Silently Structured Silent Argument

Yuta Sakamoto

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Table of contents

List of tables

List of abbreviations

ABL	ablative marker	NML	nominalizer
ACC	accusative marker	NOM	nominative marker
ADN	adnominal form	PART	partitive
ASP	aspect marker	PASS	passive morpheme
AUX	auxiliary	PL	plural
C	complementizer	POSS	possessive marker
CAUS	causative marker	PP	possessive pronoun
CC	clitic	PRES	present tense
CL	classifier	PROG	progressive
CON	conclusive form	PST	past tense
COP	copula	Q	question particle
CVB	converb	REFL	reflexive
DAT	dative marker	REL	relativizer
DECL	declarative	RP	reflexive pronoun
EVID	evidential marker	SFP	sentence-final particle
GEN	genitive marker	SG	singular
INF	infinitive	TOP	topic marker
INST	instrumental	1	1st person
LOC	locative marker	2	2nd person
NEG	negation	3	3rd person

Acknowledgements

Introduction

1.1   Escapable from silence?

This book is a cross-linguistic investigation into the nature of null arguments in radical *pro*-drop languages, where arguments such as subjects and objects can be productively dropped in the absence of agreement morphology on the verb, which is generally assumed to license null subjects in languages like Italian and Spanish. In particular, I focus on radical *pro*-drop languages where null arguments are claimed to be derivable via the process referred to as argument ellipsis, which is an ellipsis strategy that directly elides arguments.

    The status of null arguments in radical *pro*-drop languages has been a hotly debated issue in the study of generative grammar. (1) exemplifies a typical instance of null object constructions in Japanese.[1]

(1)   a.   *Taroo-wa [_{DP} Yamada sensei-no   hon]-o   hihansi-ta.*
               Taro-TOP   Yamada teacher-GEN book-ACC criticize-PST
               'Taro criticized [$_{DP}$ Prof. Yamada's book].'

       b.   *Hanako-mo [$_{DP}$ △] hihansi-ta.*
               Hanako-also   criticize-PST
               (Lit.) 'Hanako also criticized [$_{DP}$ △].'

With (1a) as its antecedent, (1b) can be interpreted as "Hanako also criticized Prof. Yamada's book" despite the phonological emptiness of its direct object. It has been assumed since Kuroda (1965) that Japanese null arguments are phonologically empty pronouns (*pro*) (see also Ohso 1976; Hoji 1985; Saito 1985; Nakamura 1987; among others). However, there is a growing body of literature which has accumulated evidence that Japanese null arguments cannot be uniformly empty pronouns: they can involve ellipsis as well as empty pronouns (cf. Otani & Whitman 1991; Oku 1998; Saito 2004a, b, 2007; Takahashi 2006, 2008a, b, 2014; Takita 2010, 2011a, b; Otaki 2014; Sakamoto 2015a, b, 2016a, b; Funakoshi 2016; Sugisaki 2018; among

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1.   In the literature, it has been controversial whether Japanese-type nominal arguments have the DP layer (cf. Fukui 1986; Chierchia 1998; Tomioka 2003; Bošković 2008; Takahashi 2011; among many others). In the following, I will simply assume DP for Japanese-type languages without any commitment to this issue. However, see Chapter 6 for relevant discussion.

many others). In particular, the argument ellipsis analysis, in which arguments are elided, has been quite influential in the literature. For example, the null object in (1b) is analyzed under the empty pronoun analysis and the argument ellipsis analysis as in (2a) and (2b) respectively.

(2) a. *Empty Pronoun Analysis*
         Hanako-also [$_{DP}$ *pro*]$_i$ criticized

     b. *Argument Ellipsis Analysis*
         Hanako-also [$_{DP}$ ~~Prof. Yamada's book~~] criticized

In (2a), the null object position is occupied by an empty pronoun. It is generally assumed that the empty pronoun receives its semantic interpretation via co-indexation with its antecedent *Prof. Yamada's book*, presumably through the assignment function, e.g. [*i* → λx. x is Prof. Yamada's book] (Heim & Kratzer 1998). In (2b), the null object position is derived via ellipsis of its antecedent argument, so the relevant interpretation trivially follows.

Argument ellipsis involves several differences from well-known English ellipsis constructions such as sluicing and NP-ellipsis. Consider the following examples.

(3) a. *Sluicing*
         John bought something, but I don't know [$_{CP}$ what$_1$ [$_{TP}$ ~~he bought ___$_1$~~]].

     b. *NP-ellipsis*
         You criticized John's novel, and I criticized [$_{DP}$ Bill's [$_{NP}$ ~~novel~~]].

What is shared by sluicing and NP-ellipsis is that what is elided is a complement of a functional head. Specifically, sluicing is an instance of ellipsis of a TP complement of the functional head C, and NP-ellipsis is an instance of ellipsis of an NP complement of the functional head D. The above ellipsis constructions are also 'partial' in the sense that they do not elide a full argument since the head and its specifier are left behind. On the other hand, what is elided with argument ellipsis is a full argument. Furthermore, the elided element is a complement of a lexical head. It has been argued in the literature that ellipsis that is licensed by a functional head where the complement of a functional head is elided has an additional requirement in that the licensing functional head must undergo spec-head agreement (cf. Lobeck 1990, 1995; Saito & Murasugi 1990), as indicated by the contrast between (3a), where the C undergoes spec-head agreement, and (4a), where the C does not undergo spec-head agreement, and (3b), where the D undergoes spec-head agreement, and (4b), where it does not.

(4) a. *Sluicing*
         *John thinks that Mary kissed someone, but I don't think [$_{CP}$ that [$_{TP}$ ~~Mary kissed someone~~]].

b.   *NP-ellipsis*
  *John criticized a novel, and Bill criticized [$_{DP}$ a [$_{NP}$ ~~novel~~]] too.

The spec-head agreement requirement is a requirement on the ellipsis of complements of functional heads, hence does not apply to the cases where what is elided is a complement of a lexical head, as with argument ellipsis. Argument ellipsis thus differs from sluicing and NP-ellipsis in English in that it elides a full argument, and a complement of a lexical head, not a functional head, hence it is not subject to functional head licensing ellipsis conditions.[2]

Let us now turn to why argument ellipsis has been entertained in languages like Japanese in the literature. It has been claimed that a wide variety of interpretations that Japanese null arguments can yield necessitates an ellipsis analysis in addition to an empty pronoun analysis. One of the interpretations that is claimed to be a problem for the empty pronoun analysis of Japanese null arguments is the sloppy interpretation (cf