we argue that Mandarin oblique arguments should be analyzed uniformly as applied objects, counterpart to those found in world languages like Bahasa, Kinyarwanda, Halkomelem, etc. We will spell out this idea using the account of syntactic projection in Larson (2014), which analyzes θ-roles as formal features and θ-role assignment as feature agreement controlled via a θ-feature hierarchy.

3. Projection via θ-features

3.1 θ-roles as formal features

Developing ideas by Hornstein (1999), Larson (2014) proposes that θ-roles – AGENT, THEME, GOAL, LOCATION, etc. – from the Government Binding Theory (Chomsky 1981) be reanalyzed as formal syntactic features – θ-features like [AG], [TH], [GL], [LOC], etc. – that are born by predicates and arguments and that undergo agreement at the point of external merge. For example, the traditional analysis of English *kiss* as bearing AGENT and THEME θ-roles that are assigned to its arguments during composition is recast in terms of *kiss* bearing the pair of θ-features – [AG] and [TH] – which undergo agreement with a corresponding feature on an argument at the point of external merge (20):

(20)



As a counterpart to a thematic hierarchy AGENT > THEME > GOAL > LOCATION governing order of θ-role assignment in syntactic composition, Larson (2014) assumes a feature hierarchy [AG] > [TH] > [GL] > [LOC] >… and the constraint (21):[4]

(21) *Constraint*: A feature F in a feature set S can undergo agreement only if there is no lower-ranked, unagreed feature F' in S.

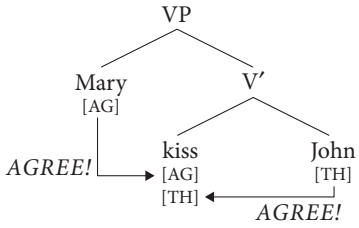
Under (21), the hierarchy of θ-features will determine the hierarchical projection of arguments, as illustrated in (22). Given [AG] > [TH] and (21), the object argument – the one bearing [TH] – must merge and agree first.[5]

---

4. Larson (2014) considers the proposal that the θ-feature hierarchy, might not in fact be universal across languages but rather learned in the course of acquisition. For the purposes of this paper we will maintain the notion of a fixed hierarchy.

5. An anonymous reviewer notes our divergence from Marantz (1984) and Kratzer (1996) in assuming that external arguments are not "severed" from the verb. The arguments presented for doing so by these authors strike us as weak. Furthermore, and neither addresses the counterpart question of why, if the external argument is unspecified on the verb, arguments aren't found in subject position with a given verb in a much broader variety of roles than are in fact found. Finally it is not clear to us that these two authors hold compatible views. The kinds of variation that Marantz uses to justify separating the external argument is very difficult to capture with the neo-Davidsonian framework that Kratzer (1996); to the best of our knowledge there is no set of roles encompassing this sort of variation.

(22)



3.2 More on syntactic features (Pesetsky and Torrego 2007)

The basic account sketched above requires further elaboration given recent developments in the theory of features, which draws a key distinction between instances of features F according to whether they are interpretable, valued or neither (i.e., uninterpretable-unvalued). Broadly put, this move imports the PF-LF distinction into features (or, more precisely, instances of them). Thus interpretable instances of features, notated "iF", are ones associated with "meaning" – i.e., with instructions to the conceptual-intentional system (23a). Valued instances of features, notated "Fv", are ones associated with "pronunciation" – i.e., with instructions to the system of externalization (23b). Uninterpretable-unvalued instances of features, notated simply "F", are concordial – i.e., they have no independent LF content and whatever pronounced content they have is derivative on their relation to a valued feature (23c).

(23) a. [iF] interpretable F, associated with a "meaning"
b. [Fv] valued F, associated with visible marking/pronunciation
c. [F] uninterpretable-unvalued F, concordial

Under the feature theory of Pesetsky and Torrego (2007), unvalued features instances ([iF] or [F]) probe their c-command domain seeking another instance of F. Finding such an F they undergo agreement, which is indicated with a shared numerical index ([n]). In order for a feature F to be "legible" at the interfaces, it must have both interpretable and valued instances linked by agreement. Thus all of (24a–c) will constitute legible features since all instances are linked by agreement and all contain both interpretable and valued instances of F. By contrast (25a–e) will not constitute legible features since one or more of the required conditions – presence of an interpretable instance, presence of a valued instance, or linking by agreement – fails to hold:

(24) a. iF[n] … Fv[n]
b. iF[n] … F[n] … Fv[n]
c. iF[n] … F[n] … F[n] … Fv[n]

(25) a. iF
b. Fv
c. iF[n] … F[n]
d. F[n] … Fv[n]
e. iF … Fv

As a brief illustration of these concepts in the domain of case, consider (26a) below from German, containing the transitive verb *grüssen* 'greet' and an object showing multiple instances of accusative agreement. Chomsky (1995) analyzes *v* as the source of accusative case in such examples. Under Pesetsky and Torrego (2007), *v* can be analyzed as bearing an interpretable, unvalued accusative feature (iACC), which agrees with the valued, uninterpretable instance of the same feature (ACCval) on the object noun (*Freund*). The determiner (*einen*) and the adjective (*alten*) are concordial for this feature, i.e., they bear instances of [ACC] that are neither interpretable nor valued. Assuming composition proceeds bottom-up as in (26b), unvalued [ACC] on *alten* first probes [ACCval] on *Freund* and, upon merger, agrees with it (①). Unvalued [ACC] on *einen* then probes [ACC] on *alten* and agrees with it on merger (②). Finally unvalued [iACC] on *v* probes [ACC] on *einen* and agrees with it when v and VP are merged (③), yielding a feature structure corresponding to (24c), which is licensed, as we noted.

(26) a. [vP V *grüsste* [DP *einen* *alten* *Freund*]]
greeted an.ACC old.ACC friend.ACC

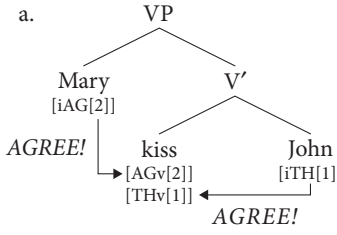
b. [vP V … [DP D AP NP]]
[iACC[1]] [ACC[1]] [ACC[1]] [ACCv[1]]

PROBE/AGREE ③ ② ①

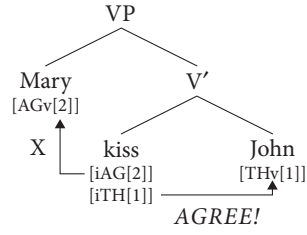
This refinement in the theory of features obliges us to revise the picture in (22) and to determine, with respect to the arguments (*John, Mary*) and the predicate (*kiss*), which instances of θ-features are interpretable and which are valued. Here c-command together with the assumption that only unvalued features probe seems to decide matters. If arguments bear unvalued, interpretable θ-features and predicates bear valued, uninterpretable ones, then agreement under c-command proceeds without issue, as shown in (27a). However, if arguments bear valued, uninterpretable θ-features and predicates bear unvalued, interpretable ones, then agreement with a higher argument will fail, since the required c-command relation will be absent (27b).[6]

6. Regarding interpretability of θ-features on arguments, see Section 4.

(27) a.



b.



We will therefore henceforth assume the general picture of valuation and interpretability in (27a).

We will also assume that, just as argument nominals can appear in different positions bearing different case features and undergo agreement for those features in those positions, argument nominals can appear in different positions bearing different θ-features and undergo agreement for those features in those positions. We will take θ-features to be associated with nominals in the lexicon, like case features, and enter the numeration bearing these features.

3.3 Further refinements

Larson (2014) proposes two key further refinements regarding θ-features and their composition in structure. First, not only V's like *kiss*, but also P's and *v*'s can bear valued θ-features.[7] Second, if an item α bears a set of features of the same type, then at most one of these features can be valued.

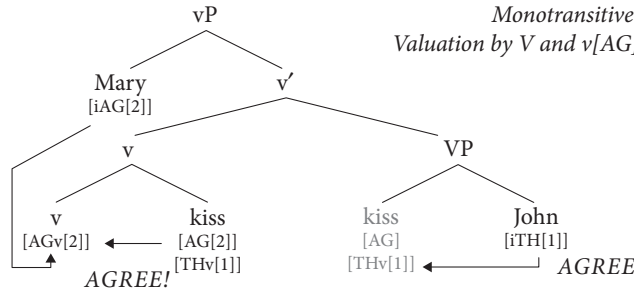
The first assumption allows for the situation in (28a–c) where, for example, a valued goal feature ([GLV]) can be borne by any of the three categories of elements shown:

(28) a. *serve*
[GLV]
b. *to*
[GLV]
c. *v*
[GLV]

The second assumption has the consequence of prohibiting the situation in (27a), where *kiss* bears two valued θ-features, and requires appeal to more elaborated structures like those (29) and (30) below. In (29), only the [TH] feature on *kiss* is valued, which requires [AG] to be valued by another element, here a little *v* voice head, which attracts *kiss* and agrees with it on [AG]. The agent phrase (*Mary*) then merges, agreeing with *v*[AG].

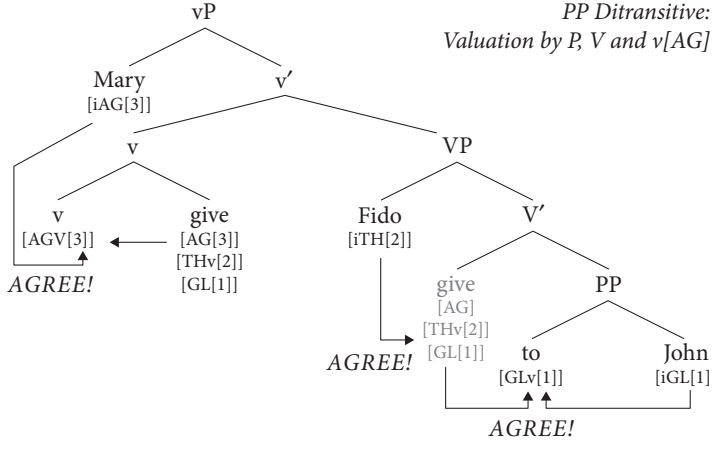
7. Little v's bearing valued θ-features are referred to as "voice heads".

(29)



In (30), *give* bears the θ-feature set {[AG], [THval], [GL]} where again only the theme feature [TH] is valued. This requires both [GL] and [AG] to be valued by other, independent elements. In (30) [GL] is valued by the preposition *to,* which afterwards itself undergoes agreement with V; [AG] is once again valued by little *v*, just as in (29).

(30)



These refinements, while important, preserve the basic picture in (22): the θ-feature hierarchy continues to determine the projection order of arguments. v's and P's enter the picture only to assist with the feature valuation that V cannot provide on its own.

3.4 Argument inversion

3.4.1 *Movement and minimality*

Derivational analyses purporting to invert lower arguments over higher ones (e.g., Psych Movement, Dative Shift, Instrumental Inversion) face a key challenge from Minimality (Chomsky 1986, Rizzi 1991). Under the theory of movement adopted within the Minimalist Program (Chomsky 1995), a head α bearing an edge feature (ε) and a feature [F] capable of undergoing agreement probes its c-command

domain for a [F]-bearing β (31a). Upon probing β, α agrees with it on [F], activates its edge feature and raises β to its Spec (31b).

(31) a. [$_{\alpha P}$ α … [… β …]]
[ε,F] → probes → [F]
b. [$_{\alpha P}$ β α … [… β …]]

Crucially, the probe-goal relation respects Minimality; α cannot probe γ "through" an intervening β that is a potential [F]-bearer (32a). But then how could raising of a lower γ across a higher β occur? How can α establish agreement with γ necessary for raising (32b)?

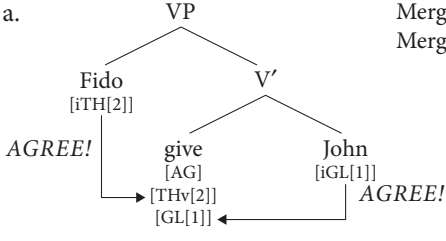
(32) a. [$_{\alpha P}$ α … [… β … [… γ …]]]
[F] → probes → X → … → [F]
b. [$_{\alpha P}$ γ α … [… β … [… γ …]]]
???

Note that this problem will be particularly acute if the probed features are θ-features and β is a potential argument phrase (DP, PP). Intervening arguments β will always be potential [θ]-bearers, hence will always intervene from the standpoint of Minimality.

3.4.2 *"Transitive Agreement"*

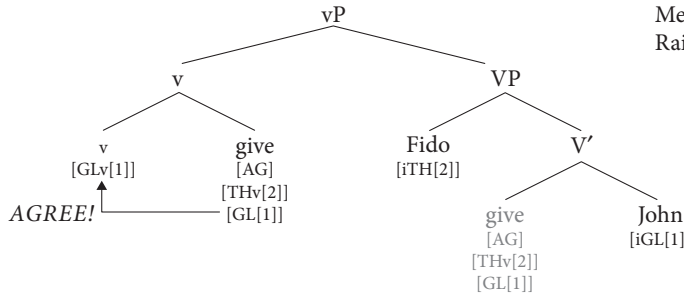
Derivations in which a head carries a set of θ-features up the tree show how argument inversion can be triggered by θ-features without incurring a Minimality violation. A concrete case is illustrated in the derivation sequence (33a–d) below. The verb *give* merges first with its goal argument and then with its theme argument, following the hierarchy of thematic features and the constraint in (21). Observe in (33a) that although merge has taken place between *give* and *John* on the basis of [GL], the latter remains unvalued since *give* is valued only for [TH]:

(33) a.



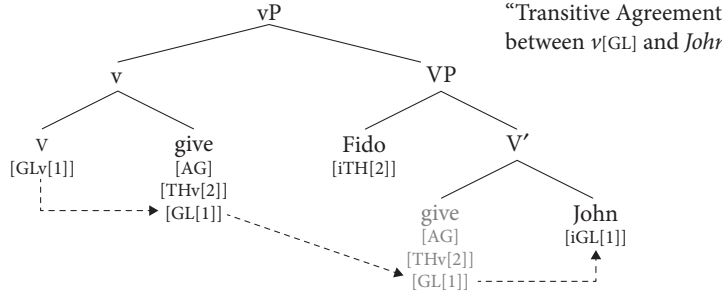
Suppose we next merge a little *v* bearing a valued [GL] feature. The latter attracts *give* and, because of the newly established c-command relation between them, is able to agree with *give* on [GL] (33b):

(33) b.



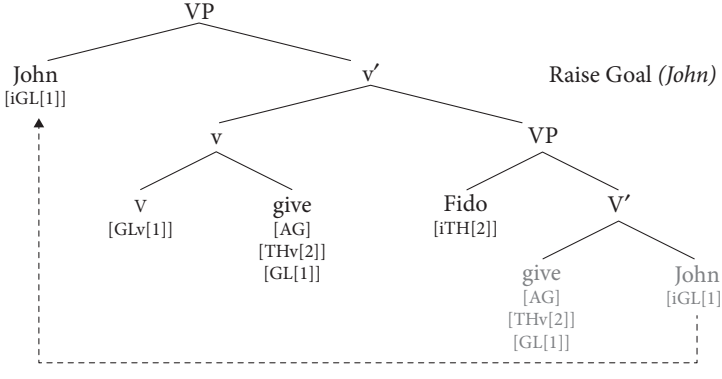
Observe now that since *v* agrees on [GL] with *give*, and *give* agrees on [GL] with *John*, *v* agrees on [GL] with *John*. This agreement occurs, as it were, "by transitivity" (33c):

(33) c.



Assuming that *v*[GL] can activate an edge feature and raise the argument agreeing with it, we derive (33d), where the goal argument crosses over the theme without incurring a Minimality violation:

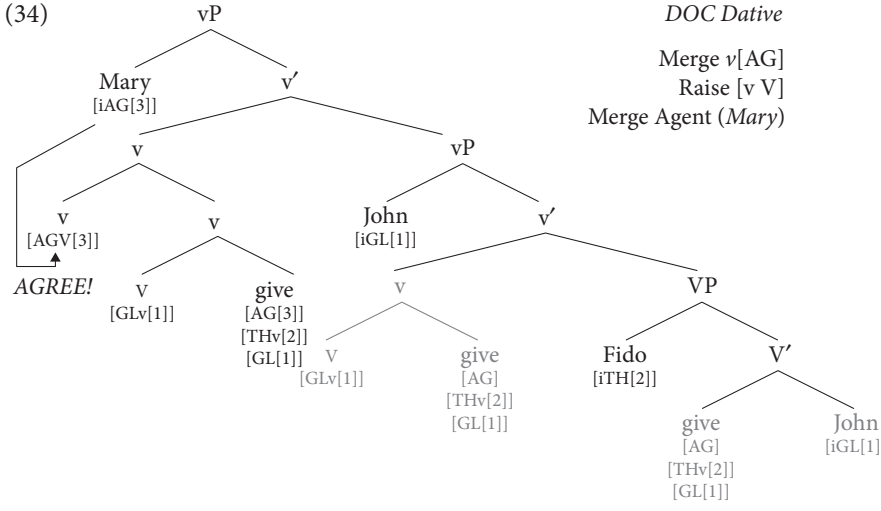
(33) d.



Crucial to this derivation is the role of the verbal head (here *give*), which agrees locally with the lower argument (*John*), and then raises from beneath the intervening argument (*Fido*), carrying agreement with it to the higher v. This allows *v* to establish a movement-enabling agreement relation with the lower argument without having to probe that argument directly, in violation of Minimality.

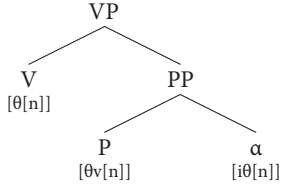
The agent θ-feature can now be valued by *v*[AG] (34), in parallel to cases (29) and (30), already discussed.

(34)



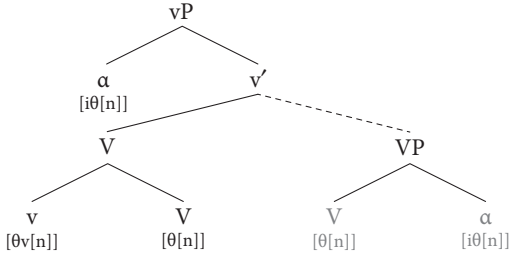
Larson (2014) terms the raising in (34d) "Applicative Shift" ("A Shift") and takes it to underlie the derivation of all applied objects. The general relation between an oblique structure and its applied counterpart is shown schematically in (35). In an oblique structure (35a), valuation of [θ] is by P. In an applied structure (35b), valuation of [θ] is by *v*.

(35) a.



Oblique Structure

b.



Applicative Structure

Applicative shift is a case of argument inversion that creates derived direct objects. Larson (2014) shows that the core θ-feature/transitive agreement mechanism

can also be applied fruitfully to inversions that create derived subjects, including passives, unaccusatives, possessives, experiencer and instrumental constructions.

4. Mandarin oblique arguments as applied objects

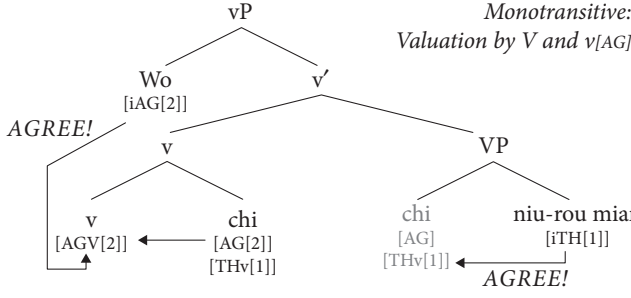
We now return to the Mandarin monotransitive and ditransitive data, exploring how the proposals developed above in Section 2 yield an account of them.

4.1 Monotransitives with canonical subjects and objects

Mandarin monotransitives with canonical agent/experiencer subjects and canonical theme objects like (36a) (= 2a) can be analyzed in parallel with their English monotransitive counterparts (36b) (compare with 29 above):

(36) a. Wo chi niu-rou mian.
I eat beef noodle
'I eat beef noodle.'

b.



The verb *chi* 'eat' carries canonical θ-features [AG] and [TH] with only the latter valued. The theme (*niu-rou mian*) combines with V directly whereas the agent (*wo*) requires an agentive voice head (*v*[AG]) to value its θ-feature.

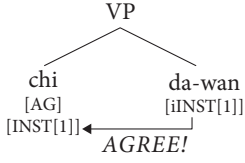
4.2 Monotransitives with canonical subjects and circumstantial objects

We propose that Mandarin monotransitive sentences with canonical agent/experiencer subjects and circumstantial objects such as (2b) *Wo chi da-wan* 'I eat with/using a big bowl', involve valuation by a little v voice head carrying an oblique θ-feature and accompanying Applicative Shift.

As noted in (36) above, the Mandarin verb *chi* 'eat' normally carries an [AG] feature and a valued [TH] feature. Suppose, however, that *chi* is able to delete its [TH] feature and carry an optional instrumental feature [INST] instead. Suppose, furthermore, that although such optional features can be added to V, they cannot

be valued on it.[8] The instrumental argument will then merge first according to the θ-feature hierarchy, but unlike with a theme object, the [INST] feature will be unvalued (37a).

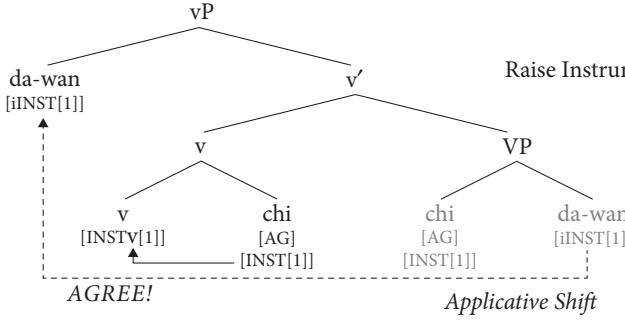
(37) a.



Merge Instrument *(Da-wan)*

In this circumstance, a little v voice head carrying a [INST] feature must be merged with VP. Transitive agreement between *v* and *da-wan* enables raising of the latter to Spec vP (31b), i.e., Applicative Shift (cf. 37b and 35b).

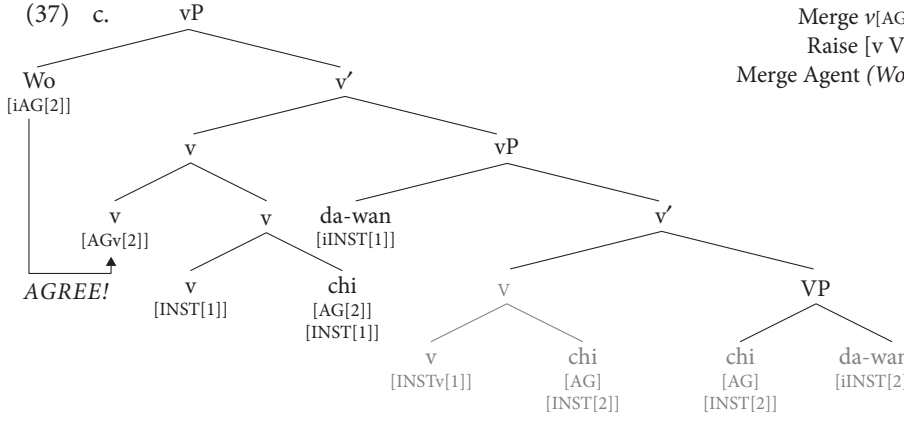
(37) b.



Merge *v*[INST]
Raise [v V]
Raise Instrument *(Da-wan)*

A little v voice head bearing a [AG] feature is then merged with vP in the usual way, allowing merge of the agent subject *wo* 'I' (37c).

(37) c.



Merge *v*[AG]
Raise [v V]
Merge Agent *(Wo)*

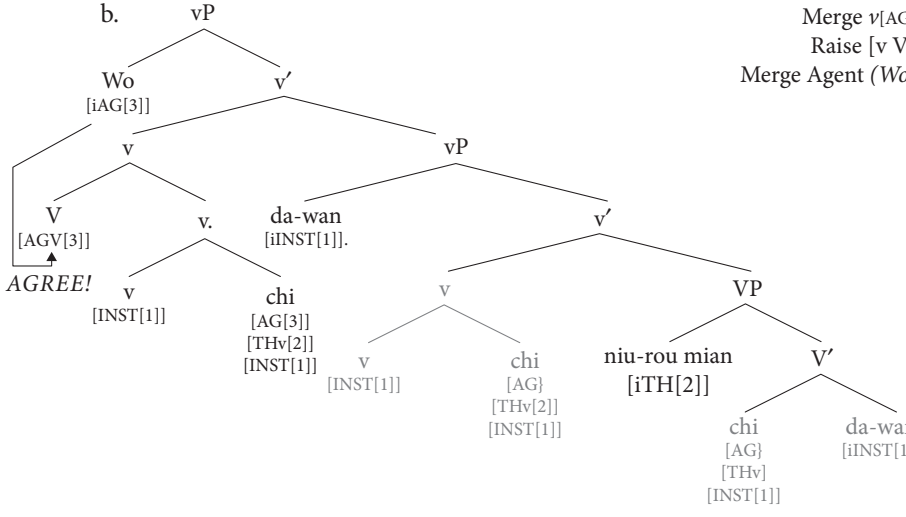
8. See Section 5 for discussion of these assumptions.

We propose parallel derivations for the remaining Mandarin examples in (2) with locative and temporal objects.[9]

A natural question arises at this point as to why Mandarin disallows co-occurrence of non-canonical and canonical objects (38a). What accounts for the unacceptability of the derivation in (38b) versus the acceptability of the apparently similar derivation for the English double object construction in (34)?

(38) a. *Wo chi da-wan niu-rou mian
I eat big-bowl beef noodle
'I eat beef noodle with a big-bowl.'

b.



Our proposal (to be refined below) is that this is a matter of Case. Assume that *v*[AG] and *v*[GL] are case probes in both Mandarin and English, but that *v*[INST], *v*[LOC] and *v*[TEMP] are not. Counting T, there will then be 3 case probes in the English double object structure (34), matching the three argument phrases: T/*Mary*, *v*[AG]/*John* and *v*[GL]/*Fido*. By contrast, there will be only 2 case probes in (38b) for its three argument phrases: T/*Wo* and *v*[AG]/*da-wan*. *Niu-rou mian* 'beef noodles' will therefore fail to agree for case. We identify this as the source of ungrammaticality in (38a) and the other examples in (4) containing co-occurring non-canonical and canonical objects.

---

9. An anonymous reviewer notes that if transitives can replace their [TH] θ-feature with a circumstantial θ-feature, unaccusatives might be expected to do the same, yielding examples equivalent to (i). Jonah Lin (p.c.) informs us that for him such examples are indeed possible.

(i) *This station arrives. (= 'people arrive at this station')

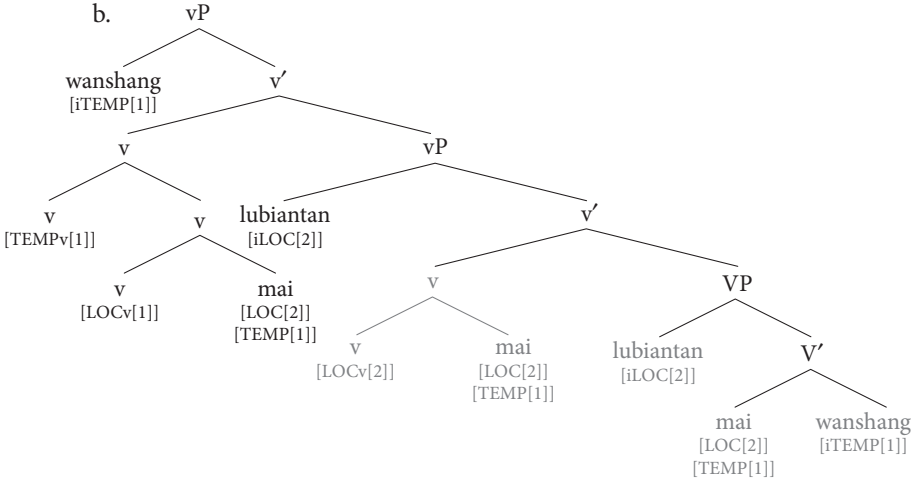
(ii) 車站到了
chēzhàn dàole
'There were station arrivals'/'Stations were arrived at'

4.3 Monotransitives with circumstantial subjects and objects

Mandarin monotransitives with both non-canonical subjects and objects and showing alternating argument orders can be assigned derivations involving two instances of Applicative Shift, where the final order of arguments reflects the order of merger of little *v* voice heads. In the derivation of (39a), *v*[LOC] and *v*[TEMP] are merged in the order *v*[LOC] followed by *v*[TEMP]. This results in the temporal argument occupying highest Spec*v* position after raising (39b):

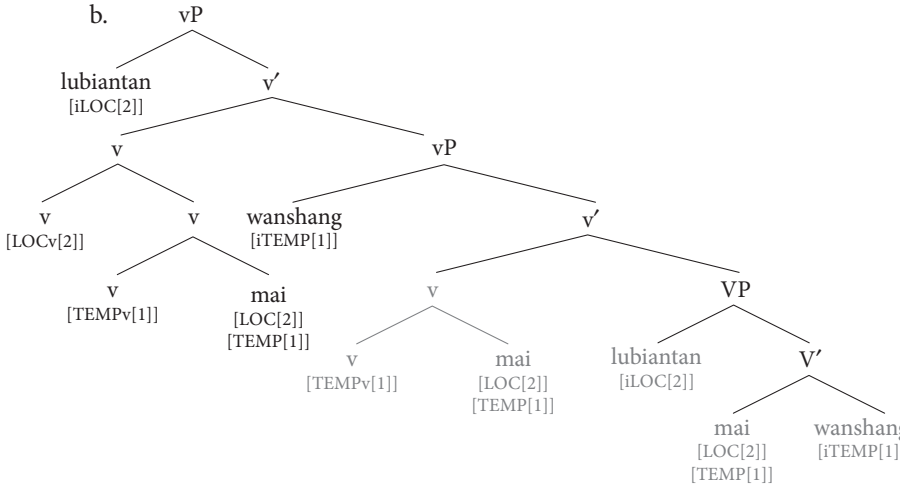
(39) a. wanshang mai lubiantan. TIME > LOCATION
evening sell street.stall
'Sell at street stalls in evenings.'

b.



In the derivation of (40a), *v*[LOC] and *v*[TEMP] are merged in the order *v*[TEMP] followed *v*[LOC], resulting in the locative argument occupying highest Spec*v* position after raising (40b):

(40) a. lubiantan mai wanshang. LOCATION > TIME
street.stall sell evening
'Sell at street stalls in evenings.'



The acceptability of the derivations in (39b) and (40b) creates a tension with respect to the analysis of (38b) above. Recall we blocked examples with combined canonical and non-canonical objects by assuming that none of *v*[INST], *v*[LOC] and *v*[TEMP] is a case probe. But if this is correct, then the only case probe in either (39b) or (40b) will be T, predicting that the lower argument should fail to agree for Case, and hence that both sentences should be ungrammatical. How do we reconcile the unacceptability of (38b) with the acceptability of (39b) and (40b), if Case explains the former?

Descriptively, the fact seems to be that Mandarin is always able to license two arguments regardless of θ-role; that is, two case probes always seem to be available. We therefore make the additional proposal that the highest Mandarin little *v* – the *v* selected by T that is the phase head – is always a potential case probe whatever its thematic composition.[10] More exactly,

Proposal:
i. *v*[AG] and *v*[GL] are inherent case probes in Mandarin and English, but *v*[INST], *v*[LOC] and *v*[TEMP] are not.
ii. In Mandarin, the highest *v* – the *v* that constitutes the phase head – can be a derived case probe.

10. We are grateful anonymous reviewer for this suggestion.

On this hypothesis *v*[TEMP] is a derived case probe in (39b) since it heads the highest vP constiututing the phase head. Likewise *v*[LOC] is a derived case probe in (40b). Accordingly, two case probes are in fact available in both structures.[11]

4.4 Ditransitives

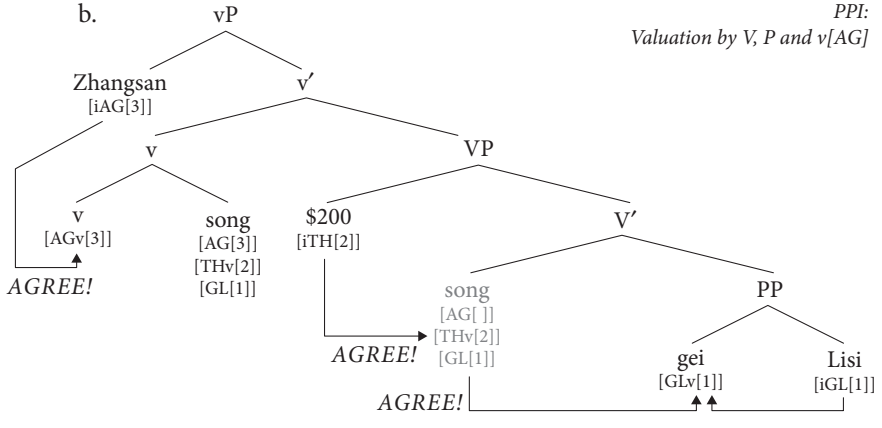
We analyze Mandarin ditransitives largely in parallel with English, following proposals in Zhang (2015a).

4.4.1 *PP Datives*

We analyze Mandarin PP datives with *gei* like (41a) analogously to English *to*-datives. Compare (41b) with (30) above. Here *gei* is analyzed as a preposition bearing a valued goal feature [GLval]:

(41) a. Zhangsan song le [liang bai kuai qian] [PP gei Lisi].
Zhangsan give PERF two hundred CL money to Lisi
'Zhangsan gave/lent two hundred dollars to Lisi.'

b.



11. The assumption that a v phase head can function as a derived case probe may be necessary for English too. Larson (2014) conjectures that English instrumental subjects like *the key* in (ia) raise by Applicative Shift from the lower position occupied by the instrumental in (ib); see (ic). If this is correct, then both T and *v*[INST] must be case probes in order for correct Case licensing to occur. Nonetheless, English *v*[INST] cannot be an inherent case probe since this would incorrectly predict the availability of English instrumental double object structures like (id):

(i) a. **This key opens this lock.**
b. **This lock opens with this key**.
c. [$_{vP}$ **the key** *v*(INST)-open [$_{VP}$ this lock open the key]].
d. *John opened the key the lock.
(cf. *John opened the lock with the key*.)

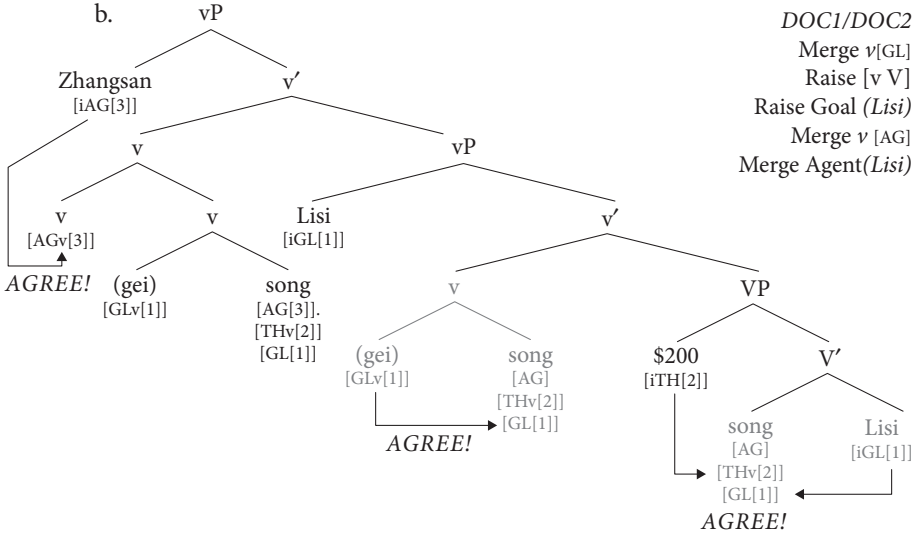
Thus if English *v*[INST] is a case probe, it must be a derived case probe in the sense proposed for Mandarin above.

4.4.2 *Double object constructions*

Mandarin double object constructions (DOC1 and DOC2) like (42a) we derive analogously to English DOC forms (33a–d). Crucially, following Zhang (2015a), we assume that Mandarin *gei* realizes not only P[GL] but also *v*[GL]. In other words, *gei* is ambiguous between a goal preposition and a *goal* voice head (42b).[12,13] We furthermore assume that *v*[GL] has a null variant, as in English.[14]

(42) a. Zhangsan song (gei) le [Lisi] [liang bai kuai qian].
Zhangsan give PERF Lisi two hundred CL money
'Zhangsan gave Lisi two hundred dollars.'

b.



Case in these structures is analyzed just as in the English counterparts: T, *v*[AG] and *v*[GL] are all (inherent) case probes in Mandarin, hence each argument will agree for Case in the structures.

---

12. As Zhang (2015a) notes, the status of Mandarin *gei* as both preposition and applicative head strongly recalls the view of Baker (1988), who takes applicative heads to be incorporated prepositions. The analysis proposed here (and in Zhang 2015a) does not propose literal P-incorporation, but rather a version of Marantz (1984) who takes prepositions and applicatives morphemes to have the same feature content up to category (see Zhang 2015a for further discussion).

13. See also Paul and Whitman (2010) for a derivational proposal also involving raising to Applicative spec position but quite different than the one proposed here.

14. Our trees display V raising as adjunction on the right purely for diagrammatic convenience in indicating agreement relations. Thus in (36b), the order *(gei) song* (v V) should not be taken to reflect the empirical order of these morphemes.

4.4.3 *Preverbal datives*

Consider next Mandarin preverbal datives like (43) (= 16b), with a goal phrase (*gei Lisi*) preceding the main V (*song*).

(43) Zhangsan [gei Lisi] jie le [liang bai kuai qian].
Zhangsan to Lisi lent PERF two hundred CL money
'Zhangsan lent two hundred dollars to Lisi.'

Initially, these might appear to derive from PP Datives by raising and adjunction to the largest vP (44a). However consideration of other ditransitive examples with PP structure shows that such a "PP-fronting" option is not generally available in Mandarin (44b,c).[15]

(44) a. Zhangsan [PP gei Lisi] [vP Zhangsan jie le [liang bai kuai qian] [PP gei Lisi]] ⟶ ??
b. Zhangsan ji le [liang bai kuai qian] [PP dao Beijing]
Zhangsan send PERF two hundred CL money to Beijing
'Zhangsan sent two hundred Yuan to Beijing.'
c. *Zhangsan [PP dao Beijing] ji le [liang bai kuai qian]
Zhangsan to Beijing send PERF two hundred CL money
'Zhangsan sent two hundred Yuan to Beijing."

To our knowledge, preverbal datives like (43) are in fact available only with *gei*, and hence their possibility should hinge on the specific properties of this form. As is well known, one property of *gei* separating it from *dao* is that *gei can* itself function as an independent verb meaning 'give' (45a–b). And indeed Mandarin speakers do intuit that *gei* is acting as a verb in preverbal dative examples like (43).

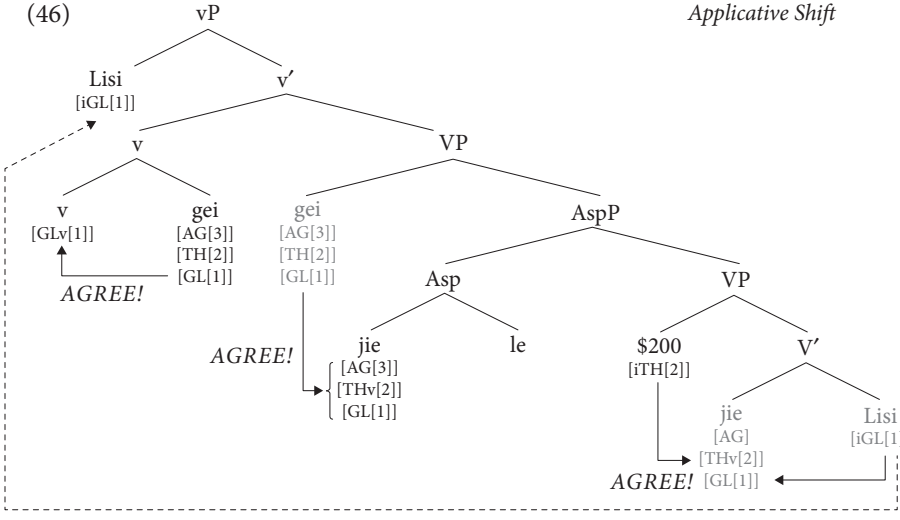
(45) a. Zhangsan gei le Lisi liang bai kuai qian.
Zhangsan give PERF Lisi two hundred CL money
'Zhangsan gave Lisi two hundred dollars.'
b. Zhangsan gei le liang bai kuai qian [PP gei Lisi]
Zhangsan give PERF two hundred CL money to Lisi
'Zhangsan gave two hundred dollars to Lisi.'

Following Chang (2005), Tao (2009), Zhang (2012) (but contra Li and Thompson 1974, 1981), we suggest that (43) and (17d)–(19d) are in fact "serial verb" or "co-verb" constructions" – i.e., structures with two independent lexical verbs. The

15. We are grateful to LIU Lei for examples (44b–c) and for helpful discussion of the material in this section.

proposed derivation and θ-feature relations for the key portion of (43) are given in (46) below. Observe the presence of two lexical verbs *gei* and *jie*. The lower V *jie* 'lend' merges with the goal and theme arguments in the usual way, and the VP it heads subsequently merges with perfective Asp (*-le*). The upper V *gei* 'give' merges with AspP.

(46)

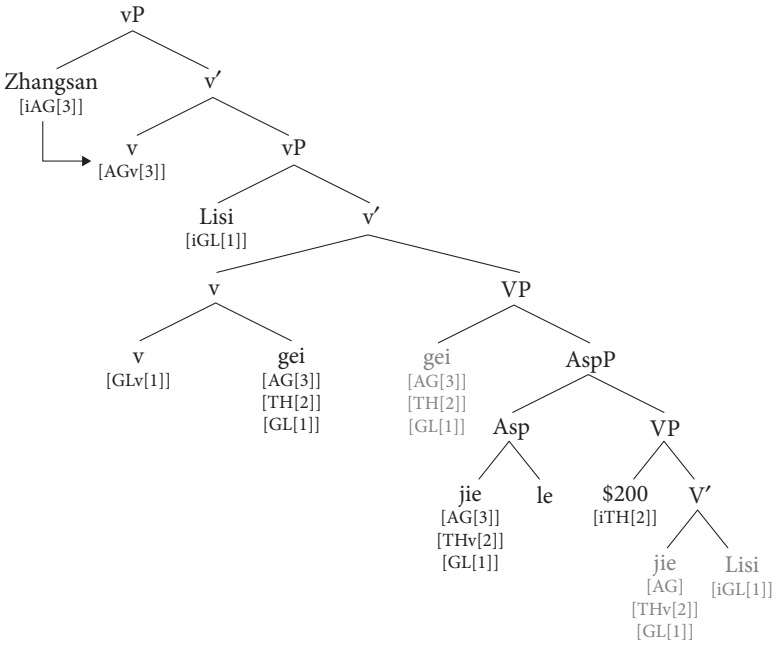


Serial *gei* is analyzed here as bearing only unvalued θ-features and hence able to probe and agree with all the corresponding features on the lower dative verb *jie*.[16] This entails, by transitivity, that upper *gei* agrees with *jie*'s theme and goal arguments, and hence that when *v*[GL] merges above *gei*, *v*[GL] also comes to agree with the goal argument *Lisi*. This transitive agreement permits *v*[GL] to raise *Lisi* to it's specifier position, another instance Applicative Shift, as shown.

The verbal projection is completed by merging *v*[AG] and the subject, as shown in (47):

16. The aspectual element *le* 'PERF' is not a potential θ-feature bearer and hence does not intervene from the standpoint of Minimality.

(47)



Regarding the semantics of dative serial verb structures and the contributions of *gei* and the lower dative verb α (= *jie* 'lend', *song* 'give', *xie* 'write', *mai* 'sell', *mai* 'buy', etc.), we suggest an account along the lines of (48a). Here serial *gei* denotes a general 'transfer of possession' predicate (TOP) and α' is the interpretation of the specific lower dative verb. We propose that serial dative verb constructions require TOP AND α' to stand in the hypernym-hyponym relation so that (48b) holds. This corresponds to our intuition that events of lending/writing/selling to someone, etc. are all transfer of possession events.

(48) a. ∃e[TOP(e) & α'(e) & Agent(e,x) & Theme(e, y) & Goal(e, z)]
b. ∀e[α'(e) → TOP(e)]

Applied to (43), the semantics of the vP will be as in (49a); in prose, there is a transfer-of- possession event e; e is a lending; e's agent is Zhangsan, e's theme is $200 and e's goal is Lisi.

(49) a. ∃e[TOP(e) & lending(e) & Agent(e,Zhangsan) & Theme(e, $200) & Goal(e, Lisi)]
b. ∃e[lending(e) & Agent(e,Zhangsan) & Theme(e, $200) & Goal(e, Lisi)]

Notice that in virtue of the hypernym-hyponym relation (48b), (49a) entails (49b). This captures the fact that the truth of a preverbal dative structure in Mandarin always entails the truth of a simpler dative structure in which only the lower V appears. The presence of the higher verb is vacuous from a truth-conditional point of view.[17]

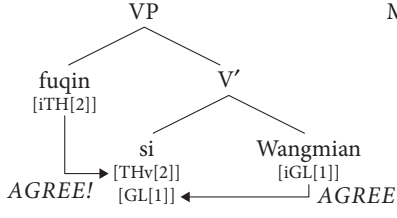
4.5 Monotransitives with possesor subjects and possessum objects

Finally, we turn to Mandarin "Wangmian sentences", whose treatment we have postponed because the analysis of these constructions appears to involve elements from the analysis of ditransitives. We noted in Section 1.2 that examples like (9a) (repeated as 50) appear to involve a derived subject. Following proposals in Zhang (2015b), we analyze (50) and related examples as "unaccusative double object constructions".

(50) Wangmian si le fuqin.
Wangmian die ASP father
'Wangmian's father died.'

More exactly, assume that Mandarin unaccusative *si* 'die', is permitted to bear a goal feature ([GL]) in addition to its usual theme feature ([TH]). The goal argument merges first, followed by the theme (51a). Only the theme feature is valued.[18]

(51) a.



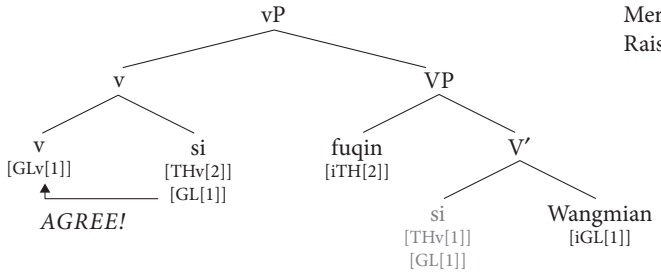
Merge Goal (*Wangmian*)
Merge Theme (*fuqin*)

Suppose we next merge a little *v* bearing a valued [GL] feature. The latter attracts *si* and agrees with it on [GL] (51b)

17. We believe this approach to serial datives can be extended naturally to other Mandarin serial verb structures such as the *ba*-construction. Demonstrating this claim, however, is beyond the scope of the present paper.

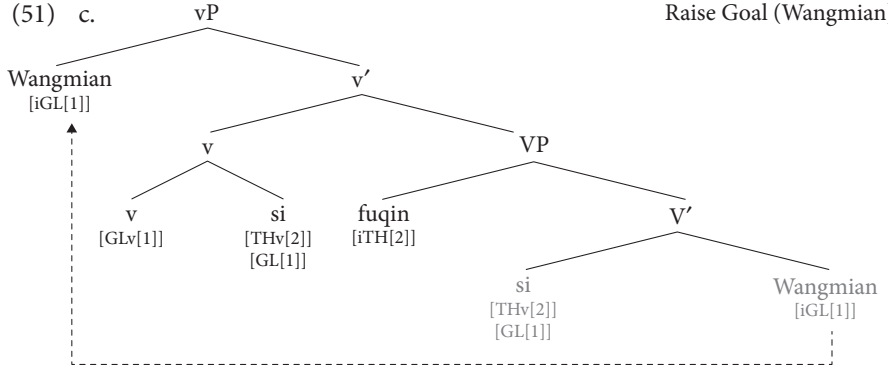
18. In Larson (2014) the theme feature [TH] in an unaccusative is unvalued. The fact that it can be valued with *si* appears to reflect a broader fact, viz., that Vs bearing only a single θ-feature cannot be valued for it. Thus when *die*/*si* occurs with a single θ-feature, it must be unvalued for it, but when it occurs with an additional feature, as in Mandarin, it can and in fact is valued for it.

(51) b.



Since *v* agrees on [GL] with *si*, and *si* agrees on [GL] with *Wangmian*, by transitivity *v* agrees on [GL] with *Wangmian*. Little *v* can then activate its edge feature, raising the goal and deriving (51c), where *Wangmian* crosses *fuqin* without violating Minimality. *Wangmian* subsequently raises to the TP subject position.

(51) c.



As noted by Zhang (2015b), this derivation assimilates Wangmian sentences to DOCs insofar as both invert goal over theme. It also assimilates them with respect to a crucial semantic feature observed earlier: in both constructions two NPs stand in a possessor – possessed relation. In DOCs the relevant NPs are the two object arguments. In Wangmian sentences, they are the subject and object arguments. The account in (51a–c) traces this feature to the same source: both DOCs and Wangmian sentences involve a theme and a possessor goal. Wangmian sentences come out essentially as an "agentless" version of the DOC.

Wangmian sentences do differ from datives in some important respects: whereas DOCs typically have a PPD variant, Wangmian sentences never do. Compare (52) and (53):

(52) a. Zhangsan song/jie le [Lisi] [liang bai kuai qian]. *DOC1*
Zhangsan give/lend PERF Lisi two hundred CL money
'Zhangsan gave/lent Lisi two hundred dollars.'

b. Zhangsan song/jie le [liang bai kuai qian] [PP gei Lisi].
Zhangsan give/lend PERF two hundred CL money to Lisi
'Zhangsan gave/lent two hundred dollars to Lisi.' *PPD*

(53) a. Wangmian si le fuqin.
Wangmian die ASP father
'Wangmian's father died.'
b. *Fuqin si le [PP gei Wangmian].
Father die ASP to Wangmian
'Wangmian's father died.'

Furthermore, whereas DOCs typically show an incorporated *gei* variant (DOC2), Wangmian sentences never do. Compare (54) and (55):

(54) Zhangsan song gei/jie gei le [Lisi] [liang bai kuai qian].
Zhangsan give to/lend to PERF Lisi two hundred CL money
Zhangsan gave/lent Lisi two hundred dollars.' *DOC2*

(55) Wangmian si (*gei) le fuqin.
Wangmian die v[GL] ASP father
'Wangmian's father died.'

We assume that the restriction in both cases is due to specific semantic features of *gei,* which associate it with transfer of possession events. As discussed earlier, these features ultimately make *gei* suitable as a serial verb, but assuming they are carried over into *gei*'s distribution either as a P and a *v*[GL], they would also make *gei* unavailable with event predicates like *si* 'die', which do not involve possession or transfer of possession at all.[19]

Interestingly, *gei* is found in Wangmian sentences in a subtly different form. Consider (56), where *gei* occurs pre-verbally:

(56) Wangmian gei-si le fuqin.
Wangmian GEI-die ASP father
'Wangmian's father died.'

---

19. Similar effects are observed with datives. Many English speakers permit DOCs with *deny* (ia), but reject their prepositional variants with *to* (ib):

(i) a. The boss denied John a raise.
b. ??The boss denied a raise **to John**.

Presumably this is because denial, like prevention, involves keeping something from happening; the boss directed a raise that should have gone to John away from him, etc. Thus the general "ablative" character of denial seems to clash with the goal semantics of *to*.

Pre-verbal *gei* is typically unavailable in simple transitives (57a). However it is as an option in many Mandarin sentences that, descriptively speaking, involve an object that has been fronted across the main verb. Thus pre-verbal *gei* is found in Object Topicalizations (57b), *Ba*-Constructions (57c) and *Bei*-Passives (57d):

(57) a. Zhangsan (*gei-)chi le pingguo. *Simple Transitive*
Zhangsan GEI-eat ASP apple
'Zhangsan ate the/an apple.'

b. Pingguo, Zhangsan (gei-)chi le pingguo *Object Topicalization*
Apple Zhangsan GEI-eat ASP apple
'The/an apple Zhangsan ate.'

c. Zhangsan ba pingguo (gei-)chi le pingguo *BA-Construction*
'Zhangsan BA apple GEI-eat ASP apple
'Zhangsan ate the/an apple.'

d. Pingguo bei Zhangsan (gei-)chi le pingguo *BEI-Passive*
'apple BEI Zhangsan GEI-eat ASP apple
'Zhangsan ate the/an apple.'

The fact that pre-verbal *gei* is also available in Wangmian sentences is at least suggestive of an account like the one offered here, in which an object – here the indirect object *Wangmian* – has raised to a pre-verbal position.[20]

5. Syntax, semantics and selection

The analysis proposed above yields plausible formal derivations for a wide range of Mandarin sentences involving oblique arguments. At the same time some of its key assumptions clash strongly with certain widespread views of selection.

5.1 Selection as semantic

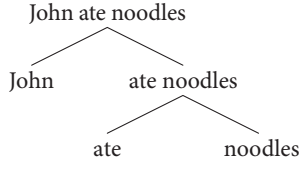
One common view of predicate selection is that it issues from meaning. On this idea it is part of the meaning of *eat*, for example, that it involves an eater – an agent – and a thing eaten – a theme or patient. The fact that *eat* selects two arguments or bears

20. Note the descriptive generalization also predicts that preverbal *gei* should not occur in DOCs since although these involve fronting of an indirect object, as in Wangmian sentences, with DOCs the latter does not cross the main V. This prediction is correct, as shown in (i):

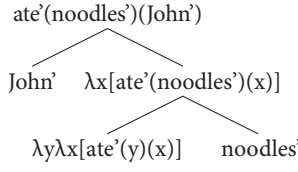
(i) *Zhangsan **gei-song le** Lisi liang bai kuai qian.
Zhangsan GEI-give ASP Lisi two hundred CL money
'Zhangsan gave Lisi two hundred dollars'

two θ-roles is simply a reflection of this more basic semantic fact. Frege famously expressed this idea in analogizing predicates to mathematical functions, which require application to arguments of appropriate number and type in order to yield a value. In themselves predicates are "unsaturated" or "incomplete". Frege's idea underlies versions of formal semantics descending from Montague (1974), in which composition of meaning arises primarily by function-argument application. Thus in (58), the verb *eat* contributes a function on two arguments and the nominals supply the individuals serving as arguments.

(58) a.



b.

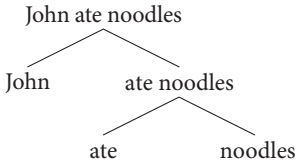


From this perspective, the analysis offered here for the Mandarin instrumental object in (2b) can only seem strange. Recall our proposal that a basic verb like *chi* 'eat', which typically bears [AG] and [TH] features, can delete its valued [TH] feature and carry an optional (unvalued) [INST] feature instead. Under a Fregean, selection-as-meaning view, this would seem to require an alternative concept of eating as an action that only incidentally involves a thing eaten but somehow essentially involves an instrument used to eat with, etc. Similarly for our analysis of Mandarin Wangmian sentences wherein an unaccusative like *si* 'die' is proposed to allow a [GL] θ-feature characteristic of possessives. In what sense does the concept of dying involve possession?

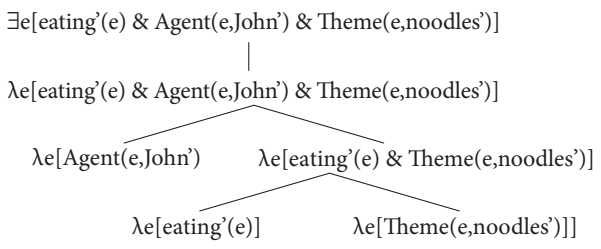
5.2 Selection as syntactic

Recent developments in the framework of neo-Davidsonian event semantics have opened up interesting alternatives to the classical Fregean picture. Consider the view of semantic combination in (59a–b), for example, which implements ideas from Krifka (1992). Here *eat* contributes only a bare event predicate and the arguments contribute both individuals and thematic relations in which those individuals stand to an event. Composition is by predicate conjunction with a final stage of existential event closure at the top.

(59) a.



b.



Notice that (59), unlike in (58), yields no notion of "semantic incompleteness" that could be understood to drive composition. All of the event predicates in (60), when existentially closed, express complete and coherent truth conditions:

(60) a. ∃e[eating'(e)]
'There is/was eating'
b. ∃e[Theme(e,noodles')]]
'Something happened to noodles'
c. ∃e[eating'(e) & Theme(e,noodles')]]
'There is/was eating and it happened to noodles'
d. ∃e[Agent(e,John')
'John did something'
e. ∃e[eating'(e) & Agent(e,John') & Theme(e,noodles')]
'There is/was eating and John did it and it happened to noodles'

Under a picture like (59), therefore, selection between a verb and its arguments cannot be a semantic matter. Rather it must be syntactic.

The theory of θ-features proposed in Larson (2014) and adopted in this paper fits the semantic picture in (59) very closely. For example, the verb *chi* 'eat' in (2b) *Zhangsan chi nou-rou mian* 'Zhangsan eats beef noodles' can be understood as contributing only the event predicate (61a). The arguments bearing interpretable instances of θ-features can be interpreted as providing individuals together with their appropriate θ-relations (61b,c). External Merge corresponds semantically to predicate conjunction (61d,e).

(61) a. ⟦*chi* ⟧ = λe[eating'(e)]
b. ⟦*mian*$_{[iTH]}$⟧ = λe[THEME(e,noodles')]
c. ⟦*Zhangsan* $_{[iAG]}$⟧ = λe[AGENT(e,Z)]
d. ⟦[$_{VP}$ *chi mian* $_{[iTH]}$⟧ = λe[eating'(e) & THEME(e,noodles')]

e. ⟦[$_{vP}$ *Zhangsan*$_{[iAG]}$ *chi mian*$_{[iTH]}$⟧ =
∃e[eating'(e) & AGENT(e,Z') & THEME(e,noodles')]

What brings the predicate and arguments together in this analysis is not semantical. Rather it is the set of formal syntactic θ-features, born by the arguments and predicates, which are coordinated and formally licensed by means of agreement and movement in the course of the syntactic derivation.

Note that from this perspective, there is nothing semantically exceptional about a Mandarin non-canonical object like *da-wan* 'big-bowl' in (2b); composition proceeds exactly as in the canonical case (62). It's simply that a different interpretable feature occurs on the object, with a corresponding uninterpretable feature on the verb:

(62) a. ⟦*chi*⟧ = λe[eating'(e)]
b. ⟦*da-wan*$_{[iINST]}$⟧ = λe[INST(e,big-bowl')]
c. ⟦*Zhangsan*$_{[iAG]}$⟧ = λe[AGENT(e,Z')]
d. ⟦[$_{VP}$ *chi da-wan*$_{[iINST]}$⟧ = λe[eating'(e) & INST(e,big-bowl')]
e. ⟦[$_{vP}$ *Zhangsan* $_{[iAG]}$ *chi da-wan* $_{[iINST]}$⟧ =
∃e[eating'(e) & AGENT(e, Z') & INST(e,big-bowl')]

Analogously for the non-canonical locative and temporal objects in (2c,d) (resp.).

5.3 Cross-linguistic variation in selection

A strictly syntactic account of selection like that sketched above seems to us to fit the facts of Mandarin grammar better than more classical, semantically based views. As discussed insightfully by Li (2014), it appears quite difficult to establish "basic valence" for a given Mandarin verb. Correlatively, it seems quite difficult to associate it securely with a root set of θ-roles. Canonical argument roles are generally suppressible. Furthermore, non-canonical oblique roles seem freely realizable as arguments, subject to plausibility in context, pragmatic and collocational factors. Variability of this kind strongly suggests the absence of a structured Fregean predicate concept lying behind the verb – one dictating a fixed number of arguments required for "saturation" and a determinate set of semantic roles associated with them. Put differently, the Mandarin facts suggests a view wherein predicates denote bare event sortals and selection is actually a composite notion, part semantic/pragmatic, part statistical/distributional, etc. a gradient and plastic relations that becomes categorical in virtue of being "digitized" by formal grammar.

Of course, a natural comparative question arises as to why Mandarin exhibits the kind of selectional freedom it does as compared to a language like English, which appears more constrained and where the semantical view appears to be

more successful.[21] A potential answer is suggested by Dowty (1991) and Grimshaw (1991), who note that freedom in realization of thematic relations in English is characteristic of nominals (63). Thus even though the verb *eat* and the nominal *eating* presumably express the same concept, only in the verbal paradigm are argument requirements expressed:[22]

(63) a. [$_{NP}$ (John's) eating
(of beef noodles/with a large bowl/in restaurants/in the evening)]
is forbidden.
b. [$_{vP}$ (*John) ate *(beef noodles)]

One way of describing this situation in the current framework is that English predicates that are lexically specified as verbs can be listed with a set (or sets) of θ-features, requiring certain kinds of arguments to co-occur with them (64a). By contrast, English predicates lexically specified as nominals are not lexically listed with θ-features, but can add them freely, up to plausibility in context and interaction of pragmatic and collocational factors (64b). Evidently θ-features added optionally in this way are always unvalued, resulting in the need for valuing elements like prepositions or the genitive:

(64) a. *eat*, V, { [AG],[THval] }
b. *eating*, N, {α,β,γ,…} α,β,γ ∈ {[AG],[TH],[INST],[LOC],[TEMP],…}

The suggestion might then be that the Mandarin lexicon somehow more weakly distinguishes verbs vs. nouns – that the categorial distinction is not as clearly drawn, allowing the kind of plasticity in θ-features found with nominal predicates in English to enter the verbal paradigm as well. And since the verbal paradigm can make use of little v voice heads, unlike the nominal paradigm, the result is the widespread occurrence of applied objects of various kinds. Unfortunately we must leave this speculation for future development.

21. Of course, as many authors have noted, English also exhibits behavior that is unexpected under strict semantical views of selection, for example, in allowing verbal arguments to be unrealized a variety of syntactic contexts (generics, progressives, etc.) Even so, Mandarin is at a still further remove in allowing phrases to function as arguments that would never be allowed in English. So the contrast between the two languages remains linguistically salient.

22. In starring the absence of *beef noodles* in (63b) we mean only to indicate that on its non-absolutive sense (i.e., on the sense in which it doesn't mean 'dine') *eat* requires an object.

Acknowledgments

For comments, we are grateful to two anonymous reviewers as well to organizers, participants and audience members at the Chinese University of Hong Kong's 2016 Roundtable on Light Verbs, where this work was first presented. An earlier version of this paper in Mandarin was published as 汉语中的轻语类和双系式移位in *Hanyu qingdongci jufa yanjiu (Studies in Chinese Light Verb Syntax*,《汉语轻动词句法研究. S. Feng, Shengli & W-t.D Tsai, eds. Beijing: Peking University Press.

References

Baker, Mark. 1988. *Incorporation: A theory of grammatical function changing*. Chicago: University of Chicago Press.

Barrie, Michael. & Li, Yen-Hui Audrey. 2014. Analysis vs. synthesis: objects. In *Chinese syntax in a cross-linguistic perspective*, Yen-Hui Audrey Li, Andrew Simpson & Wei-Tien Dylan Tsai (eds), Oxford: Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199945658.003.0007

Chang, Jung-Hsing. 2007. Linking semantics and syntax in Mandarin serial verbs: a role and reference grammar account. *Language and Linguistics*. 8:235–266.

Chomsky, Noam. 1986. *Barriers*. Cambridge, MA: MIT Press.

Chomsky, N. (2001). Derivation by phase. In *Ken Hale: A life in language*, Michael Kenstowicz (ed), 1–52. Cambridge, MA: MIT Press

Djamouri, Redouane. & Paul, Waltraud. 2009. Verb-to-preposition reanalysis in Chinese. In *Historical syntax and linguistic theory*, Paola Crisma & Guisepi Longobardi (eds), 194 – 211. Oxford: Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199560547.003.0012

Emenanjo, 'Nolue. 1976. *Elements of Modern Igbo grammar*. Ibadan: Oxford University Press

Feng, Sheng-Li. 2003. Light verb syntax in Classical Chinese. Paper presented at the Conference on Research and Pedagogy in Classical Chinese and Chinese Language History, March 28–30. New York: Columbia University.

Feng, Sheng-Li. 2005. Light verb movement in Modern and Classical Chinese. *Language Sciences* 1:3–16. 顾阳 1999 双宾语结构,《徐烈炯主编 共性与个性:汉语语言学中的争议》。

Han, Jing-Quan. 2000. A study of possessor raising movement in relation to Case theory. *Modern Foreign Languages* 3: 3261–272.

Hornstein, Norbert. 1999. Movement and control. *Linguistic Inquiry* 30: 69–96. https://doi.org/10.1162/002438999553968

Huang, Chu-Ren. & Mo, Ruo-ping. 1992. Mandarin ditransitive constructions and the category of *gei*. *Berkeley Linguistic Society* 18: 109–122. https://doi.org/10.3765/bls.v18i1.1577

Huang, Chu-Ren. & Ahrens, Kathleen. 1999. The function and category of gei in Mandarin ditransitive constructions. *Book of Chinese Linguistics* 27: 1–26.

Huang, C.-T. James. 2007. Thematic structures of verbs in Chinese and their syntactic projections. *Linguistic Sciences* 4: 3–21.

Huang, C.-T. James. 2008. Cong 'ta de laoshi dang de hao' tanqi. *Language Sciences* 7(3): 225–241.

Huang, C.-T. James. Li, Yen-Hui Audrey & Li, Ya-Fei. 2009. *The syntax of Chinese*. New York: Cambridge University Press. https://doi.org/10.1017/CBO9781139166935

Jackendoff, Ray. 1987. The status of theta-roles in linguistic theory. *Linguistic Inquiry* 18: 369–411.

Kimenyi, Alexandre. 1980. *A relational grammar of Kinyarwanda*. Berkeley, CA: University of California Press.

Kratzer, Angelika. 1996. Severing the external argument from its verb. In *Phrase structure and the lexicon*. Johan Rooryck & Laurie Zaring (eds), 109–137. Springer, Dordrecht. https://doi.org/10.1007/978-94-015-8617-7_5

Krifka, Manfred. 1992. "Thematic relations as links between nominal reference and temporal constitution," in *Lexical matters*, Ivan Sag & Anna Szabolcsi (eds), 29–54. Stanford, CA: CSLI Publications.

Larson, Richard. 2014. *On shell structure*. London: Routledge. https://doi.org/10.4324/9780203429204

Li, Charles & Thompson, Sandra. 1974. Co-verbs in Mandarin Chinese: verbs or prepositions? *Book of Chinese Linguistics* 2: 257–278.

Li, Charles & Thompson, Sandra. 1981. *Mandarin Chinese: A functional reference grammar*. Berkeley: University of California Press.

Li, Yen-Hui Audrey. 2011. Non-canonical objects and case. *Korea Book of Chinese Language and Literature* 1: 21–51.

Li, Yen-Hui Audrey. 2014. Thematic hierarchy and derivational economy. *Language and Linguistics* 15: 295–339.

Lin, T.-H. Jonah. 2001. *Light verb syntax and the theory of phrase structure*. Irvine: University of California dissertation.

Liu, Feng-Hsi. 2006. Dative constructions in Chinese. *Language and Linguistics* 7(4): 863–904.

陆俭明 2002 再谈 "吃了他三个苹果"一类结构的性质,《中国语文》第四期,317–325页。

Marantz, Alec. 1984. *The Nature of Grammatical Relations*. Cambridge, MA: MIT Press.

Pan, Hai-Hua. & Han, Jing-Quan. 2005. The syntax of surface unaccusative constructions. *Linguistics Study* 3.

Paul, Waltraud. 2005. Low IP area and left periphery in Mandarin Chinese. *Recherches linguistiques de Vincennes* 33: 111–134. https://doi.org/10.4000/rlv.1303

Paul, Waltraud. & Whitman, John. 2010. Applicative structure and Mandarin ditransitives. In *Argument structure and syntactic relations from a cross-linguistic perspective*. Maia Duguine, Susana Huidobro & Nerea Madariaga (eds), 261–282. Amsterdam-Philadelphia: John Benjamins. https://doi.org/10.1075/la.158.15pau

Pesetsky, David & Esther Torrego. 2007. The syntax of valuation and the interpretability of features. In *Phrasal and clausal architecture: syntactic derivation and interpretation*. Simin Karimi, Vida Samiian & Wendy Wilkins (eds), 262–294. Amsterdam: John Benjamins. https://doi.org/10.1075/la.101.14pes

Ren, Ying. 2009. How the sentence *Wángmiǎn sǐle fùqin* is generated? – from the correlation of concepts to that of constructions. *Chinese Teaching in the World* 3: 4.

Rizzi, Luigi. 1991. *Relativized minimality*. Cambridge, MA: MIT Press.

Shen, Jia-Xuan. 2006. The generative mechanism of sentences like "Wangmian died father" (王冕死了父亲): Sentence generation by blending in Chinese. *Chinese Language* 4.

Tang, Sze-wing. 1998. On the 'inverted' double object construction. *Studies in Cantonese Linguistics* 1: 35–54.

邓思颖 2004 作格化和汉语被动句,《中国语文》第四期,291–301页。

Tao, Liang. 2009. Serial verb constructions in Mandarin Chinese: The interface of syntax and semantics. In Yun Xiao (ed.) *Proceedings of the 21st North American Conference on Chinese Linguistics (*NACCL-21) Volume 2. 209–228. Smithfield, Rhode Island: Bryant University.

Tsai, Wei-Tien Dylan. 2007. Two types of light verbs in Chinese. Paper presented at the 15th Annual Conference of the International Association of Chinese Linguistics (IACL-15) in conjunction with the 19th North American Conference on Chinese Linguistics (NACCL-19), May 25–27. New York: Columbia University.

Tsai, Wei-Tien Dylan, 2014. Syntax-semantics mismatches, focus movement and light verb syntax. In *Language and Linguistic Monograph Series 54: Peaches and Plums*. C.-T. James Huang & Feng-hsi Liu (eds), 203–226. Institute of Linguistics, Academia Sinica, Taipei, Taiwan.

Xu, Jie. 1999. Some theoretical issues of the two types of Chinese 'retained-object' constructions. *Contemporary Linguistic*, 1:16–29.

Xu, Jie. 2001. Transitivity and four classes of relevant verbs. *Linguistics Study*, 3.

Yu, Li-Ming & Lu, Jian-Jun. 2011. The historical development of the construction as represented by the sentence *wangmian sile fuqin* (王冕死了父亲). *Studies of the Chinese Language* 1:32–42.

Zhang, Chong 2015a. A derivational account of datives in Mandarin. Unpublished ms. Stony Brook University.

Zhang, Chong 2015b. Wangmian si le fuqin. Unpublished abstract. Stony Brook University.

Zhang, Ren. 2005. *Enriched composition and inference in the argument structure of Chinese*. New York: Routledge. https://doi.org/10.4324/9780203495957

Zhang, Miao-Miao. 2012. Serial Verb Constructions (SVCs) in Mandarin Chinese. Ph.D. thesis. Norwegian University of Science and Technology. Trondheim, Norway.

Zhu, De-Xi. 1979. "Yǔ dòngcí gei xiāngguān de jùfǎ wèntí [Sentences containing the verb gei]." pp. 81–87.

Zhu, Xing-Fan. 2005. Light verb syntax of intransitives containing objects. *Modern Foreign Languages* 28(3): 221–231.

On the syntax of incompleteness

Evidence from the converbal construction in Cantonese[1]

Sze-Wing Tang
The Chinese University of Hong Kong

Cantonese has a rich repertoire of verbal suffixes. One type of verbal suffixes should be analyzed as inflectional morphemes that form a converbal construction, a "defective" TP with minimal functional projections within TP and no CP and beyond. Given that it cannot stand alone and cannot occur in Case positions, it is argued that the converbal construction is used as an adverbial, which is neither nominal (a gerund) nor adjectival (a participle). Syntactically the converbal construction is analyzed as an adjunct and functionally it is regarded as a conjunctional converb on a par with an adverbial subordinate, deriving the incompleteness effects.

1. Introduction: Cantonese verbal suffixes

Verbal suffixes are bound morphemes that are attached to the predicator. Although both verbs and adjectives can serve as predicators in Hong Kong Cantonese (hereinafter referred to as "Cantonese"), the suffixes in question are labeled "verbal suffixes" in this article. For example, the verbal suffix *zo* in (1), which is also known as the perfective aspect marker, is attached to *zau* 'leave', a verbal predicator, while *zo* in (2) is attached to *gou* 'tall', an adjectival predicator.[2]

---

1. I would like to dedicate this chapter to Audrey Li to express my sincere thanks for her inspiration, caring, and support over the years. The research reported here is partially supported by the project 'Sentence-Final Particles in Cantonese Interrogatives: An Interface Study' funded by the General Research Fund, Research Grants Council, HKSAR (reference number: 14621719). I benefited from discussions with Ka-fai Yip who shared helpful references and valuable judgments with me. I would also like to thank an anonymous reviewer and Andrew Simpson, the editor of this volume, for useful comments and suggestions on an earlier version of this chapter. All errors remain my own.

2. The Romanization system for Cantonese used in this paper is the Linguistic Society of Hong Kong Cantonese Romanization Scheme (also known as *Jyutping*). Tone markers are omitted in

https://doi.org/10.1075/la.272.14tan

(1) Keoi zau-zo laa.
s/he leave-Suffix SFP
'S/He has left.'

(2) Keoi gou-zo laa.
s/he tall-Suffix SFP
'S/He has become taller.'

Cantonese has a rich repertoire of verbal suffixes. There are more than forty that denote different meanings, playing different roles in syntax and semantics. The verbal suffixes in Cantonese can be classified into six categories according to their meanings: aspect, event, degree, change of state, quantification, and modality, as listed in Table (3) (Tang 2015: 76).

(3) Classification of Cantonese verbal suffixes

	Examples
Aspect	*zo, gwo, lok, ding, gan, haa, zyu, sat, saangsaai, hangsaai, heisoenglei, hei, dak, lok, hoi*
Event	*faan, gwo, lei…heoi*
Degree	*haa, loeng, dak, dakzai, gwotau, gik, dei*
Change of state	*can, zoek, dou*
Quantification	*maai, saai, can, gik, lei…heoi, gam, dak*
Modality	*dak, ngaang, gang, faan*

2. Three types of verbal suffixes

One of the characteristics of Cantonese verbal suffixes is that they seem to play some role beyond the predicate and even beyond the clause. With certain verbal suffixes, clauses cannot stand alone. Some "extra" elements should be added to improve the marginal judgments. Some clauses must even appear in the form of complex sentences, exhibiting so-called marginality/incompleteness effects.

"Marginality/incompleteness" is a phenomenon in which the basic components of a clause seem to be complete on the surface, which include the subject and the

all the examples. The following abbreviations are used in giving glosses for the examples: Acc: accusative case, Abl: ablative case, Aor: aorist, Cl: classifier, Conv: converb, Dat: dative, Gen: genitive, Incl: inclusive, Imp: imperative, Impf: imperfective, Mod: modifier marker, Pass: passive marker, Past: past tense, Pl: plural, SFP: sentence-final particle, Stat: stative, Suffix: verbal suffix, and 3SG: third person singular. The third personal pronoun *keoi* in Cantonese is translated as "s/he" and "him/her".

predicate with the minimum elements, for example, a bare verb and a bare predicate with no adverbials, while it still cannot be used independently. The marginality/incompleteness effects of clauses have been widely discussed in the literature of Chinese grammar (Lu 1986, 1993, Kong 1994, among others). For example, (4) in Mandarin has both the subject *wo* 'I' and the predicate with the bare predicate *chi fan* 'eat rice' with no verbal suffixes, adverbials, and sentence-final particles, but it seems a bit unnatural and marginal if it is interpreted as 'I am eating'.[3] It seems to the ears of native speakers that something is still missing even though the perfective verbal suffix *le* is attached to the verb in (5). (6) becomes perfectly acceptable if the sentence-final particle *le* is added.[4] Following the notation in Tsai (2008), marginality of grammaticality judgments is marked with "%".

(4) %Wo chi fan. (Mandarin)
I eat rice
'I am eating.'

(5) %Wo chi-le fan.
I eat-Suffix rice
'I ate.'

(6) Wo chi-le fan le.
I eat-Suffix rice SFP
'I have eaten.'

Considering the marginality/incompleteness effects of clauses, the verbal suffixes in Cantonese can be reclassified into three types.[5] Clauses with type 1 verbal suffixes are perfectly acceptable while those with type 2 verbal suffixes are slightly degraded and marginal. Clauses with type 3 verbal suffixes are regarded as incomplete and the judgments are that they are unacceptable. For ease of discussion, the term "marginality" is used for describing the grammaticality judgments of clauses with type 2 verbal suffixes whereas "incompleteness" is employed for describing the grammaticality judgments of clauses with type 3 verbal suffixes.

---

3. (4) may sound acceptable if it has a habitual reading, meaning 'I have a habit of eating rice (but not others)'.

4. The perfective verbal suffix *le* and the sentence-final particle *le* should be analyzed as two different morphemes in Mandarin.

5. The classification of Cantonese verbal suffixes presented in this article is mainly based on Tang (2018) with significant modifications.

2.1 Type 1 verbal suffixes

Clauses with type 1 verbal suffixes are regarded as perfectly acceptable. They can be used as independent sentences without being embedded or adding any adverbials and other "additional" elements.

The verbal suffixes in examples (7) to (10) belong to the category of aspect. The verbal suffix *gwo* in (7) is also known as an experiential aspect marker in the literature. The verbal suffix *gan* in (8) denotes the progressive aspect, which is also known as a progressive aspect marker. The verbal suffix *zyu* in (9) is attached to a verbal predicator that denotes a continuous activity or state without change and is also regarded as a durative aspect marker (Zhan 1958, Cheung 1972, Matthews & Yip 1994). The verbal suffix *hoi* in (10) denotes a habitual reading. Note that *hoi* may also denote an inchoative reading of an event if it is used in a complex sentence (Tang 2015).[6]

(7) Keoi sik-gwo min. (Aspect)
s/he eat-Suffix noodle
'S/He had eaten noodles.'

(8) Keoi sik-gan min.
s/he eat-Suffix noodle
'S/He is eating noodles.'

(9) Keoi lo-zyu jat wun min.
s/he hold-Suffix one CL noodle
'S/He is holding a bowl of noodles.'

(10) Keoi sik-hoi min.
s/he eat-Suffix noodle
'S/He has a habit of eating noodles.'

The verbal suffixes in (11) to (13) are degree verbal suffixes. The verbal suffix *dak* in (11) is a marker that signals the manner of the event conveyed by the predicative complement *hou hoisam* 'very happy' (Tang 2015, cf. Li & Thompson 1981). The verbal suffixes *dakzai* in (12) and *gwotau* in (13) denote an excessive meaning (Matthews & Yip 1994: 171–172).

(11) Keoi sik-dak hou hoisam. (Degree)
s/he eat-Suffix very happy
'S/He ate very happily.'

---

6. It is assumed that the inchoative reading of *hoi* is derivative when it is used in a condition sentence.

(12) Keoi gou-dakzai.
s/he tall-Suffix
'S/He is a bit too tall.'

(13) Keoi gou-gwotau.
s/he tall-Suffix
'S/He is excessively tall.'

The verbal suffixes in the following examples belong to the category of change of state. The verbal suffix *can* in (14) denotes an adversative meaning (Matthews & Yip 1994: 227, Gu & Yip 2004). The verbal suffix *dou* in (15) is a marker that indicates the extent of the result conveyed by the predicative complement *hou gui* 'very tired' (Tang 2015, cf. Li & Thompson 1981).

(14) Keoi haak-can ngo. (Change of state)
s/he frighten-Suffix I
'S/He frightened me.'

(15) Keoi sik-dou hou gui.
s/he eat-Suffix very tired
'S/He ate to the extent that he was very tired.'

The following examples are quantificational verbal suffixes. The verbal suffix *saai* in (16) is a distributive marker that denotes a reading of universal quantification, somewhat similar to *all* and *each* in English (T. Lee 1994, Tang 1996, P. Lee 2012). The verbal suffix *gam* in (17) is a partitive marker, which was historically derived from the verb *gaam* 'deduct' (Tang 2003b, 2015). The verbal suffix *dak* in (18) denotes restrictive focus, similar to *only* in English (Tang 2002, 2015).

(16) Keoi sik-saai wun min. (Quantification)
s/he eat-Suffix CL noodle
'S/He ate up the bowl of noodles.'

(17) Keoi sik-gam jat wun min.
s/he eat-Suffix one CL noodle
'S/He ate one bowl of noodles partially.'

(18) Keoi sik-dak jat wun min.
s/he eat-Suffix one CL noodle
'S/He ate one bowl of noodles only.'

The following examples of verbal suffixes belong to the category of modality. The verbal suffix *dak* in (19) is a modality marker, expressing ability, possibility, and permission (Matthews & Yip 1994, Cheng & Sybesma 2004). Note that *dak* in (19) and the ones in (11) and (18) are homonyms and should be analyzed as different morphemes although they are normally written with the same Chinese character

and were derived from the same historical source. The verbal suffixes *ngaang* in (20) and *gang* in (21) denote modality, expressing the root modality and the epistemic modality, somewhat like *must* in English (Tang 2003a, Wong 2009). With this type of verbal suffixes, the clauses can be used alone, without being embedded or adding "extra" elements such as adverbials and sentence-final particles.

(19) Keoi sik-dak min. (Modality)
s/he eat-Suffix noodle
'S/He can eat noodles.'

(20) Keoi jeng-ngaang.
s/he win-Suffix
'S/He must win.'

(21) Keoi jeng-gang.
s/he win-Suffix
'S/He must win.'

2.2 Type 2 verbal suffixes

Clauses with type 2 verbal suffixes are slightly unnatural and marginally acceptable when they are compared with those formed by type 1 verbal suffixes. The marginal judgments of the clauses formed by type 2 verbal suffixes are relative without adding any "extra" elements.

The verbal suffix *zo* in (22) is also known as a perfective aspect marker in the literature. The verbal suffixes *lok* in (23) and *ding* in (24) denote the realization of the action (Cheng 1998, Tang 2015, Wong 2018). The verbal suffix *sat* in (25), literally meaning "solid", is regarded as a durative aspect marker (Wong 2009). The verbal suffixes *saangsaai* in (26) and *hangsaai* in (27) denote a progressive meaning. The verbal suffix *faan* in (28), literally meaning "back" or "in return", indicates resumption of an activity or a return to a state which has been interrupted (Matthews & Yip 1994).

(22) %Keoi sik-zo min. (Aspect)
s/he eat-Suffix noodle
'S/He ate noodles.'

(23) %Keoi zyu-lok min.
s/he cook-Suffix noodle
'S/He has cooked noodles.'

(24) %Keoi sik-ding min.
s/he eat-Suffix noodle
'S/He ate noodles ahead of time.'

(25) %Keoi tai-sat wun min.
s/he look-Suffix CL noodle
'S/He keeps looking at the bowl of noodles.'

(26) %Keoi cou-saangsaai.
s/he noisy-Suffix
'S/He is making noise.'

(27) %Keoi cung-hangsaai.
s/he dash-Suffix
'S/He is making a dash.'

The verbal suffix *gwo* in (29) denotes a meaning of "redoing". Note that *gwo* in (29) and the one in (7) are homonyms and should be seen as different morphemes. In (30) *lei … heoi*, literally meaning "come and go", requires the verb to be reduplicated to form the verbal predicator.

(28) %Keoi sik-faan min. (Event)
s/he eat-Suffix noodle
'S/He ate noodles again.'

(29) %Keoi zyu-gwo wun min.
s/he cook-Suffix CL noodle
'S/He re-cooked the bowl of noodles.'

(30) %Keoi haang-lei-haang-heoi.
s/he walk-Suffix-walk-Suffix
'S/He is walking back and forth.'

The verbal suffixes *haa* in (31) and *dei* in (32) denote the degree of an action and a state, respectively. Note that the predicator to which *dei* is attached has to be reduplicated.

(31) %Keoi juk-haa. (Degree)
s/he move-Suffix
'S/He has moved a little bit.'

(32) %Keoi gwaai-gwaai-dei.
s/he strange-strange-Suffix
'S/He is a bit strange.'

The verbal suffix *maai* in (33) marks the extension of the action to a related entity (Zhan 1958, Cheung 1972, P. Lee 2012, among many others).

(33) %Keoi sik-maai wun min. (Quantification)
s/he eat-Suffix CL noodle
'S/He is eating the bowl of noodles (inclusively).'

The verbal suffix *faan* in (34) denotes deontic modality, which could be analyzed as a volitive or desiderative marker. Note that *faan* in (34) and the one in (28) are homonyms and should be treated as different morphemes.

(34) %Keoi sik-faan wun min. (Modality)
s/he eat-Suffix CL noodle
'S/He intends to eat a bowl of noodles.'

Clauses with type 2 verbal suffixes may sound more natural if some "extra" elements are added, for example, the sentence-final particle *laa* that denotes temporal meaning in (35)(cf. (22)) or the locative adverbial *haidou* 'here' in (36)(cf. (26)).

(35) Keoi sik-zo min laa.
s/he eat-Suffix noodle SFP
'S/He has eaten noodles.'

(36) Keoi haidou cou-saangsaai.
s/he here noisy-Suffix
'S/He is making noise here.'

2.3 Type 3 verbal suffixes

Clauses with type 3 verbal suffixes are regarded as incomplete. Unlike those with type 2 verbal suffixes, clauses with type 3 verbal suffixes cannot be used independently and should be embedded. Unlike those with type 2 verbal suffixes, the incomplete judgments of the clauses formed by type 3 verbal suffixes are absolute and clear. To differentiate with the marginal judgments of those formed by type 2 verbal suffixes, the incomplete judgments of the clauses with type 3 verbal suffixes are marked with "*".

The verbal suffix *haa* in (37) denotes a progressive meaning and requires the verb to be reduplicated. Note that *haa* in (37) and the one in (31) are homonyms and should be treated as different morphemes. There are two functions of the verbal suffix *zyu*. The one in (9) is a durative aspect marker while the one in (38) is used to denote simultaneous activities (Matthews & Yip 1994, Tang 2015). The verbal suffix *heisoenglei* in (39) denotes an inchoative reading and can be split on the surface into *hei* (literally meaning "up") and *soenglei* (literally meaning "go up and come" and truncated as *lei* in some occasions): *hei* is attached to the verb while *soenglei* follows the object if any.[7] The verbal suffix *hei* in (40) can also denote an inchoative reading, quite similar to *heisoenglei* in (39). The verbal suffix *lok* in (41) denotes realization

7. The syntactic status of *soenglei* in (39), as part of the verbal suffix, is put aside in this article and will be a topic for my future research.

and inchoative meanings. The verbal suffix *dak … (lei)* in (42) also denotes an inchoative reading and marks the temporal sequence of two events (Lai 2014).[8]

(37) *Keoi siksik-haa min. (Aspect)
s/he eat-eat-Suffix noodle
'(When) s/he was eating noodles, …'

(38) *Keoi sik-zyu min.
s/he eat-Suffix noodle
'(While) s/he was eating noodles, …'

(39) *Keoi sik-hei min soenglei.
s/he eat-Suffix noodle Suffix
'(Once) s/he eats noodles, …'

(40) *Keoi gong-hei ni wun min.
s/he talk-Suffix this CL noodle
'(When) s/he was talking about this bowl of noodles, …'

(41) *Ni wun min sik-lok.
this CL noodle eat-Suffix
'This bowl of noodles tastes like …'

(42) *Keoi sik-dak min lei.
s/he eat-Suffix noodle SFP
'(At the time) s/he starts eating noodles, …'

The verbal suffix *loeng* (literally meaning 'two') in (43) denotes a tentative reading, which requires the verb to be reduplicated. The verbal suffix *gik* in (44) is attached to an adjectival predicator and denotes the highest degree.

(43) *Keoi sik-loeng-sik. (Degree)
s/he eat-Suffix-eat
'(After) s/he ate a bit, …'

(44) *Ni wun min housik-gik.
this CL noodle delicious-Suffix
'(Regardless of) how delicious this bowl of noodles is, …'

The verbal suffix *zoek* in (45) denotes a change of state and its result (Tang 2015).

(45) *Ngo sik-zoek ni wun min. (Change of state)
I eat-Suffix this CL noodle
'I had a chance to eat noodles (unfortunately), …'

8. In (42) *lei* is regarded as a sentence-final particle (Lai 2014, Tang 2015). The coexistence of the inchoative *dak* and the sentence-final particle *lei* is required.

The verbal suffix *can* in (46) denotes a universal reading, somewhat like *every* and *whenever* in English. Note that *can* in (46) and the adversative *can* in (14) are homonyms and should be analyzed as different morphemes. The verbal suffix *gik* in (47) is attached to a verbal predicator and denotes a universal reading, normally used in a negative context. Note that the verbal suffix *gik* attached to an adjectival predicator, such as (44), and the one attached to a verbal predicator, such as (47), belong to two different categories. The former is associated with degree while the latter is associated with quantification. The verbal suffix *lei … hei* in (48) denotes a universal reading and a repetitive meaning, quite similar to *gik* in (47) and *lei … hei* in (30), respectively.

(46) *Keoi sik-can min. (Quantification)
s/he eat-Suffix noodle
'(Whenever) s/he ate noodles, …'

(47) *Keoi sik-gik.
s/he eat-Suffix
'(Regardless of) how much s/he was eating, …'

(48) *Keoi sik-lei-sik-heoi.
s/he eat-Suffix-eat-Suffix
'Everything s/he was eating is …'

Unlike those with type 2 verbal suffixes, clauses with type 3 verbal suffixes still sound incomplete even if some "extra" elements are added. For example, adding the sentence-final particle *laa* that denotes the temporal meaning in (49)(cf. (35)) and the locative adverbial *haidou* 'here' in (50)(cf. (36)) does not help.

(49) *Keoi gong-hei ni wun min laa.
s/he talk-Suffix this CL noodle SFP
'(When) s/he has started talking about this bowl of noodles, …'

(50) *Keoi haidou sik-can min.
s/he here eat-Suffix noodle
'(Whenever) s/he was eating noodles here, …'

One way to improve the judgments of these examples is to embed them in a sentence to form a complex sentence. The bracketed clauses with the verbal suffixes *hei* in (51) and *can* in (52) are adverbials and analyzed as subordinate clauses. Note that the clauses that follow the bracketed clauses, such as *zau hou m hoisam* 'someone is then not very happy' in (51) and *dou m syufuk* 'someone does not feel comfortable' in (52), are analyzed as the main clauses or superordinate clauses. The presence of an intonation break between the adverbial and the main clause is optional. Note that in the main clause the correlating adverbs *zau* 'then' in (51) and *dou* 'all' in (52) cannot be omitted.

(51) [Keoi gong-hei ni wun min] zau hou m hoisam.
s/he talk-Suffix this CL noodle then very not happy
'When s/he was talking about this bowl of noodles, s/he was not very happy.'

(52) [Keoi sik-can min] dou m syufuk.
s/he eat-Suffix noodle all not comfortable
'Whenever s/he eats noodles, s/he does not feel comfortable.'

Example (53) shows that the subject of the main clause can be recovered, for example, *keoi* 's/he'. (54) shows that both the subjects of the adverbial and the main clause can overtly be realized.

(53) [Gong-hei ni wun min], keoi zau hou m hoisam.
talk-Suffix this CL noodle s/he then very not happy
'When s/he was talking about this bowl of noodles, s/he was not very happy.'

(54) [Keoi sik-can min], ngodei dou hou daamsam.
s/he eat-Suffix noodle we all very worry
'Whenever s/he eats noodles, we are all very worried.'

Embedding the clauses with type 3 verbal suffixes in other contexts, for example, in the subject position as a clausal subject in (55), in the object position as a clausal object in (56), and in noun phrases as a relative clause in (57), does not salvage the unacceptability.

(55) *[Keoi sik-can min] zeoi hou.
s/he eat-Suffix noodle most good
'That (*whenever) s/he eats noodles is the best.'

(56) *Keoidei zidou [keoi sik-can min].
they know s/he eat-Suffix noodle
'They know that (*whenever) s/he eats noodles.'

(57) *Ngo zungji [[sik-can min] ge jan].
I like eat-Suffix noodle Mod person
'I like the people who (*whenever) eats noodles.'

The clauses with type 3 verbal suffixes should be analyzed as adjuncts syntactically. Example (58) with a *wh*-word like *dimjoeng* 'how' inside the bracketed constituent cannot be used to form a direct question. The ungrammaticality of (58) suggests that the bracketed constituent with the verbal suffix *can* is an adjunct, exhibiting an island effect. As illustrated in (59), it is substantially easier to use the *wh*-word *dimjoeng* 'how' in the main clause to form a direct question. The asymmetry of the island effect in (58) and (59) can be explained if the bracketed constituent with the verbal suffix *can* is analyzed as an adjunct. It will further be argued in the subsequent sections that in terms of grammatical relations clauses with type 3 verbal suffixes should be analyzed as adverbials, functioning as subordinate clauses.

(58) *[Keoi dimjoeng sik-can min] dou m syufuk?
s/he how eat-Suffix noodle all not comfortable
'(Lit.) How does s/she not feel comfortable [whenever s/he eats noodles *t*]?'

(59) [Keoi sik-can min] dou dimjoeng m syufuk?
s/he eat-Suffix noodle all how not comfortable
'How does s/she not feel comfortable whenever s/he eats noodles?'

2.4 A summary

For ease of reference, the three types of verbal suffixes in Cantonese are summarized in Table (60). Clauses with type 1 verbal suffixes are perfectly acceptable. Clauses with type 2 verbal suffixes are slightly degraded and marginal unless some "extra" elements are added. Clauses with type 3 verbal suffixes cannot be used independently and hence regarded as incomplete.

(60) Three types of verbal suffixes in Cantonese

	Type 1	**Type 2**	**Type 3**
Aspect	*gwo, gan, zyu, hoi*	*zo, lok, ding, sat, saangsaai, hangsaai*	*haa, zyu, heisoenglei, hei, lok, dak…lei*
Event		*faan, gwo, lei…heoi*	
Degree	*dak, dakzai, gwotau*	*haa, dei*	*loeng, gik*
Change of state	*can, dou*		*zoek*
Quantification	*saai, gam, dak*	*maai*	*can, gik, lei…heoi*
Modality	*dak, ngaang, gang*	*faan*	

3. Syntax of marginality and incompleteness

3.1 Marginality: Type 2 verbal suffixes

Clauses with type 1 verbal suffixes are perfectly acceptable while those with type 2 verbal suffixes are regarded as marginally complete and are judged as slightly degraded. Type 3 verbal suffixes should be treated differently because clauses with type 3 verbal suffixes are absolutely incomplete and cannot be used in isolation.

Tsai (2008) tries to relate the marginality of some verbal suffixes in Mandarin, i.e., the counterparts of type 2 verbal suffixes in Cantonese, to a failure of anchoring tense, and the lack of necessary temporal reference of a given sentence through syntactic measures. Tense anchoring is analyzed as a process of spelling out an

underlying event argument by a variety of morpho-syntactic means. Tsai proposes that verbal suffixes occur in different layers in syntax, namely in outer aspect (Asp1), in middle aspect (Asp2), and in inner aspect (Asp3), to account for their marginal judgments. Structurally, AspP1 is the highest syntactically, which is above *v*P; AspP2 is in the middle, which is right below *v*P; and Asp3 is at the lowest level attached to the verb, as schematized in (61). He stipulates that Asp1 may move to T to instantiate a lexical tense operator whereas neither Asp2 nor Asp3 can move to T. Following Tsai's (2008) analysis, type 1 verbal suffixes are associated with Asp1 while type 2 verbal suffixes are associated with Asp2 and Asp3.

(61) $[_{TP}$ T $[_{AspP1}$ Asp1 $[_{vP}$ *v* $[_{AspP2}$ Asp2 $[_{VP}$ V-ASP3]]]]]

Cross-linguistically it is found that verbal suffixes closer to the verbal stem are consistently related to functional heads that are lower than those licensing outer suffixes. The syntactic processes that derive the sequences of verbal suffixes are taken to obey the Mirror Principle (Baker 1985), a morphological universal. Under the Mirror Principle, the ordering of verbal suffixes in (62) and (63) suggests that Asp1 that is associated with the type 1 verbal suffix *saai* should be structurally higher than the type 2 verbal suffix *ding*, lending empirical support to the hierarchical structure in (61).[9]

(62) Keoi zou-ding-saai ni gei gin si.
s/he do-Suffix-Suffix this several CL thing
'S/He has prepared for all these several matters ahead of time.'

(63) *Keoi zou-saai-ding ni gei gin si.
s/he do-Suffix-Suffix this several CL thing
'S/He has prepared for all these several matters ahead of time.'

In short, we have seen that the marginality of judgments of type 2 verbal suffixes in Cantonese is reminiscent of similar phenomena in Mandarin. Let us assume that (61) is correct and the extension of Tsai's (2008) account to type 2 verbal suffixes in Cantonese is on the right track. The marginality of the verbal suffixes in question may then be attributed to a failure of anchoring tense.[10]

9. The formation of verbal suffix clusters in Cantonese is very restricted. Some possible sequences of verbal suffixes are in fact not captured by (61). See Tang (2003a) for an alternative proposal of the syntactic hierarchy of Cantonese verbal suffixes on different grounds.

10. See also Tang and Lee (2000) and Hu and Shi (2005) for a similar claim with different licensing mechanisms of tense anchoring in Chinese.

3.2 Incompleteness: Type 3 verbal suffixes

Recall that clauses with type 3 verbal suffixes are regarded as incomplete and cannot stand alone. The contrast between type 2 verbal suffixes and type 3 verbal suffixes with respect to their grammaticality judgments is sharp. The three-layered analysis proposed by Tsai (2008) can plausibly capture the marginality of type 2 verbal suffixes but it is unable to handle the incompleteness of type 3 verbal suffixes. Therefore, a different solution to the problem of incompleteness is needed.

According to Tsai's (2010) cartographic analysis of Chinese clauses, Modal Phrase that denotes epistemic modality (M^{Epi}) is structurally higher than TP. Assuming that epistemic modals are raising verbs (Lin & Tang 1995), the subject in the specifier of TP may move to the specifier of MP on the surface, deriving the word order of "subject + modal + verb". Tsai (2010) further argues that epistemic modality is higher than deontic and dynamic modality. Deontic modality (M^{Deo}) is above *v*P while dynamic modality (M^{Dyn}) is below *v*P. The cartographic hierarchical structure of the Modal Phrases is illustrated in (64).

(64) … $[_{MP3}\ M^{Epi}\ [_{TP}$ Subject $[_{T'}\ T\ [_{MP2}\ M^{Deo}\ [_{vP}\ v\ [_{MP1}\ M^{Dyn}\ [_{VP}\ V$ …

Clauses with type 3 verbal suffixes do not permit the presence of epistemic modals, for example, *jinggoi* 'should' in (65) and *honang* 'may' in (66), and hence MP3 in (64) are not possible.

(65) *[Keoi jinggoi sik-can min], ngodei dou hou daamsam.
s/he should eat-Suffix noodle we all very worry
'Whenever s/he (*should) eats noodles, we are all very worried.'

(66) *[Keoi honang sik-can min], ngodei dou hou daamsam.
s/he may eat-Suffix noodle we all very worry
'Whenever s/he (*may) eats noodles, we are all very worried.'

Consider example (67) with the type 1 verbal suffix *gan* (cf. (8)) and example (68) with the type 2 verbal suffix *ding* (cf. (24)).[11] Co-occurrence with the epistemic modals *jinggoi* 'should' and *honang* 'may' is acceptable. There is a clear contrast between type 3 verbal suffixes on the one hand and type 1 and type 2 verbal suffixes on the other hand.

(67) Keoi jinggoi/honang sik-gan min. (Type 1)
s/he should/may eat-Suffix noodle
'S/He should/may be eating noodles.'

11. The judgment of (68) is still slightly degraded even though an epistemic modal is added. The strategies that improve the judgments of clauses with type 2 verbal suffixes are beyond the scope of this article and will be left for my future research.

(68) %Keoi jinggoi/honang sik-ding min. (Type 2)
s/he should/may eat-Suffix noodle
'S/He should/may eat noodles ahead of time.'

In the following examples the deontic modal *bitseoi* 'must' is incompatible with type 3 verbal suffixes.[12] To have a fair comparison, the verbal suffixes *saai* in (69), *maai* in (70), and *can* in (71) are chosen to run the tests, which all belong to the same category of quantification.

(69) Keoi bitseoi sik-saai wun min. (Type 1)
s/he must eat-Suffix CL noodle
'S/He must eat up the bowl of noodles.'

(70) %Keoi bitseoi sik-maai wun min. (Type 2)
s/he must eat-Suffix CL noodle
'S/He must eat the bowl of noodles (inclusively).'

(71) *[Keoi bitseoi sik-can min] dou m syufuk. (Type 3)
s/he must eat-Suffix noodle all not comfortable
'Whenever s/he (*must) eats noodles, s/he does not feel comfortable.'

It seems that dynamic modality is also incompatible with type 3 verbal suffixes. In the following examples *hang* 'willing' is a dynamic modal in Cantonese.

(72) Keoi hang sik-saai wun min. (Type 1)
s/he willing eat-Suffix CL noodle
'S/He is willing to eat up the bowl of noodles.'

(73) Keoi hang sik-maai wun min. (Type 2)
s/he willing eat-Suffix CL noodle
'S/He is willing to eat the bowl of noodles (inclusively).'

(74) *[Keoi hang sik-can min] dou m syufuk. (Type 3)
s/he willing eat-Suffix noodle all not comfortable
'Whenever s/he (*is willing to) eats noodles, s/he does not feel comfortable.'

The following examples further support the claim that clauses with type 3 verbal suffixes lack the functional projections between CP and TP and some between TP and *v*P. As noted by an anonymous reviewer, it is ungrammatical in (75) to have *houcoi* 'fortunately', an adverb associated with $\text{Mood}_{\text{evaluative}}$ (a functional category between CP and TP), and *zyundang* 'intentionally', an adverb associated with $\text{Mod}_{\text{volitional}}$ (a functional category between TP and *v*P), according to Cinque's

12. The deontic modal *bitseoi* 'must', a word borrowed from *bixu* 'must' in Mandarin, may sound too formal in Cantonese and can be interchanged with *jatding jiu* 'necessarily need'.

(1999) hierarchical structure. However, these two adverbs can co-occur with type 1 and type 2 verbal suffixes, as shown in (76) and (77).

(75) [Keoi (*houcoi/*zyundang) sik-can min] dou m syufuk.
s/he fortunately/intentionally eat-Suffix noodle all not comfortable
'Whenever s/he (*fortunately/*intentionally) eats noodles, s/he does not feel comfortable.' (Type 3)

(76) Keoi (houcoi/zyundang) sik-saai wun min. (Type 1)
s/he fortunately/intentionally eat-Suffix CL noodle
'S/he (fortunately/intentionally) ate up the bowl of noodles.'

(77) Keoi (houcoi/zyundang) sik-maai wun min. (Type 2)
s/he fortunately/intentionally eat-Suffix CL noodle
'S/he (fortunately/intentionally) ate the bowl of noodles (inclusively).'

Clauses with type 3 verbal suffixes are incompatible with conjunctions, such as *jyugwo* 'if', *seoijin* 'although', and *janwai* 'because', as shown in (78). Assuming that conjunctions are in C (Aoun & Li 2003: 248, Tang 2010), the ungrammaticality of (78) suggests that clauses with type 3 verbal suffixes lack CP.

(78) [*Jyugwo/*Seoijin/*Janwai keoi sik-can min] dou m syufuk.
if/although/because s/he eat-Suffix noodle all not comfortable
'(*If/Although/Because) whenever s/he eats noodles, s/he does not feel comfortable.'

Examples (79) and (80) show that clauses with type 1 and type 2 verbal suffixes can combine with the conjunctions and thus should project a CP layer.

(79) Jyugwo/Seoijin/Janwai keoi sik-saai wun min, … (Type 1)
if/although/because s/he eat-Suffix CL noodle
'If/Although/Because s/he ate up the bowl of noodles, …'

(80) Jyugwo/Seoijin/Janwai keoi sik-maai wun min, … (Type 2)
if/although/because s/he eat-Suffix CL noodle
'If/Although/Because s/he ate the bowl of noodles (inclusively), …'

An anonymous reviewer draws my attention to (81) and points out that type 3 verbal suffixes may apparently co-occur with some conjunctions, suggesting that *zijiu* 'as long as' is a conjunction.

(81) [Zijiu keoi sik-can min] dou m syufuk.
as.long.as s/he eat-Suffix noodle all not comfortable
'As long as s/he eats noodles, s/he does not feel comfortable.'

Whether *zijiu* 'as long as' is analyzed as a conjunction is questionable. Note that *zijiu* 'as long as' can co-occur with conjunctions like *jyugwo* 'if' as indicated in examples (82) and (83) that are from the internet. It is highly unlikely that a clause in Cantonese can be headed by two conjunctions simultaneously. One possible solution is therefore to treat *zijiu* 'as long as' as an adverb, as Lau (1977: 398) does. If *zijiu* 'as long as' is an adverb, (81) should not constitute evidence for the existence of CP in the clauses with type 3 verbal suffixes.[13]

(82) Jyugwo zijiu keoi jau Fai sir ge jat bun, go go jan
if as.long.as s/he have Ferguson Sir Mod one half that CL person
jiging syun singgong.
already consider successful
'As long as s/he has half of the ability of Sir Alex Ferguson, that person is regarded as successful.'

(83) Zijiu jyugwo keoi jihau zyunsamjatzi, ngo wui me dou bei
as.long.as if s/he later concentration I will what all give
keoi lo.
s/he SFP
'As long as s/he can concentrate on me wholeheartedly from now on, I will give him/her everything without reservation.'

(84) shows that the bracketed constituent cannot serve as the object/complement of the verb *waa* 'say'. Assuming that verbs like *waa* 'say' select a CP (cf. Huang 2022), the ungrammaticality of (84) may be indirect evidence for the lack of CP in clauses with type 3 verbal suffixes.

(84) *Keoidei waa [keoi sik-can min].
they say s/he eat-Suffix noodle
'They said that (whenever) s/he eats noodles.'

By way of contrast, clauses with type 1 and type 2 verbal suffixes can be the object/complement of *waa* 'say', as in (85) and (86).

(85) Keoidei waa [keoi sik-saai wun min]. (Type 1)
they say s/he eat-Suffix CL noodle
'They said that s/he ate up the bowl of noodles.'

13. Some apparent counterexamples given by the anonymous reviewer need careful discussion and might imply that (some) clauses with type 3 verbal suffixes could be "truncated" clauses, similar to Haegeman's (2003) analysis of central adverbial clauses.

(86) %Keoidei waa [keoi sik-maai wun min]. (Type 2)
they say s/he eat-Suffix CL noodle
'They said that s/he ate the bowl of noodles (inclusively).'

Sentence-final particles like *wo* cannot occur in clauses with type 3 verbal suffixes, as shown in (89), which implies that the functional categories beyond CP that are associated with speech act, such as F (Tang 2010), CoA (Tang 2020), and their variants and counterparts in other frameworks, are all missing.

(87) Keoi sik-saai wun min wo. (Type 1)
s/he eat-Suffix CL noodle SFP
'I tell you that it is heard that s/he ate up the bowl of noodles.'

(88) Keoi sik-maai wun min wo. (Type 2)
s/he eat-Suffix CL noodle SFP
'I tell you that it is heard that s/he ate the bowl of noodles (inclusively).'

(89) [Keoi sik-can min (*wo)] dou m syufuk. (Type 3)
s/he eat-Suffix noodle SFP all not comfortable
'(*I tell you that it is heard that) whenever s/he eats noodles, s/he does not feel comfortable.'

Suppose that *lei* in (90) (cf. (42)) is a temporal sentence-final particle, on a par with *lei* in (91) that denotes the recent past.[14] The sentence-final particle *lei* could be an overt realization of T in Cantonese (Tang 2010, 2015). In (92) *sin* is an event sentence-final particle and should be analyzed as the head of a functional projection right above *v*P (Tang 2015, 2019).

(90) [Keoi sik-dak min lei], ngo dou zau-zo.
s/he eat-Suffix noodle SFP I also leave-Suffix
'At the time s/he starts eating noodles, I have already left.'

(91) Keoi sik min lei.
s/he eat noodle SFP
'S/he just ate noodles.'

(92) [Keoi sik-can min sin] dou m syufuk.
s/he eat-Suffix noodle SFP all not comfortable
'Whenever s/he eats noodles first, s/he does not feel comfortable.'

14. See Lai (2014) for a unified account of various subtypes of the temporal sentence-final particle *lei* in Cantonese.

An anonymous reviewer points out that some native speakers do not find (92) acceptable. As a matter of fact, example (93) is taken from the internet and shows that the type 3 verbal suffix *can* is compatible with the event sentence-final particle *sin*.[15]

(93) Mannei jap-can bo sin dou mou hou je.
Mané shoot-Suffix ball SFP all not good thing
'Whenever Sadio Mané kicks the ball into the goal first, he is not much good.'

Clauses with type 3 verbal suffixes should have the light verb *v*. (94) with the sequence *nei peihei* 'your temper' on the surface is a typical example of a syntax-semantics mismatch, in which *nei* 'you' is actually the object of the predicate *faat peihei* 'get a temper'. Following Huang's (1997) analysis, the verb *faat* 'get' takes two objects underlyingly, namely *peihei* 'temper' and *nei* 'you', and moves to the light verb *v*, an eventuality predicate DO, deriving the derived word order, as shown in (95). Example (94) provides evidence for the existence of *v* in clauses with type 3 verbal suffixes.

(94) [Keoi faat-can nei peihei] dou m syufuk.
s/he get-Suffix you temper all not comfortable
'Whenever s/he gets angry with you, s/he does not feel comfortable.'

(95) [$_{vP}$ *get*$_i$-*v* [$_{VP}$ *you* [$_{V'}$ t_i *temper*]]]

Based on the above, it can be concluded that clauses with type 3 verbal suffixes are not necessarily "bare" as there should be certain functional projections, such as TP, XP (for hosting the event sentence-final particles), and *v*P, as schematized in (96). The functional category "X" in (96) is a slot that holds event sentence-final particles, which is likely to be a member of the Asp family in Cinque's (1999) hierarchical structure within the lexical layer, i.e., the lexical domain below TP, in the sense of Rizzi (1997) although I do not commit myself to any particular label in this article. Note that word order is irrelevant in the representation in (96).

(96) [$_{TP}$ Subject [$_{T'}$ T [$_{XP}$ X [$_{vP}$ *v* [$_{VP}$ V]]]]]

Briefly summarizing, let us assume that the proposed structure in (96) for clauses with type 3 verbal suffixes is correct, i.e., having a TP structure, while the clauses with type 1 and type 2 verbal suffixes have a fully-fledged clausal structure, including CP. The functional projections beyond TP, such as MP1 (=M^{Epi}), CP, and those

15. The unacceptability of (92) to some native speakers could perhaps be subject to idiosyncratic variation. As noted by the anonymous reviewer, other type 3 verbal suffixes like *haa* and *gik* cannot co-occur with the event sentence-final particle *sin*. I agree with the judgments of the type 3 verbal suffixes *haa* and *gik* and suspect that the ungrammaticality is due to semantics, not syntax.

associated with speech act, are all missing in clauses with type 3 verbal suffixes. The functional projections within TP seem to be minimal, consisting only in XP and *v*P. Other functional projections below TP such as modal phrases like MP2 (=M^{Deo}) and MP3 (=M^{Dyn}) do not occur.[16]

A similarity that the clauses with type 2 verbal suffixes and type 3 verbal suffixes share is that both of them have T. An anonymous reviewer suggests that type 2 verbal suffixes leave T underspecified and hence need extra devices to anchor the tense, along the lines in Tsai (2008) (see also Tang & Lee 2000 and Hu & Shi 2005), deriving the marginality effects, while type 3 verbal suffixes require T to be unspecified, deriving the incompleteness effects. It will be argued in the next section that T in the clauses with type 3 verbal suffixes is "defective" and nonfinite.

4. Converbal properties of type 3 verbal suffixes

4.1 Present participles and gerunds

To account for the incompleteness effects of type 3 verbal suffixes, it is claimed in Tang (2018) that type 3 verbal suffixes are somewhat similar to the suffix *-ing* in English, whose function is to form a present participle. For example, (97) cannot stand alone as the root if the predicate is *loving*, a present participle, exhibiting an incompleteness effect.

(97) *John loving linguistics.

A salvation strategy is to embed the clause with the participle, also known as a participial phrase, in a "complex" context, functioning as an adverbial to modify the main clause, such as *bearing in mind that many retired people can still contribute usefully to society* in (98) and *the total population being in excess of ten million* in (99) (cited from Greenbaum 1996: 338). The participial adverbial in (99) that is not introduced by a conjunction and that has its own subject is also known as an "absolute clause" (Greenbaum 1996). These examples with participial adverbials in English seem reminiscent of the behavior of those with type 3 verbal suffixes in Cantonese.

(98) Bearing in mind that many retired people can still contribute usefully to society, it seems probable that the burden of a dependent child is, overall, at least as high as that of a retired person.

16. As pointed out by an anonymous reviewer, apart from type 3 verbal suffixes, some adverbials also exhibit incompleteness, such as the preverbal *jat* 'one' in Cantonese. A unified analysis of incompleteness is challenging and will be left for my future research.

(99) There are populated areas all around the bay the total population being in excess of ten million.

Although type 3 verbal suffixes may apparently cancel the independent status of clauses, exhibiting an incompleteness effect, somewhat similar to the participial adverbials in English, type 3 verbal suffixes in Cantonese and the present participles in English behave differently and should not be analyzed in the same syntactic way.

Present participles in English can be used as adjectival phrases to modify a nominal as adnominal modifiers, for example, *moving* in (100). They can also be used as predicates to convey the progressive aspect, for example, *moving* in (101).

(100) a moving target

(101) The target is moving.

Words or phrases with type 3 verbal suffixes like *juk-can* 'moving' are neither used as adjectival phrases nor used as predicates, as indicated in the ungrammatical examples in (102) and (103), respectively. (104) and (105) show that the verb *juk* 'move' with the type 1 verbal suffix *gan* can, however, modify the nominal *ce* 'car' and serve as a predicate, unlike type 3 suffixes. Hence, clauses with type 3 verbal suffixes are neither adjectival nor predicative.

(102) *juk-can ge ce (Type 3)
move-Suffix Mod car
'a moving car'

(103) *Gaa ce juk-can.
CL car move-Suffix
'The car is moving.'

(104) juk-gan ge ce (Type 1)
move-Suffix Mod car
'a moving car'

(105) Gaa ce juk-gan.
CL car move-Suffix
'The car is moving.'

Words or phrases with type 3 verbal suffixes should not be analyzed as nominal either – for example as gerunds. Huang (1997) proposes a gerundive analysis for the constructions involving event quantification (with duration and frequency phrases) like (106) and the genitive agent constructions like (107) in Mandarin. According to his analysis, what the light verb selects in the event quantification constructions and the genitive agent constructions is a gerundive phrase.

(106) Ta chang-le liang ci (de) ge. (Mandarin)
s/he sing-Suffix two time Mod song
'S/He sang twice.'

(107) Ni chang ni de ge.
s/he sing you Mod song
'You go on with your singing.'

The following examples in Cantonese show that the event quantification constructions, as in (108), and the genitive agent constructions, as in (109), are incompatible with type 3 verbal suffixes. Note that (109) may sound acceptable to native speakers' ears. If it is acceptable, *keoi* 's/he' in (109) has a possessive reading, i.e., "his/her songs", rather than the agentive reading, i.e., "his/her singing". The grammaticality judgment of (110) is straightforward as *keoi* 's/he' has one reading only, i.e., "his/her talking about linguistics", given that pragmatically the possessive reading of "his/her linguistics" is not realistically available. The unacceptability of these examples implies that clauses with type 3 verbal suffixes are not gerundive.

(108) *[Keoi coeng-zyu jat go zungtau ge go] dang ngo.
s/he sing-Suffix one CL hour Mod song wait I
'S/he sang for an hour while s/he was waiting for me.'

(109) *[Keoi coeng-coeng-haa keoi ge go] fatjin wan-zo.
s/he sing-sing-Suffix s/he Mod song suddenly faint-Suffix
'While s/he was singing, s/he fainted suddenly.'

(110) *[Keoi gong-gong-haa keoi ge jyujinhok] fatjin gong manhok.
s/he talk-talk-Suffix s/he Mod linguistics suddenly talk literature
'While s/he was talking about linguistics, s/he switched to literature suddenly.'

Li (2008) argues that if a verb is subcategorized for a nominal object, it also accepts an empty object. The verb *tengdou* 'hear' in (111) is subcategorized for a nominal like *ni zek go* 'this song' and it allows an empty object '*e*'. If clauses with type 3 verbal suffixes were gerunds and hence nominal, they could be the object of *tengdou* 'hear' in (112). The prediction is, however, not borne out, regardless of whether an empty object is permitted.

(111) Ngo tengdou [ni zek go], keoidei dou tengdou *e*.
I hear this CL song they also hear
'I heard this song, and they did too.'

(112) *Ngo tengdou [keoi coeng-coeng-haa go](, keoidei dou tengdou *e*).
I hear s/he sing-sing-Suffix song they also hear
'I heard that (*while) s/he was singing and they did too.'

To rule out (112), a possible explanation is that the bracketed constituent with a type 3 verbal suffix, i.e., TP, is not a nominal and cannot be case-marked. The unacceptability of (113) may be indirect evidence for the claim that clauses with type 3 verbal suffixes are not nominal and hence cannot be case-marked, given that the object of the preposition *tung* 'with' is a typical case position (Li 1990, 2008). If Stowell's (1981) Case-Resistance Principle is correct, which requires case not be assigned to a category that bears a case-assigning feature, clauses with type 3 verbal suffixes bears a case-assigning feature, serving as licensors of overt subjects. That is why the subject is not necessarily empty and hence there is no obligatory occurrence of PRO.

(113) *Ni gin si tung [keoi coeng-coeng-haa go] mou gwaanhai.
this CL matter with s/he sing-sing-Suffix song not relation
'This has nothing to do with (*while) his singing.'

Consider (114), in which the clause consists of the type 1 verbal suffix *gan* and is arguably a CP that can be the object of *tengdou* 'hear'. Li (2008) speculates that case is required with certain projections but not the others. The contrast between (113) and (114) suggests that TP cannot be case-marked whereas CP is case-marked.

(114) Ngo tengdou [keoi coeng-gan go], keoidei dou tengdou *e*.
I hear s/he sing-Suffix song they also hear
'I heard that s/he was singing and they did too.'

In sum, I conclude that clauses with type 3 verbal suffixes are neither adjectival (contra present participles) nor nominal (contra gerunds). They can be assumed to be "defective" TPs that cannot occur in case positions, conforming to the observations in the previous sections that they behave like adjuncts, not arguments. It will further be argued in the next subsection that in terms of grammatical relations clauses with type 3 verbal suffixes are adverbials.

4.2 Converbs

Yip (2019) claims that type 3 verbal suffixes are associated with converbs. To the best of my knowledge, he is the first person in the literature who advocates associating Cantonese verbal suffixes with converbs.[17] I agree with his claim and further argue that type 3 verbal suffixes are markers of converbs, deriving a converbal construction in adverbial positions.

According to Haspelmath (1995: 3), a converb is defined as "a nonfinite verb form whose main function is to mark adverbial subordination". In terms of

17. Bisang (1995) explicitly claims that Mandarin is not a converb language.

categories, converbs are regarded as "verbal adverbs", whose grammatical function is to serve as an adverbial modifier. Unlike converbs, participles are verbal adjectives, whose grammatical function is to serve as an adnominal modifier.

The following examples of converbs in Modern Greek, Khalkha Mongolian, and Huallaga Quechua are cited from Haspelmath (1995: 1–2). As indicated in the English translations, the phrases marked with converbs like *xamojel-óndas* 'smiling' in (115), *xot-od or-ž* 'going to town' in (116), and *aywa-ra-yka-r* 'as we go along' in (117) are used as adverbials. Note that English is not a converb language (Kortmann 1995). The English translations in the following examples are for reference only and English present particles and preposition phrases should not be misinterpreted as converbs.

(115) I kopéla tón kítak-s-e xamojel-óndas. (Modern Greek)
the girl him look-Aor-3SG smile-Conv
'The girl looked at him smiling.'

(116) Xot-od or-ž nom aw-aw. (Khalkha Mongolian)
town-Dat go-Conv book buy-PAST
'Going to town I bought a book.'

(117) Aywa-ra-yka-r parla-shun. (Huallaga Quechua)
go-Stat-Impf-Conv converse-1PL.Incl.Imp
'Let's converse as we go along.'

Clauses with type 3 verbal suffixes in Cantonese are mainly "conjunctional converbs", in the sense of Nedjalkov (1995), according to which the converb can have its own subject and its function is similar to an adverbial subordinate, for example, (118) in Bashkir (cited from Nedjalkov 1995: 99).

(118) Ul qapqany šyğyrðatyn as-yp in-gänse, Salix duðğal-maj
he fate-Acc creak-Conv open-Conv go.in-Conv Salix move-Conv
baθ-yp tor-zo. (Bashkir)
press-Conv stand-PAST
'Until he went inside, opening the gate with a creak, Salix stood motionless.'

The converbal structure may occur in pairs, forming "coordinate converbs" (Nedjalkov 1995), for example, (119) in Turkmenian by means of four converbs ending with *-p* and a clause-final finite verb (cited from Nedjalkov 1995: 98–99).

(119) Ol gapa jakynlaš-yp_1, gapa-ny dyrkyldat-yp_2, gulpuŋ dešegin-den
he door approach-Conv door-Acc knock-Conv lock-Gen hole-Abl
seredi-p_3, bir=iki minut tur-up_4 xač zatsyz git-di_5.
look-Conv one=two minute stand-Conv nothing without go.away-PAST
'He went up to the door, knocked, looked through the keyhole, stood for about two minutes, and then went away without anything.' (Turkmenian)

Example (120) has three converbs marked with the type 3 verbal suffix *can* and the predicate *syufuk* 'comfortable' in the main clause. The bracketed constituent has its own subject and functions as an adverbial subordinate like *whenever* in English as indicated in the English translation. I assume that the converbs in (120) combine both of the functions of coordinate converbs and conjunctional converbs.

(120) [Keoi sik-can min, jam-can seoi, maat-can zeoi] dou
s/he eat-Suffix noodle drink-Suffix water wipe-Suffix mouth all
m syufuk.
not comfortable
'Whenever s/he eats noodles, drinks water, and wipes the mouth, s/he does not feel comfortable.'

Haspelmath (1995) points out that verb form, nonfiniteness, adverbial behavior, and subordination are the four components that define converbs. The grammatical properties of type 3 verbal suffixes seem to include all of these four components.

First, saying that a converb is a verb form that is part of the inflectional paradigm of verbs means that type 3 verbal suffixes are inflectional, not derivational morphemes. The contrast between (121) and (122) with respect to the ordering of the two suffixes, namely *faa* and *can*, can be explained if *faa* is a derivational morpheme like *-ize* in English, and *can*, a type 3 verbal suffix, is an inflectional morpheme, assuming that derivational suffixes should precede inflectional suffixes linearly in morphology. Note that (121) is a real example from the internet in a context in which there was a discussion of how a toy model was created.

(121) [Laptai-faa-can] dou m ceot-maai faai jik.
three-dimension-Suffix-Suffix all not out-Suffix CL wing
'Whenever something is made three-dimensional, the wing does not come out.'

(122) *[Laptai-can-faa] …
three-dimension-Suffix-Suffix
'Whenever something is made three-dimensional, …'

Second, finiteness is a definitional criterion for converbs. Although the finite/nonfinite distinction is quite controversial in Cantonese, the lack of modals in clauses with type 3 verbal suffixes (see the discussion of (65) to (74)) could be an indication of nonfiniteness in Cantonese.[18] Following Huang's (2022) analysis of Chinese clausal complements, I assume that Cantonese verbs like *soengseon*

18. Suppose that clauses with type 3 verbal suffixes are nonfinite. The temporal sentence-final particle *lei* in the earlier example (90) should be differentiated from the one in (91). The former is nonfinite and is unable to mark the reference time whereas the latter is finite and expresses the recent past. See Lai (2014) for a detailed discussion of *lei* in a formal semantics approach.

'believe', *gaiwaak* 'plan', and *hoici* 'begin' select a proposition (CP), an event or action that contains future modality but no tense (wollP), and an action with no independent tense (*v*P), respectively. Note that "wollP" is a tenseless future infinitive, in which *woll* is a future modal that contributes a modal force yielding posteriority (Wurmbrand 2014). The following examples show that the existence of epistemic, deontic, and dynamic modals is permitted in CP in (123) while they are all excluded in wollP in (124) and *v*P in (125). Assuming that the bracketed clauses in (124) and (125) are treated as nonfinite, the lack of modals in clauses with type 3 verbal suffixes (indicating) non-finiteness is understandable.[19]

(123) Keoidei soengseon [keoi (jinggoi/bitseoi/hang) sik min]. (CP)
they believe s/he should/must/willing eat noodle
'They believe that s/he should/must/is willing to eat noodles.'

(124) Keoidei gaiwaak [(*jinggoi/*bitseoi/*hang) sik min]. (wollP)
they plan should/must/willing eat noodle
'They plan to eat noodles.'

(125) Keoidei hoici [(*jinggoi/*bitseoi/*hang) sik min]. (*v*P)
they begin should/must/willing eat noodle
'They begin to eat noodles.'

The existence of the *lin* 'even' preposing can also distinguish nonfinite clauses from finite ones, given that *lin* 'even' preposing (i.e., the counterpart of the *lian* 'even' preposing in Mandarin) is not permitted in nonfinite clauses (Huang 2022). The ungrammaticality of (126) suggests that the converbal construction formed by *can* is nonfinite while the clause formed by the type 2 verbal suffix *maai* in (127) is finite.

(126) *[Keoi lin min dou sik-can] dou m syufuk. (Type 3)
s/he even noddle also eat-Suffix all not comfortable
'Whenever s/he eats even noodles, s/he does not feel comfortable.'

(127) Keoi lin min dou sik-maai. (Type 2)
s/he even noddle also eat-Suffix
'S/he eats even noodles.'

An anonymous reviewer points out that the converbal construction formed by the type 3 verbal suffix *can* in (128) does not allow embedded tense, for example, the independent temporal reading specified by *zingwaa* 'just' in the bracketed clause, unlike the genuine finite subordinate clause formed by type 1 verbal suffix

19. The possibility of having an overt subject in clauses formed by type 3 verbal suffixes may challenge the claim of nonfiniteness. See Yip (2019) for some discussion of the finite properties of a subgroup of type 3 verbal suffixes.

zo (and headed by the conjunction *jyugwo* 'if') in (129). The contrast between (128) and (129) may be a further piece of evidence for nonfiniteness of the converbal construction.

(128) *[Keoi zingwaa sik-can min], jigaa dou m wui ngo. (Type 3)
s/he just eat-Suffix noodle now also not will hungry
'Whenever s/he just ate noodles, s/he will not feel hungry now.'

(129) [Jyugwo keoi zingwaa sik-zo min], jigaa zau m wui ngo.
if s/he just eat-Suffix noodle now then not will hungry
'If s/he just ate noodles, s/he will not feel hungry now.' (Type 1)

Third, the definitional property "adverbial" is primarily intended to exclude arguments and adnominal modifiers. Clauses with type 3 verbal suffixes are arguably adverbials (see the discussion of island effects in (58) and (59)), conforming to the standard definition of converbal phrases. The ungrammaticality of (55), (56), and (57), as repeated below, can be explained straightforwardly. Clauses with type 3 verbal suffixes cannot occur in argument positions, for example, serving as a clausal subject in (130) and a clausal object in (131), and in adnominal positions, for example, serving as a relative clause in (132).

(130) *[Keoi sik-can min] zeoi hou.
s/he eat-Suffix noodle most good
'That (whenever) s/he eats noodles is the best.'

(131) *Keoidei zidou [keoi sik-can min].
they know s/he eat-Suffix noodle
'They know that (whenever) s/he eats noodles.'

(132) *Ngo zungji [[sik-can min] ge jan].
I like eat-Suffix noodle Mod person
'I like the people who (whenever) eat noodles.'

Fourth, the term "subordinate" is used in the sense "embedded" or "incorporated into superordinate clause", contrasting with coordinate clauses. Aoun & Li (2003) argue that coordinate conjunctions vary according to the categories of the conjuncts. Following their analysis of *erqie* 'and' in Mandarin, I assume that *jice* 'and' in Cantonese is used to conjoin two clauses/verbal phrases. The ungrammaticality of (133) shows that the relationship between the two bracketed constituents should not be coordinate.

(133) [Keoi sik-can min] (*jice) [dou m syufuk].
s/he eat-Suffix noodle and all not comfortable
'Whenever s/he eats noodles first (*and) s/he does not feel comfortable.'

Furthermore, clauses with type 3 verbal suffixes are not coordinate and meet some of the criteria for subordination proposed by Haspelmath (1995: 12–17), as noted in what follows.[20]

First, a subordinate clause may appear inside its superordinate clause, which becomes discontinuous. Let us consider (134), in which *lok* is a type 3 verbal suffix (cf. (41)). It is likely that *ni wun min* 'this bowl of noodles' belongs to the superordinate clause, of which *dou gei houmei* 'quite delicious' is predicated. The superordinate clause then is "broken up" by the bracketed converbal clause, as in (135). If the reasoning presented here is correct, the superordinate clause is discontinuous, showing that the bracketed clause-internal converbal clause is subordinate.

(134) Ni wun min sik-lok dou gei houmei.
this CL noodle eat-Suffix also quite delicious
'This bowl of noodles tastes delicious.'

(135) Ni wun min [sik-lok] dou gei houmei.
this CL noodle eat-Suffix also quite delicious
'This bowl of noodles tastes delicious.'

Second, backward pronominal anaphora is only possible in subordinate clauses. "*e*" in (136) is an empty pronominal subject of the bracketed converbal clause and co-refers to *keoi* in the main clause, given that a backward co-referential relationship between an empty pronominal and its antecedent is allowed in Chinese complex sentences (Lust, Chien, Chiang & Eisele 1996). Contrary to (136), backward co-reference is not possible in coordinate structures, as in (137).

(136) [e_i sik-can min] keoi$_i$ dou m syufuk.
eat-Suffix noodle s/he all not comfortable
'Whenever s/he eats noodles first (*and) s/he does not feel comfortable.'

(137) *[e_i sik min] jice [keoi$_i$ jam gaafe].
eat noodle and s/he drink coffee
'S/He eats noodles and s/he drinks coffee.'

Third, coordinate structures severely restrict the possibility of movement (Ross 1967) while subordinate clauses do not affect the possibility of movement out of the superordinate clause. The bracketed constituent in (138) is the first conjunct of a coordination structure. Topicalization of the object *gaafe* 'coffee' in the second conjunct by movement is blocked. In contrast to this, the bracketed converbal clause does not block the movement of the object in (139), on a par with the

20. For independent reasons the criteria of variable position and semantic restrictiveness proposed by Haspelmath (1995) do not apply to the converbal construction in Cantonese.

canonical subordinate clause in (140), and hence behaves like subordinate clauses in this respect.

(138) *Gaafe$_i$, keoi [sik min] jice jam t_i.
coffee s/he eat noodle and drink
'*Coffee, s/he eats noodles and drinks *t*.'

(139) Gaafe$_i$, [keoi sik-can min] dou jam t_i.
coffee s/he eat-Suffix noodle all drink
'Coffee, s/he drinks *t* whenever s/he eats noodles.'

(140) Gaafe$_i$, [jyugwo sik min] zau jam t_i.
coffee if eat noodle then drink
'Coffee, someone drinks *t* if s/he eats noodles.'

I would like to end this section with some notes about the syntax of the converbal constructions. Considering the heterogeneous properties of converbs in various languages, it is less likely that converbal constructions have a "unified" syntactic structure cross-linguistically. The converbal construction in Cantonese is a "defective" TP. Netkachev (2019) argues that the converbal constructions in Rutul can be either a CP or an AspP, giving rise to different readings. It should be reasonable to assume that converbal constructions may have different syntactic sizes to convey different meanings in different languages. Needless to say, this is a very challenging topic for comparative studies, which will be left for future research.[21]

There remains an interesting issue worth exploring: the correlation between the internal syntax of the converbal construction and its external syntax. Endo & Haegeman (2019) argue that the merge site of an adverbial clause in the associated main clause, i.e., its external syntax, is determined by the label of the adverbial clause and by the launch site of the moved constituent in its internal syntax, claiming that "the more structure is manifested in the adverbial clause, the higher it is merged". As discussed in this article, clauses with type 3 verbal suffixes are TP adverbials. Investigating the possible merge site to which the adverbials are adjoined can help us have a better understanding of and a precise analysis of the nature of "discontinuity" of the superordinate clause (Haspelmath 1995).[22]

21. An anonymous reviewer raises a question about the division of labor of gerunds, participles, infinitives, and converbs cross-linguistically. See, for instance, Ylikoski (2003), for a discussion along these lines.

22. Yip (2019) has tried to explore the syntactic relation between the subordinate converbal constructions and the superordinate clauses in Cantonese along the lines in Endo and Haegeman (2019).

5. Concluding remarks

There are more than forty verbal suffixes in Cantonese that denote different meanings, playing different roles in syntax and semantics. Three types of verbal suffixes are classified with respect to marginality and incompleteness, and an overview of the verbal suffixes in Cantonese has been given. Clauses with type 1 verbal suffixes are regularly regarded as perfectly acceptable. Without adding any "extra" elements, the judgments of clauses with type 2 verbal suffixes are that they are marginally acceptable. Clauses with type 3 verbal suffixes are regarded as incomplete and cannot be used in isolation.

A more fine-grained analysis of clauses formed by verbal suffixes has been proposed in the chapter. Following Tsai's (2008) analysis, it has been claimed that the marginality of clauses with type 2 verbal suffixes in Cantonese is related to a failure of anchoring tense, associated with middle aspect (Asp2) and inner aspect (Asp3). Clauses with type 3 verbal suffixes have a "defective" TP structure, in which the functional projections beyond TP, such as MP1 (epistemic modality), CP, and those associated with speech act, are missing while the functional projections within TP are minimal. Clauses with type 3 verbal suffixes cannot be case-marked and hence may bear a case-assigning feature.

It has been argued that type 3 verbal suffixes are inflectional morphemes that form a converbal construction, which is used as an adverbial, neither nominal (a gerund) nor adjectival (a participle), and should be analyzed as an adjunct syntactically and as a conjunctional converb functionally. The grammatical properties of type 3 verbal suffixes share the four components that define converbs, namely, verb form, nonfinite, adverbial, and subordination. The converbal construction in Cantonese is not coordinate and meets some of the criteria for subordination. Being an adverbial and subordinate, the converbal construction cannot stand alone, deriving the incompleteness effects.

References

Aoun, Joseph & Li, Yen-hui Audrey. 2003. *Essays on the Representational and Derivational Nature of Grammar: The Diversity of Wh-Constructions*. Cambridge MA: MIT Press. https://doi.org/10.7551/mitpress/2832.001.0001

Baker, Mark C. 1985. The Mirror Principle and morphosyntactic explanation. *Linguistic Inquiry* 16, 373–416.

Bisang, Walter. 1995. Verb serialization and converbs – differences and similarities. In *Converbs in Cross-linguistic Perspective*, Haspelmath, Martin & König, Ekkehard (eds), 137–188. Berlin and New York: Mouton de Gruyter. https://doi.org/10.1515/9783110884463-006

Cheng, Lisa L.-S. & Sybesma, Rint. 2004. Postverbal 'can' in Cantonese (and Hakka) and Agree. *Lingua* 114, 419–445. https://doi.org/10.1016/S0024-3841(03)00067-6

Cheng, Ting-Au. 1998. Xi Guangzhouhua dongci shuyu youzhi chengfen "lok" [An analysis of the postverbal element *lok* in Cantonese]. In *Guangzhouhua Yanjiu yu Jiaoxue (Di San Ji)* [Cantonese Research and Teaching 3], Cheng, Ting-Au & Cai, Jianhua (eds), 86–90. Guangzhou: Sun Yat-sen University Press.

Cheung, Samuel Hung-nin. 2007. *Xianggang Yueyu Yufa de Yanjiu* [Cantonese as spoken in Hong Kong] (revised edition). Hong Kong: The Chinese University Press.

Cinque, Guglielmo. 1999. *Adverbs and Functional Heads*. New York and Oxford: Oxford University Press.

Endo, Yoshio & Haegeman, Liliane. 2019. Adverbial clauses and adverbial concord. *Glossa: A Journal of General Linguistics* 4(1):48, 1–32. https://doi.org/10.5334/gjgl.589

Greenbaum, Sidney. 1996. *Oxford English Grammar*. Oxford and New York: Oxford University Press.

Gu, Yang & Yip, Virginia. 2004. On the Cantonese resultative predicate V-*can*. *Concentric: Studies in Linguistics* 30(2), 35–67.

Haegeman, Liliane. 2003. Conditional clauses: external and internal syntax. *Mind & Language* 18(4), 317–339. https://doi.org/10.1111/1468-0017.00230

Haspelmath, Martin. 1995. The converb as a cross-linguistically valid category. In *Converbs in Cross-linguistic Perspective*, Haspelmath, Martin & König, Ekkehard (eds), 1–55. Berlin and New York: Mouton de Gruyter. https://doi.org/10.1515/9783110884463-003

Hu, Jianhua & Shi, Dingxu. 2005. Wanju tiaojian yu zhicheng tezheng de yunzhun [Conditions on the completeness of sentences and the licensing of referential features]. *Yuyan Kexue* [Linguistic Sciences] 5, 42–49.

Huang, C.-T. James. 1997. On lexical structure and syntactic projection. In *Chinese Languages and Linguistics 3*, Tsao, Feng-fu & Wang, H. Samuel (eds), 45–89. Taipei: Academia Sinica.

Huang, C.-T. James. 2022. Finiteness, opacity, and Chinese clausal architecture. In *New Explorations in Chinese Theoretical Syntax: Studies in honor of Yen-Hui Audrey Li*, Simpson, Andrew (ed), 17–76 Amsterdam: John Benjamins.

Kong, Lingda. 1994. Yingxiang Hanyu juzi zizu de yuyan xingshi [Linguistic forms of incompleteness of Chinese sentences]. *Zhongguo Yuwen* [Studies of the Chinese Language] 6, 434–440.

Kortmann, Bernd. 1995. Adverbial participial clauses in English. In *Converbs in Cross-linguistic Perspective*, Haspelmath, Martin & König, Ekkehard (eds), 189–237. Berlin and New York: Mouton de Gruyter. https://doi.org/10.1515/9783110884463-007

Lai, Yin Yee. 2014. Temporal modification in Cantonese: the semantic study of the sentence-final particle *lei4* in simplex and bi-clausal sentences. PhD dissertation, City University of Hong Kong.

Lau, Sidney. 1977. *A Practical Cantonese-English Dictionary*. Hong Kong: The Government Printer.

Lee, Peppina Po-lun. 2012. *Cantonese Particles and Affixal Quantification*. Dordrecht: Springer. https://doi.org/10.1007/978-94-007-4387-8

Lee, Thomas Hun-tak. 1994. Yueyu "saai" de luoji tedian [The logical properties of Cantonese *saai*]. In *Proceedings of First International Conference on Cantonese and Other Yue Dialects*, Sin, Chow-yiu (ed), 131–138. Hong Kong: Modern Educational Research Society, Ltd.

Li, Charles N. & Thompson, Sandra A. 1981. *Mandarin Chinese: A Functional Reference Grammar*. Berkeley and Los Angeles: University of California Press.

Li, Yen-hui Audrey. 1990. *Order and constituency in Mandarin Chinese*. Dordrecht: Kluwer Academic Publishers. https://doi.org/10.1007/978-94-009-1898-6

Li, Yen-hui Audrey. 2008. Case, 20 years later. In *Proceedings of the 20th North American Conference on Chinese Linguistics (*NACCL-20) Volume 1, Chan, Marjorie K.M. & Kang, Hana (eds), 41–68. Columbus OH: The Ohio State University.

Lin, Jo-Wang & Tang, Jane. 1995. Modals as verbs in Chinese: a GB perspective. *The Bulletin of Institute of History and Philology 66*, 53–105. Taipei: Academia Sinica.

Lu, Jianming. 1986. Xiandai Hanyu li dongci zuo weiyu wenti qianyi [On verbal predication in Modern Chinese]. *Yuwen Lunji 2*. Beijing: Foreign Language Teaching and Research Press.

Lu, Jianming. 1993. *Bashi Niandai Zhongguo Yufa Yanjiu* [Study of Chinese grammar in the 80s]. Beijing: Commercial Press.

Lust, Barbara, Chien, Yu-Chin, Chiang, Chi-Pang & Eisele, Julie. 1996. Chinese pronominals in universal grammar: a study of linear precedence and command in Chinese and English children's first language acquisition. *Journal of East Asian Linguistics* 5, 1–47. https://doi.org/10.1007/BF00129804

Matthews, Stephen & Yip, Virginia. 1994. *Cantonese: A Comprehensive Grammar*. London and New York: Routledge.

Nedjalkov, Vladimir P. 1995. Some typological parameters of converbs. In *Converbs in Cross-linguistic Perspective*, Haspelmath, Martin & König, Ekkehard (eds), 97–136. Berlin and New York: Mouton de Gruyter. https://doi.org/10.1515/9783110884463-005

Netkachev, Ivan. 2019. Syntax of general converb in Rutul. *Working Paper*, the National Research University Higher School of Economics, Moscow.

Rizzi, Luigi. 1997. The fine structure of the left periphery. In *Elements of Grammar*, Haegeman, Liliane (ed), 281–337. Dordrecht: Kluwer Academic Publishers. https://doi.org/10.1007/978-94-011-5420-8_7

Ross, John R. 1967. Constraints on variables in syntax. PhD dissertation, MIT.

Stowell, Tim. 1981. Origins of phrase structure. PhD dissertation, MIT.

Tang, Sze-Wing. 1996. A role of lexical quantifiers. *Studies in the Linguistic Sciences* 26(1/2): 307–323.

Tang, Sze-Wing. 2002. Focus and *dak* in Cantonese. *Journal of Chinese Linguistics* 30(2), 266–309.

Tang, Sze-Wing. 2003a. Properties of *ngaang* and the syntax of verbal particles in Cantonese. *Journal of Chinese Linguistics* 31(2), 245–269.

Tang, Sze-Wing. 2003b. Yueyu shuyu zhuci "gam" de yixie tedian [Properties of the verbal particle *gam2* in Cantonese]. In *Proceedings of the 8th International Conference on Cantonese and Other Yue Dialects*, 570–586. Beijing: China Social Science Press.

Tang, Sze-Wing. 2010. *Xingshi Hanyu Jufaxue* [Formal Chinese syntax]. Shanghai: Shanghai Educational Publishing House.

Tang, Sze-Wing. 2015. *Yueyu Yufa Jiangyi* [Lectures on Cantonese grammar]. Hong Kong: Commercial Press.

Tang, Sze-Wing. 2018. Yueyu dongci houzhui yu wanju wenti [Verbal suffixes and completeness in Cantonese]. In *Frontiers in the Study of Sinitic and Sino-Tibetan Languages: Festschrift in Honor of Professor Ting Pang-hsin on His 80th Birthday*, Ho, Dah-An, Yiu, Yuk-man Carine, Sun, Jingtao, Chen, Zhongmin & Cheung, Hung-nin Samuel (eds), 686–696. Beijing: Social Sciences Academic Press (China).

Tang, Sze-Wing. 2019. Cihui cengci de jumozhuci [Sentence-final particles in the lexical layer]. *Yuyan Jiaoxue yu Yanjiu* [Language Teaching and Linguistic Studies] 3, 38–45.

Tang, Sze-Wing. 2020. Cartographic syntax of performative projections: evidence from Cantonese. *Journal of East Asian Linguistics* 29, 1–30. https://doi.org/10.1007/s10831-019-09202-7

Tang, Sze-Wing & Lee, Thomas Hun-tak, 2000. Focus as an anchoring condition. Handout of talk given at the International Symposium on Topic and Focus in Chinese, The Hong Kong Polytechnic University, June 21–23, 2000.

Tsai, Wei-tien Dylan. 2008. Tense anchoring in Chinese. *Lingua* 118, 675–686. https://doi.org/10.1016/j.lingua.2007.09.002

Tsai, Wei-tien Dylan. 2010. Tan Hanyu motaici de fenbu yu quanshi zhi duiying guanxi [On the syntax-semantics correspondences of Chinese modals]. *Zhongguo Yuwen* [Studies of the Chinese Language] 3, 208–221.

Wei, Wei & Li, Yen-hui Audrey. 2018. Adverbial clauses in Mandarin Chinese. *Linguistic Analysis* 42(1–2), 163–330.

Wong, Cheuk Lam Cherie. 2009. Word order and subjectivity in Cantonese. MPhil thesis, The Hong Kong Polytechnic University.

Wong, Shing-Kit. 2018. Yueyu ciwei "ding" de yufa tedian [Linguistic properties of suffix *ding6* in Cantonese]. *Current Research in Chinese Linguistics* 97(1), 41–56.

Wurmbrand, Susi. 2014. Tense and aspect in English infinitives. *Linguistic Inquiry* 45(3), 403–447. https://doi.org/10.1162/LING_a_00161

Yip, Ka Fai. 2019. Yueyu dongci houzhui de wanju wenti [The incompleteness effects of Cantonese verbal suffixes]. MPhil thesis, The Chinese University of Hong Kong.

Ylikoski, Jussi. 2003. Defining non-finites: action nominals, converbs and infinitives. *SKY Journal of Linguistics* 16, 185–237.

Zhan, Bohui. 1958. Yuefangyan zhong de xuci "can, zyu, faan, maai, tim" [Functional words *can, zyu, faan, maai,* and *tim* in Cantonese]. *Zhongguo Yuwen* [Studies of the Chinese Language] 3, 119–122.

PART IV

The syntax and interpretation of particles

On the syntax of mirativity

Evidence from Mandarin Chinese

Wei-Tien Dylan Tsai and Ching-Yu Helen Yang

This chapter proposes a unified analysis of Mandarin miratives in terms of their syntax and pragmatics. We examine the rather curious behavior of sentential adverbs such as *yuanlai* 'turn out' and *zenme* 'how come' in conjunction with the sentence final particle *a*. Specifically, the construals in question encode unexpectedness from the viewpoint of the speaker, as observed in other languages with overt morphology. It is argued extensively that the mirativity involved is syntactically represented by a functional projection in the left periphery, i.e., Speech Act Phrase. The evidence is drawn from the sentence-initial position of *yuanlai* and *zenme*, as well as their distribution in relation to evaluative adverbs and their exclusion from certain embedded clauses. Furthermore, the compatibility between Mandarin mirative expressions and indicative/interrogative mood presents a strong case for the separation of Force and Mood in cartographic terms.

1. Setting the stage

In this chapter, we look into the syntax and pragmatics of Mandarin mirative construals, where syntactic means are employed to encode unexpectedness from the speaker's point of view. In the literature, mirativity is often characterized as a distinctive category expressing sudden discovery, surprise and unprepared mind of the speaker, as already well-documented in DeLancy's pioneering works (DeLancy 19 97, 2001, 2012; Aikhenvald 2004, 2012; Peterson 2016; among others). It is usually encoded by a verbal affix, a complex predicate, or a sentence final particle (SFP), as shown in (1).

(1) *O-ba-**o*** *ci* ***o-le-o***. (Kham; Watters 2002)
3SG-go-NML CEP MIR
'He already left.' (I expected him to still be here!)

https://doi.org/10.1075/la.272.15tsa

By contrast, just like its tense makeup, Mandarin does not have a morphological marker for mirativity, but relies on sentential adverbs such as *yuanlai* 'turn out' or *zenme* 'how come', as shown in (2b) and (2c) respectively. Or it may employ the sentence-final particle (SFP) a^0 with a neutral tone, as in (2d). The mirative reading is most salient when the two adverbs *yuanlai* and *zenme* occupy the sentence-initial position. Otherwise, they need to carry stress after a topicalized subject, where the presence of a^0 is required, as in (3a,b):

(2) a. *Akiu qu-le Budapesi.*
Akiu go-PRF Budapest
'Akiu went to Budapest.'
b. ***Yuanlai*** *Akiu qu-le Budapesi!*
turn.out Akiu go-PRF Budapest
'It turns out that Akiu went to Budapest!'
c. ***Zenme*** *Akiu qu-le Budapesi!*
how.come Akiu go-PRF Budapest
'How come Akiu went to Budapest!'
d. *Akiu qu-le Budapesi* ***a^0***!
Akiu go-PRF Budapest SFP
'To my surprise, Akiu went to Budapest!'

(3) a. *Akiu* ***yuanlai*** *qu-le Budapesi* ***a^0***!
Akiu turn.out go-PRF Budapest SFP
'It turns out that Akiu went to Budapest!'
b. *Akiu* ***zenme*** *qu-le Budapesi* ***a^0***!
Akiu how.come go-PRF Budapest SFP
'How come Akiu went to Budapest!'

In this chapter, we provide a unified analysis of these mirative forms in Mandarin, and reach the conclusion that mirativity in Mandarin is expressed by discrete functional elements appearing very high in the sentential projections. Related observations have already been made by Li (2006), Paul (2014, 2015) and Pan (2015). Under the cartographic approach (Cinque 1999; Rizzi 1997; Tsai 2015; among many others), it is therefore quite plausible to suggest that mirativity is actually represented by the projection of a Speech Act Phrase (SAP) in the left periphery: the SFP a^0 merges to its head position, while *yuanlai* 'turn out' and *zenme* 'how come' end up in its Spec position.

2. Mirativity as a distinctive category

In the literature, there is a debate on whether mirativity is a distinctive category or a semantic extension of inferential evidentiality. Mirativity is conveyed by the same form of verbal suffixes as indirect evidentiality in Turkish, as in (4) (Aksu-Koç & Slobin 1986).

(4) Kemal gel-miş (Turkish; Slobin and Aksu 1982:187)
Kemal came-EVID
'Kemal came.'

Similarly, mirative construals in Kham do not specify the source of information (e.g., first-hand observation, inference or hearsay). In Magar, the mirative marker *le* can co-occur with the indirect evidence marker *–sa*, as in (5).

(5) *ŋa-i i-din-cʌ sya ŋa-jya-o* ***le-sa-ŋ***
1SG-ERG PROX-type-ATT meat 1.PRON-eat-NML IMPF.MIR-INFER-1.PRON
'[I realize to my surprise that:] Apparently I have eaten this type of meat!'
(Magar; Aikhenvald 2014)

Interestingly enough, Mandarin miratives behave quite differently in this respect: A mirative sentence such as (6) can be uttered not only in situations of indirect evidence, as in (6a), but is also compatible with other evidential types such as direct evidence and hearsay, as specified in (6b) and (6c) respectively:

(6) ***Yuanlai/Zenme*** Akiu chi sherou a^{0}!
turn.out/how.come Akiu eat snake.meat SFP
'{How come/It turns out that} Akiu eats snake meat!'
a. Indirect evidence: the speaker found that Akiu went to a restaurant which mainly serves snake meat and he spent an hour staying there.
b. Direct evidence: the speaker directly witnesses the situation that Akiu is eating snake meat.
c. Hearsay: the speaker is told that Akiu eats snake meat.

On the other hand, Mandarin miratives do pattern like their counterparts in other languages in pragmatic terms, namely, expressing the surprise of the speaker. In particular, mirative *yuanlai* 'turn out' expresses the speaker's sudden discovery or realization of the situation (cf. Lü 1980; Xing 1985; Tang 2006; Wu 2012; among others). This is illustrated by the pragmatic restrictions laid out in (7).

(7) ***Yuanlai*** *Akiu chuguo-le*! {*#wo yi-dian dou bu yiwai/ #Zhe-jian shi wo zhiqian* JIU *zhidao-le}*.
turn.out Akiu go.abroad-PRF I one-bit DOU not surprise/ This-CLF thing I before JIU know-PRF
'It turns out that Akiu is not in the country! {I am not surprised at all / I have already known}.'

Wu (2012: 203) points out that *yuanlai* observes a contrast constraint: "a proposition did not hold at a past time but holds at the time of assertion". As will become clear below, this property is shared by both the mirative and temporal usages of *yuanlai*. Temporal *yuanlai* can be translated as 'originally', in which case the relevant proposition was true in the past, but false now.

Similarly, mirative *zenme* and the SFP a^0 express a proposition contrary to the speaker's belief or expectation (Lü 1980; Huang & Ochi 2004; Tsai 2008; among others), as shown by (8a) and (8b) respectively. On the other hand, the pragmatic force of mirative *zenme* is characterized as astonishment by Paul (2014), and as "the matter being addressed as deviant from how it should be, or normally is, from the speaker's point of view" in Wu (2004: 178).

(8) a. ***Zenme*** *Akiu chuguo-le! {#wo yi-dian dou bu yiwai/#gen wo cai-de yiyang}*.
how.come Akiu go.abroad-PRF I one-bit DOU not surprise/with I guess-DE same
'How come Akiu is not in the country! {I am not surprised at all / It's just as what I suspected}.'

b. *Akiu chuguo-le* ***a^0***! *{#wo yi-dian dou bu yiwai/#gen wo cai-de yiyang}*.
Akiu go.abroad-PRF SFP I one-bit DOU not surprise/with I guess-DE same
'To my surprise, Akiu is not in the country! {I am not surprised at all / It's just as what I suspected}.'

Another defining property of a mirative expression is that it cannot be used to answer a question, as evidenced by the contrasts in the question-answer pairs of (9–11). This is because there is a pragmatic conflict between the answerhood and the surprise attitude as proclaimed by Speaker B in (9a,b). The same situation does not arise under the unexpectedness evaluation associated with *jingran* in (9c).[1]

1. As pointed out by an anonymous reviewer, *jingran* 'unexpectedly' can also be said to express some sort of surprise. However, we would argue that it actually expresses "unexpectedness" as an evaluative adverb, and does not fall under the same category as mirative *yuanlai*. The latter is evidential in nature, and functions as an attitude operator by raising to the Spec of SAP2, as sketched in the diagram (27a).

(9) A: *Akiu ganggang yudao-le shei? Name xingfen.*
Akiu just meet-PRF who that excited
'Who did Akiu just meet? He is so excited!'
B: a. #***Yuanlai*** *ta yudao-le Chenglong*!
turn.out he meet-PRF Jackie.Chan
'It turns out that he met Jackie Chan!'
b. #*Ta yudao-le Chenglong* a^0!
he meet-PRF Jackie.Chan SFP
'He met Jackie Chan!'
c. *Ta (jingran) yudao-le Chenglong.*
he unexpectedly meet-PRF Jackie.Chan
'He met Jackie Chan (unexpectedly).'

Additionally, it is widely assumed that a^0 merges high in the left periphery. Li (2006) proposes that the SFP a^0 is a discourse particle located in DiscourseP, which scopes over EvaP (Evaluative Phrase) headed by *ne*, as evidenced by the linear precedence of *ne* over a^0 in (10) (Li 2006: 61).

(10) *Xiaowang hai cang zhe zhe baobei* ***ne*** $\boldsymbol{a^0}$/ *$\boldsymbol{a^0}$* ***ne.***
Xiaowang still hide PROG this treasure SFP SFP SFP SFP
'Little Wang's still keeping this treasure.'

In Paul's (2014) analysis, a^0 occurs as the head of the highest projection of the CP layer, namely, AttP (Attitude Phrase), as shown in the following schematization:

(11)

Attitude (C_3)	> Force (C_2)	> low C (C_1)
ou warning	*ma* interrogative	*le* currently relevant state
(y)a astonishment	*ba* imperative	*laizhe* recent past
ne_3 exaggeration	ne_2 follow-up question	ne_1 continued state

Finally, mirative *yuanlai* and *zenme* must precede epistemic modals such as *yiding* 'surely' in (12–13) and evaluative adverbs such as *juran* 'unexpectedly' in (14–15). This indicates that they are merged high up in the top layer of the left periphery.

(12) a. ***Yuanlai*** *ta mai-de gupiao* ***yiding*** *hui zhang*!
turn.out he buy-DE stock surely will rise
'It turns out that the price of the stock that he buys will surely rise!.'
b. **Ta mai-de gupiao* ***yiding yuanlai*** *hui zhang*!
he buy-DE stock surely turn.out will rise

(13) a. ***Zenme*** *ta mai-de gupiao* ***yiding*** *hui zhang*!
how.come he buy-DE stock surely will rise
'How come the price of the stock that he buys will surely rise!'
b. **Ta mai-de gupiao* ***yiding zenme*** *hui zhang*!
he buy-DE stock surely how.come will rise

(14) a. ***Yuanlai*** *zhenxiang* ***juran*** *zheme canku*!
turn.out truth unexpectedly this cruel
'It turns out that the truth is unexpectedly cruel!'
b. **Zhenxiang* ***juran*** ***yuanlai*** *zheme canku*!
truth unexpectedly turn.out this cruel

(15) a. ***Zenme*** *zhenxiang* ***juran*** *zheme canku*!
how.come truth unexpectedly this cruel
'It turns out that the truth is unexpectedly cruel!'
b. **Zhenxiang* ***juran*** ***zenme*** *zheme canku*!
truth unexpectedly how.come this cruel

Moreover, mirative *yuanlai* has an IP-internal counterpart whose interpretation is distinctively non-mirative. Rather, it is construed as a temporal adverb, which can be translated as 'originally'. Temporal *yuanlai*, unlike its mirative counterpart, can be embedded under a matrix predicate like *faxian* 'find out', as evidenced by the contrast between (16a) and (16b).

(16) a. ??*Akiu faxian* [***yuanlai*** *wo zai Budapesi*].
Akiu find.out turn.out I in Budapest
'??Akiu found out [that it turns out that I am in Budapest!]'
b. *Akiu faxian* [*wo* ***yuanlai*** *zai Budapesi*].
Akiu find.out I originally in Budapest
'Akiu found out [that I was originally in Budapest].'

Likewise, only mirative *zenme*, but not its causal counterpart, is blocked from the complement of *xiangzhidao* 'wonder', as shown by the contrast between (17a) and (17b):

(17) a. ?? *Akiu xiangzhidao* [***zenme*** *Xiaodi qu-le Budapesi*].
Akiu wonder how.come Xiaodi go-Prf Budapest
'??Akiu wondered [why the hell Xiaodi went to Budapest!]'
b. *Akiu xiangzhidao* [*Xiaodi* ***zenme*** *qu-le Budapesi*].
Akiu wonder Xiaodi how.come go-Prf Budapest
'Akiu wondered [how come Xiaodi went to Budapest].'

We attribute the deviance of (16a) and (17a) to the selectional restrictions imposed by the matrix predicates, which cause the truncation of the top layer of their clausal complements. More specifically, *faxian* 'find out' selects a Finite Phrase (FinP), hence incapable of accommodating an SAP. *Xiangzhidao* 'wonder', on the other hand, selects an Interrogative Phrase (IntP), and cannot host an SAP, either.

All these observations point to the conclusion that sentence-initial *yuanlai* and *zenme* are merged much higher than their IP-internal counterparts, and associated

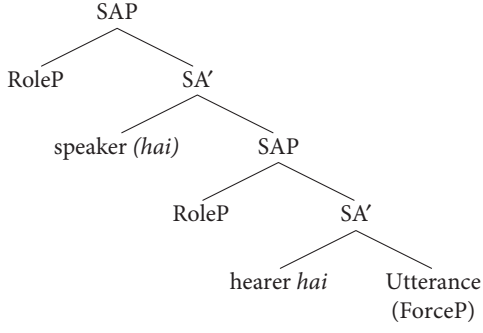
with syntactic projections encoding mirativity in the left periphery. This distributional property is directly responsible for their inability either to appear in truncated complements, or to be scoped over by lower functional categories.

3. The syntax of speech act and mirativity

Now we move on to the technical side of our treatment. Speas & Tenny (2003) and Hill (2007), propose that Speech Act Phrase (SAP) should be analyzed as a Larsonian shell structure: The higher layer conveys the speaker's point of view (expressing an indirect address or exclamative construal), and the lower layer identifies the addressee (expressing a direct address or vocative construal), as evidenced by the distribution of *vai* 'oh' in (18). *Vai* is used as the RoleP for the speaker and *măi Ioane* 'you Ion' for the addressee, while *hai* is considered as a Romanian speech act marker used when the speaker wants to influence the hearer's reaction through injunction or evidentiality. Their distribution is illustrated in (19).

(18) (Vai) măi (Ioane) (*vai) hai că nu te crede nimeni!
oh you Ion oh hai that not you believe nobody
'My God, Ion, give it up, nobody believes you!'

(19)

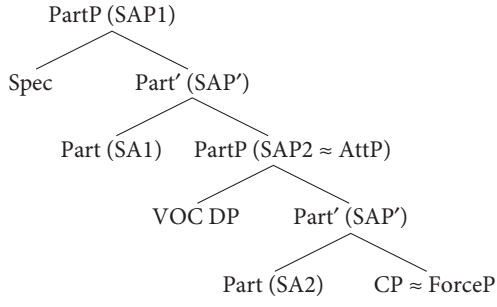


In a somewhat different analysis, Haegeman (2014) adopts a split SAP approach to West Flemish vocatives in (20a,b):

(20) a. M' een al een medalie wè/zulle. (West Flemish)
we have already a medal SA2 vocative
'We already have a medal, you know.'
b. Zé/né, m' een al een medalie.
SA1/vocative we have already a medal
'Look, we already have a medal.'

As illustrated in the diagram (21), the higher SAP (SAP1) establishes the discourse relation between speaker and addressee, whereas the lower SAP (SAP2) is stative and more attitudinal in Paul's (2014) sense: Namely, it reaffirms the already established speaker-addressee relationship with regard to the content of the utterance.

(21)



English performs a transparent correspondence between the form of a sentence and the use of a sentence. For example, sentences are equipped with an interrogative mood if performing subject-auxiliary inversion, and are used as questions. To offer a working analysis of Chinese miratives, we would like to point out again that the mapping between sentential mood and the force/attitude of a sentence is not transparent in Mandarin, due to the lack of morphological markers (cf. *hai* in Romanian) and overt syntactic mechanisms such as subject-aux inversion and *wh*-movement. Both sentence-initial adverbs and sentence-final particles, which may appear in sentences with indicative mood, occur as instantiations of mirativity, as exemplified by (22a–c).

(22) a. ***Yuanlai*** *Akiu chi she-rou* *(a^0)*!
turn.out Akiu eat snake-meat SFP
'It turns out that Akiu eats snake meat!'

b. ***Zenme*** *Akiu chi she-rou* *(a^0)*!
how.come Akiu eat snake-meat SFP
'How come Akiu eats snake meat!'

c. *Akiu chi she-rou* ***a^0***!
Akiu eat snake-meat SFP
'To my surprise, Akiu eats snake meat!'

As mentioned above, both mirative adverbs have a lower counterpart, i.e., temporal *yuanlai* in (23a) and causal *zenme* in (23b). The former is associated with the indicative mood, and the latter the interrogative mood.

(23) a. *Akiu **yuanlai** chi she-rou, dan xianzai bu chi le.*
Akiu originally eat snake-meat but now not eat INC
'Akiu originally ate snake meat, but now he doesn't eat it anymore'
b. *Akiu **zenme** chi she-rou (ne)*?
Akiu how.come eat snake-meat SFP
'How come Akiu eats snake meat?'

Along the line of Coniglio & Zegrean (2012), we distinguish a Mood Phrase (MoodP, cf. Cheng 1991, 1997) from an SAP by assuming that the Mood head is equipped with a feature signaling the clause type (cf. Speas & Tenny 2003; Haegeman 2014; among others). We further propose that MoodP situates in the lower CP layer, where the Mood head may be marked either as [indicative], as in (24a), or as [interrogative]. In the latter case, *zenme* may merge low as an instrumental *wh*, and undergo covert movement in LF, as in (24b). The other option is to merge *zenme* high to check the interrogative feature directly, which results in a causal question, as in (24c).

(24) a. Declaratives:
… [$_{\text{MoodP}}$ [Mood^0 $_{\text{[indicative]}}$…[$_{\text{IP}}$ *Akiu chi-le jirou*.]]]
b. Instrumental how-questions:

... [$_{\text{MoodP}}$ *zenme*$_i$ [Mood^0 $_{\text{[interrogative]}}$…[$_{\text{IP}}$ *Akiu* t$_i$ *chi she-rou*]]]
covert movement

c. Causal how-questions:
… [$_{\text{MoodP}}$ *zenme* [Mood^0 $_{\text{[interrogative]}}$…[$_{\text{IP}}$ *Akiu chi she-rou*]]]

In terms of pragmatics, mirativity is often associated with the speech act of expressives. Its main function is to express the attitude of the speaker. Therefore, it does not require the involvement of the addressee. This is demonstrated by the curious fact that Chinese miratives are not compatible with addressee-oriented SFPs. Technically, we construe the lower SAP (SAP2) in Haegeman's sense, which encodes a distinctive relation of the speaker and the addressee. For miratives, SAP2 is endowed with the feature EXPRESS (or [mirative]), and hence rejects the occurrence of addressee-oriented SFPs.

(25) a. ***Yuanlai** Akiu mei qu Budapesi {a^0/$^{\text{??}}$la^0/$^{\text{??}}$ne^0}*!
turn.out Akiu not go Budapest SFP/SFP/SFP
'It turns out that Akiu did not go to Budapest!'
b. ***Zenme** Akiu mei qu Budapesi {a^0/*a^{11}/*ne^{11}}*!
how.come Akiu not go Budapest SFP/SFP/SFP
'How come Akiu didn't go to Budpest!'

In terms of syntax, we adopt the criterial approach of Rizzi (2010, 2016). In these works it is claimed that the left periphery consists of a sequence of functional head (Top, Foc, Q, Rel, Excl,…) which have a dual function:

a. In (narrow) syntax, they trigger movement (and determine freezing effects).
b. At the interfaces with sound and meaning, they trigger interpretive procedures for the proper assignment of scope-discourse properties at LF, as well as the appropriate intonational contours at PF.

Based on these guidelines, we propose that *yuanlai* is hosted by an Evidential Phrase (EviP), whereas *zenme* is hosted by a Focus Phrase (FocP). Moreover, we take SAP2 to be endowed with a criterial feature [mirative], expressing the surprise attitude. This mirative feature can be checked by merging a^0 directly to its head, which in turn values *yuanlai* and *zenme* as [mirative] through Agree, as illustrated below.

(26) a. $[_{SAP2}\ a^0_{[mirative]} \ldots [_{EviP}\ yuanlai\ Evi^0\ [_{MoodP}\ Mood^0_{[indicative]} \ldots [_{IP} \ldots$
b. $[_{SAP2}\ a^0_{[mirative]} \ldots [_{FocP}\ zenme\ Foc^0\ [_{MoodP}\ Mood^0_{[interrogative]} \ldots [_{IP}\ \ldots$

Alternatively, *yuanlai* may carry the feature [mirative], and raise to the Spec position of SAP2 to implement criterial checking, as in (27a), in which case the presence of a^0 is no longer required. The same analysis applies to mirative *zenme* in (27b) as well.

(27) a. $[_{SAP2}\ yuanlai_{i[mirative]}\ SA2^0\ _{[mirative]} \ldots [_{EviP}\ t_i\ Evi^0$

criterial checking

$[_{MoodP}\ Mood^0_{[indicative]} \ldots$

b. $[_{SAP2}\ zenme_{i\ [mirative]}\ SA2^0_{[mirative]} \ldots [_{FocP}\ t_i\ Foc^0$

criterial checking

$[_{MoodP}\ Mood^0_{[interrogative]} \ldots$

As a way to test our proposal, we may look into the grammatical properties of *qishi* 'actually' in (28a), which expresses that the speaker takes the addressee's belief to be inconsistent with reality (cf. Wang et al. 2011). In a mirative construal involving sentence-initial *yuanlai* 'turn.out', it is the speaker's belief that is contradicted. As a result, mirative *yuanlai* is fully compatible with *qishi*, as evidenced by (28b).

(28) a. *Akiu* ***qishi*** *hen congming. Ni gaocuo-le.*
Akiu actually very smart you wrong-INC
'Akiu is actually smart. You got it wrong.'

b. ***Yuanlai*** *Akiu* ***qishi*** *hen congming (a^0)*!
turn.out Akiu actually very smart SFP
'It turns out that Akiu is actually smart!'

By contrast, when *yuanlai* appears after *qishi* 'actually', it can only receive the temporal interpretation, as shown by the contrast between (29a,b). This suggests that mirative *yuanlai* has indeed merged high in the left periphery, whereas its temporal counterpart is situated within IP.

(29) *Akiu* ***qishi*** ***yuanlai*** *hen congming*.
Akiu actually originally very smart
a. 'Akiu was actually very smart originally.'
b. #'It turns out that Akiu is actually smart!'

Also, some people may find the exchange of adverbial word order in (30) acceptable. It is instructive to note that, under this configuration, only the mirative reading of (30a) is possible. By contrast, the temporal reading of (30b) is blocked. It is therefore quite plausible to take the evaluative adverb *qishi* 'actually' as a delimiter, placing mirative *yuanlai* in the upper CP layer (presumably SAP2), where the subject *Akiu* can be marginally topicalized to the sentence-initial position with a stress on *yuanlai*.

(30) ?*Akiu* ***yuanlai*** ***qishi*** *hen congming (a^0)*!
Akiu turn.out actually very smart SFP
a. 'It turns out that Akiu is actually very smart!'
b. #'Originally, Akiu was actually very smart.'

4. Further issues

Two predictions can be made by the our analysis in Section 3. First, the semantic/pragmatic dichotomy between mirative *yuanlai* and temporal *yuanlai* suggests that they should be able to co-occur in the same sentence. This is indeed borne out, as illustrated by the following examples:

(31) a. ?***Yuanlai*** *Akiu* ***yuanlai*** *shi ge nonmin*!
turn.out Akiu originally is CLF farmer
'It turns out that Akiu is originally a farmer!'
b. ?***Yuanlai*** *Akiu* ***qishi*** ***yuanlai*** *hen congming*!
turn.out Akiu actually originally very smart
'It turns out that Akiu was actually very smart originally.'

The somewhat marginal grammaticality of (31a,b) is presumably due to haplology. Such a view is supported by the fact that, when post-subject *yuanlai* is replaced by its synonym *benlai* 'originally', the sentences become perfect, as evidenced by (32a,b):

(32) a. ***Yuanlai*** *Akiu* ***benlai*** *shi ge nonmin*!
turn.out Akiu originally is CLF farmer
'It turns out that Akiu is originally a farmer!'
b. ***Yuanlai*** *Akiu* ***qishi*** ***benlai*** *hen congming*!
turn.out Akiu actually originally very smart
'It turns out that Akiu was actually very smart originally.'

Second, our analysis predicts that sentence-initial *yuanlai* 'turn out' and *zenme* 'how come' can be embedded under a matrix predicate which selects a "larger" projection in the upper CP layer. Interestingly enough, this also seems to be the case. The selectional properties of *jingya* 'surprised' accommodate an SAP complement hosting either *yuanlai* or *zenme*, as illustrated by (33a) and (33b) respectively:

(33) a. *Ta hen jingya* [***yuanlai*** *Akiu qu-le Budapesi*].
he very surprised turn.out Akiu go-PRF Budapest
'He is surprised at [(the inexpectancy) that it turns out that Akiu went to Budapest].'
b. *Ta hen jingya* [***zenme*** *Akiu qu-le Budapesi*].
he very surprised how.come Akiu go-PRF Budapest
'He is surprised at [how come Akiu went to Budapest].'

5. Concluding remarks

In this article, we argue for the separation of Mood and Force in cartographic terms, and has put forth the claim that pragmatic construals such as speech acts and speaker's attitudes are encoded in syntactic projections on the top layer of the left periphery, as shown below:

a. Mirativity: SAP2 with indicative or interrogative mood
b. Questions: SAP1 and SAP2 with interrogative mood
c. Declaratives: SAP1 and SAP2 with indicative mood

This cartographic account correctly captures the descriptive generalization that mirative adverbs must situate higher than epistemic/evaluative adverbs, and cannot be embedded under predicates that select for a truncated clause as their complements.

Finally, our study demonstrates that criterial checking is at work in shaping the left periphery of mirative sentences in Mandarin, and that the mirativity in question is encoded as a distinctive category either in the form of a functional head or in the form of an adverb.

Acknowledgments

This article is a tribute to Professor Audrey Li for her lifelong dedication to our cause. An early version of this article was presented at the 25th Annual Meeting of the International Association of Chinese Linguistics (Budapest, June 2017) and the 3rd International Workshop on Syntactic Cartography (Beijing, October 2019). We are grateful to the audience there for sharing their insights and suggestions. Special thanks to Andrew Simpson for his helpful comments and painstaking proofreading. The research leading to this article is funded by the Ministry of Science and Technology of Taiwan (MOST 103-2410-H-007-026-MY3, MOST 106-2410-H-007-030-MY3 and MOST 109-2410-H-007-065-MY2).

References

Aikhenvald, A. Y. 2004. *Evidentiality*. New York: Oxford University Press.

Aikhenvald, A. Y. 2012. The essence of mirativity. *Linguistic Typology*, 16(3), 435–486. https://doi.org/10.1515/lity-2012-0017

Aikhenvald, A. Y. 2014. The grammar of knowledge: a cross-linguistic view of evidentials and the expression of information source. *The grammar of knowledge: A cross-linguistic typology*, 1, 51. https://doi.org/10.1093/acprof:oso/9780198701316.003.0001

Aksu-Koç, Ayhan A. & Dan I. Slobin. 1986. A psychological account of the development and use of evidentials in Turkish. In Chafe & Nichols (eds.) 1986, 159–167. DeLancey, Scott. 1997. *Mirativity: The grammatical marking of unexpected information*. *Linguistic Typology* 1. 33–52.

Cheng, Lisa Lai-Shen. 1991. On the typology of *wh*-questions. Doctoral Dissertation, Massachusetts Institute of Technology.

Cheng, L. L. S. 1997. *On the typology of wh-questions*. Taylor & Francis.

Cinque, Guglielmo. 1999. *Adverbs and functional heads: A cross-linguistic perspective.* New York: Oxford University Press.

Cinque, Guglielmo. 2004. Issues in adverbial syntax. *Lingua* 114(6): 683–710. https://doi.org/10.1016/S0024-3841(03)00048-2

Coniglio, Marco & Iulia Zegrean. 2012. Splitting up force: Evidence from discourse particles. In Lobke Aelbrecht, Liliane Haegeman & Rachel Nye (eds.) *Main Clause Phenomena: New Horizons*. Amsterdam: John Benjamins, 229–256. https://doi.org/10.1075/la.190.10con

DeLancey, S. 1997. Mirativity: The grammatical marking of unexpected information. *Linguistic Typology* 1: 33–52. https://doi.org/10.1515/lity.1997.1.1.33

DeLancey, S. 2001. The mirative and evidentiality. *Journal of Pragmatics* 33: 369–382. https://doi.org/10.1016/S0378-2166(01)80001-1

DeLancey, S. 2012. Still mirative after all these years. *Linguistic Typology* 16: 529–564. https://doi.org/10.1515/lity-2012-0020

Haegeman, L. 2014. West Flemish verb-based discourse markers and the articulation of the speech act layer. *Studia Linguistica* 68 (1): 116–139. https://doi.org/10.1111/stul.12023

Hill, Virginia 2007. Vocatives and the Pragmatics-syntax Interface, *Lingua* 117: 2077–2105. https://doi.org/10.1016/j.lingua.2007.01.002

Huang, C. T. J., & Ochi, M. 2004. Syntax of the hell: Two types of dependencies. In *Proceedings*-NELS 34 (1): 279–294.

Li, Boya. 2006. *Chinese sentence-final particles and the syntax of the periphery.* Doctoral Dissertation, University of Leiden.

Lü, Shu-Xiang et al. 1980. *Xiandai Hanyu Babai Ci [Eight Hundred Words in Modern Chinese]*, Peking: Shangwu Yinshuguan.

Pan, Victor Junnan. 2015. Mandarin Peripheral Construals at the Syntax-Discourse Interface. *The Linguistic Review* 32.4:819–868. https://doi.org/10.1515/tlr-2015-0005

Paul, Waltraud. 2014. Why particles are not particular: sentence-final particles in Chinese as heads of a split CP. *Studia Linguistica* 68:77–115. https://doi.org/10.1111/stul.12020

Paul, Waltraud. 2015. *New perspectives on Chinese syntax*. De Gruyter Mouton. https://doi.org/10.1515/9783110338775

Peterson, Tyler. 2016. Mirativity as Surprise: Evidentiality, Information, and Deixis. *Journal of Psycholinguistic Research* 45(6): 1327–1357. https://doi.org/10.1007/s10936-015-9408-9

Portner, Paul. 2009. *Modality*. Oxford: Oxford University Press.

Rizzi, Luigi. 1997. The fine structure of the left periphery. In *Elements of grammar: Handbook of generative syntax*, Liliane Haegeman (ed.), 281–337. Dordrecht: Kluwer. https://doi.org/10.1007/978-94-011-5420-8_7

Rizzi, Luigi. 2010. On Some Properties of Criterial Freezing. In *The Complementizer Phase: Subjects and Operators*, E. Phoevos Panagiotidis (ed.), Oxford Studies in Theoretical Linguistics. https://doi.org/10.1093/acprof:oso/9780199584352.003.0002

Rizzi, Luigi. 2016. Cartography and further explanation: The role of interface Principles, and Locality. *Paper presented at Journées suisses de linguistique* 9.

Speas, P., & Tenny, C. 2003. Configurational properties of point of view roles. *Asymmetry in grammar* 1: 315–345. https://doi.org/10.1075/la.57.15spe

Tang, Weiqun. 2006. Fuci 'yuanlai' de duo jiaodu kaocha [Examination of adverbial *yuanlai* from multiple perspectives]. *Changjiang xueshu* [Yangtze River Academic] 4: 117–123.

Tsai, Wei-Tien Dylan. 2008. Left periphery and how-why alternations. *Journal of East Asian Linguistics* 17(2): 83. https://doi.org/10.1007/s10831-008-9021-0

Tsai, Wei-Tien Dylan. 2015. On the topography of Chinese modals. In *Beyond functional sequence*, Ur Shlonsky (ed.), 275–294. Oxford. https://doi.org/10.1093/acprof:oso/9780190210588.003.0015

Wang, Y. F., Goodman, D., Chen, S. Y., & Hsiao, Y. H. 2011. Making claims and counterclaims through factuality: The uses of Mandarin Chinese *qishi* ('actually') and *shishishang* ('in fact') in institutional settings. *Discourse Studies* 13(2): 235–262. https://doi.org/10.1177/1461445610392140

Watters, David E. 2002. *A grammar of Kham*. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511486883

Wu, Jiun-Shiung. 2012 "One-way Contrast vs. Two-way Contrast: On the Semantics of *běnlái* and *yuánlái* in Mandarin Chinese." *Cahiers de Linguistique – Asie Orientale* 41(2): 163–271. https://doi.org/10.1163/19606028-04102002

Wu, R.R.-J. 2004. *Stance in Talk*. Amsterdam: John Benjamins. https://doi.org/10.1075/pbns.117

Xing, Fuyi. 1985. Cong yuanlai de cixing kan cide guilei wenti [On the issue of syntactic categorization from the syntactic category of *yuanlai*]. *Hanyu xuexi* [Chinese Language Learning] 6: 1–4.

On the mirative marker *leh*^{4} in Taiwanese Southern Min

Miao-Ling Hsieh
National Taiwan Normal University

This paper shows that the sentence final *leh*4 咧 with an actual pronunciation of a low third tone can independently mark mirativity from either the speaker's or the addressee's perspective. The range of mirative meanings that the mirative *leh*4 咧 expresses include (a) sudden discovery, sudden revelation or realization on the part of the speaker, (b) new and surprising information for the speaker/addressee, (c) counterexpectation to the speaker/addressee. By contrast, 'new information to the addressee' is conveyed by either the higher fourth tone *leh*4 咧 or *neh*4 呢, which indicates the worthiness of new information and calls it to the addressee's attention. Syntactically, I propose that the mirative *leh*4 咧 is projected higher than an evidential projection.

1. Introduction

The sentence final particle (SFP) *leh*^{4} 咧 in Taiwanese Southern Min[1] (TSM) has several (tonal) variants. This paper focuses on the mirative usage of *leh*^{4} 咧 that has a neutralized pronunciation, equivalent to the third tone [le^3] with the tone value of [21].[2,3] The tone of *leh*^{4} 咧 does not undergo assimilation to its preceding syllable, a process that the particle *e*^{5} 的 and the perfect marker *ah*^{4} 矣are subject to (see Yang 1991).

---

1. According to Cheng (1985), about 80% of the population in Taiwan speaks Taiwanese Southern Min.

2. I follow the tone value system given in Chang (2001): 1st tone: 55, 2nd tone: 53, 3rd tone: 21, 4th tone: 32, 5th tone: 13, 7th tone: 33, and 8th tone: 54.

3. Variants within the *le*/*ne* family and the number of instances found in Li (1999: 183) are as follows: *le*^{3} (173)/*ne*^{3} (16), *leh*^{4} (98)/*neh*^{4} (102), *le*^{5} (2)/*ne*^{5} (1), *le*^{7} (30)/*ne*^{7} (2), and *le*^{1} (19)/*ne*^{1} (5). According to Li, the difference between the *l* sound and the *n* sound is that the latter sounds more friendly. The *leh*^{4}/*neh*^{4} group is discussed in Section 4.2.1.4. In the present study, as mentioned in the main text, I focus on the mirative *leh*^{4} 咧 pronounced as [le^3], but the same mirative function also applies to [ne^3].

https://doi.org/10.1075/la.272.10hsi

Early works on the SFP *leh*^{4} 咧 include Lien (1988), Chen (1989) and Li (1999). Lien (1988) posits that *le* has a directive function and an assertive one. The examples Lien gives for the directive function, however, as Li (1999) points out, 'all belong to either the use of the attemptive marker *le*, which results from contraction of *chit-le* (一下), or that of the continuative aspect maker *le*, which roughly corresponds to Mandarin *zhe* (著)' (Li 1999: 184).[4] This usage of *le* is thus excluded from Li's study and my study. The assertive *le*, according to Lien, is used when the speaker intends to contradict the addressee's implicit assumption or explicit assertion. The examples that Lien gives involve the [le^{1}] variant. Though it also functions as a mirative marker like [le^{3}], the usage of which is more restricted. It only expresses counterexpectation to the addressee.[5]

Chen's (1989) study claims that *le* can serve as an epistemic attitudinal particle, a question particle, an aspect particle, or an attitudinal particle. More comprehensively, Li (1999) studies the *le*/*ne* family and concludes that *le* (or *ne*) that occurs at the end of an utterance is a discourse marker of contrast with various interpretations derived from its interaction with specific contextual features outside of a sentence. She concludes that the functions performed by *le3*/*ne3* include statement-denouncement sequences, suggestion-dismissal sequences, questions and others. *Leh* (or *neh*), on the other hand, serves the following functions: informings, explanations/classifications/refutations, remindings, questions and dispreferred seconds. She argues that they all result from the core meaning of contrast.[6]

In addition to the three works, the SFP *leh*^{4} 咧 is also discussed in Chen (2020), which studies the grammaticalization of the Southern Min verb final continuative marker *leh*^{4} 咧 from the Ming dynasty and the Qing dynasty. Chen posits that the SFP *leh*^{4} 咧 can have the same function as the verb final continuative marker *leh*^{4} 咧 which occurs right after a verb and marks the continuation of the state after some activity is done:[7]

---

4. For the analysis of the 'attemptive' marker *le*, please see Hsieh and Hsiao (To appear), in which it is argued that the sentence final *tsit*^{8}-*e*^{7} 一下, which can be shortened to [le^{3}], is a delimitative aspect marker, meaning 'termination in a short time.'

5. Compared to the 'denial of expectation' function of *leh*^{4} 咧 as discussed in Section 4.2.1.3.2, sentences with the higher first tone [le^{1}] convey an uncertainty of the truth of the associated proposition and thus show politeness. Due to limits of space, I will not discuss [le^{1}] further.

6. Lack of space prevents me from reviewing Chen's (1989) and Li's (1999) works in detail, but I will discuss some of their analyses and show how they do not work for [le^{3}] in Section 4.

7. I adopt the writing and spelling systems promoted by the Ministry of Education, Taiwan.

(1) 若 欲 寫 字， 著 寫 紙面 咧。
na[7] beh[4] sia[2] ji[7] tioh[8] sia[2] tsua[2]bin[7] leh[4]
if want write word have.to write paper.surface LEH
'If you want to write, you have to write it on the paper.'
(Chen (2020: 189), originally from 4.43.6 *Yǔyuàn* 語苑 21)

But it is not simply a continuative marker. Chen shows that it has further developed into a mood particle when the continuation meaning can be solely conveyed by a predicate. Such a usage of *leh*[4] 咧 serves confirmation and emphasis functions. For example,[8]

(2) 啊 彼 後面 閣 有 果園 咧!
ah[4] hit[4] au[7]bin[7] koh[4] u[7] kue[2]hng[5] leh[4]
PRT that back also have orchard LEH
'There is even an orchard at the back!'
(Chen (2020: 192), originally due to 10.12 *Shālù* 沙鹿 2, *Táiwān Xiàndài Mǐnnányǔ Gùshìjí* 台灣現代閩南語故事集 (TXMG)[9])

In (2), the verb *u*[7] 有'have' marks existence and thus the continuation of a situation. It is thus unlikely that *leh*[4] 咧 serves as a continuative marker.

In this paper, I will show that the SFP *leh*[4] 咧 with a low third tone marks mirativity, which involves a speaker's surprise at new information as well as other values of mirative meanings. The SFP *leh*[4] 咧 can also mark the speaker's surprise due to an extraordinary degree of a property in an exclamative (data not included in Chen (2020)):

(3) 偌 鬧熱 咧!
gua[7] lau[7]jet[8] leh[4]
how festive LEH
'How festive (it was)!' (Li 1999: 202)

The remaining of this paper proceeds as follows. Section 2 reviews Chen's (2020) analysis of the SFP *leh*[4] 咧 as a mood particle. Section 3 briefly discusses related literature on mirativity. In Section 4, I will show that *leh*[4] 咧 can occur as a pure continuative marker as well as a mirative marker expressing different mirative meanings. Finally, Section 5 concludes the paper.

8. I will use the exclamation mark '!' to mark the sentences that contain mirative meanings.

9. This is a book series that contains a sequence of books on the stories from different cities in Taiwan published from 1994–2006. A list of the books can be found in Lien (2020: 216).

2. The SFP *Leh*^{4} 咧 as a continuative marker or a mood particle in Chen (2020)

As a continuative marker (or 'the continuative aspect *le*,' as Li (1999) calls it), *leh*^{4} 咧 occurs after a verb and marks the continuation of the state after some activity has been carried out (See Li (1996: 204)). It can occur not only in an existential construction as in (4a), but also in other kinds of sentences as in (4b).[10]

(4) a. 伊 倒 咧，無 坐 咧。
i^1 to^2 leh^4 bo^5 tse^7 leh^4
3SG lie LEH NEG sit LEH
'He is lying, not sitting.' (Chen 2020: 158)

b. 你 碗 共 我 捙 咧。[11]
li^2 uann^2 ka^7 gua^2 phang^5 leh^4
2SG bowl KA 1SG hold.up.with.both.hands LEH
'Take this bowl and hold it for me.' (Chen 2020: 158)

Both examples in (4) show that such sentences indicate some resultant position of the action expressed by the verb. Chen (2020) argues that the verb final *leh*^{4} 咧, which appears in the late Qing dynasty, has its origin in *te*^{3} 處 'place, locus,' or *ti*^{7}*te*^{3} 佇處 'in a place or locus.' Both expressions already appeared in Annotated Texts of the Romance of Li Zhi Ji of Ming Wanli Edition, which was published during the Wanli era of the Ming dynasty (1572–1620).[12] In the late Qing dynasty, only a few cases of *te*^{3} 處 were found to be replaced by *leh*^{4} 咧 though. But eventually, *leh*^{4} 咧 has completely replaced *te*^{3} 處 in *Yǔyuàn* 語苑, a journal published between 1908 to 1941 in Taiwan under Japanese rule. The grammaticalization involves the change of the spatial meaning of *te*^{3} 處 'place, locus' to a temporal meaning indicating continuation. Chen reasons that when *te*^{3} 處or *ti*^{7}*te*^{3} 佇處 follows a non-location related verb, or co-occurs with a locative phrase in the sentence, it loses it spatial meaning and becomes a pure continuative marker that indicates the continuation of a state.

The grammaticalization process, however, does not stop at this point. Chen maintains that *leh*^{4} 咧 has become a sentence final mood particle in modern Southern Min. Its grammaticalization is a multi-path development depending on the elements present in the sentence and its syntactic position. Typically, the

10. There are dialectal differences in the pronunciation of the verb final *leh*^{4} 咧. Some native speakers may apply assimilation, while others pronounced it with a low third tone.

11. Chen (2020) gives an example in the Huian dialect. In the text, I use its counterpart in TSM.

12. Chen (2020) uses 在處 for *ti*^{7}*te*^{3} 佇處.

continuative marker follows a verbal or a stative predicate which has nothing to do with existence or appearance, without a locative phrase or an object. Chen reasons that when *leh*[4] 咧 occurs with a verb or an adjective of existence or appearance, or when the verbal predicate is modified by a locative phrase or an object, its meaning of the continuation of a state gets weakened.

The examples in (5)–(7) illustrate the first type of examples. They have a verb of existence or appearance (*u*[7] 有 'have' in (5) and the negative marker *bue*[7] 未 (literally meaning 'not have') in (6)), or an adjective of existence and appearance (*bo*[5] *ho*[2]無好 in (7)).

(5) 雷公 卻是 **有** 咧! 雷母 毋 捌 聽
lui[5]kong[1] khiok[4]si[7] **u**[7] leh[4] liu[5]bu[2] m[7] bat[4] thiann[1]
thunder.god but.COP have LEH thunder.goddess NEG ever hear
人 講。
lang[5] kong[2]
people say
'But we do have a god of thunder. As for the goddess of thunder, I have never heard of it.' (Chen (2020: 188), originally from 9.33.6 *Yǔyuàn* 語苑 9)

(6) 猶 未 咧! 今年 冬 尾，就 欲 給 伊 做堆。
iah[4] **bue**[7] leh[4] kin[1]ni[5] tang[1] bue[2] tio[7] beh[4] hoo[7] i[1] tso[3]tui[1]
still NEG LEH this.year year end FOC will let 3SG be.together
'Not yet. But we will let her be together (with my son) at the end of this year.'
(Chen (2020: 188), originally from 10.17.8 *Yǔyuàn* 語苑 13)

(7) 伊 本身 腳 就 **無** **好** 咧! 毋 敢 按呢 行 落
i[1] pun[2]sin[1] kha[1] tio[7] **bo**[5] **ho**[2] leh[4] m[7] kann[2] an[2]ne[1] kiann[5] loh[8]
1SG self foot FOC NEG good LEH NEG dare this.way walk down
這 个 溝仔 底。
tsit[4] e[5] kau[1]a[2] te[2]
DEM CLF ditch bottom
'But her feet are bad. So she didn't dare to walk into the ditch.'
(Chen (2020: 188), originally from 30.01 *Xīnshè* 新社 2, TXMG)

Chen suggests that *leh*[4] 咧 in the three examples above denotes continuity and also serves an intensifying function because it helps to make explicit the implicit meaning of continuity of a certain state.

If we examine the examples in (5)–(7) more closely, we will find they convey a counterexpectation, as evidenced by the occurrence of adverbs: *khiok*[4]*si*[7] 卻是 in (5) and *iah*[4] 猶 in (6). In the original text, (5) was uttered when the person the speaker of (5) was in conversation with reasoned that females are more important than males as evidenced by the fact that one finds words such as *tshia*[1]*bu*[2] 車母 'locomotive,' but not *tshia*[1]*kang*[1] 車公. The speaker, nevertheless, disagreed by

pointing out that contrary to the addressee's belief, one uses *lui*[5]*kong*[1] 雷公 'god of thunder,' but not *lui*[5]*bu*[2]雷母 'goddess of thunder.' Similarly, (6) was uttered when the speaker conveyed that in contrast to the addressee's expectation his daughter in law was not an adult yet. Finally, (7) was used in the original text to explain why the old woman contrary to the expectation didn't dare to walk into the ditch to find out who was calling from the bottom of the ditch.[13]

The second type of examples Chen provides involve a locative phrase, as shown in (8)–(12) below. When *leh*[4] 咧 is present with a locative phrase, it can occur either after the locative phrase (boldfaced) as in (8)–(10), before it as in (11), or both before and after it as in (12).

(8) 若 欲 寫 字，著 寫 **紙面** 咧。 (=(1))
na[7] beh[4] sia[2] ji[7] tioh[8] sia[2] **tsua[2] bin[7]** leh[4]
if want write word have.to write paper.surface LEH
'If you want to write, you have to write it on the paper.'
(Chen (2020: 189), originally from 4.43.3*Yǔyuàn* 語苑 21)

(9) 假使 暗時，牛 就 攏 縛 佇 **牛稠** 咧，...
ka[2]su[2] am[3]si[5] gu[5] tio[7] long[2] pak[8] **ti[7]** **gu[5]tiau[5]** leh[4]
if night bull FOC all tie PREP bull.pen LEH
'During the night, the bull is tethered in the pen…'
(Chen (2020: 189), originally from 20.18 *Zhānghuà* 彰化 19, TXMG)

(10) 這 个 明明 是 阮 丈夫 啦 因 何 會 死 佇
tsit[4] e[5] bing[5]bing[5] si[7] gun[2] tiong[7]hu[1] lah[4], in[1] ho[5] e[7] si[2] ti[7]
DEM CLF evidently COP 1 SG.GEN husband PRT why will die PREP
遮 咧?!
tisa[1] leh[4]
here LEH
'This is evidently my husband. Why did he die here?!'
(Chen (2020: 189), originally from 2.82.8-10 *Yǔyuàn* 語苑 21)

(11) 啊！有影，我 來 僻 咧 **門扇** **後**。
ah[4] u[7]iann[2] gua[2] lai[5] phiah[4] leh[4] **mng[5]sinn[3]** **au[7]**
PRT true 1SG come hide LEH door.plank behind
'Ah! You're right. I will hide behind the door.' (Chen (2020: 189),
originally from *Quánzhōu Cuántǒng Xìqǔ Cóngshū*
泉州傳統戲曲叢書[Quanzhou traditional drama series])

13. *Leh*[4] 咧 in (7) is more likely to be pronounced as [le[1]] (Seng-hian Lau, personal communication).

(12) 啊 去 歇 咧 **樹仔腳** 咧，啊 人 來 尋， 伊 就
ah[4] khi[3] hioh[4] leh[4] **tshiu[7]a[2]kha[1]** leh[4] ah[4] lang[5] lai[5] tshue[7] i[1] tio[7]
PRT go rest LEH tree.foot LEH PRT person come look.for 3SG FOC
閃 咧。
siam[2] leh[4]
dodge LEH
'Then he went to rest under a tree. When someone comes to look for him, he disappears for a while.'
(Chen (2020: 189), originally from 120.08 *Zhānghuà* 彰化 7, TXMG)

In (8)–(10), Chen claims that the degree of grammaticalization of *leh*[4] 咧 in (10) is higher than that in (9), which is higher than that in (8). She reasons that this is because *leh*[4] 咧 in (8) is only a continuative marker in an imperative, in contrast to that in the other two. *Leh*[4] 咧 is indispensable in (8) for marking the continuity of the post-action state. By contrast, *leh*[4] 咧 in (9) is both a continuative marker and a mood particle. It makes the continuity of the state salient and 'the emphasis is shifted from the existence of a time point to the existence of a time interval.' (Chen 2020: 190) Finally, *leh*[4] 咧 in (10) is a pure mood particle because the presence of *leh*[4] 咧 does not change the meaning of continuity. Therefore, the three examples show different degrees of grammaticalization, with (10) being the most grammaticalized one.

Now consider (11) and (12). Chen posits that while the verb final *leh*[4] 咧 in (11) and (12) is a continuative marker, the SFP *leh*[4] 咧 in (12) is a continuative marker and a mood particle. The occurrence of the second *leh*[4] 咧 makes up for 'the semantically incapacitating effect of the original one' (Chen 2020: 191).

Among the examples in (8)–(12), only (10) expresses surprise. It is a Surprise-Disapproval question in the sense of Obenauer (2004), which expresses the speaker's attitude of surprise with a negative orientation. I will return to this in Section 4.2.1.2.3. No clear surprise meaning is observed in other examples. *Leh*[4] 咧 is thus only a continuative marker in those examples.

Finally, different degrees of grammaticalization, according to Chen, are also manifested in the examples in which *leh*[4] 咧 occurs with a transitive verb and a non-locative object.

(13) 猶 你 著 佮 我 包 紙 咧。
iah[4] li[2] tioh[8] kap[4] gua[2] pau[1] tsua[2] leh[4]
also 2SG have.to and 1SG wrap paper LEH
'You also have to help me wrap (them) with paper.'
(Chen (2020: 191), originally from 9.4.3 *Yǔyuàn* 語苑 5)

(14) 耳孔 若 塞 破布 咧! 准 無 聽見!
hinn^{7}khang^{1} na^{2} that^{4} pua^{3}poo^{3} leh^{4} tsun^{2} bo^{5} thiann^{1}kinn^{3}
ear seemingly stuff rag LEH behave.as NEG hear
'He behaved as if his ears were stuffed with rags and could not hear!'
(Chen (2020: 191), originally from 3.6.5 *Yǔyuàn* 語苑 24)

(15) 啊 今 也 是 阮 老父 娶 某, 生 兩 个
ah^{4} tann^{1} ia^{7} si^{7} guan^{2} lau^{7}pe^{7} tshua^{7} boo^{2} sinn^{1} nng^{7} e^{5}
PRT now also COP 1SG.GEN father marry wife give.birth two CLF
囝 咧!
kiann^{2} leh^{4}
child LEH
'Then at that time my father got married and even had two kids!'
(Chen (2020: 191), originally due to 36.08 *Shígāng* 石岡 1, TXMG)

(16) 啊 彼 後面 閣 有 果園 咧! (=(2))
ah^{4} hit^{4} au^{7}bin^{7} koh^{4} u^{7} kue^{2}hng^{5} leh^{4}
PRT that back also have orchard LEH
'There is even an orchard at the back!' (Chen (2020: 192), originally due to 10.2 *Shālù* 沙鹿 2, TXMG)

Chen maintains that *leh^{4}* 咧 in (13) is a continuative marker in the imperfect sentence, that in (14) and (15) is both a continuative marker and a mood particle and it is a pure mood particle in (16). She suggests that the presence of *leh^{4}* 咧 in (15) marks the existence of the state described by the verb and it also serves as a mood particle adding a tone of confirmation. Similarly, *leh^{4}* 咧 adds a tone of confirmation in addition being a continuative marker. Finally, *leh^{4}* 咧 in (16) is a pure mood particle functioning as an emphasizer because when the sentence it is in contains a verb of existence and appearance, such as *u^{7}* 有 'have' and *bo^{5}* 無 'not have,' 'it is more than sufficient to express the continuity of existence.' (Chen 2020: 192)

Closely examining the context where each of the examples in (13)–(16) is used in the original texts, I find the examples in (14)–(16) express some unexpectedness or surprise. (14) contains the evidential marker *(kann^{2})na^{2}* (敢)若 'seemingly' (cf. Lien (2017)). The speaker was surprised to see that the person referred to in the context behaved badly. (15) was uttered when the speaker talked about what had happened to his father before his father went to study in Japan. He reported that by some point of time, his father had married his mother and even had two kids. He was working in a public office then and it was later that he went to study in Japan secretly. The use of *leh^{4}* 咧 shows the speaker's surprise that his father had had two kids already before he went to Japan for his study. Similarly, the speaker of (16) conveys some unexpectedness, not of the speaker, but of the addressee. The speaker was thinking to himself that he himself, as compared to his relatives in marriage, was rich because he has an orchard, which was not something that his relatives in

marriage would expect. The unexpected meaning in the two examples is reflected in Chen's original translations of the two examples as both contain 'even.'[14]

I will present my analysis in Section 4. Before it, I will first review mirativity in Section 3.

3. Mirativity in previous literature

When mirativity is narrowly defined, it denotes surprise (Peterson 2017). English has many different ways in registering the surprise of the speaker:

(17) 'You made it!!'
'I don't believe you made it!'
'Looks like you made it!'
'Wow, you're here!'
'I'm amazed you made it!'
'That can't be who I think it is!'
'What a surprise!' etc. (Peterson 2017: 313)

Mirativity can also be more broadly defined. DeLancey (1997, 2001) defines it as conveying information which is new or unexpected to the speaker, with overtones of surprise. According to DeLancey (1997: 33), mirative meanings reflect 'the status of the proposition with respect to the speaker's overall knowledge structure.' Hengeveld and Olbertz (2012: 488) posit that mirativity presents the proposition as newsworthy, unexpected or surprising. Aikhenvald (2012: 473) includes five values of mirative meanings, each of which can be defined with respect to the speaker, to the audience (or addressee), or the main character in a story:

(18) a. sudden discovery, sudden revelation or realization (a) by the speaker, (b) by the audience (or addressee), or (c) by the main character;
b. surprise (a) of the speaker, (b) of the audience (or addressee), or (c) of the main character;
c. unprepared mind (a) of the speaker, (b) of the audience (or addressee), or (c) of the main character;
d. counterexpectation (a) to the speaker, (b) to the addressee, or (c) to the main character;
e. new information (a) to the speaker, (b) to the addressee, or (c) to the main character.

14. Applying Kay's (1990) insight into the scalar nature of *even*, Simonin (2018) claims that *even* calls for the reconstruction of an implicit scale. On this scale, the element that is associated with *even* in the sentence is characterized as the most (or more) surprising in the set considered.

According to Aikhenvald (2012), miratives in different languages make a choice of one or several mirative values. Miratives in the majority of languages in her study include 'surprise' and 'unprepared mind' of the speaker. Moreover, a number of languages have two, or more, mirative markers. For example, based on Post (2007), Aikhenvald (2012: 458–459) distinguishes 'surprise' and 'unprepared mind' of the speaker from 'sudden discovery' in Galo, a Tibeto-Burman language from Arunachal Pradeshm. The former is marked by the mirative marker *la(a)ka*, while the latter the discovery marker *ɲi*. Mirative *la(a)ka* 'indicates a speaker attitude of surprise or astonishment, usually at the information reported in the marked clause, but potentially also at the addressee in connection with some aspect of the marked information.' (Post 2007: 634) The speaker in (19), according to Post, was astonished and disapproved the event unfolding as he speaks, of which the addressee was also an uninvolved witness. In (20), the speaker 'is not astonished at his own 'speaking,' but rather at his addressee for his lack of awareness in asking him to discuss something which has already been discussed' (Post 2007: 634).[15]

(19) *azên gə̀ jesì tɨ́ɨdû lakà!*
azèn=gə jesì tɨ́ɨ-dùu **la(a)ka**
friend=GEN urine imbibe-IPFV **MIR**
'(The pig) is drinking his friend's urine, of all things!' (Post 2007: 634)

(20) *əgə̀m, əgə̀m, mênto bá laká!*
əgə̀-m əgə̀-m mèn-tó-báa **la(a)ka**
ANAP.IND-ACC ANAP.IND-ACC speak-PFV-PFV.DRCT **MIR**
'What are you talking about, I already talked about all that!' (Post 2007: 634)

Note that the mirative meaning in Galo is independent of evidentiality as it has a set of evidential markers which occupy the same position in the verb phrase as the mirative.

On the other hand, the discovery marker *ɲi*, according to Post, follows a noun or a copula. Its function is described as follows:

---

15. I use Post's original examples and abbreviations: ACC: Accusative; ADVS: Advisative, ANAP: Anaphoric, CEXP: Counter-expectational, COMPL: Complement (clause), CONC: Concessive, COP: Copula, COS: Change-of-state, CTRY: Contrarative, DECL: Declarative, DISC: Discovery, DOWN: Downward, DRCT: Direct, DST: Distal, EMPH: Emphatic, EPF: Experiential prefect, ETAG: Emphatic tag, GEN: Genitive, HDST: Hyperdistal, Hin: Hindi, IPTV: Imperative, IND: Individuator, INFO: Informative, IPFV: Imperfective, MIR: Mirative, NF: Non-finite/non-final, NZR: Nominalizer, NEG: negative, ODIR: Other (non-self) directed, PADV: Pro-adverbial, PFV: Perfective, PL: Plural, REP: Reportative, RLS: Realis, SBRD:: Subordinator/Subordinate clause, SG: Singular, SUB: Subject, and TOP: Topic.

> Discovery *ɲi* marks information as *previously unknown* (whether to the speaker or to a third person whose thoughts the speaker is modeling, as in a folktale) and/or *unexpected* and which just *has been discovered*, or which some unfolding set of the circumstances (including a process of deduction) suggest to probably be the case. As such, it may also have a mirative overtone, expressing a shock-like reaction to an unfolding and/or unanticipated state of affairs. (Post 2007: 646)

For example,

(21) *occîkgo bəətə́í là, bə̀əm…uŋŋâa*
occìk=go bə́ə-tó-là(a) bə̀ə-m uŋŋàa
knife=IND carry/hold-PFV-NF HDST.DOWN-ACC baby
bə̀m kɨ́ɨ́l
bə̀-m kɨ́ɨ-là(a)
DST.DOWN-ACC slice-NF
dodûu kunà ɲì.
dó-dùu-kú-nà=əə **ɲi**
eat-IPFV-COMPL-NZR:SUB=COP.IPFV **DISC**
'Taking a knife, she slices off a piece of the baby and eats it, it turns out.'
(Post 2007: 647)

In fact, Galo has two other markers that are related to mirativity.[16] The first one is Counterexpective *ɲo*. According to Post (2007: 639), it marks information 'as counter to, contrary to, the opposite of, or otherwise inconsistent with a standing expectation (whether the expectation is held by the speaker himself or is presumed by the speaker to be held by an addressee).' Post also notes that *ɲo* gives a sense that the speaker is correcting an error someone else has made. It has a mirative overtone when it marks information uttered in immediate reaction to some concurrent state of affairs:

(22) *ŋó "caací" əmnᵊmə́ ɲò!*
ŋó caaci ə́m-nam=əə **ɲo**
1.SG elder.brother(<Hin) say-NZR:RLS=COP.IPFV **CEXP**
'No, I said "caaci" (not "caaca", as you had claimed).' (Post 2007: 640)

The second one is Contrarative *ká?*, which according to Post, might be considered to be related to Simple Informative *kə̀*. Contrarative *ká?* marks 'a statement as a contradiction of a previous statement of the addressee's' (Post 2007: 640), as in (23). Alternatively, as in (24), it can be 'more generally as a view to the contrary of some viewpoint or opinions of the addressee's (whether they are actually stated or just construed as such by the speaker).' (Post 2007: 640)

16. These two markers are not discussed in Aikhenvald (2012).

(23) *A: lâatka əmbèe tù. B: əmmaí ká ʔ!*
làa-tó=káa əm-bèe=tu əm-máa=(ə)í **kəʔ**
take-IPTV.ODIR=ADVS tell-EPF=ARVL[17] tell-NEG=EMPH **CTRY**
'A: I certainly told you to get some (betelnut). B: No, you didn't!'
(Post 2007: 640)

(24) *əgàm, izá…ŋunnàm…jaamée gaddà,*
əgà=əəm izzàa ŋunù =əəm jaamé gadə=əə
ANAP.IND=ACC now 1.PL=ACC boy group=TOP
mênzi lacìn mənà garɨ̂ibəî
mèn-zí-la(a)cìn mə́-nà garɨ̀ɨ =bə=(ə)í
say-BEN-CONC lie-NZR:SUB resemble=SBRD=EMPH
tadâkku. korûmgə rɨnəmà
tá-dàk-kú korùm=gə rɨ̀-nam=əə
listen/hear-COS-COMPL ancients=GEN do-NZR:RLS=TOP
âmbə rɨbbêe ká ʔ!
əmbà rì-bèe **kəʔ**
ANAP.PADV do-EPF **CTRY**
'Nowadays, even if we tell about this sort of thing, young people listen to it just as though we were liars. The things that happened in the old days actually did happen like that!' (Post 2007: 641)

On the other hand, Informative *ká* has no such contrarative sense. It often follows Reportative *juu*. Post reports that some consultants claim that its meaning is something like 'here is your information.'

(25) *əmbà, rɨbbé jú kʷà, korûm naì.*
əmbà rɨ̀-bée juu **kà** korúm na=(ə)ì
ANAP.PADV happen-EPF REP **INFO** ancients DECL=ETAG
'That's how they say it happened, in ancient times, right?' (Post 2007: 641)

Lisu, which is also a Tibeto-Burman language, has four types of evidentials (visual/eyewitness, non-visual, inferred, and reported), and four markers expressing different values within the range of mirative meanings (Yu (2005), cited in Aikhenvald (2012: 460–462)). While evidentials can co-occur, different miratives cannot. The four miratives cover different combinations of the range of meanings. First, the mirative marker *ɣɛ*[55] indicates new information 'that is discovered by the speaker,' and unexpected information which goes against a presumption. For example,[18]

17. ARVL is not included in the abbreviation list given by Post (2007).

18. Abbreviations used in the examples from Aikhenvald (2012): ADV: adverbial marker, CLF: classifier, DAT: dative, DUR: durative, ERG: ergative, IMPF: imperfective, LOC: locative, MIR: mirative, ONOMAT: onomatopoeia, NMLZ: nominative, PL: plural, Q: question, REP: reported evidential, SEQ: sequential, SG: singular, STAT: stative, TOP: topic, and VIS: visual.

(26) *a*^{55}*sa*^{33}*mi*^{55} *gua*^{33} *tho*^{21} *ɣ*^{ɣ21} *so*^{33} *tia*^{55} *si*^{21} ***ɣɛ***^{55}
Asami (third daughter) that book learn DUR IMPF.yet **MIR**
'Asami is still studying [the speaker presumed that Asami would have finished her study]. (Aikhenvald (2012: 461), originally due to Yu (2005))

Second, *bɛ*^{55}*t*^{h}*ɛ*^{21}, which is composed of the verb *bɛ*^{55} 'say' and a tense-aspect-mood marker, expresses 'the sense of new and surprising information':

(27) *ji*^{35} *za*^{21}*nɸ*^{33} *gua*^{33} *na*^{21} *tõ*^{55}*sa*^{55}*bi*^{21}*di*^{33} *thɛ*^{215} *go*^{33} *tɛ*^{35} *si*^{55} *ji*^{55}
ONOMAT child that TOP caterpillar one.CLF pick hold SEQ 3SG
mɣ^{21}*lɣ*^{35} *ga*^{33} *xo*^{21} *a*^{33} *be*^{33} *je*^{33} *tia*^{55} ***bɛ***^{55}***t***^{h}***ɛ***^{21}
mouth LOC put STAT ADV do DUR **MIR**
'Goodness! The child was holding a caterpillar and trying to put it into his mouth.' (Aikhenvald (2012: 461), originally due to Yu (2005))

Third, the question marker *lɛ*^{21} conveys 'inference' which is against the speaker's expectation, as shown below.

(28) *na*^{21} *ba*^{35} *la*^{33} ***lɛ***^{21}
2PL father come **Q.MIR**
'Did your father come [the speaker expected that someone instead of the father would come]?' (Aikhenvald (2012: 461), originally due to Yu (2005))

Fourth, *le*^{21} 'only' plus topic marker plus *ɣɛ*^{55} expresses 'opposite to what was expected or presumed.'

Dhimal, a Sino-Tibetan language spoken in southeastern Nepal, also has two mirative morphemes: *la* and *sa* (King 2009: 252–255). They both are 'having to do with the integration of information into a speaker's store of knowledge.' *La* marks 'the information presented is new or unassimilated.' For example,[19]

(29) *manthu* ***la***.
NEG.EXT **MIR**
'There isn't any more.' (King 2009: 253)

(30) *kalau wa jeŋ-hi* ***la***.
so 3S become-P **MIR**
'And so then he was born.' (King 2009: 254)

The example in (29) can be used in the following scenario:

> A woman selling rice beer and snacks by the roadside might use the mirative particle *la* shortly after discovering that she no longer had any eggs, but might drop it in favour of the simple negative existential if someone inquired about eggs later on that day. The mirative could still be used later on if the speaker chose to emphasise the fact that there were eggs previously, but they have now run out. (King 2009: 252)

19. Abbreviations in King's (2009) examples: APR: apparentive, EXCL: exclamative, EXT: existential, IMPF: imperfective, MIR: mirative, NEG: negative, P: past, PL: plural, and S: singular.

La in (30) highlights 'a proposition as new and therefore of potential importance to the story.' (King 2009: 254)

Sa, which is called Apparentive by King (2009: 255–258), on the other hand, indicates 'the speaker suddenly becomes aware of some proposition and is surprised or in disbelief.' (King 2009: 256)

(31) *dhemal-lai katha phərra mare-**sa**-khe ru!*
Dhimal-PL language flowingly kill-**APR**-IMPF EXCL
'Why, it seems [he] speaks Dhimal fluently!' (King 2009: 256)

(32) *rem-pha gwamgwam-pa ca-**sa**-hi.*
be.good-do heartily-do eat-**APR**-P
'It seems he really ate with gusto (the poor thing must have been starved).'
(King 2009: 257)

Note that *sa* occurs in an exclamative in (31). The contrast between *la* and *sa* shows that Information 'new' to the speaker is marked differently from 'sudden discovery' in Dhimal.

In summary, depending on languages, a mirative marker may express one or several mirative meanings.

4. Two usages of the SFP *Leh*^{4} 咧

In this section, I will show that the SFP *leh*^{4} 咧 can occur as a pure continuative marker as well as a mirative marker expressing three mirative meanings.

4.1 *Leh*^{4} 咧 as a continuative marker

As mentioned above, Chen (2020) posits that the SFP *leh*^{4} 咧 is derived from the continuative marker, which is in turn derived from *te*^{3} 處 'place, locus,' or *ti*^{7}*te*^{3} 佇處 'in a place or locus.' The grammaticalization process is reminiscent of a correlation pointed out in Comrie (1976: 98): 'there is similarity between the formal expression of imperfective aspect, especially progressive aspect, and various locative adverbial phrases.' The same similarity seems to be manifested in the usage of the SFP *leh*^{4} 咧 as a continuative marker. In the examples that I have discussed so far, *leh*^{4} 咧 either involves 'surprise,' 'unexpectedness,' or 'sudden discovery,' or it seems to indicate existence in some location, as in (33) and (34), or the continuation of an action, as in (35).

(33) 若 欲 寫 字， 著 寫 紙面 咧。 (=(8))
na[7] beh[4] sia[2] ji[7] tioh[8] sia[2] tsua[2]bin[7] leh[4]
if want write word have.to write paper.surface LEH
'If you want to write, you have to write it on the paper.'
(Chen (2020: 189), originally from 4.43.6 *Yǔyuàn* 語苑 21)

(34) 啊 去 歇 咧 樹仔腳 咧，啊 人 來 尋， 伊 就
ah[4] khi[3] hioh[4] leh[4] tshiu[7]a[2]kha[1] leh[4] ah[4] lang[5] lai[5] tshue[7] i[1] tio[7]
PRT go rest LEH tree.foot LEH PRT person come look.for 3SG FOC
閃 咧。 (=(12))
siam[2] leh[4]
dodge LEH
'Then he went to rest under a tree. When someone comes to look for him, he disappears for a while.'
(Chen (2020: 189), originally from 120.8 *Zhānghuà* 彰化 7, TXMG)

(35) a. 佇咧 寫 字 咧
ti[7]leh[4] sia[2] li[7] leh[4]
PROG write character LEH
'being writing words' (Hu 1994: 687)

b. 佇 破病 咧
ti[7] phua[4]pinn[7] leh[4]
PROG sick LEH
'being sick' (Hu 1994: 687)

In (35), the SFP *leh*[4] 咧 occurs with the progressive marker *ti*[7]*leh*[4]/*ti*[7] 佇咧/佇.

The correlation between imperfective aspect and locative adverbial phrases is also reminiscent of Yang's (1991) analysis that *leh*[4] marks 'existence,' as shown in the following example given in Yang.

(36) 伊 來 咧，你 免 去 揣 伊。
i[1] lai[5] leh[4] li[2] bian[2] khi[3] tsue[7] i[1]
3SG come LEH 2SG not.have.to go find 3SG
'He is here. You don't have to look for him.' (Yang 1991: 262)

(36) is the only example that contains the SFP *leh*[4] 咧 in Yang. The presence of *leh*[4] 咧 is related to the existence in a location, though the locative phrase is not spelled out (cf. (37)).

(37) 伊 來 矣 咧。
i[1] lai[5] ah[4] leh[4]
3SG come ASP LEH
'He is here.' (Li 1999: 8)

4.2 *Leh*^{4} 咧 as a mirative marker

In this section, I distinguish three types of miratives that involve the use of *leh*^{4} 咧 and show that *neh*^{4} 呢 is used when new information is conveyed to the addressee.

4.2.1 *Different values of mirative meanings*

4.2.1.1 *Sudden discovery, sudden revelation or realization on the part of the speaker:* Leh^4 咧

A mirative meaning that the SFP *leh*^{4} 咧 expresses is 'sudden discovery,' 'sudden revelation or realization' on the part of the speaker, as evidenced in (38). This usage of *leh*^{4} 咧 is compatible with the sentence initial *ah*^{4}, which is intonationally set off from the sentence it occurs with.

(38) a. (啊!) 昨昏 就 落 雨 矣 咧!
ah^4 tsa^{1}hng^1 tio^7 loh^8 hoo^7 ah^4 leh^4
PRT yesterday FOC fall rain ASP LEH
'(Ah!) It has rained since yesterday!'

b. (啊!) 敢若 昨昏 就 落 雨 矣 咧!
ah^4 kann^{2}na^2 tsa^{1}hng^1 tio^7 loh^8 hoo^7 ah^4 leh^4
PRT seemingly yesterday FOC fall rain ASP LEH
'(Ah!) It seems that it has rained since yesterday!'

(37a) can be used when the speaker suddenly found out that it had rained since yesterday. Similarly, (37b) can be used when the speaker just discovered via inference with direct evidence that it had rained since yesterday, such as by looking at a video (cf. Apparentive *esa* in Dhimal). Compare the contrast in (38). The presence of *leh*^{4} 咧 makes it impossible to be followed by a clause like 'I knew it':

(38′) a. 昨昏 就 落 雨 矣 咧! #我 早 就 知 矣!
tsa^1 hng^1 tio^7 loh^8 hoo^7 ah^4 leh^4 gua^2 tsa^2 tio^7 tsai^1 ah^4
yesterday FOC fall rain ASP LEH 1SG early FOC know ASP
'It has rained since yesterday! #I knew it.'

b. 昨昏 就 落 雨 矣! 我 早 就 知 矣!
tsa^{1}hng^1 tio^7 loh^8 hoo^7 ah^4 gua^2 tsa^2 tio^7 tsai^1 ah^4
yesterday FOC fall rain ASP 1SG early FOC know ASP
'It has rained since yesterday. I knew it.'

By uttering (38′), the speaker indicated that he/she suddenly realized by the time of utterance that it had rained since yesterday, so it is not feasible if the utterance is followed by 'I knew it.'

4.2.1.2 *New and Surprising Information for the Speaker/Addressee:* Leh[4] 咧
This type of mirative conveys new and surprising information for the speaker or the addressee. It can be divided into four subtypes: one that shows no other elements that convey surprise other than *leh*[4] 咧, one that contains other elements that also convey surprise, one that expresses a Surprise-disapproval question and one that marks an exclamative. In general, this type of sentence does not serve well as an answer to an information-seeking *wh*-question. For example,

(39) A: 這 欲 佇 佗位 買?
tse[1] beh[4] ti[1] to[2]ui[7] be[2]
DEM will PREP where buy
'Where can I buy one of this?'
B: 遐 就 有 佇咧 賣 啊/#咧。
hia[1] tio[7] u[7] ti[1]leh[4] be[7] ah[4] leh[4]
there FOC have PROG sell PRT LEH
'They're selling it there.'

4.2.1.2.1 *With no other elements that convey surprise*
'New and surprising information' can be marked with *leh*[4] 咧 alone. For example,

(40) a. 彼 張 紙 是 白 的。
hit[4] tiunn[1] tsua[2] si[7] peh[8] e[5]
DEM CLF paper COP white PRT
'That paper is white.'
b. 彼 張 紙 是 白 的 咧!
hit[4] tiunn[1] tsua[2] si[7] peh[8] e[5] leh[4]
DEM CLF paper COP white PRT LEH
'That paper is white!'

(41) 彼 細細仔 條 的 銅線 是 叫做 電話線, 能
hit[4] se[3]se[3]a[2] iau[3] e[5] tang[5]suann[3] si[7] tio[3]tso[3] tian[7]ui[7]suann[3] e[7]
DEM slim CLF PRT copper.wire COP call phone.line can
講話 咧!
kong[2]ue[7] leh[4]
speak LEH
'That somewhat slim copper wire is called a 'telephone line,' which can be used to talk!' (4.45.7 *Yǔyuàn* 語苑 5)

The speaker of (40b) may expect the paper not to be white and so expressed his/her surprise when he/she found out that it was not white, while the speaker of (41) didn't not expect that the 'line' being referred to could be used to talk. More examples are given below:

(42) 有 三千萬 人 咧!
u^{7} sann^{1}tshing^{1}ban^{7} lang^{5} leh^{4}
have three.thousand.ten.thousand person LEH
'There are 30 million people!'

(43) 啊 今 也 是 阮 老父 娶 某，生 兩 个
ah^{4} tann^{1} ia^{7} si^{7} guan^{2} lau^{7}pe^{7} tshua^{7} boo^{2} sinn^{1} nng^{7} e^{5}
PRT now also COP 1SG.GEN father marry wife give.birth two CLF
囝 咧! (=(15))
kiann^{2} leh^{4}
child LEH
'Then at that time my father got married and even had two kids!'
(Chen (2020: 191), originally due to 36.08 *Shígāng* 石岡 1, TXMG)

(44) 啊 彼 後面 閣 有 果園 咧! (=(16))
ah^{4} hit^{4} au^{7}bin^{7} koh^{4} u^{7} kue^{2}hng^{5} leh^{4}
PRT that back also have orchard LEH
'There is even an orchard at the back!'
(Chen (2020: 192), originally due to 10.12 *Shālù* 沙鹿 2, TXMG)

(45) 牛叔 啊!牛叔 啊! 你 會曉 按呢 泅水， 又
Gu^{5}tsik^{4} ah^{4} Gu^{5}tsik^{4} ah^{4} li^{2} e^{7}hiau^{2} an^{2}ne^{1} siu^{5}tsui^{2} iu^{7}
Bull.uncle PRT Bull.uncle PRT2SG can this.way swim also
閣 遐 條直， 漢草 閣 粗勇 咧!
koh^{4} hiah^{4} tiau^{5}tit^{4} han^{3}tshau^{2} koh^{4} tshoo^{1}iong^{2} leh^{4}
also so honest build also strong LEH
'Uncle Bull! Uncle Bull! You know how to swim and you are honest. Your body is also strong!' (154.19 Xīnshèxiāng 新社鄉 1, TXMG)

All of the four examples convey unexpected information, for the speaker or the addressee.

Similarly, the examples that denote physical sensation such as (46) may also belong to this mirative type.[20]

(46) a. 我 感覺 怪怪 咧!
gua^{2} kam^{2}kak^{4} kuai^{3}kuai^{3} leh^{4}
1SG feel strange.strange LEH
'I feel strange!' (There's something wrong!)' (Chen 1989: 70)

b. 這 件 代誌 怪怪 咧!
tsit^{4} kiann^{1} tai^{7}tsi^{3} kuai^{3}kuai^{3} leh^{4}
DEM CLF matter strange.strange LEH
'This matter is strange!' (There's something wrong in this matter!)'

20. In Garcia Macias (2016), physical sensation statements are categorized as a subtype of thetic sentences along with existentials (presence, appearance, continuation, etc.), not the mirative type though.

(46a) contains a reduplicated adjective *kuai*[2] 怪 and the verb *kam*[2]*kak*[4] 感覺, both describing a state related to some psychological state, but the verb is not required as shown in (46b).

The fact that a psychological state is crucial for it to occur with *leh*[4] 咧 is shown in (47) and (48).

(47) 請 入來 內面，三 號 佮 四 號 的 箱
tshiann[2] lip[8]lai[5] lai[7]bin[7] sann[1] ho[7] kah[4] si[3] ho[7] e[5] siunn[1]
please enter inside three number and four number PRT box
開開 佇 咧。
khui[1]khui[1] ti[7] leh[4]
open.open be.there LEH
'Please come in. Both box number 3 and box number 4 are open.'
(Chen (2020: 185), originally from 6.5.5-6 *Yǔyuàn* 語苑 16)

(48) …*(猶) 開開 咧。
iah[4] khui[1]khui[1] leh[4]
still open.open LEH
'…still open.'

While *khui*[1]*khui*[1] 開開, which denotes a state, may be followed by the verb *ti*[7] 佇 plus *leh*[4] 咧 conveying the continuative meaning, as shown in (47), it is not possible for it to only occur with *leh*[4] 咧 if *iah*[4] 猶is not present, as indicated in (48). The presence of *iah*[4] 猶 conveys 'unexpectedness,' another type of mirative which will be discussed next. I thus maintain that (46) is possible because the psychological state is characterized as some new and surprising information for the speaker or the addressee.

4.2.1.2.2 *With other elements that convey surprise*

Unexpected information may also occur with additional elements that convey surprise, as shown in (49)–(50), e.g., *suah*[4] 煞 in (49) and *guan*[5]*lai*[5] 原來 in (50).

(49) 豆仔仁 伊 這馬 生理 無 啥 咧 做， **煞**
Tau[7]a[2]jin[5] i[1] tsit[4]ma[2] sin[1]li[2] bo[5] siann[2] leh[4] tso[3], **suah[4]**
Tau-a-jin 3SG now business NEG what PROG do unexpectedly
落去 咧 共 調牌 矣 咧！[21]
loh[8]-khi[3] leh[4] kang[7] tiau[3]pai[5] ah[4] leh[4]
go PROG for collect.lotteries ASP LEH
'Now Tau-a-jin does not tend to his business. Instead, he is occupied with collecting lotteries from elsewhere for people!' (Chen 1989: 61)

21. Chen (1989) used 續 and translated *suah*[4] as 'and.' She might have been mistaken *suah*[4] 煞 with *sua*[3] 絏. The former means 'unexpectedly,' while the latter 'follow.'

(50) **原來** 遐 就 有 佇咧 賣 咧!
guan^{5}lai^{5} hia^{1} tio^{7} u^{7} ti^{7}leh^{4} be^{7} leh^{4}
as.it.turns.out there FOC have PROG sell LEH
'As it turns out, they're selling it there!'

4.2.1.2.3 *Surprise-disapproval questions*

In many languages, a mirative marker can occur in interrogatives, usually in the form of a rhetorical question (Hengeveld & Olbertz (2012: 497)). The TSM data below show that it occurs with a special type of question which is called a Surprise-disapproval question in Obenauer (2004). A Surprise-disapproval question expresses a surprise and disapproval attitude of the speaker towards the propositional content. For example,

(51) *Cossa zièghe-lo?!*
what shouts-he
'Why on earth is he shouting?!'
(Munaro & Obenauer (1999), cited in Obenauer (2006: 250))

Cossa 'what' in (51) occupies an adjunct position instead of a regular argument position. Its interpretation is similar to that of *why*.

Each of the TSM examples below contains a *wh*-word equivalent to *why* and *leh^{4}* 咧: *in^{1}ho^{5}* 因何 in (52), *ho^{5}pit^{4}* 何必in (53) and *an^{2}tsuann^{2}* 按怎 in (54). (cf. Mandarin mirative *zěnme* 怎麼and the SFP *a^{o}* 啊in Tsai & Yang (To appear))

(52) 這 个 明明 是 阮 丈夫 啦, **因何** 會 死
tsit^{4} e^{5} bing^{5}bing^{5} si^{7} gun^{2} tiong^{7}hu^{1} lah^{4}, **in^{1}ho^{5}** e^{7} si^{2}
DEM CLF evidently COP 1SG.GEN husband PRT how.come will die
佇 遮 咧?! (=(10))
ti^{7} tisa^{1} leh^{4}
PREP here LEH
'This is evidently my husband. Why did he die in here?!'
(Chen (2020: 189), originally from 2.82.8-10*Yǔyuàn* 語苑 21)

(53) 美 穲 都 常在 的, 你 **何必** 氣 甲
sui^{2} bai^{2} to^{1} tshiang^{2}tsai^{7} e^{5} li^{2} **ho^{5}pit^{4}** khi^{3} kah^{4}
beautiful ugly both always.exist PRT 2SG why.should angry COMP
按呢 咧?!
an^{2}ne^{1} leh^{4}
this.way LEH
'Whether you are beautiful or not is not subject to change, so why should you be so angry?!' (Chen 1989: 64)

(54) I2: 是 **按怎** 著愛 對 恁 兩 个 小弟 較
si[7] **an[2]tsuann[2]** tioh[8]ai[3] tui[3] lin[2] nng[7] e[5] sio[2]-ti[7] khah[4]
COP how.come must to 2PL two CLF little-brother more
好禮 咧?!
ho[2]le[2] leh[4]
polite LEH
'Why is it that we have to always butter your brothers up?'
G1-2: If you didn't treat my two little brothers like that, you wouldn't have had such miserable time today.
I1-4: We came to work in your company because we are capable. Why is it that we have to always butter your brothers up? Let me tell you this. If you want us to flatter others, we can't possibly do it.'
(Li 1999: 198)

The examples in (53) and (54) are taken from Chen (1989) and Li (1999) respectively. *Leh*[4] 咧 in (53), according to Chen (1989: 64), functions as a question marker and is used to 'contradict the hearer's assumption.' The analysis of *leh*[4] as a question marker is dubious because it is not required to occur in a question. On the other hand, Li's (54) is labelled to be a rhetorical question in Li (1999). Li explains that the speaker asked the question only to show his strong confusion or puzzlement as to why there should exist a contrasting idea or opinion. This is a function of *leh*[4] 咧 which Li identifies as marking contrast. If we look at the three examples above more closely, all of them are *why* questions and the speakers show surprise and disapproval. *Leh*[4] 咧 in the above examples thus marks surprise and disapproval.

4.2.1.2.4 *Exclamatives*

This surprise type can be found in an exclamative.[22] Two examples are given below (with context information).

(55) D1: Henn.
PRT
right
'Right.'
2: 偌 鬧熱 咧! (=(3))
gua[7] lau[7]jet[8] leh[4]
how festive LEH
'How festive (it was)!'
B1-3: Today on the way I saw, when A-eng took me home I saw, (I) saw people putting up the Tua-seng-ang.
D1-3: Right. How festive (it was)! There were many teams!' (Li 1999: 202)

22. In Garcia Macias (2016), it is shown that thetics, miratives and exclamatives are conceptually related and are represented by similar sentence patterns crosslinguistically.

(56) 有 啊! 對 偌 濟 咧!
u^{7} ah^{4} tioh^{8} gua^{7} tse^{1} leh^{4}
have PRT win.lottery how much LEH
'Yes, I did. I've won so much money!' (Chen 1989: 60)

Li takes the second utterance of D (D2) in (54) to be a descriptive statement which conveys a sense of excessiveness having arisen from an implied comparison. As a result, it is an example that manifests a sense of contrast. The use of contrast here is not clearly defined though. What is salient is the surprise that is conveyed. As we have witnessed in (31) in Section 3, a mirative marker can occur in an exclamative.

An exclamative differs from a mirative construction in the extraordinary degree reading that an exclamative has and a mirative lacks,[23] as evidenced in the examples below.[24]

(57) a. 伊 足 懸 的 咧! 猶毋過，
i^{1} tsiok^{4} guan^{5} e^{5} leh^{4} iau^{2}m^{7}koh^{4}
3SG very tall PRT LEH but
差 一點仔。
tsa^{1} tsit^{8}tiam^{2}a^{2}
miss a.little.SF
'He is very tall! But he is somewhat shorter.'

b. 伊 偌 懸 的 咧! #猶毋過，
i^{1} gua^{7} guan^{5} e^{5} leh^{4} iau^{2}m^{7}koh^{4}
3SG how tall PRT LEH but
差 一點仔。
tsa^{1} tsit^{8}tiam^{2}a^{2}
miss a.little.SF
'How very tall he is! #But he is somewhat shorter.'

The contrast in (57) shows that in an exclamative, the high or even extreme scalar reading cannot be cancelled, unlike that in a non-exclamative. I maintain that just like miratives, exclamatives also express surprise, but exclamatives are only speaker-oriented and more specific: they express the speaker's surprise at the extraordinary degree of a property. In terms of form, exclamatives in Sadock & Zwicky (1985) are analyzed as a 'minor' sentence type. They explain that exclamatives and

23. Liu & Lien (2006) claim that exclamatives in TSM are characterized by three features: first person, extreme degree and factivity. Chao (2009) analyses them from the perspective of scalarity and subjective evaluation.

24. For the differences between a degree adverb such as *very* and an anaphoric degree adverb such as *so*, see Michaelis (2001: 1040–1041).

interrogatives are similar in structure because they are nonassertive and share functional similarities:

> The function of exclamatory sentences is much like that of declarative sentences, except that exclamations are intended to be expressive whereas declaratives are intended to be informative. Both represent a proposition as being true, but in an exclamation, the speaker emphasizes his strong emotional reaction to what he takes to be a fact, whereas in a declarative, the speaker emphasizes his intellectual appraisal that the proposition is true (Sadock & Zwicky 1985: 162).

Michaelis (2001: 1041) summarizes the semantic-pragmatic features shared by exclamatives in (58):

(58) a. Presupposed open proposition
(with a degree as the variable);
b. Expression of commitment to a particular scalar extent;
c. Expression of affective stance toward the scalar extent;
d. Person deixis (judge is the speaker by default);
e. Identifiability of the referent of whom the scalar property is predicated.

Questions and exclamations are alike in having a presupposed open proposition. The question in (59a) presupposes (59d). This is also true for the exclamations in both (59b) and (59c).

(59) a. How much did he spend?
b. I cannot believe how much he spent.
c. How much he spent!
d. He spent x amount.

By contrast, questions and exclamations differ with regard to what is asserted. The speaker of (59a) asserts the desire to know where the spending ranks on a numerical scale, while the speaker of (59b) or (59c) asserts that the spending ranks high on that numerical scale. In addition to the two features in (58a) and (58b), the feature in (58c) refers to the surprise that comes with an exclamation. Finally, (58d) refers to the use of deixis, e.g., anaphoric degrees such as *so*:

> Anaphoric degree adverbs like *so* makes sense on the assumption that the scalar proposition expressed in the exclamation is presupposed. The use of an anaphoric adverb like *so* relies upon the hearer's ability to recover the relevant scale from the context. Michaelis (2001: 1041)

Now back to the TSM data. Examples in (60) show that anaphoric degree adverbs such as *tsiah*[4]*ni*[7]*a*[2] 遮爾仔 in TSM occur more naturally within a Surprise-disapproval question. With more context, nevertheless, such adverbs can be acceptable in a non-question, as (61) shows.

(60) a. ʔ遮 遮爾仔 熱 咧!
tsia[1] tsiah[4]ni[7]a[2] luah[8] leh[4]
here DEM.SF hot LEH
'It's so hot here!'

b. 遮 哪會 遮爾仔 熱 咧?!
tsia[1] na[2]e[7] tsiah[4]ni[7]a[2] luah[8] leh[4]
here how.come DEM.SF hot LEH
'Why is it so hot here?!'

(61) 遮 遮爾仔 熱 咧! 你 閣 穿 遐 濟!
tsia[1] tsiah[4]ni[7]a[2] luah[8] leh[4] li[2] koh[4] tshing[7] hiah[4] tse[7]
here DEM.SF hot LEH 2SG unexpectedly wear DEM much
'It's so hot here! You are wearing so much (You are all wrapped up)!'

4.2.1.3 *Counterexpectation to the Speaker/Addressee:* Leh[4] 咧

I include two subtypes of miratives under counterexpectation.

4.2.1.3.1 *Misexpectation*

Leh[4] 咧 marks a misexpectation entailed by the embedded complements of cognitive verbs such as *kio[3]si[7]* 叫是 and *liah[8]tsun[2]* 掠準, both of which mean 'mistakenly thought':

(62) 我 叫是 伊 欲 來 咧!
gua[2] kio[3]si[7] i[2] beh[4] lai[5] leh[4]
1SG thought 3SG want come LEH
'Oh! I thought he was coming!' (Chen 1989: 60)

Chen (1989: 60–62) *leh[4]* 咧 takes this usage to be an epistemic attitudinal particle (emphatic): it makes an epistemic commitment to the truth of a statement and at the same time indicates a certain attitude toward it. As an epistemic attitudinal particle, it is frequently used to contradict the hearer's assumption or the speaker's earlier expectation. It often appears with cognitive verbs such as *kio[3]si[7]* 叫是 'mistakenly thought' or epistemic adverbs like *kann[2]na[2]* 敢若 'seemingly, like.' According to Chen, 'in the former case, it signals an event beyond the speaker's expectation.'

Should *leh[4]* 咧 in (62) be analyzed to be part of the embedded clause or not? The answer is in the positive. That a surprise meaning is associated with the embedded clause in such kinds of sentences is evident from the use of the complementizer *to* in Japanese. According to Akatsuka (1985: 631–635), the complementizer *to* in (63b) and (64b) expresses the speaker's surprise or sudden realization.

(63) a. *Anata wa Mary ga tunbo da to
2SG TOP Mary SUBJ deaf COP COMP
sitte imasu ka?
knowing COP Q
'Do you know that Mary is deaf?'

b. Watakusi wa Mary ga tunbo da to sono
1SG TOP Mary SUBJ deaf COP COMP DEM
toki sitta.
time got.to.know
'I got to know then that Mary was deaf.'

(64) a. *Mary ga konna baka da to sitte imasita ka?
Mary SUBJ such fool COP COMP knowing COP Q
'Did you know that Mary was such a fool?'

b. Mary ga konna baka da to (wa) sirimasendesita.
Mary SUBJ such fool COP COMP COMP NEG.know
'I didn't know that Mary was such a fool.'

By contrast, *to* is not acceptable in (63a) and (64a) because these sentences involve 'state of knowledge.' This contrast shows that Japanese grammar is sensitive to the cognitive distinction between 'newly-learned information' and the 'state of knowledge.' According to Akatsuka, 'with regard to complementizer choice, Japanese grammar treats newly-learned information as part of a natural class along with hearsay, inferences, doubts, and counterfactuals.' (p. 632)

4.2.1.3.2 *Denial of expectation*

The other subtype under couterexpectation is what I call 'denial of expectation.'

(65) 人 才 毋 是 按呢 想 咧!
lang[5] tsiah[4] m[7] si[7] an[2]ne[1] siunn[7] leh[4]
3SG FOC NEG be this.way think LEH
'She by no means thinks in this way!' (Chen 1989: 13)

(66) S1: 我 才 無 愛 插 遐爾仔 濟 咧!
gua[1] tsiah[4] bo[5] ai[3] tshap[4] hiah[4]ni[7]a[2] tse[1] leh[4]
1SG FOC NEG want care DEM.SF much LEH
'Actually I don't care that much!'

M1: If you don't marry Chiu-guat-a, you will be beaten to death by your father.

S1-2: Actually I just don't care that much. Anyway, I just don't want to get married now. (Li 1999: 189)

(67) 欲 死 誰 猶 毋 知影 咧!
beh^{4} si^{2} siang^{2} iah^{4} m^{7} tsai^{1}iann^{2} leh^{4}
will die who still NEG know LEH
'Who is going to die is still unknown!' (Chen 1989: 71)

(68) I2: Hng, 我 都 猶 未 答應 咧!
hng gua^{2} to^{1} iah^{4} bue^{7} tah^{4}ing^{3} *leh^{4}*
PRT I FOC still NEG consent LEH
'I actually haven't given him my consent yet.'
G1-2: Of course he is happy. He wants to have a concubine.
I1: Have a concubine?
G3: Yes.
I2: Hng. I actually haven't given him my consent yet!' (Li 1999: 187)

Consider the two examples with context information given by Li (1999) first: (66) and (68). Li (1999: 188–190) reasons that (66) is used in a warning-dismissal sequence. The speaker of this sentence dismissed the idea that he should listen to his father and marry Chiu-guat-a, contrary to the mother's (the addressee) expectation. On the other hand, Li (1999: 187–188) posits that I2 of (68) occurs in a statement-denouncement sequence. The speaker I's husband wanted to have a concubine and presupposed that he had had his wife I's consent. But the wife denounced her husband by saying that she had not given him her consent. The denouncing effect, according to Li, is built upon the basis of contrast: the sharp contrast arises because 'G's statement gives rise to the presumed situation that the husband has already got I's consent, but I2 indicates clearly and vehemently this is not the case.' In my view, both in (66) and (68), *leh^{4}* 咧 marks information that is contrary to the addressee's expectation, with (68) also expressing the speaker's surprise. The warning or denouncement function is derived from the particular context.

Next, consider the two sentences with *tsiah^{4}* 才 in (65) and (66). There are three main features with this type of mirative. In this usage, *leh^{4}* 咧 cannot occur without *tsiah^{4}* 才 and *leh^{4}* 咧 cannot be omitted. Moreover, this usage of *tsiah^{4}* 才 occurs in a negative sentence.

(69) a. 人 才 毋 是 按呢 想 *(咧)!
lang^{5} tsiah^{4} m^{7} si^{7} an^{2}ne^{1} siunn^{7} *leh^{4}*
3SG FOC NEG be this.way think LEH
'She by no means thinks in this way!'

b. *人 才 是 按呢 想 咧!
lang^{5} tsiah^{4} si^{7} an^{2}ne^{1} siunn^{7} leh^{4}
3SG FOC be this.way think LEH
'She does think in this way!'

Finally, the two examples in (67) and (68) contain *iah*[4] 猶 (*iau*[2]). If we follow Soh & Gao's (2008: 464) analysis of *hái* 還 'still, yet' in Mandarin Chinese, the counterpart of *iah*[4] 猶 (*iau*[2]), the use of *iah*[4] 猶 (*iau*[2]) may involve a presupposition. The two authors posit that *hái* 還 presupposes that in (70) the situation [he smokes] immediately precedes the situation described.

(70) 他 還 抽 煙。 (Mandarin Chinese)
tā hái chōu yān
3SG still smoke cigarette
'He still smokes.'

Under the same analysis, *iah*[4] in (67) presupposes the situation 'kà?'. [It is unknown who will die] immediately precedes the situation being described. *Leh*[4] 咧 in this example indicates that the situation described may be unexpected to the addressee.

This usage of *leh*[4] 咧 is reminiscent of *le*[21] 'only' plus topic marker plus *ɣɛ*[55] in Lisu as discussed in Section 3, which expresses 'opposite to what was expected or presumed.' It is also similar to Galo's Counterexpective *ɲo* or Contrarative *kə́?* as discussed in Section 3.

4.2.1.4 *New Information to the Addressee: The Higher Fourth Tone* Leh[4] 咧 *or* Neh[4] 呢

Instead of the low third tone *leh*[4] 咧, new information to the addressee that expresses the worthiness of new information and calls it to the addressee's attention is marked by either the higher fourth tone *leh*[4] 咧 or *neh*[4] 呢.[25] Consider the example in (71), which contains an evidential verb *kuann*[3] 看 and allows either *neh*[4] 呢 or *leh*[4] 咧 in the higher fourth tone.

(71) 你 看， 流星 呢/咧！
li[2] kuann[3] liu[5]tshinn[1] neh[4] leh[4]
2SG look shooting.star NEH LEH
'Look! A shooting star!'

According to Peterson (2016: 1354), evidential statements become deictic of the gestural kind under certain conditions. The direct evidential verbs in English *Look! A shooting star!*, and *I see a shooting star!* have the function of pointing out or drawing the addressee's attention to a shooting star.

By contrast, the following example shows that only the third tone *leh*[4] 咧 is possible. Neither the low third *neh*[4] 呢 nor the higher fourth tone *neh*[4] 呢 is possible

25. As mentioned in footnote 3, the higher fourth tone *leh*[4] 咧 and *neh*[4] 呢 are about equally distributed in Li's data (1999: 183). There were 98 instances of former and 102 instances of the latter.

because the *n* sound tends to show friendliness and the worthiness of new information does not fit in the context which calls for the expression of a strong emotion. The utterance in (72) was emotionally charged and was uttered to refute the addressee's assumption that the speaker would die.

(72) 欲 死 誰 猶 毋 知影 咧/*呢!
beh^{4} si^{2} siang^{2} iah^{4} m^{7} tsai^{1}iann^{2} leh^{4} neh^{4}
will die who still NEG know LEH NEH
'Who is going to die is still unknown!' (Chen 1989: 71)

4.2.2 The Mirative Leh^{4} 咧 as an Independent Category

The mirative *leh*^{4} 咧 is a category independent from evidentiality. This is evidenced by the fact that it may occur with an evidential marker:

(73) a. 昨昏 就 落 雨 矣 咧! (=(38a))
tsa^{1}hng^{1} tio^{7} loh^{8} hoo^{7} ah^{4} leh^{4}
yesterday FOC fall rain ASP LEH
'It has rained since yesterday!'

b. 敢若 昨昏 就 落 雨 矣 咧! (=(38b))
kann^{2}na^{2} tsa^{1}hng^{1} tio^{7} loh^{8} hoo^{7} ah^{4} leh^{4}
seemingly yesterday FOC fall rain ASP LEH
'It seems that it has rained since yesterday!'

The mirative *leh*^{4} 咧 does not depend on a continuative meaning, either. Peterson (2017) uses the following example from Magar, a Central Himalayish (Tibeto-Burman) language of Nepel, to show that the surprise meaning may be implicated, not entailed.

(74) boi-e chitua-ke gap-o le
father-ERG leopard-DAT shoot-NMLZ IMPF.MIR
[I realise to my surprise that:] 'Father shot the leopard!'
(originally due to Aikhenvald (2012: 441))

In Magar, miratives typically occur only with the non-past imperfective aspect. The surprise meaning is thus parasitic. This is not the case in TSM. We have seen that *leh*^{4} 咧 occurs with different aspect. (73a) above is an example in which *leh*^{4} 咧 occurs with the SFP perfective marker *ah*^{4} 矣. Example in (75) below shows that *leh*^{4} 咧 is compatible with the progressive aspect.

(75) 原來 遐 就 有 佇咧 賣 咧! (=(50))
guan^{5}lai^{5} hia^{1} tio^{7} u^{7} ti^{7}leh^{4} be^{7} leh^{4}
as.it.turns.out there FOC have PROG sell LEH
'As it turns out, they're selling it there!'

4.3 Syntactic positions

Syntactically, examples such as (73) above, where *leh* 咧 follows the perfective aspect particle *ah*[4] 矣, suggest that, structurally, *leh*[4] 咧 as a mirative marker occurs in a position higher than the perfective aspect *ah*[4] 矣. Assuming that *ah*[4] 矣 as well the continuative *leh*[4] 咧 heads an aspectual projection, we derive the order of the projections as MirP > AspP ('>' means hierarchically higher).[26]

Evidence also shows that the mirative *leh*[4] 咧 occurs higher than the projection of a sensory evidential, as shown in (76).

(76) a. 買 一 支 竹篙 个 款。
bue[2] tsit[8] ki[1] tek[4]ko[1] e[5] khuan[2]
buy one CLF bamboo.pole PRT pattern
'(He) seems to have bought a bamboo pole.'
(Lien 2017: 185, originally due to Zhānghuàxiàn 彰化縣, TXMG)

b. (敢若) 買 一 支 竹篙 个 款 咧!
kann[2]na[2] bue[2] tsit[8] ki[1] tek[4]ko[1] e[5] khuan[2] *leh*[4]
seemingly buy one CLF bamboo.pole PRT pattern LEH
'(He) seems to have bought a bamboo pole!'

c. *敢若 買 一 支 竹篙 咧 个 款!
kann[2]na[2] bue[2] tsit[8] ki[1] tek[4]ko[1] *leh*[4] e[5] khuan[2]
seemingly buy one CLF bamboo.pole LEH PRT pattern

According to Lien (2017), the evidential *e*[5] *khuan*[2] 个款 in (76a) is reanalyzed from *e*[5] 个 as a determiner D plus a noun phrase *khuan*[2] 款 to be an SFP occupying in the projection of a lower C position (call it CP1), lower than that of other SFPs such as *lah*[4] 啦 (call it CP2), as evidenced in (76c) that the order of the two particles cannot be reversed. (76b) shows that *leh*[4] 咧 follows *e*[5] *khuan*[2] 个款 and is thus higher in the syntactic structure than the sensory evidential marker.

If we follow Yang's (2017) analysis of *a* 啊, *leh*[4] 咧's counterpart in Mandarin Chinese, as an attitude particle, or assume with Tsai & Yang (To appear) that *an*[2]*t-suann*[2] 按怎 and *leh*[4] 咧, just like its Mandarin counterpart the mirative *zěnme* 怎麼 and the SFP *a*[o] 啊 in Tsai & Yang, is located in SAP2 (the lower Speech Act Phrase, cf. Speas & Tenny (2003) and Haegeman (2014)), then we can map out the hierarchy as follows:

---

26. To get the word order right, SFPs have to occur at the end of a sentence one following another. This raises the question about whether the Final-over-Final Constraint (FOFC) is violated (Hsieh & Sybesma 2011). Please see Chan (2013) for the discussion that SFPs in Chinese should be analyzed differently from complementizers. The latter but not the former are subject to the FOFC.

(77) AttitudeP/SAP2> EvidP > AspP

Now consider the positions of the low third tone *leh*^{4} 咧 and the higher fourth tone *neh*^{4} 呢. *Neh*^{4} 呢 linearly follows and so occurs higher than *leh*^{4} 咧 when the two co-occur, as shown in (78).

(78) a. 偌 鬧熱 咧 呢!
gua^{7} lau^{7}jet^{8} leh^{4} neh^{4}
how festive LEH NEH
'How festive (it was)!'
b. *偌 鬧熱 呢 咧!
gua^{7} lau^{7}jet^{8} neh^{4} leh^{4}
how festive NEH LEH

If we follow Paul (2014) and Pan (2015) in treating *ne* 呢, *neh*^{4} 咧's counterpart in Mandarin Chinese, as an attitude particle, then the question is where *ne* 呢 is located. In fact, Pan (2015: 857) posits that it is generated in a lower Attitude P, whereas *a* 啊 is located in a higher Attitude P. But the TSM examples in (78) seem to suggest the opposite. More research is thus needed for the investigation of these particles in both TSM as well as Mandarin Chinese.

5. Concluding remarks

The use of the SFP *leh*^{4} 咧 may concern speaker-hearer interactions, and the attitude of the speaker. Chen (2020) in her study of the grammaticalization of the Southern Min continuative marker *leh*^{4} 咧 from the Ming and Qing dynasties posits that the continuative marker *leh*^{4} 咧 has further developed into a sentence final mood particle in Modern Southern Min, which serves functions such as confirmation and emphasis. In this paper, I show that the third tone mirative *leh*^{4} 咧 is a mirative marker which expresses three of the five mirative meanings in Aikhenvald (2012: 473): (a) sudden discovery, sudden revelation or realization on the part of the speaker, (b) new and surprising information for the speaker/addressee, (c) counterexpectation to the speaker/addressee. 'New information to the addressee,' which marks the worthiness of new information and calls it to the addressee's attention, nevertheless, is conveyed by the higher fourth tone *neh*^{4} 呢 or *leh*^{4} 咧. Syntactically, I propose that the mirative *leh*^{4} 咧 is projected in a position higher than an evidential projection.

Acknowledgments

This paper was part of the project supported by the Ministry of Science and Technology (108-2410-H-003-024), Taiwan. I would like to delicate this paper to my beloved teacher Audrey Li and thank Andrew Simpson and a reviewer for their comments. Many thanks also go to Sihwei Chen, Su-ying Hsiao, Miao-Hong Hsieh, Miao-Wen Hsieh, Seng-hian Lau, Chinfa Lien, Shu-ing Shyu and Chin-Chin Tseng for their discussions of the data and/or analyses with me. All remaining errors are mine.

Abbreviations used for the TSM and Japanese data

1	first person	LEH	*leh*[4] 咧
2	second person	NEG	negation
3	third person	NEH	*neh*[4] 呢
ASP	aspect marker	PL	plural
CLF	classifier	PREP	preposition
COMP	complementizer	PROG	progressive marker
COP	copula	PRT	particle
DEM	demonstrative	Q	question marker
FOC	focus	SF	suffix
GEN	genitive	SG	singular
HOO	passive/causative/goal marker	SUBJ	a subject marker
KA	object/benefactive marker	TOP	a topic marker

References

Aikhenvald, Alexandra. 2012. The essence of mirativity. *Linguistic Typology* 16(3): 435–485. https://doi.org/10.1515/lity-2012-0017

Akatsuka, Noriko. 1985. Conditionals and the epistemic scale. *Language* 61(3): 625–639. https://doi.org/10.2307/414388

Chan, Brian Hok-Shing. 2013. Sentence-final particles, complementizers, antisymmetry, and the final-over-final constraint. In *Theoretical Approaches to Disharmonic Word Order*, Theresa Biberauer & Michelle Sheehan (eds), 445–468. Oxford: Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199684359.003.0016

Chang, Yu-hong. 2001. *Principles of POJ or the Taiwanese Orthography: An Introduction to Its Sound-Symbol Correspondences and Related Issues*. Taipei: The Crane Publishing Company.

Chao, Chingya. 2009. Exclamatives in Southern Min: Integrating Form and Function. PhD dissertation, National Tsing Hua University.

Chen, Janet Chiou-mei. 1989. A Study on Taiwanese-Final Particles. MA thesis, National Taiwan Normal University.

Chen, Manjun. 2020. The etymology and grammaticalization of the continuative aspect marker *le(h)* [4]: a survey from the historical documents. In *Diachronic Perspectives and Synchronic Variation in Southern Min* [Routledge Studies in Chinese Linguistics Book Series], Chinfa Lien & Alain Peyraube (eds), 157–196. London: Routledge. https://doi.org/10.4324/9780429316517-8

Cheng, Robert. 1985. A comparison of Taiwanese, Taiwan Mandarin, and Peking Mandarin. *Language* 61: 352–377. https://doi.org/10.2307/414149

Comrie, Bernard. 1976. *Aspect*. Cambridge: Cambridge University Press.

DeLancey, Scott. 1997. Mirativity: the grammatical marking of unexpected information. *Linguistic Typology* 1(1): 33–52. https://doi.org/10.1515/lity.1997.1.1.33

DeLancey, Scott. 2001. The mirative and evidentiality. *Journal of Pragmatics* 33(3): 369–382. https://doi.org/10.1016/S0378-2166(01)80001-1

Garcia Macias, Jose Hugo. 2016. From the Unexpected to the Unbelievable: Thetics, Miratives and Exclamatives in Conceptual Space. PhD dissertation, the University of New Mexico.

Haegeman, Liliane. 2014. West Flemish verb-Based discourse markers and the articulation of the Speech Act layers. *Studia Linguistica* 68(1): 116–139. https://doi.org/10.1111/stul.12023

Hengeveld, Kees & Olbertz, Hella. 2012. Didn't you know? Mirativity does exist! *Linguistic Typology* 16(3): 487–503. https://doi.org/10.1515/lity-2012-0018

Hsieh, Feng-fan & Sybesma, Rint. 2011. On the linearization of Chinese sentence final particles: Max spell out and why CP moves. *Korea Journal of Chinese Language and Literature*, vol. 1: 53–90.

Hsieh, Miao-Ling & Hsiao, Su-Ying. To appear. On the 'one+verbal classifier' sequence as a delimitative aspect marker in Taiwanese Southern Min. *Language and Linguistics*.

Hu, Xin-Lin. 1994. *Fēnlèi Táiyǔ Xiǎocídiǎn* 分類台語小辭典*[The Glossary of Categorized Taiwanese Southern Min*]. Taipei: Independence Evening Post.

Kay, Paul. 1990. Even. *Linguistics and Philosophy* 13(1): 59–111. https://doi.org/10.1007/BF00630517

King, John Timothy. 2009. *A Grammar of Dhimal*. Leiden: Brill.

Li, Ing Cherry. 1999. *Utterance-Final Particles in Taiwanese: A Discourse-Pragmatic Analysis*. Taipei: The Crane Publishing Company.

Li, Ru-rong. 1996. *Quánzhōu fāngyán de tǐ* 泉州方言的體[The aspects of Quanzhou dialect]. In *The Aspect of Verbs [Series on Comparative Research of China's Southern Dialects 2]*, Shuang-Qing Zhang (ed), 195–224. Hong Kong: T.T. NG Chinese Language Research Center.

Lien, Chinfa. 1988. Taiwanese sentence-final particles. In *The Structure of Taiwanese: A Modern Synthesis*, Robert L. Cheng & Shuanfan Huang (eds), 209–240. Taipei: The Crane Publishing Company.

Lien, Chinfa. 2017. The emergence of *e*[5] *khuan*[2] 个款 as a sensory evidential marker in TSM. *International Journal of Chinese Linguistics* 4(2): 173–190. https://doi.org/10.1075/ijchl.16018.lie

Lien, Chinfa. 2020. *Kong*[2] as a verb for saying 'on the move' in Taiwanese Southern Min. In *Diachronic Perspectives and Synchronic Variation in Southern Min [Routledge Studies in Chinese Linguistics Book Series]*, Chinfa Lien & Alain Peyraube (eds), 197–216. London: Routledge. https://doi.org/10.4324/9780429316517-9

Liu, Hsiu-Ying & Lien, Chinfa. 2006. *Mǐnnányǔ gǎntànjùshì chūtàn* 閩南語感嘆句式初探 *[Initial research on exclamatives in Taiwanese Southern Min]. Zhongguo Yuxue* 253: 92–116.

Michaelis, Laura A. 2001. Exclamative constructions. In *Language Typology and Language Universals: An International Handbook*, Martin Haspelmath, Ekkehard König, Wulf Oesterreicher & Wolfgang Raible (eds), 1038–1050. Berlin & New York: Walter de Gruyter.

Munaro, Nicola & Hans-Georg Obenauer. 1999. On underspecified *wh*-elements in pseudo-interrogatives, *University of Venice Working Papers in Linguistics* 9, no. 1–2: 181–253.

Obenauer, Hans-Georg. 2004. Nonstandard *wh*-questions and alternative checkers in Pagotto. In *Syntax and Semantics of the Left Periphery, Interface Explorations 9*, Horst Lohstein & Susanne Trissler (eds), 343–384. Berlin & New York: Mouton de Gruyter. https://doi.org/10.1515/9783110912111.343

Obenauer, Hans-Georg. 2006. Special interrogatives – Left periphery, *wh*-doubling, and optional elements. In *Romance Languages and Linguistic Theory 2004*, Jenny Doetjes & Paz Gonzaílves (eds), 247–273. Amsterdam: John Benjamins. https://doi.org/10.1075/cilt.278.12obe

Pan, Victor Junnan. 2015. Mandarin peripheral construals at the syntax-discourse interface. *The Linguistic Review* 32(4): 819–868. https://doi.org/10.1515/tlr-2015-0005

Paul, Waltraud. 2014. Why particles are not particular: sentence-final particles in Chinese as heads of a split CP. *Studia Linguistica* 68: 77–115. https://doi.org/10.1111/stul.12020

Peterson, Tyler. 2016. Mirativity as surprise: evidentiality, information and deixis. *Journal of Psycholinguistic Research* 45(6): 1327–1357. https://doi.org/10.1007/s10936-015-9408-9

Peterson, Tyler. 2017. Problematizing mirativity. *Review of Cognitive Linguistics* 15(2): 312–342. https://doi.org/10.1075/rcl.15.2.02pet

Post, Mark William. 2007. A Grammar of Galo. PhD dissertation, La Trobe University.

Sadock, Jerrold M. & Zwicky, Arnold M. 1985. Speech act distinctions in syntax. In *Language Typology and Syntactic Description*, Timothy Shopen (ed), 155–196. Cambridge: Cambridge University Press.

Simonin, Oliver. 2018. The mirative and scalar meaning of *even*. *Anglophonia: French Journal of English Linguistics* 26, 01 November 2018, <http://journals.openedition.org/anglophonia/1775> (10 February 2021). https://doi.org/10.4000/anglophonia.1775

Soh, Hooi Ling & Gao, Meijia. 2008. Mandarin sentence *-le*, perfect and English *already*. In *Event Structures in Linguistic Form and Interpretation [Language, Context and Cognition 5]*, Johannes Dölling, Tatjana Heyde-Zybatow & Martin Schäfer (eds), 447–474. Berlin: Walter de Gruyter. https://doi.org/10.1515/9783110925449.447

Speas, Peggy & Tenny, Carol. 2003. Configurational properties of point of view roles. *Asymmetry in Grammar, vol. 1: Syntax and Semantics*, Anna Maria Di Sciullo (ed), 315–345. Amsterdam/Philadelphia: John Benjamins Publishing Company. https://doi.org/10.1075/la.57.15spe

Tsai, Wei-Tien Dylan & Ching-Yu Helen Yang. (To appear in this book) On the syntax of mirativity: Evidence from Mandarin Chinese.

Yang, Hsiu-Fang. 1991. *Táiwān Mǐnnányǔ Yǔfǎgǎo* 台灣閩南語語法稿 *[Southern Min Grammar*]. Taipei: Da-An Publisher.

Yang, Ching-Yu Helen. 2017. Exclamatives in Mandarin Chinese: The Syntax-Semantics Interface. PhD dissertation, National Tsing Hua University.

Yu, Defen. 2005. Evidentiality and mirativity in Lisu. *Paper presented at the Research School of Pacific and Asian Studies*, Australian National University, September 23, 2005.

Non-veridical *kaN* in Taiwanese Southern Min

Shu-ing Shyu and Liok-san N̂g
National Sun Yat-sen University / Academia Sinica

In the study of kaN (敢 gan3 in Mandarin Chinese written form) in Taiwanese Southern Min, previous studies have largely focused on the interrogative kám sentences. This paper, however, shows a comprehensive picture when taking into consideration of the allomorph kánn in declarative sentences, and the diachronic development of kaN. Specifically, we propose that kaN functions as a non-veridical operator, whose clause type feature needs to be valued in IntP, thus deriving either a [+Q] (kám) or [-Q] (kánn) sentence. Moreover, various kaN sentence types are derived contingent on the interface criteria: (i) syntax (clause type feature valuation), (ii) inquisitive semantics of kaN: the epistemic use of kánn and sī 'be', and (iii) speaker's intentionality/supposition in the speech act domain.

1. Introduction

The Chinese word 敢 (pronounced as *gan*^{3} in Mandarin Chinese) literally means *dare* or *bold*. Its contemporary Taiwanese Southern Min (TSM) form is pronounced either as *kam*^{2} = *kám* or as *kánn*; for ease of discussion we use kaN as a cover term for these two forms. *Kám* occurs in questions, and is assumed to have developed from multiple sources involving 敢 – 豈敢 *qi-gan,* 膽敢 *dan-gan* 'how dare, boldly dare', as well as a fusion from 敢問 *kánn-mn̄g* 'dare-ask' functioning as 'may I dare ask' (Liu *et al.* 1992; Y. Cheng 2003; Wei 2010, etc.), as in (1), and (2). While the use of *kám* in questions has attracted much attention, the epistemic modal usage of *kánn* has been commented on formally much less, which expresses epistemic meaning of conjecture 'seemly, probably, likely,' as shown in (3) (Tsao 1993; Cheng 2000, 2003; Wei 2010; Lien 2011; Yen 2012; Liu 2013, among many others).[1]

1. Some speakers of TSM prefer using 敢若 *kánn-ná*, rather than simply *kánn* in epistemic declarative sentences (Lâu 2020, personal communication). In addition to *kám* and *kánn*, Lien (2011) has identified the third use of kaN, *kan*^{2}. We will not further distinguish this use, but assume that its meanings are integrated into the two uses of *kám* and *kánn* discussed in the paper.

https://doi.org/10.1075/la.272.17shy

(1) a. 你 敢 欲 來?
Lí kám beh lâi?
you KAM want come
"Do you want to come?"
b. 阿輝 敢 有 食 檳榔?
A-Hui kám ū tsia̍h pin-nn̂g?
A-Hui KAM have eat betel-nuts
"Does A-Hui eat betel nuts?"

(2) 明仔載 敢 會/袂 落雨?
Bîn-á-tsài kám ē/bē lo̍h-hōo?
tomorrow KAM will/not will possibly rain
"Will it/ Will it not rain tomorrow?"

(3) 明仔載 敢 會/袂 落雨。
Bîn-á-tsài kánn ē/bē lo̍h-hōo.
tomorrow KANN will/not will possibly rain
"Probably it will/will not rain tomorrow."

In general, kaN may appear in three positions. First, it may occur before *v*P predicates or modals, as shown above in (1) and (2); see R. L. Cheng (1997), Y. Cheng (2000, 2003), Hsieh (2001), Lâu (2010a, b), Lien (2011), Wu (2015), L. Huang (2016), Shyu and L. Huang (2018) and among others, and may express neutral question meaning, this often being treated as variants of *zheng-fan* alternative/disjunctive questions (e.g., in Tang 1999).

Second, kaN may co-occur with and precede *sī* 'be' and convey speaker's subjective attitude toward the proposition either in declarative sentences (4) (Lien 2011; Yen 2012) or in presumptive questions (5) (Wu 2015). It has been noted that presumptive questions (either with or without *sī*) are more commonly used than neutral questions (Wei 2010), though the latter usage has recently become more prominent among younger generations and in the southern part of Taiwan (Wang and Lien 2001; Yen 2012; Liu 2013).

(4) 你的皮包仔揣遐久攏揣無，敢是去予人提去矣. (Yen 2012: 114)
Lí ê phuê-pau-á tshuē hiah kù lóng tshuē bô, kánn sī
your purse seek very long also find no, KANN SI to
'You have looked for your purse for so long, but you
khì hōo lâng the-khì-ah
people take.away
haven't found it.
Probably it was taken away by someone.'

(5) 老王敢是開車來e? (Wu 2015)
Láu-óng kám sī khui tshia lâi-ê?
Lauong KAM SI drive car come SFP
'Did Lauong drive car here?'

In addition to the clause-medial position (4), kaN(*sī*) occurs in the pre-subject position as in (6a). Although this is often treated as a subject focus question reading (6a-i) (e.g. Schaffar and Chen 2001; Wu 2015: 147, etc.), as shown in the second conjunct in (6b), it may be intended to illicit addressee's confirmation of the proposition, as shown in (6a-ii) and (6c). We will turn to this point in Section 3.

(6) a. 敢是你欲來…?
Kám sī lí beh lâi
KAM SI you want come
i. "Is it you that will come?"
ii. "Is it the case that you will come?"

b. ….毋是伊欲來?
M̄-sī i beh lâi
not-SI he want come
'…, not he will come?'

c. ….毋是伊欲去?
M̄-sī i beh khì
not-SI he want go
"Is it that you will come, not he will go?"

Similarly, when a negative word *m* co-occurs with *sī,* kaN-*m-sī* delivers speaker's strong presumption of the proposition constituent *P*; for example, *that the addressee has a pearl gown*, in (7).[2]

---

2. It seems that interrogative *kám-m-sī* in (7) does not have the epistemic declarative *kán-n*(*ná*)*–m-sī* counterpart in such a context, as shown in (i). This phenomenon is expected in our account. As to be shown in section three that *sī* functions as an epistemic modal expressing a speaker's evaluation of actuality/truth of the proposition and when the speaker intends to express his/her subjective inquisitive attitude and weaker presumption, the use of *kánn*(*na*)*-sī* already serves this purpose, as shown in (ii); thus it is redundant to use *m-sī* to modify the speaker's presumption of the *P*. Moreover, if the speaker assumes ~*P*, (iii) is used, in which *kánn*(*na*) qualifies the negative main predicate.

(i) ??伊敢 (若) 毋是 有一領珍珠寶衣.
I kánn m̄-sī ū tsi̍t-niá tsin-tsu pó-i.
you KANN not SI have one-CL pearl precious clothing
'??It seems that he has a very precious piece of pearl clothing.'

(7) 你敢毋是 有一領珍珠寶衣? (Lien 2011: 6)
Lí kám m̄-sī ū tsi̍t-niá tsin-tsu pó-i?
you KAM not SI have one-CL pearl precious clothing
'Don't you have a very precious piece of pearl clothing?'

Third, both *kám* and *kánn* may further express *fanjie* rhetorical function as shown in (8) and (9) respectively. Such forms may not express genuine open questions, but the speaker's strong presupposition of ~*P*.[3]

(8) 逐工按呢耍電腦,敢考會著上大學? (Yen 2012: p. 116)
Ta̍k-kang án-ne sńg tiān-náu, kám khó-ē-tiâu tāi-ha̍k?
everyday so play computer (game), KAM take enter university
'You play computer games every day. How can you pass the entrance exam?'

(9) 伊做人安怎 大家敢無看見. (Lien 2011: 4)
I tsò-lâng án-tsuánn, ta̍k-ke kánn bô khuànn-kìnn.
he act-man how people KANN not see
'How come people don't see how he treats others!'

Several issues are raised in the study of kaN. While the grammaticalization processes of kaN have been addressed in the typological/functional camp, the extent that contemporary kaN sentence structures related to its grammaticalization path has rarely been delved into. In addition, in the syntactic literature, focus has largely been placed on the interrogative *kám,* which is often categorized as a variant of Chinese A-not-A questions, either on a par with wh-interrogatives (C.-T. Huang 1988, 1991; Huang *et al.* 2009; echoed in Hsiao and Her 2019), or as polar, yes-no questions (R. L. Cheng 1997: 231; T.-C. Tang 1999; Wang and Lien 2001; and Hsieh 2001), or as a polarity marker (Wu 2015; R. Huang 2014). The debates result from the indeterminate functions of *kám* and its syntactic representations. In order to better understand the whole picture of kaN, we suggest that both *kám* and *kánn* be taken into consideration, as a single morpheme referred to here as kaN. The paper

(ii) 伊 敢 (若) 是 有 一領珍珠寶衣.
I kánn (na) sī ū tsi̍t-niá tsin-tsu pó-i.
he KANN(NA) SI have one-CL pearl precious clothes
'It seems that he has a very precious piece of pearl clothing.'

(iii) 伊 敢 (若) 無 一領珍珠寶衣.
I kánn (na) bô tsi̍t-niá tsin-tsu pó-i.
he KANN(NA) not.have one-CL pearl precious clothes
'It seems that he doesn't have a very precious piece of pearl clothing.'

3. Due to limits of space, we will not list all *kám*'s counterparts, declarative *kánn*(*–na*) sentences. We assume that they have similar syntactic behaviors to interrogative sentences with *kám*.

proposes that kaN is a non-veridical operator, which pertains to the *inquisitive* meaning recently developed in Giannakidou (2013) and Giannakidou and Mari (2018), etc. (credited to Ciardelli, Groenendijk, and Roelofsen 2013, 2018). It is further proposed that *sī* functions as an epistemic modal (cf. MC *shi* in Huang 1988), and the various functions of kaN can be derived at the syntax-pragmatics interface. Eventually the full range of kaN sentences cannot be modeled successfully without reference to the interface of syntax and speech act domains.

2. KaN

KaN is treated as an adverb by Cheng (2000, 2003), as a modal in Tsao (1993), and as a raising verb in Chen and Shen (1998)). Cheng's primary reason for considering it an adverb is that it cannot serve as a fragmental answer to a question (10B), in contrast with regular modal verbs, which can occur as fragmental answers (11B). Cheng further states that unlike regular modal verbs that can be negated (12a), kaN cannot be directly negated as in *kám* question (12b) (Cheng 2000), and the declarative *kánn* sentence in (13).

(10) A: 伊 敢 會 來? (Cheng 2000, p. 35)
I kám ē lâi?
s/he KAM want come
"Will s/he come?"
B: *敢/
Kám

(11) A: 伊 會/會當 來?
I ē/ē-tàng lâi
s/he will/can come
"Will/Can she/he come?"
B: 會 / 會當。
Ē/Ē-tàng.
will/can
"Yes."

(12) a. 伊無 可能/袂 當來.
I bô khó-lîng /bē-tàng lâi.
s/he not possible/ can come
"S/He will not possibly/cannot come."
b. *伊 無/毋 敢 可能來?
*I bô/m̄ kám khó-lîng lâi?
s/he not-have/not KAM possibly come
"Will s/he not come?"

(13) *伊 無/毋 敢 (若) 可能來.
*I bô/m̄ kánn(na) khó-lîng lâi.
s/he not-have/not KANN(NA) possibly come
"Impossibly s/he will come."

Moreover, kaN has to be higher than modals and the verb of *ū* 'have' (17).[4]

(14) 明仔載 敢 會/袂 (*敢) 落雨?
Bîn-á-tsài kám ē/bē lȯh-hōo?
tomorrow KAM will/not.will rain
'Will it/ Will it not rain tomorrow?'

(15) a. 伊 敢 應該／一定 愛 (*敢)來?
I kám ing-kai/it-tīng ài lâi?
you KAM should/have.to must come
"Should he come? / Does he have to come?"
b. 伊 敢 愛 (*敢)來?
I kám ài lâi?
you KAM must come
"Does he have to come?"

(16) 伊 敢 拍算欲 (*敢)去台北?
Lí kám phah-sǹg beh khì Tâi-pak?
you KAM plan want go Taipei
"Does s/he plan to go to Taipei?"

(17) 昨昏 敢 (若) 有 (*敢) 落雨。
tsa-hng kánn(ná) ū lȯh-hōo.
yesterday KANN have rain
'It seems that it rained yesterday.'

In addition, kaN occurs before predicate negation, frequency and Infl-adverbs including *tiānn-tiānn* 'often', *hán-tit* 'seldom', *bô-tiānn-tiānn* 'not.often' as shown below.

(18) 伊 敢 無 (*敢) 愛 來?
I kám bô (*kám) ài lâi?
s/he KAM not-have want come
"Does s/he not want to come?"

4. One might question this point by referring to (i), in which KaN precedes a regular verb "graduate." We assume that it is because here KaN selects an AspP, rather than a bare VP, as indicated by the obligatory *ah* as an aspectual marker.

(i) 你 敢 畢業 *(矣)? (TSM)
Lí kám pit-giȧp–ah?
you KAM graduate Asp
"Have you graduated yet?" (Shen 1997: 9 #(1b))

(19) 伊 敢 定定/罕得/無定定 (*敢) 來?
Lí kám tiānn-tiānn/hán-tit/bô-tiānn-tiānn (*kám) lâi?
you KAM often/seldom/not-often come
"Does s/he often/seldom/not often come?"

KaN can occur either before or after temporal/locational adverbials, which may be topicalized in the CP domain when sentence-initial. Note that kaN also has to precede the auxiliary-like verb *ū* 'have' rather than directly preceding the main verb *tsú pn̄g* 'cook rice', as shown in (21).

(20) 伊 (明仔載)敢 (明仔載) 欲 囡仔 去 公園?
I (bîn-á-tsài) kám (bîn-á-tsài) beh tshuā gín-á khì kong-hn̂g?
she tomorrow KAM tomorrow want take children go park
"Will she be taking the children to the park tomorrow?" (Lin, 2015, p. 416)

(21) 阿明[佇 厝] 敢 有 (*敢) [佇 厝] 煮 飯?
A-bîng (tī tshù) kám ū (*kám) (tī tshù) tsú pn̄g?
A-bing (at home) KAM have (KAM) (at home) cook rice
'Does A-bing cook at home?'

Having seen that kaN operates on a predicate-level category, and its distribution as a predicate modifier, we side with Y. Cheng's position in treating it as an adverb.

2.1 The development of kaN

KaN's MC written form 敢 *gan* originated from the lexical verb *dare.* In Archaic Chinese, the combination *gan-wen* 'dare-ask' meaning 'boldly ask' frequently occurred (Wei 2010). *Gan-wen* may perform a vocative function (22a) (followed by an interrogative sentence), or function as the matrix predicate selecting either an indirect question (as in (22b)) or a nominal complement, e.g. (22c). The modern MC question particle *gan* has been claimed to be developed from this earlier source (Liu *et al.* 1992: 247; Wei 2010, etc.).

(22) a. 敢問『薦之於天，而天受之，暴之於民，而民受之。』如何?」
(孟子萬章章句上(五))
Gan-wen: "Jian zhi yu tian er tian shou zhi, pu zhi yu min, er min shou zhi. Ruhe?
Dare.ask recommend to heaven, heaven receive it, expose (him) to people, people accept him, how? (*Mencius* 4th B.C.)
'I presume to/boldly ask: how was it that [Yao] presented him [Shun] to Heaven, and Heaven accepted him; and that he exhibited him to the people, and the people accepted him?"

b. 敢問此何神也 (左傳/昭公)
Gan-wen ci he shen ye (*Zuo Zhuang* 771–476 BC)
dare-ask this what god SFP
'May I boldly ask what this god is?'

c. 敢問明王之治 (莊子/應帝王)
Gan-wen ming wang zhi zhi (*Zhuangzi* 369–286 BC)
dare-ask prudent emperor POSS govern
'May I boldly ask the governing of a prudent emperor?'

Of the various functions of kaN presented above, epistemic *kánn* in declarative sentences, *kám* (neutral and presumptive) questions, and both in rhetorical uses, studies have shown that the rhetorical usage was developed early (Zhang 1990, Wei 2010, Liu 2013 among many others). KaN then later developed epistemic and conjectural meanings (Cheng 2000, 2003; Yen 2012, among many others), typically occurring before the predicate or the modals, as exemplified in (1); see R. L. Cheng (1997), Lâu (2010a, b), Lien (2011), among others. The neutral question use of kaN in modern usage has been gaining more prominence recently (Wang and Lien 2001; Wei 2010; Liu 2013). In her study of various dialects of Southern Min question types, Liu (2013) adopts M. Zhang's (1990) development sequence of the same cognates (*kam, kan, ka*^{n}) in Xianmen dialect, in which three types have been categorized: (i) rhetorical (*nandao, zenme* 'how come') or evaluative meaning (*perhaps, afraid*), (ii) conjecture/ supposition *tuidu* (*mofei, probably, really?*), and (iii) neutral question use, as schematized below.

(23) Rhetorical *fanjie* "kaN" ↘
Evaluative *guliang* "kaN" ↗ Conjecture "kaN" / Supposition *tuidu* → Neutral inquiry *kám*

Following this line of thinking, Liu (2013), in her field study of various dialects of Southern Min, has found that the first two types are used more often in conformity with Wei's (2010) account. However, she has further observed that the *kám*-VP neutral question is growing more common than other question types especially for participants aged from 15~34 (similar results reported in Wang and Lien 2001), and preponderantly used by Tainan accent participants (more than 50% among various questions types: VP-bo/bue, VP-or-not-VP, VP-m/bo-VP, and *kám*-VP).

These typological and functional studies provide us insight to the nature of kaN in TSM. Previous synchronic studies which have simply focused on *kám* questions may fall short of capturing the whole picture of kaN, for example Wu's (2015) analysis of treating *kám* as a polarity particle with [±Pol] feature (cf. Holmberg 2015). By contrast, the current paper proposes that kaN intrinsically is a non-veridical operator, and the question or epistemic readings are derived. In light of Tsao's (1993)

and Y. Cheng's (2000) observations, the morpheme kaN has two allomorphs, *kám* and *kánn,* in complementary distribution. Use of the former conveys the speaker's doubt and inquires about the existence or possibility of the constituent proposition, *P,* expressing this in the form of a question. Use of the latter form indicates that the speaker speculates on the possibility of *P,* in a declarative sentence form. This line of thinking is supported by the examples in (24), which R. L. Cheng (1997) notes is three-ways ambiguous, corresponding to (i) a *kám* question, (ii) an epistemic supposition with *kánn*, and (iii) a rhetorical use.

(24) 你 敢 袂曉 駛 直直 (R. L. Cheng 1997: 260)
Lí kaN bē-hiáu sái tit-tit
he kaN cannot drive straight
'Can't you drive straightly?'
i. The speaker asks the addressee to respond to the speaker's assertion.
ii. The speaker asserts [speculates] that the addressee should be able to drive straight.
iii. The speaker claims [presumes] and complains that the addressee is not driving straight.

2.2 KaN as a non-veridical operator

In the previous section, we have seen that kaN can precede epistemic modals (e.g., in (2) and (3)), deontic modals as in (1), existential verbs (21), and the subject as in (6), but cannot occur after these modals or existential verb. In addition, kaN cannot immediately precede the regular verb as in (25). This indicates its position is higher than modals and the existential verb. We further show that *kám* should not be categorized as a type of MC V-not-V question.

(25) a. *伊 敢 來?
I kám lâi?
you KAM want come
'Does he come?"
b. *伊 敢 來.
I kánn lâi.
you KANN want come
'He probably comes.' (Cheng 2000: 35)

Likening *kám* to MC alternative questions, Huang (1988, 1991), Huang *et al.* (2009: 253) have suggested that TSM *kám* be a type of V-not-V as such question forms are in complementary distribution; for example (26b) is ungrammatical as the V-not-V form and *kám* seem to compete for the same position.

(26) a. 阿財是毋是醫生?
A-Tsai si-m-si i-sing
A-Tsai SI-not-SI doctor

b. *阿財敢是毋是醫生? (TSM: Shen 1997: 80 #(12))
*A-Tsai kam si-m-si i-sing?
A-Tsai KAM SI-not-SI doctor
"Is A-Tsai a doctor or not?"

However, questions arise as to what extent TSM actually allows V-not-V forms. Hsieh (2001) has noted that there is only a restricted number of verbs that are allowed in this form, limited to *sī* 'be', *bat* 'know', and modals like *kánn* 'dare', and V-not-V questions are not as productive as those in MC – also see Tang (1999), and Hagstrom (2005). V-not-V forms using other verbs are considered unacceptable in TSM according to our native informants, as shown in (27).

(27) a. *你 恨不恨/??愛不愛這個人? (TSM: vs. Huang 1991: 327)
Lí hūn-m̄-hūn/ài-m̄-ài tsit-ê lâng?
you hate-not-hate/like-not-like this person
"Do you hate/like this person?"

b. *你 走毋走／行毋行? (TSM)
*Lí tsáu-m̄-tsáu / kiânn-m̄-kiânn?
you run-not-run / walk-not-walk
'Do you run / walk or not?'

Since V-not-V is not productive in TSM, it is not clear whether the ungrammatical (26b) is due to any allomorphic complementary distribution between *kám* and V-not-V (as Huang suggested) or the prohibition against its co-occurrence with *sī-m-sī*. Thus, it can be concluded that *kám* is not the counterpart of MC V-not-V. Additionally, we follow the view present in other works that *kám* is parallel to TSM *sī-m-sī* and MC *shi-bu-shi* in questions. This has a consequence that *kám*, *sī-m-sī* (*shi-bu-shi*) should be distinguished from and structurally higher than MC V-not-V, cf. Hsieh (2001), vs. Gasde (2004).

Another reason for not equating *kám* with V-not-V is that while MC V-not-V questions cannot be modified by "predicate-related adverbs" including temporal/ frequency/ manner/ subject-oriented/ reason/ instrument adverbs, etc.), as acknowledged by Ernst (1994) and Law (2006), etc. in (28), *kám* can combine with adverbs such as *tiānn-tiānn* 'often', *hán-tit* 'seldom', *bô-tiānn-tiānn* 'not.often' and precedes these elements. If *kám* were to be parallel to MC V-not-V, TSM examples such as (29) should not have been possible. Note that in (29) kaN cannot appear after these adverbs, repeated from (19).

(28) *Zhangsan changchang/quanshenguanzhudi kan-bu-kan dianshi? -MC
Zhangsan often/attentively watch-not-watch TV
'Does Zhangsan watch TV often/attentively?'

(29) 伊 敢 定定/罕得/無定定 來? = (19)
í kám tiānn-tiānn/hán-tit/bô-tiānn-tiānn lâi?
you KAM often/seldom/not-often come
"Do you often/seldom/not often come?"

We therefore assume that the kaN particle lexically is an adverb (Cheng 2000, 2003) that merges with a proposition taking projections, such as TP, ModP or *v*P, but not VP.[5] Moreover, it has syntactic non-veridical [? Q] feature, whose positive and negative value is to be checked via covert raising to Int(erogativeP or C(lause)T(ype) in the clause left periphery to be rendered as either a question *kám* or epistemic *kánn* sentences.[6]

(30) [IntP/CT [±Q] … ^ [TP ^ [ModP … ^ [vP …[VP]]]]]
("^" indicating the possible positions of kaN)

Thus, our analysis of kaN as a non-veridical operator explains the observation that both question *kám* and epistemic *kánn* do not contribute to the truth condition of the utterance. This is in line with the issues related to nonveridical contexts which may include modality (Beaver and Frazee 2016) and inquisitive sentences (Giannakidou 1998, 2001, 2013; Giannakidou and Mari 2018; and references cited therein), as they do not entail the proposition they combine with, as in (31).

(31) a. Did Paul see a snake? ↛ Paul saw a snake.
b. Paul may have seen a snake. ↛ Paul saw a snake
(Giannakidou 2001: 672)

---

5. Hsieh (2001) positions *kám* in T, which is argued to be the locus of yes-no question, whereas A-not-A [+Q] (such as in Suzhou) is suggested to be located in the head of QP, lower than T. However, our analysis does not restrict kaN's position to T^0 on account of its pre-predicate distributions on a par with those of modal adverbs.

6. The contrast in (i) indicates that wh-indefinite licensing requires a particular syntactic configuration, e.g., Li (1992), vs. Shaffar and Chen (2001); that is, kaN should be syntactically higher than the subject *siánn-lâng*.

(i) a. 敢 (有)啥人 漏洩 這个 秘密
kaN ū siánn-lâng lāu-siap̍ tsit-ê pì-bit̍
kaN have what-person disclose this-CL secret
'Did anyone disclose this secret?/Probably someone disclosed this secret.'
b. *啥人 敢漏洩 這个 秘密
siánn-lâng kaN lāu-siap̍ tsit-ê pì-bit̍?
what-person kaN disclose this-CL secret

In addition, as the non-veridical operator can license polarity items (Giannakidou 1998, 2001 among many others), kaN can do so too. *Siánn-mih* 'what thing' is interpreted with a *what*-indefinite reading in *kám* question (32), and *kánn* sentence (33).[7]

(32) 伊 敢 有 講 啥物?
I kám ū kóng siánn-mih?
s/he KAM have say what-thing
'Did s/he say anything?'

(33) 伊 敢 有 講 啥物.
I kánn ū kóng siánn-mih.
s/he KANN have say what-thing
'S/He probably said something.'

2.2.1 *Island sensitivity*

Shen (1997) has noted that the occurrence of *kám* in questions is restricted by typical island conditions.[8] Here we further show that the same island sensitivity also occurs with *kánn* cases, as in (34b) through (37b). This indicates that non-veridical kaN needs to raise to CT/IntP to check the clause type feature.

(34) Sentential subject
a. *[伊 敢 有 來] 較 好? (TSM: Shen 1997: 61 #(48))
*[I kám ū lâi] khah hó
he KAM have come more better
b. *[伊 敢 若 有 來] 較 好.
*[I kánn-na ū lâi] khah hó
he KANN-NA have come more better
'*It is better that (it seems to me) he can come.'

(35) Complex DP
a. *伊佮意 [敢 講 英語] 的 人 (TSM: Shen 1997: 67 #(59))
*I kah-ì [kám kóng Ing-gí] ê lâng
he like KAM speak English Comp man
"*Does he like the person who whether speaks English or not?"

7. TSM speakers who do not use epistemic *kánn* do not have intuitions about this example; instead they use *kánn-ná*, which serves the same purpose for the current study. We will use *kánn-ná* to check the island sentences in the following section.

8. Huang (1991) was the first to show the island sensitivity observed in MC V-not-V sentences. Though we have shown that TSM kaN is not parallel to MC V-not-V, the ungrammatical sentences (34) through (37) indicate that kaN operator requires covert raising as well.

b. *伊佮意 [敢 若 講 英語] 的 人.
*I kah-ì [kánn-ná kóng Ing-gí] ê lâng
he like KANN-NA speak English Comp man
'?*He likes the person who (it seems to me that) speaks English.'

(36) Adjunct island
a. *這件 代誌 [共 伊 敢 無 來] 無關係? (TSM: L.-S. Huang 2016: 70)
*Chit-kiāⁿ tāi-chì [ka i kám bô lâi] bô-koan-hē
this matter with he KAM not come not-have-relation
'*Doesn't it have to do with whether he will not come or not?'
b. *這件 代誌 [共 伊 敢若 無 來] 無關係.
*Chit-kiāⁿ tāi-chì [kah i kánn-ná bô lâi] bô-koan-hē
this matter with he KANN-NA not come not-have-relation
'*This matter has nothing to do with that probably he would not come.'

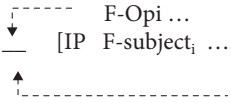
(37) wh-island
a. *我 知影 [伊 為啥物 敢 自殺] ? (TSM: Shen 1997: 68 #(62))
*Góa chai-iáⁿ [i ūi-siáⁿ-mi̍h kám chū-sat]?
I know he why KAM commit-suicide
"*I know why whether he commits suicide.
b. *我 知影 [伊 為啥物 敢若 自殺].
*Góa chai-iáⁿ [i ūi-siáⁿ-mi̍h kánn-ná chū-sat]
I know he why KANN-NA commit-suicide
"*I know why probably he commits suicide."

2.2.2 *Intervention effect*

In this section, we demonstrate that the covert movement of kaN OP is further supported by the occurrence of intervention effects involving focused elements. Following the observation that quantificational and scope bearing elements appear to block covert wh-movement in German, Korean, and Japanese, creating an 'intervention effect' (Beck 1996; Beck and Kim 2006), Yang (2012, 2015) has proposed a "competition effect" in Mandarin Chinese, in which a focus operator/Op (e.g., *shi* 'be', *lian* 'even') competes for the Comp position with the question Op(erator)s binding wh-argument variables (Aoun and Li 1993; Tsai 1994) as illustrated in (39).

(38) a. 是張三吃了甚麼? (MC)
*_Shi_ Zhangsan chi-le *shenme*?
SHI Zhangsan eat-ASP what
'What was x such that it was Zhangsan who ate x?'
b. 連張三都吃了甚麼? (MC)
*_Lian_ Zhangsan dou chi-le *shenme*?
LIAN Zhangsan all eat-ASP what
'What did even Zhangsan eat?'

(Mandarin Chinese: Yang 2015: 156)

(39) 

(Yang 2012, 2015: 158)

This intervention effect is also observed in kaN sentences. When kaN occurs after a *liân*-phrase (as in (40)) or *kan-na* 'only' (42), the result is ungrammaticality; however, such forms become grammatical when kaN precedes the focused phrase as in (41) and (42).[9]

(40) a. ?*阿明連飯敢攏毋食? [10] (TSM)
A-Bîng *liân* pn̄g lóng kám m-tsia̍h?
A-Bing LIAN rice all KAM not eat
'Is it the case that A- Bîng does not eat even rice?'

---

9. Although the focus intervention effect is also observed in the MC V-not-V and *shi-bu-shi* sentences (Shyu and Huang (2018)), as shown in (i) (*lian-* 'even') and (ii) *zhi-* 'only' sentence respectively, when the focused phrase occurs after *shi-bu-shi*, as in (iii) and (iv), these sentences become grammatical. This contrast further supports the view that kaN's position is higher than MC V-not-V, and parallel to MC *shi-bu-shi*; see (41) and (42).

(i) a. *張三連飯都吃不吃? (MC)
*Zhangsan lian fan dou chi-bu-chi?
Zhangsan LIAN rice all eat-not-eat
'*Did Zhangsan eat even rice?'
b. ?張三連飯是不是 都不吃? (MC)
Zhangsan lian fan shi-bu-shi dou bu-chi?
Zhangsan LIAN rice SHI-not-SHI all not-eat

(ii) a. *張三 只 喜不喜歡 瑪莉? (MC)
Zhangsan zhi xi-bu-xi huan Mali?
"Does Zhangsan only like Mary?" (Hagstrom 2005)
b. *張三 只 是不是 喜歡 瑪莉? (MC)
Zhangsan zhi shi bu shi xi huan Mali?

(iii) 張三是不是 連飯都不吃? (MC)
Zhangsan shi-bu-shi lian fan dou bu chi?
Zhangsan SHI-not-SHI LIAN rice all not eat
'Is it the case that Zhangsan does not eat even rice?'

(iv) 張三是不是 只吃飯? (MC)
Zhangsan shi-bu-shi zhi chi fan ?
Zhangsan SHI-not-SHI only eat rice
'Is it the case that Zhangsan eats only rice?'

10. This sentence, also (ib) in footnote 9, could be acceptable when *liân pn̄g* 'even rice' is rendered as a base-generated topic element (cf. the clause-internal moved focus vs. based-generated topic *lian*-phrase in MC discussed in Shyu (1995, 2014)), irrelevant to the current discussion.

b. ??阿明 連飯敢 攏毋食。
A-Bîng *liân* pn̄g kánn lóng m-tsia̍h.
A-Bing LIAN rice KANN all not eat
'It seems that A-Bing didn't eat even rice.'

(41) a. 阿明敢 (是)連飯攏毋食? (TSM)
A-Bîng kám (sī) *liân* pn̄g lóng m-tsia̍h?
A-Bing KAM (SI) LIAN rice all not eat
'Is it the case that A- Bîng does not eat even rice?'

b. 阿明 敢若 (是) 連飯攏毋食。
A-Bîng kánn-ná (sī) *liân* pn̄g lóng m-tsia̍h.
A-Bing KANN-NA (SI) LIAN rice all not eat
'It seems that A-Bing didn't eat even rice.'

(42) a. 阿明 敢 干焦 / *干焦 敢 佮意 阿美?
A-Bing kám kan-na/ *kan-na kám kah-ì A-Bi?
A-Bing KAM only/ *only KAM like A-Bi
"Is it the case that A-Bing only likes A-Bi?"

b. 阿明 敢 若 干焦 / *干焦 敢 若 佮意 阿美.
A-Bing kánn-ná kan-na /*kan-na kánn-ná kah-ì A-Bi?
A-Bing KANN-NA only/ *only KANN-NA like A-Bi
"It seems that A-Bing only likes A-Bi."

While Yang (2015: 174) shows that downward entailing/DE quantificational phrases like *meiyouren* 'nobody' or *henshaoren* 'few people' intervene the covert movement of the V-not-V operator in MC (43), we further show that kaN also observes the intervention effects (45), presumably same with MC *shi-bu-shi* (44).

(43) *很少人/沒有人修不修車? (MC: Yang 2015: 174)
*Henshaoren/ Meiyouren xiu-bu-xiu che ?
few.people/ nobody fix-not-fix car
'Do(es) few people/nobody fix cars or not?'

(44) *很少人/沒有人是不是修車?
*Henshaoren/ Meiyouren shi-bu-shi xiu che ?
few.people/ nobody SHI-not-SHI fix car
'Do(es) few people/nobody fix cars or not?'

(45) *無 講 蓋 濟 人/ *無 人敢 是 會曉 修理 車?
*Bô kóng kài tsē lâng / *Bô lâng kám sī ē-hiáu siu-lí tshia?
not-have.say very many people/ not-have people KAM SI can fix car

(46) a. 敢是無講蓋濟人/ 無人會曉修理車?
Kám sī bô kóng kài tsē lâng/ bô lâng ē-hiáu
KAM SI not-have say very many people/ non-have people can
siu-lí tshia?
fix car
'Is it that few people/nobody can fix the car?'

b. 敢若是無講蓋濟人 / 敢若是無人會曉修理車.
Kánn-ná sī bô kóng kài tsē lâng/ Kánn-ná bô lâng
KANN-NA SI not very many people/ KANN-NA non-have people
ē-hiáu siu-lí tshia
can fix car
'It seems that few people/nobody can fix the car.'

In (45a), *kám* cannot follow downward entailing subject quantifiers like *bô kóng kài tsē lâng* 'not so many people' or *bô lâng* 'nobody'. We can attribute the ungrammaticality of TSM in (45a) to two reasons. First, topicalization of the DE quantifier tends to be less acceptable in the first place. Second, the DE quantifier phrase can be suggested to intervene covert movement of the kaN OP to a higher Int(errogative) P, as illustrated in (47). By contrast, when the DE subject quantifier remains in its subject position without being topicalized, sentence (46) is grammatical.

(47) *[IntP kaN OP< Q > …[TopP bô lângi] [TP…ti..]] --at LF

Additionally, non-DE quantifiers in TSM like *ták ê lâng* 'everyone' seem to create a similar intervention effect as well, as shown in the contrast between (48a) and (48b), although the intervention effect seems to be milder to some extent, for reasons that await future study.

(48) a. ?濟濟 人/ ?逐 个 人敢 是 攏 會曉 修理 車? (TSM)
*Tsē-tsē lâng/?Ták ê lâng kám sī lâng lóng ē-hiáu
many person/every CL person KAM SI all can
siu-lí tshia?
fix car
'Can many people/ everyone fix cars or not?'

b. 敢 是 濟濟 人/逐 个 人攏 會曉 修理 車?
Kám sī tsē-tsē lâng / ták ê lâng lóng ē-hiáu siu-lí tshia?
KAM SI many person / every person all can fix car
'Is it many people / everyone or not that can fix cars?'

Having seen the intervention effects observed in kaN sentences, in the following section, we discuss the nature of *sī* 'be' and its co-occurrence with kaN.

3. A modal analysis of *sī*

As mentioned earlier, kaN often co-occurs with *sī*, and such sentences usually encode a stronger speaker's supposition toward the proposition constituent. To better understand kaN-*sī*, we need to first consider the nature of *sī*. Among multiple functions of *sī*, Lien (2009) identifies two main types: copula and focus marker. As for *kám-sī* questions, it is tempting to treat *sī* as a focus marker. This is indeed the position taken by Lâu (2010b), and Wu (2015), the latter of whom positions *sī* or the negative *m-sī*, the focus marker (FM), as the head of FocP above TP, and *kám* bears the [±Pol] feature of the proposition that must "combine with the FM [focus marker] *sī* or Neg-FM *mi-sī*" as in (49) (p. 152). According to her, this FocP is further responsible for the answer particle *sī a* 'yes" or *m-sī* 'no.'

(49) 敢是老王有去台北?
kám sī Láu-óng ū khì Tâi-pak?
KAM SI Lauong have go Taipei
'Is it the case that Lauong went to Taipei?'

We cannot discuss question-answer patterns with *kám* sentences here due to limits of space. However, treating *sī* in Foc leaves problems unexplained. First, sentence (6a), repeated below in (50), conveys speaker's supposition of the probability of *P*: you (the hearer) want to come, and the speaker's intention to confirm his/her supposition. Now consider (51) with negative *m-sī*, which however does not differ from affirmative (50): the speaker in both sentences conveys his/her strong supposition toward *P*: you, the hearer, want to come. In other words, the negation here does not operate on the clause proposition. By contrast, this is not expected for regular negation operating on focus. In (52b), the negation negates the focused phrase *kan-na* DP 'only' rendering *m-nā*/ *m-sī kan-na* 'not only' DP.

(50/6a) 敢是你欲來…?
Kám sī lí beh lâi
KAM SI you want come
i. "Is it you that will come?"
ii. "Is it the case that you will come?"

(51) 敢毋是你欲來…?
Kám m-sī lí beh lâi
KAM not-SI you want come
'Isn't it the case that you want to come?'

(52) a. 干焦阿明有來(爾／爾爾)。
Kan-na A-bîng ū lâi (niâ / niā-niā)
only A- bîng have come
'Only A-bîng came.'

b. 毋但 / 毋是干焦 阿明 有 來，其他 的 人 嘛 有 來。
M̄-nā /m-sī kan-na A-bîng ū lâi, kî-tha(nn) ê lâng
not only/ not-SI only A-bîng have come, other people
mā ū lâi
also have come
'Not only A-bîng came, but also others came.'

One might suggest that *m-sī* in (51), which does not negate the main proposition, differs from clause-internal predicate negation. However, this point cannot be held either. Although (7), repeated below, contains a clause-internal *kám-m-sī,* it does not differ from the use of *kám-sī* in term of having the same presumption, i.e. *P,* the addressee having pearl clothes. Thus, the clause-internal *m-sī* here does not negate the main predicate either.[11]

(7) 你敢毋是 有一領珍珠寶衣? (Lien 2011: 6)
Lí kám m̄-sī ū tsi̍t-niá tsin-tsu pó-i ?
you KAM not-SI have one-CL pearl precious clothes
'Don't you have a very precious pearl clothes?'

We will show later that the negation actually operates on speaker's evaluation of his/her presupposition, coupled with the non-veridical kaN to raise uncertainty about *P.* Consequently, the interface between syntax and discourse is called for. We will come to this in turn.

3.1 Assertion of a proposition vs. assertion of a proposition's truth

We have shown that kaN-*sī* contributes speaker's presumption of the proposition and its negative kaN-*m-sī* does not negate the main proposition. This leads us to reconsider the widely held view of *sī* as being a focus marker or a marker asserting the propositional constituent; cf. rich literature on Mandarin *shi*. Moreover, previous studies on Mandarin *shi* (presumably same as TSM *sī*) have largely assumed that the *shi* sentence does not differ from the non-*shi* sentence in that they both assert the proposition as there is no difference in the truth-condition of the sentences. It

---

11. This point can be further supported by the answers to these questions. *Tio̍h–ah, hènn – ah* confirms speaker's presupposition, rather than *sī – ah* in answering (50), especially for native speakers who are less influenced by Taiwan MC.

(i) A. 著–啊／嘿–啊／*是–啊，伊 欲 來。
Tio̍h–ah / Henn–ah / *Sī–ah, i beh lâi.
right–SFP / yes–SFP / *yes–SFP, he want come
"Yes, he wants to come."

is beyond the scope of the current study to delve into the distinctions of *sī/shi* and non-*sī/shi* sentences, which will be left for future work.[12] Nevertheless, we suggest that *sī* be better treated as a modal category (cf. Huang's (1988) modal analysis of MC *shi*) on account that modality refers to "any kind of speaker modification of a state of affairs," or "qualifications of states of affairs" (Nuyts 2006: 1). Specifically, we aver that *sī* is used to express speaker's full commitment to the actuality of the states of affairs or the *truth* of the proposition. In other words, we suggest that cononical sentences (without *sī/shi*) are used to assert the proposition content, whereas *sī/shi* sentences are uttered by the speaker to assert the actuality, truth of the propositional content.

This line of thinking calls for a finer distinction between the "assertion of a proposition" (in the assertoric sentence) and the "assertion of the proposition's truth" (cf. Sher and Wright 2007).[13] When a speaker utters a non-modal statement of fact (assertion), he/she is committing himself/herself to the truth of what is asserted (on account of the felicity condition in the context). By contrast, the speakers' commitment to the truth of the proposition constituent may be qualified by the use of modal terms to express his/her judgment of the possibility or necessity toward the proposition content. In the literature, 'propositional modality' is concerned with "the speaker's attitude to the truth-value or factual status of the proposition;" and "with epistemic modality speakers make judgments about the factual status of the proposition" (Palmer 2001: 24).

---

12. It is beyond the scope of this paper to compare TSM *sī* and the so-called VERUM focus (cf. Höhle 1992), particularly with regard to the VERUM focus properties discussed in Gutzmann and Castroviejo Miró (2011). We will leave this for future research.

13. In their discussion of the concept of "truth," Sher and Wright (2007) combine Kant's analysis of truth as a modality of judgment and Frege's analysis of truth as a norm, and then formulate their Immanence Thesis "as the view that truth lies at the juncture of three basic modes of thought" (p. 295). Their first *immanent mode* as the mode of "attributive thinking" ("Pegasus is a flying horse"), a domain of "potential truth-bearers". Their second *transcendent mode* questions about the immanent thought: "Are things as ψ (immanent mode) says they are?". Then the third *normative* or *critical mode*: "a normative conception is created and an alethic property identified" (p. 298).

Sher and Wright further emphasize the role of truth plays in the "context of synthesizing cognitive states into judgments in the alethic mode, ultimately leading to the possibility of knowledge" (p. 300), which motivates the account of the cognitive and epistemic nature of truth. They address the need of distinguishing *alethic* and epistemic uses of modals on account of the mode of actuality that is often reduced to possibility mode of knowledge. Their study addressing the distinction between asserting the proposition content (truth-judgment in the "basic modes of thought") and asserting the actuality/possibility/necessity of the truth of the proposition is illuminating. Further research is needed to articulate how MC *shi* and TSM *sī* can be better explained on account of the two levels of evaluation of truth.

If we are on the right track of treating *sī* as an epistemic modal, its translated expressions, *it is true, indeed,* indicate its function of making evaluation/judgment of the *actuality/factuality* or truth of the status of the proposition. This then follows from the fact that *shi/sī* sentences are not uttered out of the blue, unlike non-*shi/ sī* counterparts. Moreover, the speaker's judgment can be qualified by being preceded by evaluative adverbs, such as *tik-khak* 'indeed' or the possibility modal like *khó-lîng* and *kann* in (53b).[14]

(53) a. 阿明 是 有 來.
A-bîng *sī* ū lâi
A-bîng SI have come
'It is true that A-bîng came.'

b. 阿明 的確 是/可能 是/ 敢是 有 來.
A-bîng tik-khak sī/ khó-lîng sī/kann sī ū lâi
A-bîng indeed SI/ possible SI have come
'Indeed/Possibly A-bîng came.'

Consequently, our proposal naturally explains why *sī*, as the basic type of the notion of truth (cf. Portner 2009: 10), can be collocated with other (extended) epistemic modals, such as *it-tīng sī* 'definitely,' *tik-khak sī* 'truly,' *khó-lîng sī* 'possibly' (cf. the study of TSM modals in Hsin and Tang 2004) as in (53) and (54), rather than with deontic modals conveying permission 'can' *ē-sái*, or ability *ē-hiáu* in (55).

(54) 伊一定(是)/的確(是)/可能 (是)去看電影了
i it-tīng (sī)/ tik-khak(sī)/ khó-lîng sī khì khuànn tiān-iánn-ah.
he definitely SI/truly SI/ possibly SI go see movie SFP
'He surely/definitely/possibly went to see a movie.'

(55) a. 我會使 (*是)去看電影了
Guá ē-sái (*sī) khì khuànn tiān-iánn-ah.
I may SI go see movie SFP
'I can go to see a movie.'

b. 這條歌你會曉 (*是)唱袂?
Tsit tiâu kua lí ē-hiáu (*sī) tshiùnn-bē?
This-CL song you able sing not

The proposed modal analysis of *sī* further solves the long-standing puzzle of the impossibility of the "clefted object focus" in *sī* sentences. Like other pre-predicate modals, *sī* naturally has to precede the predicate. It has been widely noted that TSM

14. The co-occurrence of *sī* and epistemic modals is reminiscent of the "modal spread" phenomenon discussed in Giannakidou and Mari (2018), in the sense that two modal terms are interpreted as a single modality.

sī (and MC *shi*) cannot occur after the main verb and immediately precede the object; see Shyu's (2016) review of MC *shi*. Previous cleft analyses of TSM *sī* (MC *shi* as well) cannot explain why *sī* can immediately precede the subject (rendering "subject focus") and the main predicate, but cannot immediately precede the object for the intended "object focus", a phenomenon not attested in English and many Indo-European languages.

(56) 是伊打破. (Lien 2009: 748)
sī i phah phoa.
SI he phah-phuà.
'HE broke it.'

(57) 我是罵 (*是)益春，不敢罵你. (Lien 2009: 751)
Guá sī mā (*sī) Ik-tshun, m̄ kánn mā lí
I SI scold Yichuan not dare scold you
'I scolded Yichun, not you.'

Like other epistemic modals functioning as raising predicates, these elements may precede the subject as well, echoing Huang's (1988) analysis of categorizing MC *shi* into a raising predicate.

(58) 一定(是)/的確(是)/可能 (是) 伊去看電影了
it-tīng (sī)/ tik-khak(sī)/ khó-lîng (sī) i khì khuànn tiān-iánn-ah.
must SI/ definitely SI/ possibly SI go see movie SFP
'He surely/definitely/possibly went to see a movie.'

Finally, our epistemic modal analysis of *sī* predicts that the hearer's answers to *kám-sī* questions evaluate the possibility of *P*. This applies to cases where *kám* co-occurs with other epistemic modals such as *ū-khó-lîng* 'possibly.' The answers to (59Q) question express the degree of the possiblity of *P,* rather than the truth-condition of the clause proposition.

(59) Q: 阿明 敢 有可能 咧 撾門?
A-bîng kám ū-khó-lîng leh lòng-mn̂g?
A-bîng KAM possibly Progressive knock door
'Is it possible that A-bing is knocking on the door?'
A1: 有可能 / *著 / *嘿 / *是。
Ū-khó-lîng / *Tio̍h / *Hennh / *Sī.
Possible/ *Right/ *Yeah/ *Yes.
A2: 無可能 / *毋著 / *毋是。
Bô-khó-lîng / *M̄-tio̍h / *M̄-sī.
Not-possible/ *Not-right/ *No

3.2 Nonveridical equilibrium

Our claim that kaN is a non-veridical operator categorizes the epistemic *kann* declarative sentence and the *kám* question as a natural group of expressing the inquisitive meaning. This approach lends further support to the identification of a natural class of inquisitive sentences, which convey epistemic states that allow *p* and ~*p*, including modal verbs, questions and disjunctions (Giannakidou 2013; Giannakidou and Mari 2018) in light of the inquisitive semantics developed by Ciardelli, Groenendijk and Roelofsen (2013, 2018). This type of sentences expresses an anchor's (i.e., the speaker in the non-embedded sentences) conjecture on the propositional content. One of the issues concerns whether questions and assertions are necessarily dichotomous and categorical as traditionally thought. Giannakidou (2013) and her subsequent works argue that the inquisitive sentences as a natural class do convey non-trivial informative content, and the inquisitive meaning is "semantically non-dichotomous" (p. 117). Our study shows that traditional dichotomous question and assertion categories cannot provide a full account for TSM kaN sentences, thus in support of this non-dichotomous view.

This analysis does not only pertain to the recently developed inquisitiveness, but also receives cross-linguistic support. Kang and Yoon (2020) have shown that the modalized questions like (60) and (61) are not used for requesting information but for enhancing a speaker's epistemic uncertainty. To convey the speaker' question about the possibility of the propositional contents, they may be self-addressed questions and do not necessarily obligate the hearer to respond. On account of Korean *-nka*, an inquisitive disjunction morpheme, they further claim that "three distinct notions of disjunction, questions, and possibility modality can be unified under the framework of *nonveridical equilibrium*" developed by Giannakidou 2013; Giannakidou and Mari 2018).

(60) Japanese
  a. John-ga kuru darou.
     John-NOM come DAROU
     'John is coming, I bet. ≈ Probably, John is coming.'
  b. John-ga kuru ka?
     John-NOM come Q
     'Is John coming?'
  c. Yurie-wa wain-o nomu **darou-ka**.
     Yurie-TOP wine-ACC drink DAROU-Q
     'I wonder if Yurie drinks wine.'

(Hara and Davis 2013: Examples (1),(2),(7))

(61) Korean (Kang and Yoon 2020: 210)
Con-i wusungca-i-**nka**?
John-NOM winner-be-NKA
'Maybe John is the winner, maybe not?'

As it is beyond the scope of this paper to elaborate on the comparisons of the inquisitive sentences among these languages, we will leave the study for future research. In the next section we further show how various kaN and kaN-*sī* sentences are derived at syntax-pragmatic interfaces.

4. Syntax-pragmatics interface

Having described the properties of *kám* and *sī,* in this section we discuss the derivations which render their interpretations. In light of the cartography of finer structure of CP in Rizzi (1997, 2004), Cinque (1999), among many others, significant advances have been made in representing the finer syntactic structure of the speech act domain, which has been traditionally considered to be peripheral to syntactic domain of grammar, e.g., the Speech Act Phrase (SAP) in Speas and Tenny (2003) configuring the pragmatically related "thematic" roles of the SPEAKER (agent of the speech act), the UTTERANCE CONTENT (its theme), and the HEARER (its goal). Additionally, finer syntactic structures encoding discourse functions have been proposed to further elaborate on Rizzi's ForceP in the illocutionary (ILL) domain, including not only sentential but also clause-initial particles/adverbs (Hill 2007; Haegeman 1984, 1993; Haegeman and Hill 2013; Coniglio and Zegrean 2012, and Mandarin Chinese in Pan 2015; Paul 2015, etc.).[15]

One of the motivations for assuming syntactic projections of discourse particles/words in the left periphery is that these may not affect the truth-condition of the clause, but they may modify the illocutionary force[16] of the utterance in accordance with the speaker's intentions (Coniglio and Zegrean (2012)). Another reason is that a clause type may not strictly match the intended speech act. It has been

15. Not only sentence-initial but also clause-medial or IP discourse particles have been studied: Romanian *sigur* in Hill (2007); West Flemish interjections in Haegeman (1984, 1993), vocatives in Romanian and West Flemish in Haegeman and Hill (2013), Haegeman and Weir (2015), German and Italian particles in Coniglio and Zegrean (2012), and references cited therein.

16. "Speech acts are those acts that can (though need not) be performed by saying that one is doing so" (Green 2020), later termed by Austin (1962) as 'illocutionary force' to refer to a dimension of communicative acts. Searle (1965) later revised Austin's speech acts and identified five main categories: (i) assertives, (ii) directives, (iii) commissives, (iv) expressives, and (v) declarations.

well known that sentences[17] are intended/uttered to perform speech acts (Austin (1962), and Searle (1965)); e.g., an imperative sentence being intended to perform a directive speech act. However, these two are not always in one-to-one match (Green 2020). A yes/no question may be uttered, but actually intended to perform a directive speech act, such as "*could you pass me the salt*?".

To syntactically represent particles and their relation with the discourse/pragmatic field, Coniglio and Zegrean (2012) split up the CP layer to ILL(ocutionary Force) and C(lause) T(ype), the former of which (encoding the speaker's intention) has an uninterpretable feature related to the clause type [*u* type] and an uninterpretable feature related to intentionality [*u* intent]. The CT has an interpretable clause type feature [*i* type], ensuring "the realization of syntactic operations proper of each clause type are present" (p. 17). The discourse particle has interpretable intentionality and clause type features [*i* type; *i* intent]: one "which refers to the speaker encoded in ILL and one which ensures syntactic compatibility with CT" (p. 18). ILL probes the matching goals in its domain via Multiple AGREE (valuing features with those in CT and the particle).

Turning back to our kaN sentences, we have argued that kaN has grammaticalized as a syntactic adverb and functions as a non-veridical operator that operates on/modifies modals, or *v*P, but not bare VP. It occurs in positions higher than modals and *v*P. We further postulate an epistemic modal function for *sī*. Like other epistemic elements as raising predicates, *sī* may surface either in a pre-subject position or post-subject position due to subject raising/topicalization. It is further assumed that while kaN sentences are of inquisitive sentences semantically, they have to value their syntactic clause typing feature. Specifically, the kaN OP needs to covertly raise to IntP to value either [+Q] or [-Q] syntactic feature. Table 1 summarizes the possible derivations.

Table 1. A summary of the derivations of kaN sentences

Sentence sense	SAP (speaker's) supposition	CT	
(i) *kám* neutral Q		+Q	kaN *kám* (24-i)
(ii) *kánn* declarative		- Q	kaN *kánn*(*–na*) (24-ii)
(iii) *kám* presumed Q	supposition *P*	+Q	kaN *sī kám-sī* (62) (63)
(iv) *kánn* declarative	supposition *P*	-Q	kaN *sī kánn*(*–na*)*-sī* (4)
(v) Rhetorical *kám* Q	supposition ~*P*	+Q	kaN (*sī*) *kám-sī* (8)
(vi) Rhetorical *kánn*	supposition ~*P*	-Q	kaN (*sī*) *kánn*(*–na*)*-sī* (9)

17. Sentence types are identified as (i) declarative, (ii) interrogative, (iii) imperative (König and Siemund 2007), and other types like optatives, exclamatives and *wh* exclamatives; cited in Coniglio and Zegrean (2012).

When kaN is valued as [+Q], the clause is typed (e.g. L. Cheng 1991) as an interrogative clause *kám* question, type (i) in Table 1, and when it is [-Q], it renders epistemic declarative *kánn*(*–na*) sentence, type (ii).[18]

As mentioned in section three, *sī* expresses the speaker's assertion of the actuality of the propositional content. When it co-occurs with kaN, the strong attitude is modified, turning to a weaker presupposition, thus conveying speaker's conjecture of the probability of the proposition, types (iii) and (iv), as in (62). For example, judging from the addressee's sly smile in (63), the speaker has reasons to assume that the addressee is lying (*P*), and aims to further elicit affirmation of his/her assumption.

(62) 啊阮我小弟敢 是 無轉來? 安怎? (Lien 2011: 6)
A gun sio-ti kám si bo tng lai an-choann?
Ah gún sió-tī kám sī bô tńg-lâi? Án-tsuánn?
Prt 1st.sg brother KAM SI not return how
'Is it that my brother didn't come back? What's wrong?'

(63) 我看汝笑，敢 是騙阮? (41.401 荔枝記，光緒) (Yen 2012: 103)
guá khuànn lí tshiò kám sī phiàn guán?
I see you laugh KAM SI lie us
'I saw you laugh. Did you lie to me?'

As for the speech act domain, when the speaker's supposition is *not P,* the intentionality of the speech act level is valued with the subjective use of kaN-*sī*, giving rise to rhetorical use, as in types (v) and (vi).

We have demonstrated that the proposed holistic view toward kaN and the modality nature of *sī* provide a natural account for the various functions of kaN sentences. It also lends further support to the fine structure in the left periphery, and highlights the interface effects of syntax, semantics, and pragmatics.

---

18. As *kánn* expresses speaker's evaluations, it displays main clause phenomena. Sentence (i), in which *kánn*(*–na*) co-occurs with the regular epistemic modal *khó-lîng* 'possible,' is possible. *Kánn*(*–na*) denotes *the* speaker's subject evaluation, possibly based on contextual evidence. The modal *khó-lînge* expresses the possibility of the raining.

(i) 敢 (若) 明仔載 可能 會 落雨。
Kánn(-na) bîn-á-tsài khó-lîng ē e lo̍h-hōo.
KANN(NA) tomorrow possibly will rain
"It seems to me that it will probably rain tomorrow."

5. Summary

The analysis of kaN and its multiple functions which has been developed in the paper can be said to have several advantages. First, our analysis provides a holistic view of kaN – not only considering the better known *kám* questions, but also including its close kin *kánn*(*–na*) in epistemic declarative sentences, noting that the conjectural use of kaN (*kánn*) has a longer history of use than the more often studied *kám* in neutral questions. The line of analysis pursued in the paper has opened up a new perspective on the non-veridicality of kaN: *kám* and *kánn* are related lexical elements, and it provides further insight to the nature of inquisitiveness developed in Ciardelli *et al.*, and Giannakidou *et al.* This connection is further supported by the diachronic development of this lexeme, related to speaker's supposition, conjecture, and epistemic attitude. Second, our analysis lends further support to insights made in certain previous studies; for example our claim that kaN as a non-veridical OP undergoes covert raising to check clause type [+Q] or [-Q] features echoes Huang's (1988, 1991) seminal work on MC A-not-A questions, and subsequent studies on this topic. Additionally, we have articulated the derivations of various sentence types coupled with their pragmatic intentionality as in Table 1. These are related to the non-veridicality of kaN, the epistemic modality of *sī*, and the speaker's presumption toward the clause proposition (either *P*, or ~*P*). The results of this paper thus shed new light on the inquisitive nature of kaN and its role in the syntax-semantics-pragmatics interface.

Acknowledgments

We are grateful to Henry Y.-L Chang, Miao-Ling Hsieh, James C.-T. Huang, Rei-heng Huang, Chin-man Kuo, Sêng-hiân Lâu, Hui-chi Lee, Audrey Y.-H. Li, Law Paul, Chinfa Lien, Andrew Simpson, Ting-Chi Wei, Jung-Hsiung Wu, Meng-Jung Wu for their valuable comments, and TSM informants Uî-hun Chhòa, Bûn-iām Iûnn, Bōo-tshiong Kóo, Liâm-tsì Lâu, Siōng-ian Lí, Li̍p-uí Liāu, Chiau-hôa Ông, Ī̍k-huân Ông, Su-iông Pâng, and Hong-huī Tân for their judgments.

References

Aoun, Joseph & Li, Yen-hui Audrey. 1993. *Syntax of Scope*. Cambridge: MIT Press.
Austin, John Langshaw. 1962. *How to Do Things with Words*. Oxford: Oxford University Press.
Beaver, David & Frazee, Joey. 2016. Semantics. In *The Oxford Handbook of Computational Linguistics 2nd Edition*, Ruslan Mitkov (ed). Oxford: Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199573691.013.29

Beck, Sigrid. 1996. Quantified structures as barriers for LF movement. *Natural Language Semantics* 4(1): 1–56. https://doi.org/10.1007/BF00263536

Beck, Sigrid & Kim, Shin-Sook. 2006. Intervention effects in alternative questions. *The Journal of Comparative Germanic Linguistics* 9(3): 165–208. https://doi.org/10.1007/s10828-006-9005-2

Chen, Chun-yin Doris & Shen, Shih-chung Henry. 1998. A Minimalist approach to the *kam* construction in Taiwanese. *Journal of Taiwan Normal University: Humanities and Social Science* 43(1): 15–26.

Cheng, Lisa Lai-Shen. 1991. *On the Typology of Wh-Questions*. PhD dissertation, MIT.

Cheng, Robert Liang-Wei. 1997. *Taiyu, Huayu de Jiegou ji Dongxiang III: Tai, Huayu de Shikong, Yiwen yu Fouding [Taiwanese and Mandarin structures and their Developmental Trends in Taiwan III: Temporal and spatial relations, questions and negatives in Taiwanese and Mandarin*]. Taipei: Yuan-Liou Publishing Co., Ltd.

Cheng, Ying. 2000. Shixi Minnanyu qingtaici kann he kam de yuyi yu cilei [Tentative analysis of semantics and categories of modal words kann and kam in Southern Min]. *Journal of Taiwan Language Teaching and Research* 2: 29–38.

Cheng, Ying. 2003. Cong fangyan bijiao kan qingtaici de lishi yanbian [A study on the diachronic development of Chinese modals from the perspective of the dialectal comparison]. *Journal of Taiwanese Languages and Literature* 1: 107–143.

Ciardelli, Ivano, Groenendijk, Jeroen & Roelofsen, Floris. 2013. Inquisitive semantics: a new notion of meaning. *Language and Linguistics Compass* 7(9): 459–476. https://doi.org/10.1111/lnc3.12037

Ciardelli, Ivano, Groenendijk, Jeroen & Roelofsen, Floris. 2018. *Inquisitive Semantics*. Oxford: Oxford University Press. https://doi.org/10.1093/oso/9780198814788.001.0001

Cinque, Guglielmo. 1999. *Adverbs and Functional Heads: A Cross-Linguistic Perspective.* Oxford: Oxford University Press.

Coniglio, Marco & Zegrean, Iulia. 2012. Splitting up force: Evidence from discourse particles. In *Main Clause Phenomena: New Horizons,* Liliane Haegeman, Lobke Aelbrecht & Rachel Nye (eds), 229–255. Amsterdam/Philadelphia: John Benjamins Publishing Company. https://doi.org/10.1075/la.190.10con

Ernst, Thomas. 1994. Conditions on Chinese A-not-A questions. *Journal of East Asian Linguistics* 3(3): 241–264. https://doi.org/10.1007/BF01733065

Gasde, Horst-Dieter. 2004. Yes/No questions and A-not-A questions in Chinese revisited. *Linguistics* 42(2): 293–326. https://doi.org/10.1515/ling.2004.010

Giannakidou, Anastasia. 1998. *Polarity Sensitivity as (Non)Veridical Dependency*. Amsterdam: John Benjamins Publishing Company. https://doi.org/10.1075/la.23

Giannakidou, Anastasia. 2001. The meaning of free choice. *Linguistics and Philosophy* 24(6): 659–735. https://doi.org/10.1023/A:1012758115458

Giannakidou, Anastasia. 2013. Inquisitive assertions and nonveridicality. In *The Dynamic, Inquisitive, and Visionary Life of φ, ?φ and ◇φ, a Feestschrift for* Jeroen Groenendijk, Martin Stokhof and Fran Vetmann, Maria Aloni, Michael Franke & Floris Roelofsen (eds), 115–126. Amsterdam: University of Amsterdam.

Giannakidou, Anastasia & Mari, Alda. 2018. The semantic roots of positive polarity: Epistemic modal verbs and adverbs in English, Greek and Italian. *Linguistics and Philosophy* 41(6): 623–664. https://doi.org/10.1007/s10988-018-9235-1

Green, Mitchell. 2020. Speech acts. In *The Stanford Encyclopedia of Philosophy*, Edward N. Zalta (ed). Stanford.

Gutzmann, Daniel & Miró, Elena Castroviejo. 2011. The dimensions of verum. In *Empirical Issues in Syntax and Semantics*, Olivier Bonami & Patricia Cabredo Hofherr (eds), 143–165. Colloque de Syntaxe et Sémantique à Paris.

Haegeman, Liliane. 1984. Interjections and phrase structure. *Linguistics* 22(1): 41–50. https://doi.org/10.1515/ling.1984.22.1.41

Haegeman, Liliane. 1993. The interpretation of the particle da in West Flemish. *Lingua* 90(1–2): 111–128. https://doi.org/10.1016/0024-3841(93)90063-3

Haegeman, Liliane & Hill, Virginia. 2013. The syntacticization of discourse. In *Syntax and Its Limits*, Raffaella Folli, Christina Sevdali & Robert Truswell (eds), 370–390. Oxford: Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199683239.003.0018

Haegeman, Liliane, & Weir, Andrew. 2015. The cartography of *yes* and *no* in West Flemish. In *Discourse-oriented Syntax*, Josef Bayer, Roland Hinterholzl & Andreas Trotzke (eds), 175–210. Amsterdam/Philadelphia: John Benjamins Publishing Company. https://doi.org/10.1075/la.226.08hae

Hagstrom, Paul. 2005. A-not-A questions. In *The Blackwell Companion to Syntax,* Martin Everaert & Henk van Riemsdijk (eds), 173–213. Oxford: Blackwell.

Hill, Virginia. 2007. Romanian adverbs and the pragmatic field. *The Linguistic Review* 24(1): 61–86. https://doi.org/10.1515/TLR.2007.003

Höhle, Tilman N. 1992. Uber Verum-Fokus in Deutschen. In *Informationsstruktur und Grammatik*, Joachim Jacobs (ed), 112–141. Opladen: Westdeutscher Verlag. https://doi.org/10.1007/978-3-663-12176-3_5

Holmberg, Anders. 2015. *The Syntax of Yes and No*: Oxford University Press. https://doi.org/10.1093/acprof:oso/9780198701859.001.0001

Hsiao, Pei-Yi & Her, One-Soon. 2019. Justifying a two-way distinction of questions in Taiwanese Southern Min. *Paper presented at the 12th International Workshop on Theoretical East Asian Linguistics*, University of Macau.

Hsieh, Miao-Ling. 2001. *Form and Meaning: Negation and Question in Chinese.* PhD dissertation, University of Southern California, Los Angeles.

Hsin, Ai-li & Tang, Ting-Chi. 2004. Minnanyu qingtai fuci zhi fenlei, cixu yu renke yuanze [The type, order, and licensing principle of modal adverbs in Taiwan Southern Min]. *Journal of Taiwanese Languages and Literature* 2, 1–19.

Huang, C.-T. James. 1988. Shuo shi he you [On 'be' and 'have' in Chinese]. *The Bulletin of the Institute of History and Philology* 59: 43–64.

Huang, C.-T. James. 1991. Modularity and Chinese A-not-A questions. In *Interdisciplinary Approaches to Linguistics: Essays in Honor of Yuki Kuroda*, Carol Georgopoulos & Roberta Ishihara (eds), 305–332. Dordret: Kluwer Academic Publishers. https://doi.org/10.1007/978-94-011-3818-5_16

Huang, C.-T. James, Li, Y.-H. Audrey & Li, Yafei. 2009. *The Syntax of Chinese*. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9781139166935

Huang, Lu-Shan (N̂g, Liȯk-san). 2016. *A Study of Kám Questions in Taiwan Southern Min*. MA thesis, National Sun Yat-sen University, Kaohsiung.

Huang, Rui-heng Ray. 2014. Left periphery and Chinese yes-no questions. *International Journal of Chinese Linguistics* 1(2): 192–213. https://doi.org/10.1075/ijchl.1.2.02hua

Kang, Arum & Yoon, Suwon. 2020). From inquisitive disjunction to nonveridical equilibrium: Modalized questions in Korean. *Linguistics* 58(1): 207–244. https://doi.org/10.1515/ling-2019-0038

König, Ekkehard & Siemund, Peter. 2007. Speech act distinctions in grammar. In *Language Typology and Syntactic Description,* Timothy Shopen (ed), 276–324. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511619427.005

Kuo, Chin-Man. 1992. *Guoyu zheng-fan Wenju de Jiegou yu Jufa Yunyong* [*A-not-A Questions in Mandarin Chinese*]. MA thesis, National Tsing-Hua University, Hsin-Chu.

Lâu, Sêng-hiân. 2010a. *Syntax of Kám Questions in Taiwanese.* MA thesis, National Taiwan Normal University, Taipei.

Lâu, Sêng-hiân. 2010b. The Taiwanese kám and the cleft construction. *Journal of Taiwanese Vernacular* 2(2): 4–27.

Law, Paul. 2006. Adverbs in A-not-A questions in Mandarin Chinese. *Journal of East Asian Linguistics* 15(2): 97–136. https://doi.org/10.1007/s10831-005-4916-5

Li, Yen-Hui Audrey. 1992. Indefinite *wh* in Mandarin Chinese. *Journal of East Asian Linguistics* 1: 125–155. https://doi.org/10.1007/BF00130234

Lien, Chinfa. 2009. The focus marker si^{7} 是 and lexicalization of Si^{7} Mih^{8} 是乜 into what wh-words in earlier Southern Min texts. *Language and Linguistics* 10(4): 745–764.

Lien, Chinfa. 2011. Exploring three kinds of the DARE word in Southern Min: Sidelights on the hierarchical structure of functional categories. *Bulletin of Chinese Linguistics* 4(2): 271–282. https://doi.org/10.1163/2405478X-90000064

Liu, Hsiu-Hsueh. 2013. Quanzhou-qiang Minnanyu de zhongxing wenju [Neutral questions in Quanzhou-accented Southern Min]. *Language and Linguistics* 14(2): 277–314.

Liu, Jian, Jiang, Lansheng, Bai, Weiguo & Cao, Guangshun. 1992. *Jindai Hanyu Xuci Yanjiu [Studies on Functional Words in Contemporary Chinese*]. Yuwen Publisher.

Nuyts, Jan. 2006. Modality: Overview and linguistic issues. In *The Expression of Modality*, William Frawley (ed), 1–26. Berlin: Mouton de Gruyter.

Palmer, Frank Robert. 1986. *Mood and Modality*. Cambridge: Cambridge University Press.

Pan, Victor Junnan. 2015. Mandarin peripheral construals at the syntax-discourse interface. *The Linguistic Review* 32(4): 819–868. https://doi.org/10.1515/tlr-2015-0005

Paul, Waltraud. 2015. *New Perspectives on Chinese Syntax*. Germany: Walter de Gruyter GmbH & Co KG. https://doi.org/10.1515/9783110338775

Portner, Paul. 2009. *Modality* (Vol. 1). Oxford: Oxford University Press.

Rizzi, Luigi. 1997. The fine structure of the left periphery. In *Elements of Grammar: Handbook of Generative Syntax*, Liliane Haegeman (ed), 281–337. Amsterdam: Kluwer Academic Publishers. https://doi.org/10.1007/978-94-011-5420-8_7

Rizzi, Luigi. 2004. *The Structure of CP and IP: The Cartography of Syntactic Structures* (Vol. 2). New York: Oxford University Press.

Schaffer, Wolfram & Chen, Lansun. 2001. Yes-no questions in Mandarin and the theory of focus. *Linguistics* 39(5): 837–870.

Searle, John R. 1965. What is a speech act. In *Philosophy in America,* Maurice Black (ed), 221–239. London: Allen and Unwin.

Shen, Shih-Chung Henry. 1997. *On Taiwanese kám constructions*. MA thesis, National Taiwan Normal University, Taipei.

Sher, Gila, & Wright, Cory D. 2007. Truth as a normative modality of cognitive acts. In *Truth and Speech Acts: Studies in the Philosophy of Language,* Dirk Greimann & Geo Siegwart (eds), 280–306. New York: Routledge Taylor & Francis Group.

Shyu, Shu-ing. 1995. *The Syntax of Focus and Topic.* PhD dissertation, University of Southern California,

Shyu, Shu-ing. 2014. Topic and focus. In *The Handbook of Chinese Linguistics,* C.-T. James Huang, Y. H. Audrey Li & Andrew Simpson (eds), 100–125. UK: Wiley Blackwell. https://doi.org/10.1002/9781118584552.ch5

Shyu, Shu-ing. 2016. *Shi…de*. In *Encyclopedia of Chinese Language and Linguistics*, Rint Sybesma, Wolfgang Behr, Yueguo Gu, Zev Handel, C.-T. James Huang & James Myers (eds). Netherland: Brill.

Shyu, Shu-ing & N̂g, Liȯk-san (Huang, Lu-shan). 2018. Polarity question and focus: A case in Taiwanese Southern Min Kám. *Paper presented at the 12th International Symposium on Taiwanese Languages and Teaching*. National Sun Yat-sen University.

Speas, Peggy & Tenny, Carol. 2003. Configurational properties of point of view roles. In *Asymmetry in Grammar Volume 1: Syntax and Semantics*, Anna Maria Di Sciullo (ed), 315–343. Amsterdam: John Benjamins Publishing Company. https://doi.org/10.1075/la.57.15spe

Tang, Ting-Chi. 1999. Hanyu de zhengfan wenju: Beijingyu yu Minnanyu de bijiao fenxi [A-not-A questions in Chinese: A comparison between Mandarin and Southern Min]. *Language and Linguistics* 5: 27–71.

Tsai, W.-T. Dylan. 1994. On nominal islands and LF extractions in Chinese. *Natural Languages and Linguistic Theory* 12(1): 121–175. https://doi.org/10.1007/BF00992747

Tsao, Feng-fu. 1993. Taiwanhua dongci yanjiu [A study of verbs in Taiwan Southern Min]. *National Science Council Research Report (No. NSC 81-0301-H-007-508)*.

Wang, Pen-Ying & Lien, Chinfa. 2001. A-not-A questions in Taiwanese Southern Min. *Journal of Chinese Linguistics* 351–376.

Wei, Pei-chuan. 2010. Shi fou-V(NP) jushi de youlai [The history of the interrogative structure *shi fou*-V(NP)]. *Language and Linguistics* 11(2): 335–392.

Wu, Meng-Jung. 2015. *The Syntax of Polar Questions and their Answers in Taiwanese*. PhD dissertation, Newcastle University.

Yang, Barry Chung-Yu. 2012. Intervention effects and *wh*-construals. *Journal of East Asian Linguistics* 21: 43–87. https://doi.org/10.1007/s10831-011-9080-5

Yang, Barry Chung-Yu. 2015. Locating wh-intervention effects at CP. In *The Cartography of Chinese Syntax*, Wei-Tien Dylan Tsai (ed), 153–186. Oxford & New York: Oxford University Press. https://doi.org/10.1093/acprof:oso/9780190210687.003.0005

Yen, Hsiu-shan. 2012. *Taiwan Minnanyu "Gan" de Duoyixing Ji Jieceng Jiegou Tantao [Exploration of the Polysemy of "KAM" in Taiwanese Southern Min and Its Hierarchical Structure]*. PhD dissertation, National Hsinchu University of Education, Hsin-Chu.

Zhang, Min. 1990. *Hanyu Fangyan Fanfu Wenju de Leixingxue Yanjiu: Gongshi Fenbu ji qi Lishi Yunhan [Typolotidal Studies of A-not-A Questions in Chinese Dialects: Chronological Distribution and Diachronic Implications*]. PhD dissertation, Peking University, Beijing.

Sentence-internal discourse particles in Mandarin Chinese

Wei Wei
Peking University

This article investigates a group of sentence-internal discourse particles in Mandarin Chinese. We start with the general properties and proposes an approximation of the effects of three particles: *yòu*, *dào*, and *yě*. We then turn to their word order in the main clause and restricted distribution in embedded clauses. The observations are analyzed in correlation with functional projections in an expanded CP domain. In terms of meaning contributions, based on the Table model of discourse (Farkas and Bruce 2011), the core meaning of *dào* is captured as contributing to the speaker's discourse commitment, which marks misalignment between the discourse participants' beliefs. The findings suggest viable formal frameworks for explaining the distribution, meaning, and pragmatic effect of discourse particles.

1. Introduction

Discourse particles can be identified by phonological and morphosyntactic criteria. The 'particle' part indicates their syntactic and phonological properties: they are non-inflecting parts of speech, phonologically small in size, most frequently monosyllabic, and usually not stressed. Typical members of discourse particles are German modal particles (e.g., *doch*, *ja*, *wohl*, etc.), Romanian pragmatic particles (e.g., *hai* in Haegeman and Hill 2013), and Mandarin Chinese sentence-final particles (henceforth SFPs). SPFs communicate various discourse-related meanings, ranging from illocutionary force, evidentiality, and speaker's attitude. They have received much attention in the past few decades. Descriptive approaches focus their attention on describing the basic meaning and function of particles from their uses in various contexts (Zhu 1982; Li and Thompson 1981; Chu 1998, among others); generative approaches may analyze how SFPs relate to functional projections in the left periphery (Tang 1990; B. Li 2006; Paul 2014, 2015; Paul and Pan 2017; among others). In contrast to the many studies of SFPs, the current article considers a

https://doi.org/10.1075/la.272.18wei

group of grammatical elements that occur in the preverbal and post-subject position – a position typical of adverbs in Mandarin Chinese, namely the left edge of verb phrases. These elements are mostly monosyllabic and traditionally treated as adverbs in the Chinese literature and teaching grammar. Although some disyllabic members of this group can occur at the sentence-initial position, monosyllabic ones can never be sentence-initial. This restricted syntactic distribution very much resembles that of German discourse particles, and therefore we call them Sentence-internal discourse particles (henceforth S-internal DisPs).

Unlike aspectual or manner adverbs, these elements have discourse-related meaning contribution in that they convey information concerning the speaker's attitudes and epistemic states towards the propositional content of an utterance, and therefore their presence does not affect the truth of the proposition expressed (i.e., non-truth conditional). Some members of this group also function as adverbs with more concrete meanings in contemporary Chinese, mostly focus-sensitive particles (e.g., *yě* 'also' and *yòu* 'again'). It has been assumed that that their discourse-related uses derive from the more basic adverbial uses, but their discourse-related meaning contributions are often elusive or ineffable and cannot be straightforwardly explained via their basic meanings.

The structure of the article is as follows: Section 2 introduces the general properties of S-internal DisPs in Mandarin Chinese and proposes a first approximation of their discourse effects. Section 3 turns to their syntactic properties, with a focus on their distribution in main and embedded clauses, and the correlation with functional projections in an expanded CP domain. Section 4 presents an analysis of their meaning contribution couched within the dynamic semantic framework – the Table model (Farkas and Bruce 2010). This analysis highlights how they communicate speaker expectations to the participants in discourse. Section 5 concludes with implications of the proposed analytical framework and thoughts for future research.

2. General meaning and properties of S-internal DisPs

2.1 Meaning contributions and discourse effects

DisPs, in general, provide commentary on the speaker's attitude towards the propositional content of an utterance; they can also convey the speaker's assumptions about the epistemic states of his interlocutors. Zimmermann (2011) defines DisPs as being "used in order to organize the discourse by expressing the speaker's epistemic attitude towards the propositional content of an utterance, or to express a speaker's assumptions about the epistemic states of his or her interlocutors concerning a particular proposition" (Zimmermann 2011: 2012). By using discourse

particles, "the speaker gives the hearer clues to how he should interpret what has been said and where he should integrate it, as well as clues about how the speaker views the [content of an] utterance, how the previous utterance was integrated [into his view of the conversation], or how he has assessed the expectations of the hearer." (Thurmair 1989: 94). [1] In other words, they indicate the knowledge and belief of the speaker with regard to the proposition expressed by an utterance. For this reason, they are also called mood or modal adverbs in some Chinese literature. DisPs are different from discourse markers that are discourse-structuring expressions. Discourse markers like '*I mean*' and '*you know*' in English mark boundaries of units of talk (Schiffrin 1987: 31) and function like "discourse glue" (Fraser 1990: 385). Some indicate turn-taking or a change of topic, and some can be used to conclude a discourse sequence. However, if discourse markers are defined broadly as markers that play a role in establishing coherence relations in discourse, DisP is a subtype of discourse markers.

Below I give a few examples of S-internal DisPs in Mandarin Chinese to illustrate their discourse effects as stated above. The first example involves *yòu* (lit. 'again'). In (1), which contains no DisP, Mary's utterance can be understood as proffering a piece of information about the weather. The addressee, John, can accept, confirm, or contradict Mary's assertion. Alternatively, John can infer that Mary, by mentioning the weather, is questioning why he is bringing an umbrella. He may respond with an explanation to justify his behavior (e.g. '*I'm returning it to a colleague.*').

(1) [Context: Mary and John were leaving the house for work in the morning. John is packing an umbrella into his bag.][2,3]
   a. Mary: Jīntiān bú huì xiàyǔ.
      today not will rain
      'It won't be raining today.'

---

1. Originally in German and English translation from Kraus (2018: 183).

2. The abbreviations used in this article are as follows: PERF: perfective aspectual marker; SFP: sentence final particle; TOP: topic marker; NML: nominalizer; CL: classifier; DE: pre-nominal modification marker or postverbal resultative marker *de*; ASP: aspectual marker; BA: marker of the *ba* construction.

3. Unless otherwise noted with the source, Mandarin Chinese data used in this article are based on the author's introspection and consultation with at least three native speakers of northern Mandarin Chinese. Aside from examples from the literature, examples sentences are from the following two corpora:

CCL: Peking University CCL Corpus (http://ccl.pku.edu.cn:8080/ccl_corpus/index.jsp)

BCC: Corpus provided by the Beijing Advanced Innovation Center for Language Resources (http://bcc.blcu.edu.cn/)

b. Mary: Jīntiān *yòu* bú huì xiàyǔ.
today YOU not will rain
'It won't be raining today.'
(Implied: It's odd that you're bringing an umbrella.)'

The scenario shows that the illocutionary force of a "plain" assertion act in (1a) (with no modification from intonation) is open to different interpretations and may lead to different perlocutionary acts. In contrast, in (1b), when the particle *yòu* is used, the only available interpretation is that Mary is questioning the felicity of John's act of bringing an umbrella and signaling that John's behavior violated her expectation, as indicated by the implied meaning in the gloss. In this case, the cooperative response from John would be to address the reason for his action. Accepting the information with a 'yes' response becomes pragmatically marked because the speaker would come off as indifferent as he unilaterally dismisses the implied issue raised by Mary. We can say that the use of *yòu* helps John figure out how Mary has intended her assertion act to be interpreted in the context. Note that in (1b), when *yòu* is a DisP and hence not stressed, it cannot mean 'again.' To express the meaning of 'again' as in 'Again, it won't be raining today,' *yòu* must be stressed.

Turning to another example, the particle *dào* (lit. 'upside down') expresses "contrariness-to-expectation." In (2), while both sentences commit the speaker to Lili being taller than Mali, the utterance with *dào* in (2b) contributes additional information related to the speaker's belief state: *dào* signals to the hearer that the speaker views this information as being contrary to her prior expectation.

(2) [Context: Wang has two daughters, Mali and Lili. The speaker has not seen the siblings for 3 years. The speaker thought that Mali would be taller than Lili because Mali is older than Lili. On entering Wang's home and seeing the two girls, the speaker said:]
a. Lìli bǐ Mǎlì gāo.
Lili than Mali tall
'Lili is taller than Mali.'
b. Lìli *dào* bǐ Mǎlì gāo.
Lili DAO than Mali tall
'(Contrary to my expectation,) Lili is taller than Mali.'

A third discourse particle *yě* (lit. 'also') softens the tone in cases of disagreement, tactful criticism, contradiction, or correction. In (3), the context is that many people have blamed the coach for the team's unsatisfactory performance. However, one team member holds a different view. By using *yě*, the utterance conveys richer and multilayered meaning, which can be roughly paraphrased as "*Although I know that you all believe the coach is responsible, I believe that we cannot put all the blame*

on the coach." The concession part is not in the propositional content but can be attributed to the use of *yě*, which leads to the effect of tactfulness in this context of disagreement.

(3) [Context: The coach of a soccer team is going to resign after the team's defeat. In an interview, some team members complained that the coach was responsible. One team member said:]
Qíshí hěnduō shíhòu *yě* bù néng quán guài jiàoliàn. (CCL)
actually many time YE not can all blame coach
'Actually, in many cases, (we) cannot put all the blame on the coach.'

From a functional perspective, we can further see the toning-softening effect of *yě* in discourse, as its pragmatic effect is analogous to that of concession in argumentation. Concession establishes a speaker/writer's credibility with their audience and presents the speaker/writer as thoughtful and reasonable. The implied concession acknowledges the discrepancy between the speaker's and the addressee's belief states; therefore, it can signal that the speaker has expected different views toward the issue under discussion.

2.2 General properties

Before providing a formal analysis of their syntax and semantics, I present the general properties of S-internal DisPs. First, such elements can occur multiply in a single clause, as illustrated in (4) with *dǎo~yè* order and *yě~dào* order in (5). In these two examples, according to native speakers' judgments, the order of *dǎo* and *yè* can be swapped without discernable change in the pragmatic effects of polite disagreement in (4) and unexpectedness in (5).

(4) A: You're still not pleased with a man like this? He's neither fat nor thin, and good-looking…
B: Tā biéde *dào yě* hái bú cuò, jiù shì tài xǐhuān shuìjiào. (CCL)
he other DAO YE quite not bad, just be too like sleep
'He was not bad in other aspects, but it's just that he likes to sleep a lot.'

(5) [Preceding text: Auntie Wang actually has similar experienced before, …]
Yě dào bú yòng rén fúchí. (CCL)
YE DAO no need person hold.up
'(She) did not need to be held up by someone.'

However, DisPs cannot be coordinated, as illustrated in (6) with different coordinate conjunctions in Mandarin Chinese; nor can they be modified by an adverb, as in (7).

(6) Ta *yě* (*hé/gēn/érqiě) *dào* bú yòng rén fúchí.
she YE and DAO no need person hold.up
"She did not need to be held up by someone."

(7) Tā biéde (*tèbié) *dào yě* hái bú cuò.
he other extremely DAO YE quite not bad.
'He was not bad in other aspects.'

Second, they cannot appear in sentence-initial before the subject/topic, or -final position as in (8), although when the subject or topic is elided, they seem to occur in the initial position (cf. (5)).

(8) (**Yě dào*) ta *yě dào* bú yòng rén fúchí (**yě dào*).
YE DAO she YE DAO no need person hold.up YE DAO

The examples from (6) to (8) indicate that S-internal DisPs are different from most adverbs, such as evaluative and aspectual adverbs which can be modified by a degree adverb and coordinated, as shown in (9) and (10).

(9) Tóudé *hěn búxìng* érqiě *hěn bùqiǎode* zhènwáng le.
Toude very unfortunately and very inopportunely be.killed.in.battle SPF
'Toude was very unfortunately and very inopportunely killed in the battle.' (CCL)

(10) Hěn kěnéng (qíshí shì *bìrán* érqiě *yǐjīng*) tūpò fēnxī.
very likely actually be inevitably and already break.through analyticity
'It is very likely (actually it is inevitably and already) that (it) breaks through analyticity.' (CCL)

However, we cannot simply conclude that S-internal DisPs are not adverbs and belong to an independent syntactic category based on those observations. Some speaker-oriented adverbs, similar to DisPs in terms of meaning contribution, cannot be coordinated or modified. For example, *piānpiān* adds the non-truth conditional commentary such that the propositional content of the utterance contradicts the speaker's wish about the course of events (cf. Shi et al. 2017). In (11), *piānpiān* reveals the speaker's expectation that everyone should have been ready to leave and implies that the speaker finds Lisi's going to the restroom to be inopportune and unreasonable.

(11) Mǎshàng yào zǒu le, Lǐsì *piānpiān* yào qù cèsuǒ.
About.to will leave SFP Lisi PIANPIAN want go restroom
'(We're) about to leave, (but) Lisi is going to the restroom.'

In (12), *piānpiān* cannot be coordinated with another sentential adverb *gùyì* 'intentionally,' even though each of the two adverbs is acceptable in the example independently, and the unacceptability of coordination is not due to the clash of meaning of the two adverbs. Likewise, *piānpiān* cannot be modified by adverbs like *hěn* 'very.'

(12) *Lǐsì *piānpiān* érqiě *gùyì* yào qù cèsuǒ.
Lisi PIANPIAN and intentionally will go restroom
Intended: 'Lisi willfully and intentionally is going to the restroom.'

Therefore, the data in (6) to (8) are not conclusive as to whether S-internal DisPs require a special category, nor is it clearly indicative of their syntactic status as heads or phrases, a point which will be discussed further in Section 3 shortly. Finally, note that the two properties above have been observed for discourse particles in German and Italian as well (cf. Zimmermann 2011; Cardinaletti 2011).

3. Syntactic properties of S-internal DisPs

This section discusses the syntactic properties of S-internal DisPs. We first look at their position with respect to other elements in a clause in Section 3.1, and then we investigate their distribution in embedded clauses and the correlation with functional heads in the CP domain.

3.1 Linear order in the clause

S-internal DisPs appear at the left edge of a verb phrase and below subject and topic. They occur above negation, lower adverbs in Cinque's (1999: 41) system (e.g., habitual adverb *chángcháng* 'usually'), and root modals (e.g., *yào* 'want', *néng* 'be able to', *děi* 'have.to'), as illustrated in (13) and (14).

(13) [Preceding text: it rained last night.]
Tiānqì *dào* méiyòu (**dào*) liáng-xiàlai.
weather DAO not.have DAO cool-down
'(Contrary to one's expectation,) the weather did not cool down.'

(14) [Preceding text: Lisi does not talk much, but…]
Tā-de jiànyì *dào* chángcháng (**dào*) néng (**dào*) yǒu bāngzhù.
his suggestion DAO often DAO can DAO have help
'(Contrary to one's expectation,) his suggestion can often be helpful.'

They also occur above the *bǎ* structure, as shown in (15).

(15) a. *bǎ* structure:
[$_{baP}$ Subject [$_{ba'}$ *ba* [$_{vP}$ NP [$_{v'}$ v [$_{VP}$ V XP]]]]]
(Huang *et al.* 2009: Chapter 5 (77))

b. Tā (*dào*) bǎ bōcài (**dào*) dōu shèngxià le.
she DAO BA spinach DAO all be.left.over SFP
'(Contrary to one's expectation,) she left over all the spinach.'

On the other hand, the linear order between high adverbs and S-internal DisPs is not fixed. Some evidential and epistemic adverbs either precede or follow *dào*. The occurrence of different linear orders in the CCL corpus is represented numerically in (16).

(16) Numbers of examples from CCL (modern)[4]
a. *hǎoxiàng* 'seemingly'
dào ~ hǎoxiàng (76)
hǎoxiàng ~ dào (2)
b. *kěnéng* 'possibly'
dào ~ kěnéng (60)
kěnéng ~ dào (10)
c. *yéxǔ* 'probably'
dào ~ yéxǔ (11)
yéxǔ ~ dào (35)
d. *quèshí* 'indeed'
dào ~ quèshí (46)
quèshí ~ dào (2)

Evaluative adverbs *qíshí* 'actually' and *yuánlái* 'originally' generally precede *dào*. The author's native speaker intuition concerning this ordering is supported by search results from the CCL corpus: we found no instance of the sequence *dào~ qíshí* 'actually' and *dào ~ yuánlái* 'it turns out', but 49 examples of *qíshí ~ dào* and 6 examples of *yuánlái ~ dào*.

Finally, evaluative adverbs *zhēnde* 'truly,' *jūrán* 'unexpectedly,' *jìngrán* 'unexpectedly,' and *guǒrán* 'as expected' can only follow *dào.* One possibly unexpected combination is the co-occurrence of *dào* and *guǒrán* 'as expected,' since *dào* marks the deviation from some participant's expectation, while *guǒrán* means 'as expected' or 'as has been said.' Indeed, Wu (2008) analyzes *guǒrán* as signaling that a speaker's expectation converges with the course of events. However, when a speaker has

4. The modern subset of Peking University's Center for Chinese Linguistics (CCL) corpus contains over 581 million characters of text from a wide range of genres, published in post-imperial China (1911–present).

considered a certain course of events, he or she could nonetheless be surprised by the outcome due to the low probability that has been assigned to the causal path that leads to the current situation. This is illustrated by the example in (17): the protagonist knew that in general, practicing calligraphy could help clear one's thoughts, but he did not expect it to be helpful for him in his current state. *Dào* conveys unexpectedness when it turned out that doing calligraphy effectively helped him calm down. In this case, *guǒrán* 'as expected' is anaphoric to the speaker's knowledge about the effect of practicing calligraphy.

(17) [Context: The man was preoccupied with troubling thoughts. He could not focus on reading. Nor could he go out for a walk or go to sleep. As a last resort, he decided to sit down and practice calligraphy. He thought:]
Zhè-gè fǎzi, *dào guǒrán* yǒuxiào. (BCC)
this-CL method DAO as.expected effective
'This method (contrary to my expectation) is effective as has been said.'

S-internal DisPs also precede focused material and focus markers like *zhǐ* 'only' and *jiù* 'just'. For example, the 'only~DAO' order in (18) and the 'just~YE' order in (19) are not acceptable.

(18) [Context: the teacher assigned several papers for reading.]
Lǐsì (*zhǐ) *dào zhǐ* dú-le qízhōng yī-piān.
Lisi only DAO only read-PERF among one-CL
'Lisi (Contrary to one's expectation) has only read one of them.'

(19) Wang: Your new dress is really nice.
Li: Wǒ (*jiù) *yě* *jiù* huā-le wǔshí měiyuán.
I just YE just spend-PERF fifty dollar
'(Although you may think it's expensive,) I spent just fifty dollars.'

When the focused phrase appears at the beginning of a sentence (e.g., the subject is in focus), DisPs precede the focused phrases, as illustrated in (20). Neither the order in (20b) where *dào* follows the focus phrase nor the order in (20c) where *dào* follows the focus marker is possible.

(20) [Preceding text: They suddenly burst into laughter,]
a. *dào jiù* Lǐsì méi xiào.
DAO just Lisi not laugh
'(Contrary to one's expectation,) just Lisi didn't laugh.'
b. **jiù* Lǐsì *dào* méi xiào.
just Lisi DAO not laugh
c. **jiù dào* Lǐsì méi xiào.
just DAO Lisi not laugh

On the other hand, DisPs follow all background materials, i.e., topic that is moved out from the VP, cf. (21).

(21) [Preceding text: Lisi bought bananas and apples.]
Xiāngjiāo, tā mǎi-le shí-ge. [Topic Píngguǒ ne], (tā) *dào jiù*
banana he buy-PERF ten-CL apple TOP he DAO just
mǎi-le yí-ge.
buy-PERF ten-CL
'Bananas, he bought ten. Apples (contrary to one's expectation,) he just bought one.'

Based on the observations above, we can conclude that S-internal DisPs are located in a higher portion of the IP domain above *v*P/VP, which constitutes the propositional core of the clause, and can occur in the position between Modality and Mood: the lowest possible position is above root modal and/or habitual adverbs. The relative order with higher adverbs depends on the semantic scope. This syntactic distribution is in line with the fact that semantically, DisPs take scope over the propositional content of the utterance and do not form part of the proposition. Again, a similar syntactic distribution has been observed for German and Italian DisPs (cf. Coniglio 2006; Zimmermann 2011; Cardinaletti 2011).

It is standardly assumed in generative syntax that a speaker's attitude or subjective evaluation is encoded by functional heads in the left periphery (Rizzi 1997; see AttitudeP for Mandarin Chinese in Paul 2009). However, S-internal DisPs occur below the subject and/or topic and cannot appear at the clausal periphery. This restriction makes it unlikely that S-internal DisPs are directly introduced or hosted by some functional projection in the split-CP domain, such as ForceP or AttitudeP. This restriction also sets them apart from SFPs in Mandarin Chinese, which have been analyzed as overt heads in the left periphery. German DisPs faces similar distributional restrictions as some DisPs are sensitive to the clause type and discourse-related features encoded in the left periphery. As a result, the syntax must specify how S-internal DisPs interact with functional heads in the CP domain.

Zimmermann (2008) analyzes the German particle *wohl* as a modifier of sentence type and proposes that *wohl* moves to SpecForceP at LF, from where it can modify the sentence type operators in Force. Bayer and Obenauer (2011) argue that LF-movement in the sense of covert movement is not an option in minimalist syntax; they adopt the probe/goal agreement mechanism proposed in Chomsky (2000, 2001) and Pesetsky and Torrego (2007). A similar implementation of the Agree mechanism is adopted for German DisPs in Coniglio and Zegrean (2012), and Egg and Mursell (2016). Shi et al. (2017) propose that the speaker-oriented adverb *piānpiān* is located at EvalP, a projection that encodes the speaker's evaluation, and suggests that the adverb is merged at the specifier position of the projection.

Although it is not articulated in their analysis, it seems that when *piānpiān* follows a topic phrase, a TopP is projected above EvalP, cf. (22). This analysis is quite similar to the proposals for DisPs in German and Italian by Cardinaletti (2011), in which DisPs are weak adverbs and occur in specifier positions of dedicated functional projection located in the high portion of the IP.

(22) A: John's proposal is adopted. How about yours?
B: Wǒde tí'àn, *piānpiān* dàjiā dōu bù xǐhuān ya.
my proposal PIANPIAN everyone all not like SFP
'My proposal, (against my wish,) everyone did not like.'

Cardinaletti (2011) demonstrates that DisPs in German and Italian generally have full adverbial counterparts. This is also the case for Chinese DisPs. Synchronically, *yòu* and *yě* both have an adverbial cognate from which the discourse-related uses derive; *dào* has a disyllabic synonym *fǎndào* 'contrarily.' As a result of grammaticalization, S-internal DisPs have developed pragmatic functions yet remained in the S-internal position. Additionally, Cardinaletti (2011) argues that the German and Italian DisPs have semantic relations with their adverbial counterparts and that S-internal DisPs can therefore be categorized as deficient adverbs; their deficient status explains why they cannot be coordinated, modified, and focalized. On the other hand, Bayer and Obenauer (2011) argue for their status as minor functional heads, based on their restricted distribution in the middle field, immobility, and phonological property (i.e., being unstressed). They are minor functional heads because they do not project categorial syntactic features.

Both analyses (i.e., DisPs as deficient adverbs or weak heads) recognize the special status of DisPs that are different from canonical full phrases and heads and can account for their properties discussed in Section 2. Because S-internal DisPs are traditionally treated as adverbial in the Chinese literature, in this article, we follow Cardinaletti (2011) by assuming that S-internal DisPs are in the specifier of dedicated functional projections such as EvalP or ModP.

3.2 DisPs in embedded clauses

It has been observed that some syntactic phenomena are restricted to root clauses and embedded clauses with root properties, i.e., the so-called Main Clause Phenomena (cf. Emonds 1970; Hooper and Thompson 1973; Haegeman 2012, among others). For instance, topicalization in English is possible in main clauses and embedded clauses with properties of main clauses (e.g., clause embedded by verbs of saying). The occurrence of SFPs is a Main Clause Phenomenon for Mandarin Chinese: it is a well-established generalization that certain SFPs that are Force- or attitude-related (e.g., the yes/no particle *ma*) are restricted to root/matrix clause

and cannot occur in embedded clauses (Li and Thompson 1981: 556–557; Simpson 2014; Paul 2015: 286). On the other hand, the occurrence of S-internal DisPs in the embedded clause is not entirely banned, although it is restricted. Due to the expressive nature of DisPs, they have effects on the illocutionary force of a sentence. The established generalization for DisPs in German and Italian is that they can occur in root/matrix clauses, as well as in embedded clauses with root-like properties (Zimmermann 2004; Coniglio 2007). For example, the object clauses of verbs of saying and verbs expressing doxastic attitude are typical root-like embedded clauses and they permit such particles. This is illustrated with German DisP *wohl* in (23).

(23) Schröder hat gesagt, dass die SPD *wohl* Unterstützung verdient.
(Zimmermann 2004)
'Schröder said that the SPD actually deserves support.'

Meanwhile, DisPs are not allowed in the object clause of the so-called factive predicates like *regret* and *deny*, because the truth of the proposition of these clauses is presupposed, and the expression of the speaker's subjective point of view is banned (cf. Coniglio 2007). A German example with the DisP *ja* is given in (24):

(24) Er leugnete, dass er die Zeugin (**ja*) unter Druck gesetzt habe.
he deny that he the witness JA under pressure put have
(Thurmair 1989: 109)
'He denied having exerted pressure on the witness.'

DisPs in Mandarin Chinese behave similarly: they are possible in the object clause of non-factive predicates, as illustrated in (25), and are not allowed in the object clause of factive predicates, as in (26).

(25) [Context: the author and her sister longed to visit Beijing. After they finally made the trip, she felt that experience was not as exciting as she had assumed.]
Xiǎo.mèi juéde měi-de *dào* shì nà-zhāng miànbāo.zhǐ. (CCL)
little.sister think pretty-NML DAO be that-CL bread.paper
'Little sister thought the pretty thing, (contrary to her expectation), was the wrapping paper of the bread.'

(26) Xiǎo.mèi fǒurèn měi-de (**dào*) shì nà-zhāng miànbāo.zhǐ.
little.sister deny pretty-NML DAO be that-CL bread.paper
Intended: 'Little sister denied that the pretty thing, (contrary to her expectation,) was the wrapping paper of the bread.'

Another type of embedded clause with root-like properties is a set of adverbial clauses, termed as peripheral adverbial clauses in a series of works by Liliane Haegeman. According to Haegeman (2002 et seq.), two types of adverbial clauses are distinguished: central adverbial clauses (CACs) and peripheral adverbial clauses (PACs). Topicalization (or argument fronting) is a Main Clause Phenomenon in

English, which can distinguish CACs from PACs. For instance, the two adverbial clauses in (27) are introduced by the same conjunction word *if*. (27a) is a CAC that expresses the condition for realizing the event in the main clause, and argument fronting is unacceptable. In (27b), the conditional is a PAC, which expresses a proposition that brings to the context a contrast on the proposition expressed in the main clause, and argument fronting in the conditional clause is acceptable.

(27) a. *If these exams you don't pass, you won't get the degree.
(Haegeman 2012: 156)

b. If some precautions they did indeed take, many other possible measures they neglected. (ibid.: 159)

In German, discourse particles such as *ja* may occur in PACs as in the concessive clause in (28), but not in CACs, such as the temporal clause in (28).

(28) a. Er hat die Prüfung nicht bestanden, trotzdem er *ja* recht
he has the exam not passed even.though he JA quite
intelligent ist. (PAC)
intelligent is
'He has not passed the exam even though he is quite intelligent.'
(Thurmair 1989: 78)

b. Maria ging oft in die Staatsoper, als sie (**ja*) in
Maria went often to the state-Opera-House when she JA in
Wien lebte. (CAC)
Vienna lived
'Maria often went to the Opera House when she lived in Vienna.'
(Frey 2012: (16))

In Mandarin Chinese, S-internal DisPs have the same distribution: Wei and Li (2018) observe that some S-internal DisPs can occur in PACs such as inferential, concessive, and reason clauses, as illustrated with *yòu* in an inferential clause in (29) and with a *dào~yě* sequence in a concessive clause in (30) and a reason clause in (31).

(29) Xiānggū jìrán bìng *yòu* bú zhòng, chūlái ràng wǒ jiàn-jian
Xianggu since illness YOU not serious come.out let me meet-meet
héfang. (BCC)
why.not
'Since Xianggu is not seriously ill, why not ask her out and let me meet (her)?'

(30) [Preceding text: (talking about some potted flowers) … the only problem is that the flowerpot is too ordinary.']
Suīrán yánsè *dào yě* pèi, zhǐshì yǒuxiē cánpò. (BCC)
although color DAO YE match only.be some cracked
'Although the colors are matching, it's just that it's a little cracked.'

(31) [Preceding text: The tiger cannot fly, but it simply blew out some air and swallowed the sparrow. Ever since that, no sparrow has had a flying contest with a tiger.]
yīnwéi máquè *dào yě* míngbái… (BCC)
because sparrow DAO YE understand
'Because (contrary to one's expectation who may think sparrow did not understand), sparrow actually understood ([following text] that those who can fly high is not necessarily heroes.'

DisPs, however, are not possible in CACs such as conditional clauses (32) and relative clauses (33).

(32) a. Rúguǒ míngtiān (**yòu*) bù lěng, women jiù qù pá shān.
if Zhangsan YOU not cold we then go climb hill
'If it's not cold tomorrow, we go hiking.
b. Rúguǒ fángjiān bú dà jiājù (**dào*) hěn quán dehuà, nǐ huì zū ma?
if room not big furniture DAO very complete if you will rent SFP
'If the room is not big but the furniture is fully equipped, will you rent (it)?'

(33) a. Wǒ zhǎodào-le nà-ge [(**yòu*) bú shì gùyì zuò cuò] de xuéshēng.
I find-PERF that-CL YOU not be intentional do wrong DE student
'I found the student that did not do wrong intentionally.'
b. Wǒ rènshi yí-ge [(**dào*) huì zuò zhōngguó cài] de chúshī.
I know one-CL DAO can cook Chinese dish DE chef
'I know a chef who can cook Chinese food.'

We summarize the occurrence of Chinese (and German) S-internal DisPs in Table 1.

Table 1. Distribution of S-internal DPs

Clause type	S-internal DisPs
Root/matrix clause	yes
Object clause of non-factive verbs, PACs	yes
Object clause of factive verbs, CACs, relative clause	no

Based on the research of the structure of the left periphery (Rizzi 1997), it has been assumed that DisPs can occur in clauses with root properties that display illocutionary force. This is formally represented by the presence of ForceP in the left periphery (Coniglio 2007; Haegeman 2012). Specifically, illocutionary force is

encoded in the functional projection ForceP, and must be anchored to an actual or potential speaker. This projection is present in root/matrix clauses and in embedded clauses with root properties. The occurrence of DisPs in embedded clauses is dependent on the presence of Force: object clause of factive verbs and CACs lack Force and therefore do not admit DisPs. On the other hand, it is assumed that the CP domain of the complement clause of non-factive verbs encodes a deictic center, and attitude verbs are "quantifiers over sets of contexts…taken to be a tuple of coordinates, which are nothing but variables, each associated with its own indexical descriptive content. …we may think of the coordinates of *i* (the embedded context) as arguments of C (the complementizer). While these arguments are normally not present in the syntax (being implicit, so to speak), they may project syntactically under certain circumstances" (Landau 2015: 39). ForceP in the embedded clause is therefore anchored to a potential speaker and licenses the occurrence of DisPs.

While this account may work for DisPs in German and Italian, note that Mandarin Chinese also has SFPs, and Force is associated with the yes/no question particle *ma* and *ba,* which encodes yes/no confirmation question (Paul 2014). It is mentioned at the beginning of this subsection that Force and Attitude-related SFPs are disallowed in embedded clauses. Therefore, if the correlation between the presence of DisPs and Force head is to be kept, the functional projections that host SFPs in Mandarin Chinese are subject to a more fine-grained syntactic structure in the clausal periphery.

4. Meaning contribution of S-internal DisPs

DisPs contribute to discourse management and coherence by connecting the current utterance to a larger context and lead to secondary pragmatic effects such as surprise, impatience, tactfulness, politeness, or indirect speech acts. Truth-conditional contents are also called at-issue contents.[5] They correspond to what Grice (1975) calls "what is said." Thus, the meaning contribution of DisPs is backgrounded, not-at-issue content. It is infelicitous to challenge or deny its contribution overtly. For example, the use of *alas* in (34), an example of emotive markers in Rett (2021), does not change the truth value of the propositional content of the utterance, but it makes it clear to the hearer that the speaker is disappointed that John lost the race. Thus, it is odd for B to challenge the pragmatic contribution of *alas*.

5. The propositional content of an utterance has been labeled as at-issue content in recent literature on presupposition and implicature. Potts (2015: 168) attributes this term to William A. Ladusaw.

(34) A: *Alas*, John lost the race.
B: #You're not disappointed that he lost.

It is proposed that DisPs trigger (weak) presupposition (Zeevat 2003; Kaufmann 2010; Kaufmann and Kaufmann 2012), conventional implicature, or expressive meaning (Kaplan 1997; Kratzer 1999, 2004; Karagyosova 2004; Potts 2007; Zimmermann 2011; Gutzmann 2015). The core idea is that the meaning contribution of discourse particles imposes appropriateness or felicity conditions under which the sentences they occur in are uttered felicitously. We will follow this shared insight. In order to describe the meaning contribution and pragmatic function of a given DisP, we need to pin down the features of the contexts in which it is felicitously used. Generally, a discourse context includes discourse participants and their belief state, the common ground, and the issue under discussion, so a framework to model the discourse context should contain those components. Section 4.1 outlines the discourse model that is often used in the analysis of DisPs in different languages, and Section 4.2 illustrates the meaning contribution of *dào* with this model.

4.1 Discourse components and the table model

The discourse components just mentioned have been represented in the context structure by Farkas and Bruce (2010), commonly referred to as the Table model. This has been applied to the formal analyses of discourse particles, intonational tunes, emotive markers, and exclamatives (Ettinger and Malamud 2015; Csipak and Zoebel 2016; Müller 2017; Kraus 2018; Rudin 2018; Rett 2019). It combines features of earlier works by Hamblin (1971), Stalnaker (1978), Ginzburg (1996), Roberts (1996), and Gunlogson (2001).

Stalnaker (1978) proposed a theory of speech representing the interaction between content and context. It adopts the possible world analysis of propositions; the act of assertion is the expression of a proposition. *Common ground* is a component of speech context. In a conversation, it includes propositions whose truth the discourse participants take for granted as part of the background of the conversation. *Context set* is the set of all worlds that are compatible with all propositions in the common ground. Assertions are made in a context and also affect the context. The effect of an assertion is to add the asserted content to the common ground (assuming no objection from other participants) and reduce the context set. Stalnaker's (1978) model of speech context is adopted and revised by later studies of discourse structure in dynamic semantics. Roberts (1996) proposes a question-driven model to formalize the hierarchical structure of a discourse. Based on Stalnaker's notion of common ground and context set, the goal of a conversation is to reduce the context set to a singleton set, i.e., the actual world. As assertions change the context by reducing the context set, questions can also change the context. The goal of a

conversation can be viewed as finding answers to the Big Question: "what is the way things are?". A reasonable strategy to answer the Big Question is to develop sub-questions. The set of QUDs at a given point in a discourse is modeled by a QUD stack. When a question *q* is proffered and accepted, it is added to the top of the stack. If *q* is answered or determined to be unanswerable, it is removed from the stack. Ginzburg (1996) also adopts a question-driven approach. Aside from the accept/reject dichotomy, he suggested discussion as a third option: when one participant has made an assertion that *p* that is not immediately accepted by another participant, a discussion of whether *p* will take place. Gunlogson (2001) adopts Stalnaker's notion of common ground as a set of propositions representing mutual beliefs of the discourse participants. The model further separates the beliefs publicly committed by each participant, called discourse commitments (DC) or public beliefs of discourse participants.

The Table model includes the components of common ground and context set from Stalnaker (1978) and individual commitments following Gunlogson (2001). In addition, the QUD stack in Roberts (1996) becomes a stack containing at-issue propositions, called the Table. The model introduces Projected Set (*ps*), which is the future common ground that is accessible from the current context. Gunlogson (2001) defined the common ground as the union of the discourse commitments of the participants, while in the Table model, common ground is separated from the discourse commitment set of each participant. This allows for participants to negotiate the common ground independently of their own public beliefs. The basic components of the Table model are presented in (35).

(35) Basic components of the Table model
   a. Common Ground (*cg*): the set of all propositions that all members of the conversation have publicly committed to, together with the propositions that represent the shared background knowledge.
   b. Discourse commitment (DC_X): for every participant X, the set of propositions X has publicly committed to which have not (yet) been shared by other participants.
   c. The Table: a stack of at issue propositions under discussion in the current context.
   d. Projected set (*ps*): the privileged future common grounds resulting from resolving the current issue on the Table.
   e. Context Set: the set of all worlds that are compatible with all propositions in the common ground.

Discourse context is a six-tuple containing the five basic components above, plus a set of discourse participants. Farkas and Bruce (2010) uses the Table model to capture the similarities and differences between assertions and polar questions. Speech act operators take sentences as arguments and are functions from input context K_i

to output context K_o. When the speaker *a* makes an assertion of a sentence with the propositional content *p*, {*p*} is added to speaker *a*'s discourse commitment set and also placed on the Table stack, and a future common ground is projected at the level of *ps* by adding {*p*} to the output *cg*.

(36) ASSERT (S_p, *a*, K_i) = K_o such that:
a. $DC_{a,o} = DC_{a,i} \bigcup \{p\}$
b. $T_o = T_i + \{p\}$
c. $ps_o = cg_o + \{p\}$ (based on Farkas and Bruce 2010: 92)

A graphical illustration is given in (37). Note that the context changing effect of assertion is performed at the level of the Table and the *ps*. This captures the idea that assertions effectively propose to update the *cg* but not directly update it.

(37) A to B: Sam is at home.
a. K_0: context before the utterance

DC_A	Table	DC_B

cg_0, ps=$\{s_0\}$

b. K_1: context updated with *p* ('Sam is at home')

DC_A	Table	DC_B
p	{*p*}	

$cg_{1=}$ cg_0, ps_1=$\{cg_0 + p\}$

At-issue propositional content of an assertion is added to the Table. Certain implicated content (e.g. conversational implicature) is also added on the Table but separated from the at-issue content, to which further moves can react. Not-at-issue content is not placed on the Table but treated as update to speaker's discourse commitment set (Kraus 2018; Rett 2021). For example, the German particle *doch* encodes a speaker's violated expectation. It references two propositions (its prejacent *q* and discourse-salient proposition or event *p*) and expresses that the speaker believes *q* and *p* are incompatible. In (38), Tom implies that he is surprised that Sophie thinks that he has a dog. Given that he doesn't have a dog, Tom assumes that the interlocuters should know that *p* ('your dog barked all night') and *q* ('I don't have a dog') are incompatible.

(38) Sophie: Your dog barked all night last night! (Kraus 2018: (206))
Tom: Wir haben *doch* keinen Hund.
we have DOCH no dog
'We don't have a dog!'

The meaning of *doch* is formulated in (39): The speaker assumes that the addressee should have known that the two propositions *p* and *q* are incompatible.

The contribution of *doch* is logged in the speaker's discourse commitment list but not raised as an issue on the Table.

(39) *doch*(q) is anaphoric to a salient proposition or event p in a discourse context C and for discourse-salient participants x, s.t.:
doch(q) adds the following to the speaker's DC list:
$\text{Exp}_{spkr}(q) \approx 1 \wedge \forall x \in C\ [\text{Exp}_x(p|q) \approx 0]$ (Kraus 2018: (222))

Encoding the expressive content in a speaker's discourse commitments achieve two goals: (i) capturing the not-at-issue status of the speaker's privately held beliefs and expectations (i.e., they are not directly challengeable as issues raised on the Table), and (ii) making its meaning contribution publicly available to other participants who can easily calculate the speaker's expectation and figure out how the utterance is intended to be integrated into the discourse.

To summarize, the Table model incorporates the necessary components of a discourse context. Furthermore, it makes a clear division between the issue raised on the Table, the private but publicly visible discourse commitment of interlocutors, and the shared common ground, so it provides potential ways to capture different types of meaning contributions and account for their discourse effects.

4.2 Marking unexpectedness: The particle *dào*[6]

This section focuses on the discourse effect and meaning contribution of the particle *dào* (lit. 'upside down'), using the Table model in the formal account. To begin with, seven entries are listed for *dào* in the mainstream dictionaries in (40).[7]

(40) Dictionary meanings of *dào*
a. contrary to expectation
b. contrary to common sense
c. contrary to the fact (implying blame); used in the "verb-*de* + *dào* + adjective" structure
d. used in the main clause of a complex sentence, indicating contrast
e. used in the initial subordinate clause of a complex sentence, indicating concession
f. used in an imperative sentence or question, indicating impatience
g. used to soften the tone of an utterance

6. This section is based on chapter three of Wei (2020).

7. I refer to three widely cited dictionaries: Eight Hundred Words of Modern Mandarin (2nd edition, 1999), Modern Chinese Dictionary (7th edition, 2016), and Oxford Chinese-English Dictionary (1st edition, 2010).

We can group (40a) to (40c) together as specific cases of indicating "contrariness-to-expectation" because expectation about a particular causal path can be based on common sense, fact, and stereotypical assumptions about how the world works. (41) is given as an example. The *dào* utterance contains the expression *méi xiǎng-dào* 'have.not-think-ASP', indicating that the fact that the laziest person got up so early is contrary to the speaker's expectation.

(41) Méi xiǎng-dào zuì lǎn de rén *dào* qǐlái-de zhème zǎo.
not.have think-ASP most lazy DE person DAO get.up-DE so early
'Unexpectedly, the laziest person would have got up so early.'

Z. Li (2005) and Zhou (2006) follow Ma's (1983) analysis of *fǎn'ér* 'contrarily' and describe the "semantic background" of *dào*, represented in (42): (a) it describes the speaker's background knowledge that *p*; (b) it says that the speaker forms high expectation for *r* via causal reasoning. In (41), the speaker believes that someone (say 'John') is the laziest person (=*p*), and by inference, she has high expectations that John would get up late (=*r*). In fact, it is not the case that John got up late (*not r*), but he got up quite early (*q*).

(42) a. The speaker has belief in *p*
b. The speaker's belief in *p* causes her to have high expectations for *r* to be true.
c. In fact, it is not the case that *r*.
d. On the contrary, it is the case that *q*.

In (41), *dào* indicates a deviation from the speaker's expectation to the actual situation. *Dào* can also signal that the addressee's expectation does not align with the speaker's belief or the reality. For example, in (43), Harry mentions that he hopes Neville knows some kind of turnip that can help him stay underwater for one hour. In Neville's response, *dào* indicates that contrary to Harry's (i.e. the addressee's) expectation, he doesn't know any turnip that can help him that way.

(43) (From the movie Harry Potter and the Goblet of Fire)
[Context: In the library, Harry Potter is looking for a method to allow him to breathe underwater for one hour in his second task of the Triwizard Tournament. Neville went over to talk to Harry.]
Neville: Do you know there's a wizard in Nepal who's growing gravity-resistant trees?
Harry: Neville, no offense, but I really don't care…about plants. Now if there's a…Tibetan turnip that will allow me to breathe under water for an hour…then great. But otherwise –
Neville: Luóbo wǒ *dào* bù zhīdào. Búguò nǐ kěyǐ yòng yúsāicǎo.
turnip I DAO not know but you can use gillyweed
I don't know about the turnip. But you can use the gillyweed.

(43) is also an example in which *dào* is deemed as being used in a concession clause, as listed in (40e). However, the concession does not come from the use of *dào*, but from the discourse, i.e., the following sentence starting with the conjunction word *búguò* 'but.' Therefore, "expressing concession" is not the basic meaning of *dào* but one of its context-dependent functions. Similarly, the last two so-called "meanings" of *dào* in (41) should be viewed as its contextual uses. The two effects – indicating impatience and softening the tone – seem incompatible; however, the different functions arise from a combination of *dào*'s core meaning with the context in which it occurs. The effect of "indicating impatience" occurs in imperatives (e.g., requests and commands), as in (44), and A-*not*-A questions, as in (45).[8]

(44) Nǐ *dào* shuō ya!
you DAO say SFP
'You just say it!'

(45) Nǐ *dào* qù-bú-qù ya?
you DAO go-not-go SFP
'(Just tell me) will you go or not?'

The imperative and question sentences have the structures in (46), respectively:

(46) a. *nǐ* *dào* VP *a/ya* ! (imperative)
you DAO SFP
b. *nǐ* *dào* V-not-V *a/ya* ? (A-not-A question)
you DAO SFP

The second-person subject must be overt. The high pitch SFP *a/ya* indicates 'deviance' and conveys the meaning that the addressee should have known the propositional content of the *a*-attached utterance. Note that imperatives and the SFP combined can signal the speaker's exasperation and convey an urgency with which the speaker requires the imperative to be fulfilled. That is, the emotive effect is present even in the absence of *dào*. As for the A-*not*-A question, it has a cornering effect of making an urgent demand for an answer. In effect, the A-*not*-A question combined with SFP *a* has the force of an imperative, as illustrated by the translation 'just tell me…' in (45). *Dào* in such use is only felicitous in a context when the addressee has not acted in accordance with the speaker's wishes. In (44), *dào* indicates that the speaker has asked the addressee to say something, but the addressee has not responded. In (45), either the addressee has been silent or given some equivocal answer. An example with context is given in (47).

8. Mandarin A-*not*-A questions are formed by reduplicating the lexical head of the predicate (typically a verb) and adding a negative morpheme between the reduplicant and the base.

(47) [Context: Han asked Xing to come over and shouted at him: "You must go and get it back for me!" Xing hang his head down and just stood there. Han got angry and said:]
Nǐ *dào* géi wǒ shuōhuà ya! (CCL)
you DAO to me speak SFP
'You say something!'

According to Portner (2004), the goal of imperatives is to assign tasks to the addressee's "to-do list," which is a set of actions that the addressee should take. Condoravdi and Lauer (2012) treat imperatives as committing the speaker to an effective preference for the addressee to perform an action. In imperatives, *dào* flags the deviation between the observed addressee's behavior and the speaker's preference for the addressee to perform a certain task. In (47), Han is committed to the preference for Xing to respond to her request, but Xing stood silently, acting in a way contrary to Han's effective preference. Overall, the effect of indicating the speaker's impatience is an additive effect of the SFP *a*, the imperative, and *dào*.

Let us now turn to the effect of softening the tone of an utterance, which is often termed as *wéiwǎn yǔqì* (tactful tone/mood) in the Chinese literature (e.g. Zhou 2006). This use of *dào* is observed in declarative sentences in two contexts: (i) the speaker denies or contradicts the inferred addressee's expectation or an issue raised by the addressee; (ii) the speaker gives up her stance and commits to a proposition that is contradictory or incompatible with her previous beliefs. (48) is an example of the former case. In this example, Yin and Zhan are captured and locked up. While Yin expects that they would be tortured (=*p*), Zhan holds a very low expectation for the truth of *p*. *Dào* in Zhan's utterance comments on Zhan's acknowledgment about the discrepancy in their belief states.

(48) [Context: Yin and Zhan were captured and tied up. Yin is trying to loosen the rope and said: "Will they torture us?" Zhan replies:]
Nà *dào* bú zhìyú. (CCL)
that DAO not go.so.far.as
'That is unlikely, though.'

The use of *dào* implies that the speaker knows that the issue she raises is contrary to the addressee's expectation. The meaning contribution of *dào* can be paraphrased as "although I know you hold a lower expectation for the truth of the proposition *q* over its complement, I propose to consider *q*." The effect of tone-softening comes from the speaker's conceding the addressee's epistemic state when performing a denial or contradiction act.

To recapitulate, *dào* positions the speaker's commitment or effective preference in contrast to the addressee's expectation. With an assertion act, the speaker places an issue on the Table for discussion. With request or demand, the speaker adds a

task *p* to the addressee's to-do list. The seemingly opposite effects of expressing impatience and softening the tone come from the discourse component where the proposed update is made.

Based on the discussion above, we can conclude that *dào* marks deviation of the state of affairs from some discourse participant's expectations. This contribution is not-at-issue and logged into the speaker's discourse commitment list as a comment on the speaker's or addressee's expectation:

(49) Meaning contribution of *dào*(*q*):
dào(*q*) is anaphorical to a contextually salient proposition *p* in the discourse context *C*, and for some discourse participant *x* such that:
dào adds the following to the speaker's DC list:
$\text{Exp}_x(\neg q|p) > \text{Exp}_x(q|p)$

The notion "$\text{Exp}_x(q|p)$" is used to notate the probability of *q* assigned by some discourse participant *x* given that *x* expects *p* to be true. "$\text{Exp}_x(\neg q|p) > \text{Exp}_x(q|p)$" means "given *x*'s belief in *p*, *x* has a higher expectation for the truth of the complement of *q* than for *q* itself." The expectation can be anchored to some discourse participant, i.e., either the speaker or the addressee, as indicated by the approximation of "contrary to one's expectation," which we have used in the gloss.

There might be a potential doubt about the formulation (49) in that it seems to lead to inconsistent discourse commitments for the speaker: the speaker is committed to *q* while having higher expectations for ¬*q* than for *q*. This is illustrated with the discourse in (50), represented using the Table model in (51).

(50) A: a. Zuótiān wǎnshang xià-le yǔ. (*p*)
yesterday night fall-PERF rain
'It rained last night.'
B: b. Èn.
'right'
c. Kěshì qìwēn **dào** méi yǒu jiàngdī. (*dào*(*q*))
but temperature DAO not have lower
'But the temperature did not go down.'

(51) a. K_1: context after A's utterance *p*

DC_A	Table	DC_B
p, $\text{Exp}_A(p) \approx 1$	*p*	

cg_1, $ps = \{s_0 \cup \{p\}\}$

b. K_2: context updated with B's utterance 'right'[9]

DC_A	Table	DC_B
p, $Exp_A(p)\approx 1$		p, $Exp_B(p)\approx 1$

$cg_{2=}$ $cg_1 \cup \{p\}$, $ps_2 = cg_2$

c. K_3: context updated with B's utterance *dào*(q)

DC_A	Table	DC_B
p, $Exp_A(p)\approx 1$	q	p, q, $Exp_B(\neg q \mid p) > Exp_B(q \mid p)$

$cg_{3=}$ cg, $ps_3 = \{cg_2 \cup \{q\}\}$

Specifically, in K_3 in (51), the speaker is committed to p and q, while simultaneously holding the expectation that given p, it is more likely to be the case that $\neg q$ than q. This, however, can be a coherent doxastic state. For example, someone is committed to the propositions that it rained last night and that the temperature did not go down today while having a higher expectation for the causal path that if it has rained, the temperature goes down. Such expectation is rooted in the speaker's background knowledge about the tendencies of typical sequences of situations or a typical concomitance of situations in the world. As the speaker has previously considered the probability of $\neg q$, *dào* conveys a mild "I-did-not-expect-this" type of surprise

To conclude, the contribution of *dào* to an utterance is a strategy that makes a speaker's expectations known to her addressee. Its meaning contribution is not-at-issue illocutionary content because it provides commentary on the speaker's attitudinal stance toward the propositional content of her utterance.

5. Conclusion

In Mandarin Chinese, both SFPs and S-internal DisPs figure prominently in building coherent discourse and structuring a conversation or narrative in an emotionally informative way. This article has described the general properties of S-internal DisPs, highlighting their similarities to DisPs in some European languages such as German and Italian. The empirical findings encourage us to explore the comparative side of the topic. We have also seen the application of viable syntactic

9. In Farkas and Bruce (2010: 98–99), when the propositional content p is confirmed by the addressee, p is in the DC list of each participants. They define an auxiliary move *M'* which adds the confirmed proposition p to the cg, pops it off from the Table, and removes it from individual commitment lists. In this example, I keep p in both A and B's DC list in order to show all the relevant discourse commitments participants in this discourse context have made.

and semantic frameworks for explaining the distribution, meaning contribution, and pragmatic effect of DisPs. Using a formal framework can help us find shared and different meaning components in such particles and allows us to reduce idiosyncrasy in description, which offers possibility for studies on the cross-linguistic typology of DisPs.

Meanwhile, some thorny issues need to be engaged with in future work. First, since Mandarin Chinese has both SFPs and S-internal DisPs, and they have different distributions, studies on a more fine-grained cartography of the clausal periphery seem necessary, given the potential connection of DisPs and the Force head. Empirically, it will also be helpful to investigate the co-occurrence of SFPs and DisPs to obtain a full range of possible sequences of SFP and DisP combinations. Finally, further work on the co-occurrence of DisPs, as well as DisPs and high adverbs, is also called for to establish a more detailed hierarchy of syntactic structure in the high IP and CP-domain.

Acknowledgments

I am grateful for extremely helpful comments and discussion from Audrey Li, Andrew Simpson, Deniz Rudin, and Namkil Kim, as well as audiences at the 12th International Workshop on Theoretical East Asian Linguistics (Macau) and the talk given at the School of Chinese as a Second Language at Peking University in 2020. I also thank two reviewers for helpful feedback on a previous draft. For judgment and comments on the intuition-based examples, I am indebted to three native Chinese speakers: Jia Pang, Bo Pang, and Yan Zhou.

References:

Bayer, Josef & Hans-Georg Obenauer. 2011. Discourse particles, clause structure, and question types. *The Linguistic Review* 28 (4): 449–491. < https://doi.org/10.1515/tlir.2011.013>

Cardinaletti, Anna. 2011. German and Italian modal particles and clause structure. *The Linguistic Review* 28 (4): 493–531. < https://doi.org/10.1515/tlir.2011.014>

Chomsky, Noam. 2000. Minimalist inquiries: the framework. In *Step by Step: Essays on Minimalist Syntax in Honor of Howard Lasnik*, Roger Martin, David Michaels, and Juan Uriagereka (eds), 89–155. Cambridge, Massachusetts: MIT Press.

Chomsky, Noam. 2001. Derivation by phase. In *Ken Hale: A Life in Language*, Michael Kenstowicz (eds), 1–52. Cambridge, Massachusetts: MIT Press.

Chu, Chauncey C. 1998. *A Discourse Grammar of Mandarin Chinese*. New York: Peter Lang Publishing.

Cinque, Guglielmo. 1999. *Adverbs and functional heads*. Oxford: Oxford University Press.

Condoravdi, Cleo & Sven Lauer. 2012. Imperatives: Meaning and illocutionary force. In *Empirical Issues in Syntax and Semantics* 9, Christopher Piñón (eds), 37–58.

Coniglio, Marco. 2006. German Modal Particles in the Functional Structure of IP. In *University of Venice Working Papers in Linguistics* 16, 57–95.

Coniglio, Marco. 2007. German modal particles in root and embedded clauses. In *University of Venice Working Papers in Linguistics* 17, 109–141.

Coniglio, Marco & Iulia Zegrean. 2012. Splitting up force. In *Main clause phenomena: New horizons*, Lobke Aelbrecht, Liliane Haegeman & Rachel Nye (eds), 229–255. Amsterdam: John Benjamins. https://doi.org/10.1075/la.190.10con

Csipak, Eva & Sarah Zoebel. 2016. Discourse particle *denn* in the Antecedent of Conditionals. In *Empirical Issues in Syntax and Semantics 11*, Christopher Piñón (eds), 31–60.

Egg, Markus & Johannes Mursell. 2016. The syntax and semantics of discourse particles. In *Discourse Particles: Formal Approaches to their Syntax and Semantics*, Josef Bayer & Volker Struckmeier (eds), 15–48. Berlin: De Gruyter. https://doi.org/10.1515/9783110497151-002

Emonds, Joseph. 1970. Root and structure-preserving transformations. PhD dissertation, MIT.

Ettinger, A. & Malamud, S. 2015. Mandarin utterance-final particle *ba* in the conversational scoreboard. In *Proceedings of Sinn und Bedeutung* 19. Eva & and Hedde Zeijlstra (eds), 232–251.

Farkas, Donka F. & Kim B. Bruce. 2010. On reacting to assertions and polar questions. *Journal of semantics* 27 (1): 81–118. < https://doi.org/10.1093/jos/ffp010>

Fraser, Bruce. 1990. An approach to discourse markers. *Journal of Pragmatics* 14 (3): 383–398. <https://doi.org/10.1016/0378-2166(90)90096-V>

Frey, Werner. 2012. On two types of adverbial clauses allowing root-phenomena. In *Main clause phenomena: New horizons*, Lobke Aelbrecht, Liliane Haegeman & Rachel Nye (eds), 405–429. Amsterdam: John Benjamins. https://doi.org/10.1075/la.190.18fre

Ginzburg, Jonathan. 1996. Dynamics and the semantics of dialogue. In *Language, Logic, and Computation*, vol. 1. Jerry Seligman and Dag Westerståhl (eds), 221–237. Stanford, CA: CSLI Publications.

Grice, H. Paul. 1975. Logic and conversation. In *Syntax & Semantics* 3: Speech Acts, Peter Cole & Jerry L. Morgan (eds), 41–58. New York: Academic Press. https://doi.org/10.1163/9789004368811_003

Gunlogson, Christine. 2001. *True to Form: Rising and Falling Declaratives as Questions in English*. London: Routledge.

Gutzmann, Daniel. 2015. *Use-Conditional Meaning: Studies in Multidimensional Semantics*. Oxford: Oxford University Press. https://doi.org/10.1093/acprof:oso/9780198723820.001.0001

Haegeman, Liliane. 2002. Anchoring to speaker, adverbial clauses and the structure of CP. In *Georgetown University Working Papers in theoretical Linguistics* 2: 117–180.

Haegeman, Liliane. 2012. *Adverbial clauses, main clause phenomena, and composition of the left periphery*. Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199858774.001.0001

Haegeman, Liliane & Virginia Hill. 2013. The syntacticization of discourse. In *Syntax and its limits* 48, Raffaella R Folli, Christina Sevdali & Robert Truswell (eds), 370–390. Oxford: Oxford University Press. <10.1093/acprof:oso/9780199683239.003.0018> https://doi.org/10.1093/acprof:oso/9780199683239.003.0018

Hamblin, Charles L. 1971. Mathematical models of dialogue. *Theoria* 37 (2): 130–155. <https://doi.org/10.1111/j.1755-2567.1971.tb00065.x>

Hooper, Joan B., & Sandra A. Thompson. 1973. On the applicability of root transformations. *Linguistic inquiry* 4 (4): 465–497.

Huang, C.-T. James, Y.-H. Audrey Li, and Yafei Li. 2009. *The syntax of Chinese*. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9781139166935

Kaplan, David. 1997. The meaning of 'ouch' and 'oops'. Manuscript, UCLA.

Karagjosova, Elena. 2004. *The meaning and function of German modal particles*. PhD dissertation, Freie Universität Berlin.

Kaufmann, Stefan. 2010. Strong and weak presupposition: German *ja* under quantifiers. *Manuscript*, Northwestern University. <http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.713.5544>

Kaufmann, Magdalena & Stefan Kaufmann. 2012. Epistemic particles and performativity. In *Proceedings of the 22nd Semantics and Linguistic Theory Conference*, Anca Chereches (eds), 208–225. Linguistic Society of America.

Kratzer, Angelica. 1999. Beyond Ouch and Oops: How descriptive and expressive meaning interact. *Paper presented at the Cornell Context-Dependency Conference*.

Kratzer, Angelica. 2004. Interpreting focus: Presupposed or expressive meanings? A comment on Geurts and van der Sandt. *Theoretical Linguistics*, 30 (1):123–136. https://doi.org/10.1515/thli.2004.002

Kraus, Kelsey. 2018. *Great Intonations.* PhD dissertation, University of California, Santa Cruz.

Landau, Idan. 2015. *A two-tiered theory of control*. Cambridge, Massachusetts: MIT Press. https://doi.org/10.7551/mitpress/9780262028851.001.0001

Li, Boya. 2006. Chinese Final Particles and the Syntax of the Periphery. PhD dissertation, Leiden University.

Li, Charles N., & Sandra A. Thompson. 1981. Mandarin Chinese: A Functional Reference Grammar. Berkeley: University of California Press.

Li, Zongjiang. 2005. Fuci 'dao' ji xiangguan fuci de yuyi gongneng he lishi yanbian [On the semantic functions and diachronic development of adverbs 'dao' and other relevant adverbs]. *Hanyu xuebao*. 10: 33–39.

Ma, Zhen. 1983. Shuo 'fan'er'. [On 'fan'er']. *Zhongguo yuwen*. 3.

Müller, Sonja. 2017. Combining *ja* and *doch*: A case of discourse structural iconicity. In *Discourse Particles. Formal Approaches to their Syntax and Semantics*, Josef Bayer & Volker Struckmeier (eds), 203–240. Berlin: De Grutyer.

Paul, Waltraud. 2009. Consistent disharmony: Sentence-final particles in Chinese. Manuscript, Paris. <http://crlao.ehess.fr/index.php?177.>

Paul, Waltraud. 2014. Why particles are not particular: Sentence-final particles in Chinese as heads of a split CP. *Studia Linguistica* 68 (1): 77–115. https://doi.org/10.1111/stul.12020

Paul, Waltraud. 2015. New Perspectives on Chinese Syntax. Berlin: De Gruyter. https://doi.org/10.1515/9783110338775

Paul, Waltraud & Victor Pan. 2017. What you see is what you get: Chinese sentence-final particles as head-final complementisers. In *Discourse Particles. Formal Approaches to their Syntax and Semantics*, Josef Bayer & Volker Struckmeier (eds), 49–77. Berlin: De Gruyter.

Pesetsky, David & Esther Torrego. 2007. The syntax of valuation and the interpretability of features. In *Phrasal and clausal architecture: Syntactic derivation and interpretation*. In honor of Joseph E. Emonds, Simin Karimi, Vida Samiian, & Wendy K. Wilkins (eds), 262–294. Amsterdam: John Benjamins. https://doi.org/10.1075/la.101.14pes

Portner, Paul. 2004. The semantics of imperatives within a theory of clause types. In *Proceedings of the 14th Semantics and Linguistic Theory Conference*, Robert B. Young (eds), 235–252. Linguistic Society of America. https://doi.org/10.3765/salt.v14i0.2907

Potts, Christopher. 2007. The expressive dimension. *Theoretical Linguistics* 33 (2), 165–198. https://doi.org/10.1515/TL.2007.011

Potts, Christopher. 2015. Presupposition and implicature. In *The Handbook of Contemporary Semantic Theory* [Second Edition], Shalom Lappin & Chris Fox (eds), 168–202. Blackwell. https://doi.org/10.1002/9781118882139.ch6

Rett, Jessica. 2021. The Semantics of Emotive Markers and Other Illocutionary Content. *Journal of Semantics* 38(2),305–340. https://doi.org/10.1093/jos/ffab005

Rizzi, Luigi. 1997. The fine structure of the left periphery. In *Elements of grammar*, Liliane Haegeman (eds), 289–330. Dordrecht: Kluwer. https://doi.org/10.1007/978-94-011-5420-8_7

Roberts, Craige. 1996. Information structure in discourse. In OSU Working Papers in Linguistics 49, J.H. Yoon and A. Kathol (eds), 91–136. Columbus: Ohio State University.

Rudin, Deniz. 2018. Rising above commitment. PhD dissertation, University of California, Santa Cruz.

Schiffrin, Deborah. 1987. *Discourse Markers*. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511611841

Shi, Dingxu, Mi Zhou, & Yao Yao. 2017. Pingjia fuci yu Beijing mingti – 'pianpian' de yuyi yu jufa texing [Evaluative adverbs and background proposition – the syntax and semantics of Chinese *pianpian*]. *Waiyu jiaoxue yu yanjiu*. 49 (6): 914–926.

Simpson, Andrew. 2014. Sentence-final particles. In *The Handbook of Chinese Linguistics*, C.-T. James Huang, Y.-H. Audrey Li, & Andrew Simpson (eds), 156–179. Malden, MA: Blackwell. https://doi.org/10.1002/9781118584552.ch7

Stalnaker, Robert. 1978. Assertion. In *Syntax and Semantics* (9), Peter Cole (eds), 315–332. New York: Academic Press.

Tang, Jane Chih-Chen. 1990. Chinese Phrase Structure and the Extended X-bar Theory. Phd dissertation, Cornell University.

Thurmair, Maria. 1989. Modalpartikeln und ihre Kombinationen. *Max Niemeyer Verlag*. <https://doi.org/10.1515/9783111354569>

Wei, Haley Wei & Yen-hui Audrey Li. 2018. Adverbial clauses in Mandarin Chinese. *Linguistic Analysis*, 42(1&2): 163–298.

Wei, Wei. 2020. Discourse Particles: clause structure and syntax-to-discourse relation. PhD dissertation, University of Southern California.

Wu. Jiun-Shiung, 2008. Antonyms? Presuppositions? On the semantics of two evaluative modals *jingran* and *guoran* in Mandarin. *Journal of Chinese language and computing* 18(1): 161–173.

Zeevat, Henk. 2003. Particles: Presupposition triggers, context markers or speech act markers. In *Optimality theory and pragmatics*, Reinhard Blutner & Henk Zeevat (eds), 91–111. London: Palgrave Macmillan.

Zhou, Hong. 2006. Fuci 'dao' de yuqi tuiduan yu yufa yiyi [On the Anticipation Conclusion and Grammatical Meaning of the Chinese Adverb 'dao']. *Yunnan shifan daxue xuebao [Journal of Yunnan Normal University]*. 4: 1–7.

Zhu, Dexi. 1982. *Yufa jiangyi*. [Lectures in Grammar]. Beijing: The Commercial Press.

Zimmermann, Malte. 2004. Discourse Particles in the Left Periphery. In ZAS Papers in Linguistics 35: Proceedings of the Dislocated Elements Workshop [volume 2], Benjamin Shaer, Werner Frey & Claudia Maienborn (eds) 543–566. ZAS Berlin, https://doi.org/10.21248/zaspil.35.2004.241

Zimmermann, Malte. 2008. Discourse particles in the left periphery. In *Dislocated Elements in Discourse: Syntactic, Semantic, and Pragmatic Perspectives*, Benjamin Shaer, Philippa Cook, Werner Frey & Claudia Maienborn (eds), 200–231. London: Routledge,

Zimmermann, Malte. 2011. Discourse particles. In *Semantics: An International Handbook of Natural Language Meaning* [Volume 2], Klaus von Heusinger, Claudia Maienborn & Paul Portner (eds), 2011–2038. Berlin: De Gruyter.

PART V

Acquisition of syntactic structures

V-*gei* vs. double object construction

The mental representation of the Mandarin V-*gei* construction

Yi-Hsien Liu and Heeju Hwang
University of Southern California / University of Hong Kong

The present study investigates whether V-*gei* constructions [V-*gei* NP NP] have the same underlying syntactic structure as Double Object Constructions (DOC) [V NP NP], using a structural priming paradigm. Native speakers of Mandarin were primed to produce a V-*gei*, DOC, or a *Gei*-object Construction (GOC) [V NP *gei* NP]. They then were given the opportunity to produce either a V-*gei*, DOC, or a GOC at will. We found that Mandarin speakers produced significantly more DOC and V-*gei* sentences following DOC primes than GOC primes. V-*gei* primes, however, did not increase the production DOC or V-*gei* sentences. We discuss the implications of these results.

Key words: V-*gei*, double object, syntactic priming, syntactic representation

1. Introduction

This study aims to investigate how native speakers of Mandarin Chinese process the dative construction in Chinese, as in (1). In particular, we examine whether the V-*gei* construction (V-*gei*) in (1c) is structurally related to or distinct from the Double Object Construction (DOC) in (1a).[1]

(1) a. DOC: Xiaozhang song-le Mali yi tiao xianglian
Xiaozhang gift-PFV Mary one CL necklace
b. GOC:[1] Xiaozhang song-le yi tiao xianglian gei Mali.
Xiaozhang gift-PFV one CL necklace GEI Mary
c. V-*gei*: Xiaozhang song-gei-le Mali yi tiao xianglian
Xiaozhan gift-GEI-PFV Mary one CL necklace
abc: "Xiaozhang gifted Mary a necklace."

1. Sentences like (1b) are structurally similar to the Prepositional Object Construction (POC) in other languages; however, because the status of *gei* is debatable, we will follow Liu (2006) and call it the *Gei*-object Construction (GOC).

https://doi.org/10.1075/la.272.19liu

As (2) shows, *gei* literally means "give" and its ditransitive verbal status is well-established in the literature.

(2) Xiaozhang gei-le Mali yi tiao xianglian
Xiaozhang give-PFV Mary one CL necklace
"Xiaozhang gave Mary a necklace."

Previous syntactic analyses have focused on the status of *gei* in GOCs (1b) and V-*gei* constructions (1c).[2] *Gei* in GOCs (1b) has been analyzed as a verb (e.g., Li, 1990, Huang & Ahrens, 1999, Huang & Lin, 2015), as a preposition (e.g., Ting & Chang, 2004, Zhang, 1998), and as either a verb or a preposition (e.g., Her, 2006). The *gei* in the V-*gei* construction (1c) is analyzed a coverb (e.g., Li & Thompson, 1981), a head verb in the V-V compound (e.g., Her, 2006, Li, 1990, Liu, 2006, Lin & Huang, 2015), and a verbal affix (e.g., Huang & Ahrens, 1999).

The different analyses of *gei* naturally lead to different structural analyses of V-*gei*. One line of approach is that DOCs (1a), GOCs (1b), and V-*gei* (1c) are permutations of the ditransitive/ dative construction (Li & Thompson, 1981, Li, 1990, Tang, 1978, among others). Some of the proposals have taken the DOC or V-*gei* as the underlying structure, and GOCs as the derived structure (e.g., Gu, 1999, Shen et al. 2001). Others viewed GOCs as the underlying structure and DOCs or V-*gei* forms as derived, and, in these analyses, *gei* in GOCs (1b) is taken as the same *gei* which occurs in V-*gei* (1c) (e.g., Li, 1990).

The other line of approach recognizes two different structures, DOCs (1a) and GOCs (1b). When *gei* immediately follows the verb, the complex verb produces only the [V NP NP] structure, not the [V NP *gei* NP] structure. This complex verb might be a V-V compound, in which *gei* is the head, and the compound is formed through head adjunction (Lin & Huang, 2015) or base-generation at one V head in the lexicon (e.g., Li, 1990). In this approach, the V-*gei* construction (1c) is not structurally related to the GOC (1b), but viewed as a subtype of the DOC syntactically.

Still yet another possibility is that DOC, GOC, and V-*gei* are three separate structures. Despite the surface similarity, the V-*gei* [V-*gei* NP NP] and the DOC [V NP NP] cannot freely alternate, as shown in (3a, b) and (4a, b).

2. It is generally assumed that *gei* has undergone grammaticalization. According to Ting & Chang (2004), the verbal category of *gei* is the genesis, follows by the prepositional status, and then the complementizer status in the purposive *gei* sentences, which we did not discuss in this paper.

(3) a. V-*gei*: Xiaozhang ji/juan-gei Mali yi tiao xianglian
Xiaozhang mail/donate-GEI Mary one CL necklace
b. DOC: *Xiaozhang ji/juan Mali yi tiao xianglian
Xiaozhang mail/donate Mary one CL necklace
c. GOC: Xiaozhang ji/juan yi tiao xianglian gei Mali
Xiaozhang mail/donate one CL necklace GEI Mary
abc:"Xiaozhang mailed/donated a necklace to Mary."

(4) a. V-*gei*: *Xiaozhang gaosu/tongzhi-*gei* Mali yi ge xiaoxi.
Xiaozhang tell/inform-GEI Mary one CL news
b. DOC: Xiaozhang gaosu/tongzhi Mali yi ge xiaoxi.
Xiaozhang tell/inform Mary one CL news
c. GOC: *Xiaozhang gaosu/tongzhi yi ge xiaoxi gei Mali.
Xiaozhang tell/inform one CL news GEI Mary
abc: "Xiaozhang told/informed Mary a piece of news"

Following Goldberg (1995, 2006) and Jackendoff (2004), Liu (2006) assumes constructions themselves carry meanings, independent of the meanings contributed by lexical items. She shows that the three constructions all convey a sense of transfer, but they differ in the range of transfer and the argument role of the indirect objects. Specifically, verbs with a core meaning of transfer such as *song* "gift" allow the three-way alteration in (1), repeated in (5); verbs with an extended meaning of transfer such as *ji* "mail" and *juan* "donate" allow two-way alternations, as in (3); verbs with a further extended meaning of transfer such as *gaosu "tell*" and *tongzhi* "inform" allow only one construction, as in (4).

(5) a. DOC: Xiaozhang song-le Mali yi tiao xianglian
Xiaozhang gift-PFV Mary one CL necklace
b. GOC: Xiaozhang song-le yi tiao xianglian gei Mali
Xiaozhang gift-PFV one CL necklace GEI Mary
c. V-*gei*: Xiaozhang song-gei-le Mali yi tiao xianglian
Xiaozhan gift-GEI-PFV Mary one CL necklace
abc: "Xiaozhang gifted Mary a necklace."

The differences among the three constructions suggested by Liu are summarized in Table 1 (Liu's example (64)). Under this analysis, GOCs, V-*gei*, and DOCs are related but yet separate structures. Among the three structures, GOCs and the V-*gei* construction are more closely related because they only allow for a recipient as the indirect object, and they pattern in the same way with 12 classes of the verbs (see Liu's classification of 15 verb classes) – these either occur in both constructions or are excluded by both.

Table 1. Liu's comparison of GOCs, V-*gei*, and DOCs in terms of aspects of transfer and thematic role

	Range of transfer	**Argument role of the indirect object**
GOC	act, manner, instrument, pre-condition	recipient
V-*gei*	act, manner, instrument	recipient
DOC	act	recipient, goal, patient

In sum, previous studies analyze V-*gei* as either structurally related to DOC, GOC, or as a separate structure. The present study aims to help resolve the debate in formal syntactic accounts by taking a psycholinguistic approach to the issue. Specifically, we aim to provide a potential new insight into the syntactic representation of V-*gei* using structural priming.

2. Previous syntactic priming studies

Structural priming refers to the tendency that speakers repeat a syntactic structure that they have previously encountered (e.g., Bock, 1986, Pickering & Ferreira, 2008 for a review). For example, when exposed to an English Prepositional Object (PO) sentence *John gave a banana to Mary,* speakers are subsequently more likely to produce another PO sentence *Sara sent a postcard to Jim* than when exposed to a DOC sentence *Sara sent Jim a postcard*. In a structural priming study, the sentence presented at an earlier time (e.g., *John gave a banana to Mary*) is referred to as a prime.

Critically, structural priming depends on an abstract syntactic representation that is independent of the meaning and sound of an utterance. Although the repetition of meaning-carrying words such as a verb or a noun can enhance structural priming, structural priming occurs in the absence of lexical repetition (e.g., Cleland & Pickering, 2003, Pickering & Branigan, 1998). For example, sentences such as *Susan brought a book to Stella* prime the production of POs in a subsequent description of a semantically unrelated event such as *The girl handed a brush to the man.* Additionally, structural priming does not occur when prime and subsequent sentences are superficially similar but have a different structure. Whereas *Susan brought a book to Stella* primes the production of *The girl handed a brush to the man*, the prosodically similar but syntactically different *Sue brought a book to study* does not (Bock & Loebell, 1990). These results suggest that what is primed is the production of an abstract syntactic representation rather than the meaning or sound of an utterance. Structural priming has been observed with various syntactic structures (see e.g., Bock, 1986 for actives/passives, Bock, 1989 for datives, Ferreira, 2003 for complementizer *that*, Corley & Scheepers, 2002 for relative clauses, Cleland & Pickering, 2003 for noun-phrase structure, and Konopka & Bock, 2009 for

verb-particle placement) in different languages (e.g., Hartsuiker & Kolk, 1998 for Dutch, Scheepers, 2003 for German, Hwang & Chun, 2018 for Korean) using a variety of methods (e.g., Bock, 1986 for picture description tasks, Fox Tree & Meijer, 1999 for sentence recall tasks, Pickering & Branigan, 1998 for sentence completion tasks, Branigan, Pickering, & Cleland, 2000 for confederate-scripting tasks). Overall, previous studies on structural priming have demonstrated the psychological reality of abstract syntactic representations in human minds, which are independent of semantic, lexical, or phonological information.

Recent studies have shown that the effects of structural priming are observed in Chinese as well. Specifically, structural priming has been used to investigate the dative structures orthogonally related to the topics of investigation here (Cai et al., 2011, 2012, Hwang & Shin, 2019 among others). For example, Cai et al. (2011) showed that Mandarin speakers produced significantly more V-*gei* sentences and fewer GOC sentences immediately after hearing a V-*gei* sentence such as *niuzai song-gei-le shuishou naben shu* 'the cowboy gifted the sailor that book' than after hearing a sentence unrelated to datives such as *wupo ku le* 'the witch cried' and GOC primes such as *niuzai song-le naben shu gei shuishou* 'the cowboy gifted that book to the sailor'. Similarly, Hwang and Shin (2019) showed that V-*gei* primes increased the production of V-*gei* sentences over a longer term as compared to GOC primes.

The results of these two studies provide evidence against the analysis of V-*gei* as GOCs. If V-*gei* has the same syntactic structure as GOCs, it should increase the use of GOCs, contrary to the findings. What is not clear is whether V-*gei* shares the same linguistic representation as DOCs or has a distinct structure from DOCs.

Although V-*gei* is assumed to be equivalent to DOCs in previous psycholinguistic and syntactic research, there is no empirical evidence suggesting that V-*gei* behaves like DOCs (Her, 2006, Li, 1990, Lin & Huang, 2015, among others). In fact, Hwang and Shin (2019) found no between-language priming between V-*gei* in Mandarin and DOC in English in Mandarin-English bilinguals, suggesting that V-*gei* may not behave exactly like DOCs. Between-language priming is commonly suggested to occur when two languages contain structures that are syntactically analogous. Whereas Hwang and Shin found that passives in Mandarin Chinese (e.g., *shuishou bei haidao da le* 'the sailor was hit by the pirate') primed the production of passives in English (e.g., the thief was chased by the policeman), they did not find any evidence that V-*gei* in Mandarin Chinese primed the production of DOCs in English. Assuming that DOCs in Mandarin are equivalent to DOCs in English, this raises the possibility that V-*gei* is distinct from or not entirely equivalent to DOCs.

The present study examines the structure of V-*gei* using structural priming. Given that prime sentences cause increased use of sentences with the same structure, structural priming can provide insights into the representation of V-*gei*. In particular, if Mandarin speakers process the V-*gei* construction like DOCs, we

expect that exposure to the V-*gei* primes will increase Mandarin speakers' production of DOCs, and exposure to the DOC primes will increase the production of the V-*gei* sentences. If the V-*gei* sentence has an independent structure from DOCs, we expect that V-*gei* primes will increase the production of V-*gei*, whereas DOC or GOC primes will not. We test these hypotheses using a sentence completion task similar to that of Pickering and Branigan (1998) (see also Corley & Scheepers, 2002; Kaan & Chun, 2016; Kaschak, Loney, & Borreggine, 2006 for the use of sentence competition task for structural priming).

3. Experiment

Participants

186 Taiwanese Mandarin speakers participated in the experiment. 51 participants were excluded for not completing the study. This left 135 participants in the analysis. Among the 135 participants, there were 96 females and 32 males; 7 people did not disclose gender information. 86 participants were in the age group of 18 to 34 years old, 34 participants in the age group of 35 to 54 years old, and 15 participants in the over 55 years old age group.

Materials & procedure

We constructed 24 sets of experimental items, using 12 verbs that could appear with a DOC, a GOC, and a V-*gei* construction (e.g., Pickering & Branigan, 1998). Each set consisted of a DOC prime fragment (6a), a GOC prime fragment (6b), a V-*gei* prime fragment (6c) and a target fragment (6d) (see Appendix).

(6) a. 小張送瑪麗 …
Xiaozhang gifted Mary …
b. 小張送一條項鍊 …
Xiaozhang gifted a necklace …
c. 小張送給瑪麗 …
Xiaozhang gifted-GEI Mary …
d. 小郭賠…
Xioguo compensated…

For each priming trial, participants received a prime fragment designed to induce the production of a DOC (6a: Xiaozhang gifted Mary a necklace), a GOC (6b: Xiaozhang gifted a necklace GEI Mary), or a V-*gei* construction (6c: Xiaozhang gift-GEI-(ASP) Mary a necklace). Immediately after the prime fragment, participants received a target fragment such as (6d). The target fragment allowed participants

to produce either a DOC, a GOC, or a V-*gei* construction. The prime and the target fragments employed the same set of 12 verbs, with each verb occurring twice in the primes and the targets. However, the prime and the target in each set used different verbs. The experimental items were combined with 32 filler fragments. None of the filler fragments contained a verb that could be completed with a GOC, DOC, or a V-*gei* construction (e.g., *Xiaohua qu*… "Xiaohua went…").

The experimental items were placed into three lists, each comprising eight items from each condition (i.e., DOC, GOC, V-*gei* prime condition), such that one version of each item appeared in each list. Participants were randomly assigned to one of the three lists.

The study was administered as an online survey using Qualtrics. Participants were instructed to complete each fragment with the first completion that came to mind. Before proceeding to the main experiment, participants were presented with two example trials and four practice trials.

Scoring

We analyzed participants' responses for prime and target fragments. The responses were placed into one of four categories: GOC, DOC, V-*gei* and others. Responses were scored as 'GOC' if the verb was followed by a theme and a *gei*-object phrase with a recipient as an indirect object. Responses were scored as 'DOC' if the verb was followed by a recipient and a theme. If the main verb was immediately followed by *gei* and then by a recipient and a theme, a response was scored as 'V-*gei*'. Responses were scored as 'other' (a) if they did not contain either a theme or a recipient (e.g., *niuzai song-gei ta le* "the cowboy gifted to him" or *niuzai song-le yige xiangjiao* "the cowboy gifted a banana") and (b) if participants used a structure other than a GOC, DOC, or V-*gei* structure (e.g., *niuzai song wo huijia* "the cowboy took me home").

Results

Overall, the priming manipulation effectively elicited the production of an intended primed structure 79% of the time (2547 out of 3240 trials). Thirty-three percent of these trials were completed as DOC primes (851 trials), 40% as V-*gei* primes (1026 trials), and 26% as GOC primes (670 trials). Of these prime trials, we only included the trials for which participants produced DOC, V-*gei* or GOC completions in the analysis (858 trials). Of these prime trials, we only included in the analysis the trials for which participants produced DOC, V-*gei* or GOC completions in target completions (858 trials).

Figure 1 plots the proportion of DOC, V-*gei*, and GOC completions in DOC, V-*gei,* and GOC prime conditions. As can be seen, participants produced more DOC and V-*gei* completions following DOC and V-*gei* primes than following GOC primes.

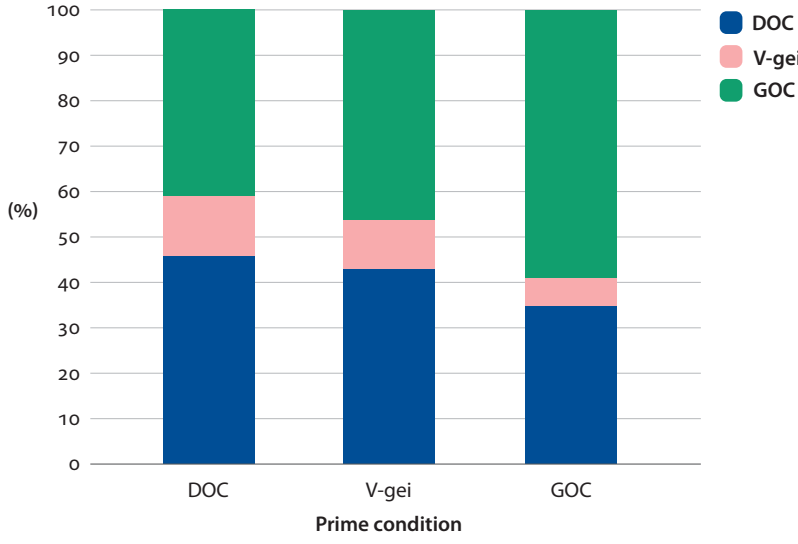


Figure 1. The proportion of DOC, V-*gei*, and GOC completions as a function of prime conditions.

To assess the effect of primes, we analyzed the frequencies of response form (DOC, V-*gei*, GOC) as a function of prime condition (DOC, V-*gei*, GOC) using multinomial logistic regression models. For comparisons between prime conditions, we report the coefficient and its level of significance. Coefficients are given in log-odds.

The results of the analysis showed that DOC primes significantly increased the rate of DOC and V-*gei* completions as compared to GOC primes (Table 2). Although V-*gei* primes numerically increased the rate of DOC and V-*gei* completions similar to DOC primes, the effect of priming did not reach statistical significance.

Table 2. Summary of multinomial logistic regression model

Fixed effects	Coefficient	SE	*p*
DOC responses (compared to GOC)			
Intercept	−0.17	0.07	.02
DOC prime	0.27	0.10	<.01
V-*gei* prime	0.08	0.10	.41
V-gei responses (compared to GOC)			
Intercept	−1.65	0.13	<.001
DOC prime	0.47	0.17	<.01
V-*gei* prime	0.16	0.17	.32

4. Discussion

The present study is an attempt to investigate whether or not the structure of V-*gei* is best analyzed as a DOC using structural priming. We have found that participants produced significantly more DOC and V-*gei* completions following DOC primes than GOC primes. This provides support for the analysis that V-*gei* constructions and DOCs share a syntactic representation. The results are incompatible with the analysis that V-*gei* constructions share a syntactic representation with GOCs or they have a distinct structure from DOCs. However, we did not find a significant effect of V-*gei* priming on DOC or V-*gei* completions. Thus, our results provide a partial support for the V-*gei* construction as DOC analysis.

There are a few possibilities why V-*gei* primes did not increase the production of DOCs and V-*gei* constructions. One possibility is that V-*gei* is such a marked structure that speakers opt to use an alternative structure to convey the same meaning. Liu (2001) surveyed Chinese speakers of different dialectal backgrounds by providing them a sheet of Chinese sentences to read. When the sentence is a V-*gei* sentence, many speakers resorted to an alternative structure. For example, when reading *jiejie da-gei ta liang-jian maoyi* "the older sister knit-GEI him two sweaters.", they switched to the preverbal *gei* structure *jiejie gei ta da-le liang-jian maoyi* "the older sister GEI him knit two sweaters" or the GOC structure *jiejie da-le liang-jian maoyi gei ta* "the older sister knit two sweaters GEI him." As a sharp contrast, when reading a GOC sentence, no one adopted any alternative structure. According to Liu (2001), this is because the GOC holds the preferred [V + D.O. (Direct Object)] sequence, whereas in the V-*gei* construction, the [*gei*+ I.O. (Indirect Object)] phrase interrupts the [V+ D.O.] continuity, even more so than DOCs. His typological study concluded that GOC is the least marked structure, followed by DOC, and V-*gei* is the most marked.

The markedness of the V-*gei* sentences may account for the overall low production of the V-*gei* production in the present study. However, this does not explain (a) why V-*gei* primes failed to induce subsequent V-*gei* completions in our study in contrast to the findings of Cai et al. (2011, 2012) and Hwang & Shin (2019), and (b) why DOCs primed the production of V-*gei*, whereas V-*gei* did not prime DOCs. Note that one important difference between previous studies and ours is that previous studies used both two-way alternation (V-*gei* and GOC) and three-way alternation verbs (V-*gei*, DOC, and GOC). Among the verbs used in Cai et al. (2012) and Hwang and Shin (2019), half of the verbs were two-way alternation verbs that participate in V-*gei* and GOC alternation. As these verbs force participants to produce either V-*gei* or GOC sentences, it is possible that the V-*gei* priming effect was primarily driven by the verbs in these studies. When the verbs participate in three-way alternations, however, the priming effect of the V-*gei* structure may be

weakened. If DOCs and V-*gei* share a syntactic representation, as suggested by our results, Mandarin speakers may choose to produce a less marked DOC sentence following a V-*gei* prime in the case of the three-way alternation verbs. This may result in an insignificant priming effect of V-*gei* in the current study.

What is left unexplained is the asymmetry between DOC and V-*gei* priming – while DOCs primed V-*gei*, V-*gei* did not prime DOCs. We suggest that if V-*gei* is a subtype of DOC (Her, 2006, Li, 1990, Lin & Huang, 2015, among others), priming a more general superset structure DOCs may activate DOCs as well as the subset structure V-*gei*, but priming a subset structure V-*gei* may not activate the superset structure DOCs as effectively. For example, DOCs allow for a recipient, goal, or patient role as an indirect object. By contrast, V-*gei* takes only a recipient role as indirect object. Assuming that exposure to a syntactic structure activates syntactic knowledge related to the structure including its argument structure (e.g., Pickering & Branigan, 1998), DOC primes should spread activation to a recipient, goal, and patient role. As a recipient role is linked to V-*gei*, DOC primes could activate V-*gei* as well as DOCs. By contrast, as V-*gei* primes are not directly linked to a goal and a patient, they may not effectively prime the production of DOCs.

Yet another possibility is that our study was not sensitive enough to detect the effect of V-*gei* priming. Given that V-*gei* primes were the most effective primes in our study (with 95% of V-*gei* primes completed as V-*gei*), we assume that this is not likely. Nevertheless, future studies might usefully examine V-*gei* priming using other priming methods such as a picture-description task or a confederate-scripting task.

5. Conclusion

To conclude now, the present study tested whether V-*gei* should be analyzed as a DOC or as an independent construction by way of syntactic priming, and provides evidence that the V-*gei* and DOCs share an abstract syntactic representation in the speakers' mind. Our study is the first to provide support for the analysis of V-*gei* as a DOC (or V-*gei* as a subtype of DOC), an assumption that has been motivated in syntax and has been endorsed in psycholinguistics literature without empirical evidence. By establishing the relationship between V-*gei* and DOCs, the current study provides a foundation for future experiments involving further complexities (e.g. investigate the priming effect of the argument structures between the canonical Chinese dative sentences and their *ba*- or *bei*-counterparts, L2 and bilingual research on the dative constructions, etc.). We hope that, by testing a syntactic assumption with a psycholinguistic approach, this study can serve as an example how syntax proposals should make predictions on the native speakers' psychological reality, and how psycholinguistics research can provide an implicit method to investigate syntactic representations.

References

Bock, J. K. 1986. Syntactic persistence in language production. *Cognitive Psychology*, 18, 355–387. https://doi.org/10.1016/0010-0285(86)90004-6

Bock, J. K. 1989. Closed-class immanence in sentence production. *Cognition*, 31, 163–186. https://doi.org/10.1016/0010-0277(89)90022-X

Bock, J. K., & Loebell, H. 1990. Framing sentences. *Cognition*, 35, 1–39. https://doi.org/10.1016/0010-0277(90)90035-I

Branigan, H. P., Pickering M. J., & Cleland, A. A. 2000. Syntactic co-ordination in dialogue. *Cognition* 75, B13–B25. https://doi.org/10.1016/S0010-0277(99)00081-5

Cai, Z. G., Pickering, M. J., & Branigan, H. P. 2012. Mapping concepts to syntax: Evidence from structural priming in Mandarin Chinese. *Journal of Memory and Language*, 66, 833–849. https://doi.org/10.1016/j.jml.2012.03.009

Cai, Z.G., Pickering, M.J., Yan, H., & Branigan, H.P. 2011. Lexical and syntactic representations in closely related languages: Evidence from Cantonese-Mandarin bilinguals. *Journal of Memory and Language*, 65(4), 431–445. https://doi.org/10.1016/j.jml.2011.05.003

Cleland, A. A., & Pickering, M. J. 2003. The use of lexical and syntactic information in language production: Evidence from the priming of noun-phrase structure. *Journal of Memory and Language*, 49, 214–230. https://doi.org/10.1016/S0749-596X(03)00060-3

Corley, M., & Scheepers, C. 2002. Syntactic priming in English sentence production: Categorical and latency evidence from an Internet-based study. *Psychonomic Bulletin & Review*, 9, 126–131. https://doi.org/10.3758/BF03196267

Ferreira, V. S. 2003. The persistence of optional complementizer production: Why saying ''that'' is not saying ''that'' at all. *Journal of Memory and Language*, 48, 379–398. https://doi.org/10.1016/S0749-596X(02)00523-5

Fox Tree, J. E., & Meijer, P. J. A. 1999. Building syntactic structure in speaking. *Journal of Psycholinguistic Research*, 28, 71–92. https://doi.org/10.1023/A:1023239604158

Goldberg, A. 1995. *Construction: A Construction Grammar Approach to Argument Structure*. Chicago: University of Chicago Press.

Goldberg, A. 2006. *Construction at Work: The Nature of Generalization in Language*. Oxford: Oxford University Press.

Goldberg, A., & Jackendoff, R. 2004. The English resultative as a family of constructions. *Language* 80, 532–568. https://doi.org/10.1353/lan.2004.0129

Gu, Y. 1999. 双宾语结构 [Double object constructions]. In *Universals and specifics: Controversy in Chinese linguistics (*共性与个性：汉语语言学中的争议*)*, L. Xu (ed.). Beijing: Beijing Language Culture University Press.

Hartsuiker, R.J., & Kolk H. H. J. 1998. Syntactic persistence in Dutch. *Language and Speech* 41, 143–184. https://doi.org/10.1177/002383099804100202

Her, O. 2006. Justifying part-of-speech assignments for Mandarin gei. *Lingua* 116 (8), 1274–1302. https://doi.org/10.1016/j.lingua.2005.06.003

Hwang, H., & Chun, E. 2018. Influence of social perception and social monitoring on structural priming. *Cognitive Science*, 42(51), 303–313. https://doi.org/10.1111/cogs.12604

Hwang, H., & Shin, J-A. 2019. Cumulative effects of syntactic experience in a between- and a within-language context: Evidence for implicit learning. *Journal of Memory and Language*, 109, 104054. https://doi.org/10.1016/j.jml.2019.104054

Huang, C., & Ahrens K. 1999. The function and category of gei in Mandarin ditransitive constructions. *Journal of Chinese Linguistics*, 27(2), 1–26.

Kaan, E., & Chun, E. 2017. Priming and adaptation in native speakers and second-language learners. *Bilingualism: Language and Cognition,* 21(2), 228–242. https://doi.org/10.1017/S1366728916001231

Kaschak, M. P., Loney, R. A., & Borreggine, K. L. 2006. Recent experience affects the strength of structural priming. *Cognition,* 99(3), B73–B82. https://doi.org/10.1016/j.cognition.2005.07.002

Konopka A.E., & Bock K. 2009. Lexical or syntactic control of sentence formulation? Structural generalizations from idiom production. *Cognitive Psychology,* 58(1), 68–101. https://doi.org/10.1016/j.cogpsych.2008.05.002

Li, A., 1990. *Order and Constituency in Mandarin Chinese*. Kluwer, Dordrecht. https://doi.org/10.1007/978-94-009-1898-6

Li, C., & Thompson S. 1981. *Mandarin Chinese: A Functional Reference Grammar*. University of California Press, Berkeley and Los Angeles.

Lin, T.-H., & Huang Y.-S. 2015. Structures of the Mandarin *gei* constructions. *Journal of East Asian Linguistics*, 24(3), 309–388. https://doi.org/10.1007/s10831-015-9132-3

Liu, D. 2001. Hanyu geiyulei shuangjiwu jiegou de leixingxue kaocha [A typological study on the double-object construction of Chinese give verbs]. *Zhongguo Yuwen* 5.

Liu, F. 2006. Dative constructions in Chinese. *Language and Linguistics*, 7(4). 863–904.

Pickering, M.J., & Branigan, H.P. 1998. The representation of verbs: Evidence from syntactic priming in language production. *Journal of Memory and Language*, 39, 633–651. https://doi.org/10.1006/jmla.1998.2592

Pickering, M. J., & Ferreira, V. S. 2008. Structural priming: A critical review. *Psychological Bulletin*, 134, 427–459. https://doi.org/10.1037/0033-2909.134.3.427

Scheepers C. 2003. Syntactic priming of relative clause attachments: persistence of structural configuration in sentence production. *Cognition* 89, 179–205. https://doi.org/10.1016/S0010-0277(03)00119-7

Shen, Y., He Y., & Gu. Y. 2001. 生成语法理论与汉语语法研究 *[Generative Grammar and Chinese Grammar Research].* Harbin: Harbin Educational Press.

Tang, T.-C. 1978. Double object constructions in Chinese. In *Proceedings of Symposium on Chinese Linguistics,* Linguistics Institute of the Linguistics Society of America 1977, Robert L. Cheng, Li Ying-Che & Ting-Chi Tang (eds.), 67–96. Taipei: Student.

Ting, J., & Chang M. 2004. The category of gei in Mandarin Chinese and grammaticalization. *Taiwan Journal of Linguistics,* 2 (2), 45–74.

Zhang, N. 1998. Argument interpretation in the ditransitive construction. *Nordic Journal of Linguistics* 21, 179–209. https://doi.org/10.1017/S033258650000425X

Appendix

1. 小黃借他的同學…./小黃借一枝筆…./小黃借給他的同學….
   Xiaohuang lent his classmate…./Xiaohuang lent a pen…./Xiaohuang lent-GEI his classmate….
   老錢傳授….
   Laoqian passed (on to)…..
2. 小美推薦她的朋友…../小美推薦這間店…./小美推薦給她的朋友….
   Xiaomei recommended her friend…./Xiaomei recommended this store…/Xiaomei recommended-GEI her friend….
   大中輸….
   Dazhong lost….
3. 小白找客人…./小白找三十塊錢…./小白找給客人….
   Xiaobai gave (change to) the customer…../ Xiaobai gave 30 dollars (change to)…./ Xiaobai gave (change to)-GEI the customer…..
   大田推薦….
   Datian recommended…..
4. 小劉輸賭場…./小劉輸三棟房子…./小劉輸給賭場….
   Xiaoliu lost (to) the casino…./ Xiaoliu lost three buildings……/ Xiaoliu lost-GEI the casino
   小紅送…
   Xiaohong gifted…..
5. 小剛賠他的客人…./小剛賠一台新電腦…./小剛賠給他的客人….
   Xiaogang compensated his client…./Xiaogang compensated a new computer……/ Xiaogang compensated-GEI his client…..
   老孫提供….
   Laosun provided……
6. 阿雅的公司提供員工…./阿雅的公司提供育嬰假…./阿雅的公司提供給員工….
   Aya's company provided the employees…../Aya's company provided parental leave…../ Aya's company provided-GEI the employees….
   大元租….
   Dayuan rented……
7. 小張送瑪麗…./小張送一條項鍊…./小張送給瑪麗….
   Xiaozhang gifted Mary…../Xiaozhang gifted a necklace…../Xiaozhang gifted-GEI Mary….
   小郭賠….
   Xiaoguo compensated…..
8. 老王供應他的顧客…./老王供應免費白飯…./老王供應給他的顧客….
   Laowang provided his customers…./Laowang provided free rice…../Laowang provided-GEI his customers
   老蕭借….
   Laoxiao lent…..
9. 小楊租她的朋友…./小楊租一個套房…./小楊租給她的朋友….
   Xiaoyang rented her friend…./Xiaoyang rented a suite…../Xiaoyang rented-GEI her friend….
   老趙賣….
   Laozhao sold….

10. 小花還圖書館…./小花還五本書…./小花還給圖書館….
Xiaohua returned (to) the library…../ Xiaohua returned five books…./Xiaohua returned-GEI the library…..
大山供應….
Dashang provided…..
11. 小方賣她的朋友…./小方賣進口車…./小方賣給她的朋友….
Xiaofang sold her friend…./Xiaofang sold imported cars…../Xiaofang sold-GEI her friend…
小柯還….
Xiaoke returned….
12. 小李傳授他的弟子…./小李傳授他的手藝…./小李傳授給他的弟子….
Xiaoli passed (on to) his disciples…./Xiaoli passed his skills…../Xiaoli passed-GEI his disciples…
小天找….
Xiaotian gave (change)…..
13. 小傲輸小立…./小傲輸六瓶威士忌…/小傲輸給小立….
Xiaoao lost Xiaoli…../Xiaoao lost six bottles of whisky…../Xiaoao lost-GEI Xiaoli….
欣欣賠….
Xinxin compensated….
14. 大寶送他的女兒…./大寶送兩盒禮盒 …./大寶送給他的女兒….
Dabao gifted his daughter…./Dabao gifted two gift boxes…./Dabao gifted-GEI his daughter….
阿靜傳授….
Ajing passed (on)…..
15. 小安推薦她的閨蜜…./小安推薦化妝品…./小安推薦給她的閨蜜….
Xiaoan recommended her close friend…./Xiaoan recommended cosmetic products…/ Xiaoan recommended-GEI her close friend…
雪梅供應….
Xuemei provided….
16. 小陳的老婆賠鄰居…./小陳的老婆賠一台新車…./小陳的老婆賠給鄰居….
Xiaochen's wife compensated her neighbor…../Xiaochen's wife compensated a new car…./ Xiaochen's wife compensated-GEI her neighbor….
宣宣找….
Xuanxuan gave (change)….
17. 小幸找乘客…./小幸找四塊零錢…./小幸找給乘客….
Xiaoxing gave (change to) the passenger…../Xiaoxing gave 4 dollars (change)……/Xiaoxing gave (change)-GEI the passenger….
曉馨輸….
Xiaoxing lost….
18. 小梅租她的球友…./小梅租兩枝羽毛球拍…./小梅租給她的球友….
Xiaomei rented her friend…../Xiaomei rented two badminton rackets……/Xiaomei rented-GEI her friend….
明利推薦…..
Mingli recommended…..

19. 老張還小明…../老張還兩把蔥…./老張還給小明….
Laozhang returned Xiaoming…./Laozhang returned two bunches of spring onions…./Laozhang returned-GEI Xiaoming…
天天送….
Tiantian gifted….
20. 老唐傳授他的兒子…./老唐傳授他的功夫…./老唐傳授給他的兒子….
Laotang passed (on to) his son…./Laotang passed his kung fu…../Laotang passed-GEI his son…..
阿俊提供….
Ajun provided…..
21. 阿原供應員工…./阿原供應廉價宿舍…./阿原供應給員工….
Ayuan provided the employees…./Ayuan provided cheap housing…./Ayuan provided-GEI the employees….
薇薇還….
Weiwei returned….
22. 小麗賣小娟…. /小麗賣一個名牌手錶…. /小麗賣給小娟….
Xiaoli sold Xiaojuan…./Xiaoli sold a brand-name watch…../Xiaoli sold-GEI Xiaojuan…..
阿珊借….
Ashan lent….
23. 大為提供他的乘客…./大為提供無限網路…./大為提供給他的乘客….
Dawei provided his passengers…./Dawei provided unlimited WIFI…../Dawei provided-GEI his passengers…..
阿辰賣….
Achen sold…..
24. 小晶借訪客…./小晶借一副鑰匙…../小晶借給訪客…..
Xiaojing lent the visitor…./Xiaojing lent a key……/Xiaojing lent-GEI the visitor…..
凱賓租….
Kaibin rented….

Predicting the unpredictable

-le used in Chinese serial verb constructions[1]

Yan Li
University of Kansas

This study investigates the use of the perfective aspect marker *–le* in Chinese serial verb constructions through an analysis of 386 serial verb constructions selected from the Sinica Corpus. The analysis takes into account the position of *–le*, the form of the object co-occurring with *–le*, and the semantic relationships between VP1 and VP2. The results indicate that *–le* is used predominately with VP1, that the primary semantic relationship between VP1 and VP2 is "consecutive", and that quantified objects occur more frequently than definite objects or bare noun objects in VPs containing *–le*. Understanding the semantic relationship between VP1 and VP2 can enable Chinese learners to predict where and when to use *–le* correctly in an SVC.

0. Introduction

The Chinese perfective aspect marker *-le* is one of the most challenging and most important grammatical features that students of Chinese as a foreign language (CFL) must learn. It has drawn enormous attention from Chinese linguists, yet neither a complete and unanimous understanding of the function of the aspect maker nor a consensus on how to facilitate its acquisition by adult Chinese language learners has been reached. Both Chinese learners and Chinese instructors feel the use of *–le* is unpredictable, and what makes it even more complicated is the existence of serial verb constructions in Chinese. Although linguists agree that

1. I am so honored to dedicate this chapter to Audrey Li, an exceptional mentor and role model in academia and in life. Her enthusiasm, knowledge, and dedication to linguistics have always been an inspiration to me. I also want to thank Professor Andrew Simpson for creating this book and for his helpful comments on this chapter. I am grateful, too, to the reviewers of this chapter for their constructive comments. I am deeply indebted to Randi Hacker, who proofread various versions of this chapter and provided helpful feedback. This project was funded by the General Research Fund, University of Kansas, #2301732. Of course, all errors are mine.

https://doi.org/10.1075/la.272.20li

–le must be used with the main verb, because Chinese does not morphologically mark verbs as finite or infinite, it is hard for L2 learners to distinguish main verbs from other verbs. Moreover, some uses of *–le* depend on the use of a serial verb construction: in other words, in this type of situation, *-le* cannot be used if it is not in a serial verb construction. An often-cited example in which *-le* is used in future events is shown in (1).

(1) 他 明天 吃了 飯 去 看 電影。
Tā míngtiān chī-le fàn qù kàn diànyǐng
he tomorrow eat-PFV meal go watch movie
'Tomorrow, after he eats, he'll watch a movie.'

In the sentence in (1), the use of *–le* depends on the structure: a serial verb construction. If the serial verb construction is changed to a single verb construction, *-le* cannot be used as shown in (2).

(2) *他 明天 吃了 飯。
Tā míngtiān chī-le fàn
he tomorrow eat-PFV meal
'*He has eaten tomorrow.'

In general, in a serial verb construction, *–le* is only used once. When the first verbal phrase denotes the means, tools or direction of the action, *-le* is used with the second verb ((3)b), not the first verb ((3)a); only when emphasizing that the action denoted by the second verb happens after the completion of the first action, is *–le* used after the first verb (4). (Yang et al., 2000; Zhao, 1990)

(3) a. *他 做了 生意 賺 幾個 錢。 (Zhao, 1990)
Tā zuò-le shēngyì zhuàn jǐge qián
he do-PFV business make a-few-CL money
'Intended: He made some money by doing business.'

b. 他 做 生意 賺了 幾個 錢。
Tā zuò shēngyì zhuàn-le jǐ-ge qián
he do business make-PFV a-few-CL money
'He made some money by doing business.'

(4) 許多 鰻魚 一直 游 到 西印度 群島
Xǔduō mányú yìzhí yóu dào xīyìndù qúndǎo
many eel continuously swim to western India group of islands
附近，才 產了 卵 死掉。 (Zhao, 1990)
fùjìn cái chǎn-le luǎn sǐdiào
nearby until lay-PFV eggs die
'Many eels swim to the vicinity of the West Indies before they lay eggs and die.'

However, in reality, these rules are not as simple as stated above. If some changes are made to the object of *zuò* 'do' in the sentences in (3), as shown in the sentences in (5), then *–le* has to be used after *zuò* 'do' even though the phrase containing *zuò* 'do' is still interpreted as the means of carrying out the action denoted by the second verb phrase.

(5) a. 他 做了 一 大 筆 生意 賺了 很多 錢。
Tā zuò-le yī dà bǐ shēngyì zhuàn-le hěnduō qián
he do-PFV one big CL business make-PFV a lot of money
'He made a lot of money doing big business.'

b. *他 做 一 大 筆 生意 賺了 很多 錢。
Tā zuò yī dà bǐ shēngyì zhuànle hěnduō qián
he do one big CL business make-PFV a lot of money
'Intended: He made a lot of money doing big business.'

Meanwhile, *-le* used in (4) can be omitted without affecting the grammaticality or the meaning of the sentence. In the field of Chinese linguistics, whether a verb in a serial verb construction can be suffixed with *–le* is taken as a sign that the verb is the head of the serial verb construction (Li, 1991; Law, 1996). Having this information is very useful in identifying the head of the SVC. However, for Chinese learners who don't know where to use *–le*, or which verb is the head of the SVC, the use of *–le* appears to be totally unpredictable; learners simply don't know when and where they should use *–le* in a serial verb construction. Furthermore, the majority of studies on *–le* do not distinguish cases where *–le* used in simple verb structure from cases where *–le* is used in SVCs. There is consequently a clear need for discussion on the essential conditions associated with the use of *–le* in serial verb constructions. The current study aims to investigate this use of *–le* through a corpus study in order to provide insights into this challenging aspect of the Chinese language. The findings will eventually help Chinese learners predict when and where to use *–le* in SVCs.

The paper is organized as follows: Section 1 defines the scope of serial verb construction that will be investigated in this study. Section 2 reviews previous studies on *–le* used in SVCs. Section 3 discusses the details of the current study, including research questions, data collection and data coding, results, and data analysis. Section 4 presents the conclusion and the pedagogical implications of this study.

1. Scope of the study of serial verb constructions (SVCs)

In Chinese linguistic literature, the term Serial Verb Construction (henceforth SVC) has generally been used to refer to syntactic structures in which two or more verbs are juxtaposed to form a complex predicate to express a series of related actions within a single clause (Baker, 1989; Givón, 2009; Li & Thompson, 1981). However, Chinese linguists disagree on what specific syntactic patterns should be included in this construction (Aikhenvald & Dixon, 2006; Baker, 1989; Durie, 1997; Givón, 2009; Li & Thompson, 1981; Paul, 2008; Sebba, 1987; Tao, 2009 among many others). Li and Thompson (1973, 1974, 1981) propose four types of SVCs, including SVCs expressing "two or more separate events", "one verb phrase or clause [being] the subject or direct object of another verb", pivotal construction, and descriptive clause constructions. Tao (2009) argues that SVCs should only include three types: the canonical type (i.e., the first type in Li and Thompson, 1981), pivotal sentences, and co-verb constructions. Matthews (2006) discusses SVCs in Cantonese and includes what is commonly known (elsewhere) as verb resultative complement structures. Zhu (1982) proposes that SVCs do not include co-verb constructions, predicative objects, conjunctions of two verbal phrases, or resultative constructions taking objects. Paul (2008) examines the different SVCs proposed by Li and Thompson (1981, 1974, 1973) as representative of the current practice in the field and argues that SVC has served as a cover term for distinct constructions with different properties in Chinese linguistics; she argues that SVC in Chinese does not refer to a unique construction with a predictable set of formal properties.

From these discussions it is clear that almost everyone agrees that the typical type of SVCs are those that express "two or more separate events" (Li and Thompson 1981: 595) while disagreement lies in the identification of other types of SVCs. This study uses this narrow definition of SVC. According to Li and Thompson (1981: 595), such a typical SVC "may be understood to be related in one or more of the following four ways: (i) consecutive, (ii) purpose, (iii) alternating, and (iv) circumstance". However, Paul (2008), argues that rather than having four types of interpretation, typical SVCs are mainly interpreted as communicating purpose or circumstance, depending on how the construction is parsed. Paul (2008) points out that "…the surface string can be parsed in two different ways" namely, " VP1 is either contained in an adjunct clause as in (6)a leading to the "circumstance" interpretation or it constitutes the matrix predicate as in (6)b leading to the "purpose" interpretation:

(6) 我們 開 會 討論 那個 問題。
Wǒmen kāi huì tǎolùn nà-ge wèntí.
we hold meeting discuss that-CL problem

a. Wǒmen [$_{vP}$ [$_{\text{adjunct clause}}$ *PRO*$_i$ kāi huì] [$_{vP}$ tǎolùn nàge wèn tí]]
(= (10)b, Paul, 2008.)
'We'll discuss that problem by holding a meeting.'(circumstance)

b. Wǒmen [$_{vP}$ kāi huì [$_{\text{purpose clause}}$ *PRO*$_i$ tǎolùn nàge wèn tí]]
(= (12), Paul, 2008.)
'We'll hold a meeting to discuss that problem.' (purpose)

Paul (2008) argues that "such a sentence can precisely *not* be analyzed as a coordinate structure, giving rise to the 'consecutive' or 'alternating' interpretation." She also indicates that a "consecutive" or "alternating" interpretation "is only possible when a pause occurs between the two VPs " or "in the presence of explicit marking by, e.g., adverbs." (Also cf. Chao, 1968: 325–326; Li, 1986: 132). However, Paul's suggestions seem to go against what is actually found in Mandarin, and a consecutive interpretation is readily available for many SVCs. The following example is cited from Li and Thompson (1981).

(7) 我 買票 進去。 (Li and Thompson, 1981: 595)
Wǒ mǎi piào jìn-qù.
I buy ticket enter-go
'I bought a ticket and went in.' (Consecutive)
'I bought a ticket to go in' (Purpose)

Sentences like (7) can be analyzed as coordinate structures, giving rise to the "consecutive" interpretation. Moreover, if VP1 is marked with the aspectual marker –*le,* the consecutive interpretation becomes stronger. For example:

(8) 公司 買了 三個 杯子 擺 在 面前。 (Sinica Corpus)
Gōngsī mǎi-le sān-gè bēizi bǎi zài miànqián
company buy-PFV three-CL cup put at front
'The company bought three cups and put them in the front.'

In the current study, SVCs are taken to have the following characteristics (Li and Thompson, 1981; Paul, 2008; Muller and Lipenkova, 2009; Zhang, 2010 among others):

(9) a. The verbs share the same grammatical subject;
b. There are no connective markings[2] to indicate the relationship of the verbs; and
c. The verbs are in a fixed order with relationships that vary based on verb semantics.

2. Connective markings in this study refer to function words that are utilized to denote semantic relationships between the two verbal phrases, such as: yǐbiàn 'in order to', wèile 'in order to', yǐzhìyú 'to the extent that' in a sentence. Adverbs that are used as part of the verbal phrase are not considered as connective markings.

According to (9)a, (10)a is an SVC while (10)b is not. In (10)a, the verbs *mǎi* 'buy', *huílái* 'come back' and *chī* 'eat' share the same grammatical subject: *tā* 'he'. In (10)b, *pài* 'send' and *qù* 'go' do not share the same grammatical subject.

(10) a. 他 買 東西 回來 吃。
Tā mǎi dōngxi huí-lái chī
he buy thing come-back eat
'He bought things and came back to eat.'

b. 我 派 他 去 買 票。
Wǒ pài tā qù mǎi piào
I send him go buy ticket
'I send him to buy tickets.'

According to (9)b, (11)a is an SVC while (11)b is not because the latter has an overt connective *lái,* 'to', used to mark the relationship between these two VPs.

(11) a. 我 努力 工作 賺錢。
Wǒ nǔlì gōngzuò zhuànqián
I work hard work make money
'I work hard to make money.'

b. 我 努 力 工作 來 賺錢。
Wǒ nǔ lì gōngzuò lái zhuànqián
I work hard work to make money
'I work hard to make money.'

2. Studies on *–le* used in SVC

Within the rich literature on *-le*, studies specifically devoted to the use of *–le* in SVCs are scarce. Zhao (1990) focuses on *–le* found in the SVCs used in elementary textbooks in China. Based on this investigation, Zhao (1990) points out that in a Chinese SVC, *-le* is only used once. When the first verbal phrase denotes the means, tools or direction of the action, *-le* occurs with the second verb (12). *–Le* is used with the first verb only if the sentence emphasizes that the second action occurs after the completion of the action denoted by the first verb (13). The following examples are from Zhao (1990).

(12) a. *他們 來了 問 幾道 數學題。
Tāmen lái-le wèn jǐ-dào shùxué tí
they come-PFV ask a few-CL math question
'Intended: they came and asked a few math questions.'

b. 他們 來 問了 幾道 數學題。
Tāmen lái wèn-le jǐ-dào shùxué tí
they come ask-PFV a few-CL math question
'They came and asked a few math questions.'

(13) 許多 鰻魚 一直 游 到 西印度 群島
Xǔduō mányú yìzhí yóu dào xīyìndù qúndǎo
many eel continuously swim to western India group of islands
附近，才 產了 卵 死掉。
fùjìn, cái chǎn-le luǎn sǐdiào
nearby until lay-PFV eggs die
'Many eels swim to the vicinity of the West Indies before they lay eggs and die.'

The suffixation of –*le* has been viewed as a sign of the headedness of the verb phrase in linguistic literature. Li (1991) and Law (1996) propose that in a Chinese SVC, the verb suffixed with an aspect marker is the head. Paul (2008) points out that either V1 or V2 can function as the head in a Chinese SVC, and thus –*le* can be suffixed to V1 or V2.

In order to find out whether there is a systematic preference for either V1 or V2 to be marked as the head, Lin et al. (2012) investigated the distribution of aspectual markers in SVCs that were found in the Sinica Corpus. This study found that "in Chinese SVCs, V2 is much more often suffixed with aspectual markers that are indicators of head, whereas V1 is more often suffixed with aspectual markers that are indicators of non-head." (Lin et al., 2012: 430) The "aspectual markers that are indicators of head" include *-le* and *-guo* and the aspectual marker that indicates a non-head is –*zhe*. Lin et al. (2012)'s findings in the corpus data suggest that Chinese SVCs tend to have V2 as the head. Therefore, it is more common to parse the second verb as the head of the SVC in which neither verb is suffixed with an aspectual marker. Lin et al. (2012) collected the data in their study through a search of only nine verbs. Because their research purpose focused on finding the head for SVCs, their conclusion is like that of many other analyses and discussions of SVCs: it furthers the understanding of the structure of SVC but is not very useful when it comes to helping Chinese learners decide when and where to use –*le* in SVCs.

Are there any features or forms that can help Chinese learners predict more effectively when and where to use –*le* in SVCs? We will address this question through a further investigation of –*le* marked SVCs found in the Sinica Corpus.

3. Corpus study

3.1 Research questions

The current study takes a usage-based approach to unveil the features of the use of *–le* in Chinese SVCs. Data in this study were drawn from the *Academia Sinica Balanced Corpus of Modern Chinese*. Data were coded and analyzed to answer the following questions:

1. Is the perfective marker *–le* used more frequently with the first verb or the second verb in a serial verb construction?
2. Is there any form correlation between the object and the use of *–le* with the first verb or the second verb in a serial verb construction? In other words, does a certain form of the object occur more often with *–le*?
3. What are the semantic relationships between VP1 and VP2 when at least one of them uses *–le*?

3.2 Data collection and coding

The data used in this study were collected from *Academia Sinica Balanced Corpus of Modern Chinese*, often referred to simply as the *Sinica Corpus*. This corpus is the first Balanced Modern Chinese Corpus with part-of-speech tagging. The new version was used: Sinica Corpus 4.0, with 10 million words, from the web search interface (http://asbc.iis.sinica.edu.tw/).

In order to capture all cases of *–le* used in SVCs, a search using the key word *–le* was conducted through the entire Sinica Corpus. This search retrieved 20,000 pieces of data which were then manually checked and analyzed to remove cases which were not SVC specific and did not use the perfective aspect *–le*.

The standards used to determine an SVC in this study were:

(14) a. that the verbs share the same grammatical subject;
b. that there be no connective markings that indicate the relationship of the verbs;
c. that the verbs be in a fixed order with a varied relationship based on the verb semantics: in other words, the two VPs in the SVC could not be switched without a significant change in meaning, e.g., *chū qù chī –fàn* 'go out to eat' vs. *chī –fàn chū qù* 'eat and go out'.

Only cases in which *–le* was used as the perfective aspect marker: verbal *–le* (Li and Thompson, 1981) were kept. Therefore, sentences in which *–le* was not used as the perfective aspect marker were not included. For example, the *-le* in *wèile* 'in order

to', or the –*le* used at the end of a sentence, or the use of –*le* induced by the use of other adverbs, such as *tài* 'too' or *jiù* 'then, as soon as', as, for example, in *tài hǎo le* 'great', *Tā liù diǎn jiù lái le* 'He came as early as 6 o'clock.' were not included. The schema in (15) below represent the forms that were considered SVCs when cases met the standards in (14):

(15) a. …V1-le (Object) V2 (Object)/AP
b. …V1 (Object) V2-le Object/COMPLEMENT
c. … V1-le (Object) V2-le Object/COMPLEMENT

After the data were collected, each sentence was coded by (1) whether –*le* was used in the first VP (coded as 1) or the second VP (coded as 2), and (2) by the form of the object after –*le* if there was one. Li and Thompson (1981) point out that "a verb with a specified quantity of the direct object typically occurs with –*le* because the quantified direct object serves to bound the event signaled by the verb" (p. 189). "An event will also often qualify as bounded if the direct object is understood as a definite noun phrase." (p. 192). Paul (2008) points out in Footnote 9 that "the boundedness of the event required by the perfective suffix -*le* can either be obtained by quantifying the object, if it is not definite, or by embedding the clause in a complex sentence". Because the goal of this study is to provide clues that L2 Chinese learners might be able to use to predict where to use –*le*, we focused only on the form of the objects. Therefore, we analyzed the form of the objects that are used after verb-*le*. Four types of objects were distinguished: quantified object (QO), definite object (DO), bare noun object (BO) and no object (NO). Quantified object (QO) in this study refers to the object that has the form [Numeral +measure word +(NP)], NPs modified by quantifiers, and quantitative phrase for actions. For example:

(16) … 不惜 掏 腰包 買了 一杯 可樂.
… bùxī tāo yāobāo mǎi-le yī-bēi kělè
not-hesitate dig pocket buy-PFV one-CL cola
'…not hesitate to dig into his pocket to buy a glass of cola.'
(Number+classifier+NP)

(17) … 又 摘了 一些 花 插 在 牠的 墳墓 上.
… yòu zhāi-le yīxiē huā chā zài tāde fénmù shàng
again pick-PFV some flowers stick at its tomb on
'…and picked some flowers and stuck them on its tomb.' (Quantifier+Noun)

(18) 我 也 就 荒廢 書本 隨著 軍隊 走了 一遭.
Wǒ yě jiù huāngfèi shūběn suízhe jūnduì zǒu-le yīzāo
I also then idle-away books following army walk-PFV one time
'I also squandered my books and walked away with the army.'
(Verbal quantitative phrase)

Sometimes the number or the noun can be omitted. For example, the number *yī* 'one' and the noun *kělè* 'coca cola' in (16) can be omitted in some cases. Those cases still fall in the category of quantified object.

Definite objects refer to those objects that are proper nouns, pronouns or nouns modified by demonstratives or other modifiers. Bare noun objects are nouns that do not have any modifiers. No objects are cases where the object was omitted or preposed to a preverbal position.

In order to see if the use of *–le* correlates with any semantic relationships between VP1 and VP2, the semantic relationship between VP1 and VP2 was also coded. According to Li and Thompson (1981), there are four main relationships between VP1 and VP2: (i) Consecutive (VP1 happens earlier than VP2), (ii) Purpose (VP2 is the purpose of VP1), (iii) Alternating (VP1 and VP2 alternate), and (iv) Circumstance (VP1 acts as VP2's means, tools, direction etc. of the action). However, for SVCs that use *–le*, the alternating relationship (iii) does not seem to exist. If any specific token denoted multiple relationships, it was coded with multiple semantic types.

For example:

(19) 董事長 在 全 省 開了 三十五場
Dǒngshìzhǎng zài quán sheng kāi-le sānshíwǔ-chǎng
Chairman at whole province hold-PFV thirty-five-CL
說明會 和 大家 溝通。
shuōmínghuì hé dàjiā gōutōng.
briefing-session with everyone communicate
'The chairman held thirty-five briefing sessions across the province and communicated with everyone.' [Consecutive]
'The chairman held thirty-five briefing sessions across the province to communicate with everyone.' [Purpose]

As indicated in the translation, the second verb phrase in (19) can be interpreted as a second event leading to the consecutive reading or a purpose clause leading to the purpose reading. Cases like this were coded C/P.

3.3 Results

After the screening, a total of 386 sentences containing SVCs in which the completed action *–le* was used at least once were identified. The results in this section are based on the analysis of these tokens.

3.3.1 *The distribution of* –le *in VP1 and VP2*

Among the 386 sentences, 267 items (69.17%) used the perfective *–le* in the first VP while only 119 (30.83%) used the perfective *–le* in the second VP (See Table 1).

Table 1. The distribution of –*le* in VP1 and VP2

	Tokens	Percentage
-*le* used in VP1	267	69.17%
-*le* used in VP2	119	30.83%

Table 1 shows that, more than 2/3 of the tokens used the perfective aspect marker –*le* with the first VP – twice as many as the tokens that used -*le* with the second VP. Among the 386 tokens, there were 8 tokens in which –*le* was used in both VPs. In order to determine whether there is a statistically significant difference in the frequency with which -*le* occurs with the first verb as compared to the frequency with which it occurs with the second verb, a Binomial test in SPSS was carried out with a test proportion set at .50. The results are shown in Table 2.

Table 2. Results of Binomial Test on the position of –*le*

		Binomial Test				
		Category	N	Observed Prop.	Test Prop.	Exact Sig. (2-tailed)
Position of -*le*	Group 1	VP1	267	.69	.50	.000
	group 2	VP2	119	.31		
	Total		386	1.00		

The results indicate that there is a statistically significant difference (p = .00). In other words, the proportion of cases where –*le* is used with VP1 significantly differ from the hypothesized value of 50%.

3.3.2 *The form of the element after the verb that is suffixed with* –le

In order to see whether there is any correlation between the use of the perfective –*le* with the form of the element after the V-*le*, we coded the element after the verb in four ways: QO (quantified object), DO (definite object), BO (bare noun object) and NO (no object). The results are shown in Table 3.

Table 3. The form of the elements after V-le

The form of the elements after V-*le*	V1-*le* (O)		V2-*le* (O)		Total	
	Count	Percentage (Total 267)	Count	Percentage (Total 119)	Count	Percentage (Total 386)
QO	93	34.83%	45	37.82%	138	35.75%
DO	45	16.85%	29	24.37%	74	19.17%
BO	52	19.48%	21	17.65%	73	18.91%
NO	77	28.84%	24	20.16%	101	26.17%
Total	267	100%	119	100%	386	100%

Among the 386 tokens, 101 cases (26.17%) had no object after V-*le*. This might be because the object was dropped or preposed to a preverbal position, or because the verb was intransitive in meaning and does not select an object. For example:

(20) 沙爾索 聽了 大 呼 痛快
Shā'ěrsuǒ tīng-le dà hū tòngkuài
Shā'ěrsuǒ hear-PFV big yell delighted
'Sha'ersuo heard it and yelled with delight.'

(21) 他 手 插 在 褲袋 裡 晃了 過去
Tā shǒu chā zài kùdài lǐ huàng-le guòqù
he hand insert at pants-pocket inside sway-PFV over
'He swayed with his hands in his pocket.'

Among the 386 cases, 138 (35.75%) had quantified objects in the verbal phrase where *–le* was used.

(22) 義美 食品 公司 製作了 五千個 月餅 在
Yìměi shípǐn gōngsī zhìzuò-le wǔqiān-gè yuèbǐng zài
I-Mei food company make-PFV five-thousand-CL mooncake at
現場 發送。
xiànchǎng fāsòng
on-site distribute
'I-Mei Foods Company made five thousand mooncakes to distribute onsite.'

(23) 九爺 仰脖 又 乾了 一碗 玉液酒。
Jiǔyé yǎngbó yòu gānle yī-wǎn yùyèjiǔ
Jiuye stretch-neck again bottom-up-PFV one-CL jade liquor
'Jiuye again raised his chin and drank a bowl of jade liquor.'

Li and Thompson (1981) and Paul (2008) both point out that the use of a quantified object or definite specific object are the two main ways in which a telic boundary for the verb phrase is established, creating a need for the use of *–le*. However, in the data from this study, cases where definite objects and bare objects occur in the verb *–le* phrase were close in number: 74 for definite objects (19.17%) and 73 for bare noun objects (18.91%). For example:

(24) 爸媽 聽了 這幾句話 笑個不停。
Bàmā tīngle zhè jǐ-jù huà xiào-ge bù tíng
Mom-dad hear-PFV this few-CL words laug-CL not stop
'Mom and Dad kept laughing after hearing these few sentences.'

(25) 我們 開車 離開了 沙市。
Wǒmen kāichē líkāi-le Shāshì.
we drive-car leave-PFV Sha-city
'We drove (away) and left Shashi.'
'We left Shashi by driving (away).'

(26) … 拐了 彎 從 耳朵裡 進去。
… guǎi-le wān cóng ěrduǒ lǐ jìnqù
turn-PFV turn from ear inside enter
'…made a turn and got through the ears.'

(27) 尼奧 起身 開了 門。
Ní'ào qǐshēn kāi-le mén
Ni'ao get-up open-PFV door
'Ni'ao got up and opened the door.'

The data in this section show that even though the majority of objects used after Verb-*le* are quantified and definite objects, bare nouns are also used after Verb-*le* .

3.3.3 *Semantic relationships between VP1 and VP2*

The semantic relationship between VP1 and VP2 was coded by: C (consecutive), P (purpose), H (circumstance) and multiple codes of these three if a structure could be interpreted as having more than one relationship. The results are shown in Table 4.

Table 4. Semantic relationships between VP1 and VP2

Semantic relationships between VP1 and VP2	V1-*le* (O)	V2-*le* (O)	Total	Overall percentage (Total 386)
C	210	68	278	72.02%
P	11	0	11	2.85%
H	2	21	23	5.96%
C/H	6	28	34	8.81%
C/P	36	2	38	9.84%
C/P/H	2	0	2	0.52%
Total	267	119	386	100%

These results indicate that the predominant semantic relationship between VP1 and VP2 is "consecutive", namely, VP1 is carried out prior to VP2. For example:

(28) 他 趿了 鞋 向 窗口
Tā tā-le xié xiàng chuāngkǒu
he wear.shoes.with.the.backs.turned.in-PFV shoes toward window
走 去。
zǒu qù
walk go
'He slipped into his shoes and walked to the window.'

(29) 我們 出境 上了 飛機。
Wǒmen chūjìng shàng-le fēijī
we exit-board get.on-PFV airplane
'We left the country and boarded the plane.'

There were a total of 278 cases in which VP1 and VP2 had a consecutive relationship, which accounts for 72.02% of the 386 tokens. Among these 278 tokens in which VP1 and VP2 had a consecutive relationship, 210/278 (75.54%) used *-le* with the first verb while only 68/278 (24.46%) used *-le* with the second verb. This shows that more cases in which *–le* is used in the first VP favor the consecutive relationship.

There were only 23 instances where VP1 indicated the circumstance of VP2 (H) with two cases using *–le* with the first verb and twenty-one using *–le* with the second verb. When the second verb is suffixed with *–le*, it's more likely that there will be a circumstance relationship between VP1 and VP2 than if the first verb is suffixed with *–le*. This is consistent with the literature in the sense that it is true that when VP1 denote means/circumstances, *-le* is used more often with the second verb. But it is not impossible for *–le* to be used with the first verb when VP1 is the means/circumstance of VP2.

(30) …… 使了 全 力 踢 我的 腿。
… shǐ-le quánlì tī wǒde tuǐ
use-PFV all strength kick my leg
'…[he] kicked my leg with all his strength.'

Among the cases analyzed for this study, there were only 11 in which VP2 was the purpose of the VP1 (P). All these 11 cases used *–le* with the first verb.

(31) 基金會 還 製作了 教堂 模型 賣 給 市民
Jījīnhuì hái zhìzuò-le jiàotáng móxíng mài gěi shìmín
foundation also produce-PFV church model sell to citizen
及 觀光客。
jí guānguāngkè
and tourist
'The foundation also produced church models to sell to citizens and tourists.'

(32) 去年 登了 兩百 多 次 廣告
Qùnián dēng-le liǎngbǎi duō cì guǎnggào
last year post-PFV two hundred more time advertisement
找 工人。
zhǎo gōngrén
look-for worker
'Last year more than 200 advertisements were published seeking workers.'

In all, 74 cases could be interpreted as exhibiting more than one relationship between VP1 and VP2. These were coded using multiple codes (C/H; C/P; C/P/H). There were 34 cases in which VP1 and VP2 could be interpreted as consecutive or in which VP1 was the circumstance of VP2 (C/H). For example:

(33) … 花了 許多 錢 買 鑑定 儀器。
… huā-le xǔduō qián mǎi jiàndìng yíqì
… spend-PFV a-lot money buy identification equipment
'…spent a lot of money and bought identification equipment.' (C)
'…spent a lot of money buying identification equipment.'(H)

(34) 他倆 帶領 考察 隊 走遍了 巴山蜀水。
tālià dàilǐng kǎochá duì zǒubiàn-le Bāshānshǔshuǐ
two.of.them lead expedition team walk over-PFV Bashan Shushui
'Two of them led the expedition team and walked all over Bashan and Shushui' (C)
'They walked all over Bashan and Shushui leading the expedition team.' (H)

There were 38 cases in which VP1 and VP2 had a consecutive relationship and in which VP2 expressed the purpose of VP1 (C/P). Interestingly, among the 38 cases, 36 used *–le* with the first verb and only two used *–le* with the second verb.

(35) 他們 出了 一些 小 手冊 放 在 公車 站 供
Tāmen chū-le yīxiē xiǎo shǒucè fàng zài gōngchē zhàn gōng
they publish-PFV some small brochure put at bus stop provide
人 閱讀。
rén yuèdú
people read
'They published some small brochures and put them at the bus stop for people to read.' (C)
'They published some small brochures to put at the bus stop for people to read.' (P)

(36) 他 回 法國 玩了 幾個 星期。
Tā huí fǎguó wánle jǐ-ge xīngqī
He return France play-PFV a few-CL week
'He returned to France and played for a few weeks.' (C)
'He went back to France to play for a few weeks'(P)

There were two cases in which VP1 and VP2 could be interpreted as having a consecutive, purpose or circumstance relationship.

(37) …寫了 一封 信 罵 小 女孩。
…Xiě-le yīfēng xìn mà xiǎo nǚhái
Write-PFV one-CL letter scold little girl
'…wrote a letter and scolded the little girl.' (C)
'…wrote a letter to scold the little girl.' (P)
'…scolded the little girl in a written letter.' (H)

A logistic regression was performed to ascertain the effects of form of objects and the semantic relationships on the likelihood that *–le* would be used with VP1 or with VP2. Table 5 shows that semantic relationship (SR) added significantly to the model, but form of objects (FO) (p=.086) did not add significantly to the model. The logistic regression model was statistically significant, $\chi^2(8) = 113.325$, $p < .05$. This model explained 35.9% (Nagelkerke R^2) of the variance in SVCs where *–le* is used and correctly classified 79.8% of cases. Of the two predictor variables (SR and FO), only SR was statistically significant.

Table 5. Logistic regression predicting likelihood of the position of *–le* based-on form of objects (FO) and semantic relationships (SR)

		Variables in the Equation						95% C.I.for EXP(B)	
		B	**S.E.**	**Wald**	**df**	**Sig.**	**Exp(B)**	**Lower**	**Upper**
Step 1[a]	FO			6.599	3	.086			
	FO(1)	.859	.392	4.804	1	.028	2.360	1.095	5.085
	FO(2)	.631	.341	3.416	1	.065	1.879	.963	3.668
	FO(3)	.135	.401	.113	1	.737	1.144	.522	2.510
	SR			58.270	5	.000			
	SR(1)	3.378	.758	19.878	1	.000	29.324	6.641	129.482
	SR(2)	–20.402	12079.051	.000	1	.999	.000	.000	.
	SR(3)	2.674	.477	31.395	1	.000	14.504	5.691	36.964
	SR(4)	−1.983	.747	7.053	1	.008	.138	.032	.595
	SR(5)	–20.310	28420.722	.000	1	.999	.000	.000	.
	Constant	−1.524	.265	33.157	1	.000	.218		

[a] Variable(s) entered on step 1: FO, SR.

3.4 Discussion

The data showed that, in a serial verb construction, the perfective marker –*le* is used more with the first verb than with the second verb: 69.17% of the instances used –*le* with the first VP while only 30.83% used the perfective marker –*le* with the second VP. There were only eight cases in which both VP1 and VP2 used the perfective marker –*le*. This result is consistent with Zhao (1990)'s finding that, in general, -*le* is only used once in a Chinese SVC, although the use of two –*le*s is possible. However, this conclusion differs from Lin et al. (2012)'s which showed that Chinese SVC tends to have V2 as the head. The different finding in this study might be because this study did not set a limit on the verbs used in SVCs while Lin et al. (2012) focused only on nine of the most often used verbs.

When there is an object in the verb phrase where –*le* is used, quantified objects are used more than definite objects or bare noun objects. More importantly, -*le* is rarely omitted when there is a quantified object in a SVC: the omission of –*le* in this case results in ungrammatical sentences. On the other hand, V–*le* can be omitted when used with a definite object or a bare noun object and will merely affect the meaning of the sentence but not render it ungrammatical. However, the form of objects was not statistically reliable in predicting whether –*le* would be used with the first verb or the second verb.

When VP1 or VP2 uses the perfective –*le*, it can result in three possible semantic relationships: consecutive, circumstance and purpose. The 'alternate' relationship does not exist for SVCs which use at least one perfective aspect marker -*le*. Among these three relationships, the majority of the tokens instantiate the consecutive relationship between VP1 and VP2. For SVCs where VP1 and VP2 have a circumstance relationship, -*le* tends to be used with the second verb whereas when there is a semantic relationship of purpose, -*le* tends to be used with the first verb. This study's statistical test results show that the semantic relationship between VP1 and VP2 is a statistically reliable predictor of where to use –*le*.

4. Conclusion and pedagogical implications

This study used data from the Sinica Corpus to investigate the use of the perfective aspect marker –*le* in Chinese SVCs. Earlier studies on -*le* did not distinguish between the -*le* used in a simple verb construction and the -*le* used in a serial verb construction. Studies on SVCs have focused more on the structure and the headedness of the construction and do not provide practical guidance to Chinese learners on when and where to use –*le* in SVCs: the analysis of corpus data in this study provided the armature for the construction of this important scaffolding.

The selected data that instantiate the use of *–le* in SVCs were scrutinized with a focus on the position of the *–le* that is used, i.e., whether *–le* is used in the first VP or the second VP, the form of the object occurring after V-*le*, and the semantic relationship between VP1 and VP2.

The findings indicate that *–le* is used predominantly with VP1 in an SVC and that quantified objects occur more often with V-*le*. The majority of SVC cases where *–le* is used show a consecutive relationship between VP1 and VP2, that is, the action denoted by VP1 has finished before the action that is denoted by VP2 occurs. When the first VP indicates the means, tools or the direction of the second VP, *-le* occurs more with the second VP, but the form of the object in both VPs may influence where *–le* is used: as noted, *-le* is more often used with quantified objects. Similarly, when VP2 indicates the purpose of VP1, *-le* is used more with VP1.

Based on the corpus findings, we would suggest focusing on the semantic relationship between VP1 and VP2 to guide students to predict where and when to use *–le* in an SVC. As the semantic relationship between VP1 and VP2 is a reliable predictor for where and when to use *–le*, instructors can draw students' attention to deciphering the semantic relationship between the verbal phrases. The most typical pattern for using *–le* in SVC is to use *–le* in VP1 where VP1 and VP2 have a consecutive relationship. When VP1 is the circumstance of VP2, *-le* tends to be used with VP2. When VP2 is the purpose of VP1, *-le* tends to be used with VP1. Even though the form of the elements after the verb is not a very reliable predictor of where to use *–le*, quantified objects do co-occur with *–le* more often than other elements. Instruction on the use of the aspectual marker *-le* in serial verb constructions can productively be based on these typical patterns and conditions that make the use of *-le* accessible and more easily predicted.

References

Aikhenvald, Alexandra Y. & Robert M.W. Dixon (eds). 2006. *Serial Verb Constructions. A Cross-Linguistic Typology.* Oxford: Oxford University Press.

Baker, Mark. 1989. Object sharing in serial verb constructions. *Linguistic Inquiry* 20: 513–553.

Chao, Yuen Ren. 1968. *A Grammar of Spoken Chinese*. Los Angeles: University of California Press.

Durie, Mark. 1997. Grammatical structures in verb serialization. In *Complex Predicates*, A. Alsina, J. Bresnan, and P. Sells (eds), 289–354. Stanford: CSLI Publications.

Givón, Tom. 2009. Multiple routes to clause union: The diachrony of complex verb phrases. In *Syntactic Complexity: Diachrony, Acquisition, Neuro-cognition, Evolution*, Givón, T. & Masayoshi Shibatani (eds), 81–118. Amsterdam: John Benjamins. https://doi.org/10.1075/tsl.85.04mul

Law, Paul. 1996. A note on the serial verb construction in Chinese. *Cahiers de Linguistique – Asie orientale* 25: 199–235. https://doi.org/10.1163/19606028-90000052

Li, Charles & Sandra A. Thompson. 1973. Serial verb constructions in Mandarin Chinese: Subordination or coordination? In *You Take the High Node and I'll take the Low Node: Papers from the Comparative Syntax Festival*, C. Corum, T.C. Smith-Stark and A. Weiser (eds), 96–103. Chicago: Chicago Linguistic Society.

Li, Charles & Sandra A. Thompson. 1974. Coverbs in Mandarin Chinese: Verbs or prepositions? *Journal of Chinese Linguistics* 2: 257–278.

Li, Charles and Sandra A. Thompson. 1981. *Mandarin Chinese. A Functional Reference Grammar.* Berkeley: University of California Press.

Li, Linding. 1986. *Xiàndài hànyǔ jùxíng* [Sentence Patterns in Modern Mandarin]. Beijing: Shanggwu yinshuguan.

Li, Yafei. 1991. On deriving serial verb constructions. In *Serial Verbs: Grammatical, Comparative and Cognitive Approaches*, Claire Lefebvre (eds), 103–135. Amsterdam: Benjamins. https://doi.org/10.1075/ssls.8.05li

Lin, Jingxia, Chu-Ren Huang, Huarui Zhang & Hongzhi Xu. 2012. The Headedness of Mandarin Chinese Serial Verb Constructions: A Corpus-Based Study. *26th Pacific Asia Conference on Language, Information and Computation*, 428–435.

Matthews, Stephen. 2006. On serial verb constructions in Cantonese. In *Serial Verb Constructions: A Cross-Linguistic Typology*, A. Y. Aikhenvald & R. M. W. Dixon (eds), 69–87. Oxford: Oxford University Press.

Müller, Stefan & Janna Lipenkova. 2009. Serial verb constructions in Chinese: An HPSG account. *Proceedings of the HPSG-2009 Conference*, 234–254.

Paul, Waltraud. 2008. The 'serial verb construction' in Chinese: A tenacious myth and a Gordian knot. *Linguistic Review*, De Gruyter, 25 (3–4): 367–411. https://doi.org/10.1515/TLIR.2008.011

Sebba, Mark. 1987. *The Syntax of Serial Verbs*. Amsterdam: John Benjamins. https://doi.org/10.1075/cll.2

Tao, Liang. 2009. Serial verb construction in Mandarin Chinese: The interface of syntax and semantics. In *Proceedings of the 21st North American Conference on Chinese Linguistics (*NACCL-21), Yun Xiao (eds). Volume 2: 209–228. Smithfield, Rhode Island: Bryant University.

Yang, Suying, Yuyuan Huang, & Xiuling Cao. 2000. Underuse of aspect markers in acquisition of Chinese. *Journal of the Chinese Language Teachers Association* 35(3): 87–116

Zhang, Bin. 2010. *Xiandai Hanyu Miaoxie Yufa* [A descriptive grammar of Modern Chinese]. Beijing: Shangwu Chubanshe.

Zhao, Shuhua. 1990. Liandongshi zhong dongtai zhuci 'le'de weizhi [Position of the verbal aspect marker-*le* in Serial Verb Construction], *Language Teaching and Linguistic Studies* 1: 4–10.

Zhu, Dexi. 1982. *Yufa Jiangyi* [Lectures on Chinese grammar]. Beijing: Shangwu yinshuguan.

Index

This volume brings together 19 cutting edge studies written by some of the most prominent linguists working on Chinese formal syntax, as a Festschrift volume dedicated to Yen-Hui Audrey Li. The contributions to the volume address a wide range of issues currently developing in the field of Chinese syntax, grouped into five thematic sections on *the structure of lexical and functional projections, modal verb syntax, syntax-semantics interactions, the syntax and interpretation of particles, and the acquisition of syntactic structures.* With its rich descriptive content sourced from different varieties of Chinese, and its theoretical orientation and analyses, the book provides an important new resource both for researchers with a primary interest in Chinese and other linguists interested in discovering how properties of Chinese can inform the analysis of other languages.

ISBN 978 90 272 1067 8

John Benjamins Publishing Company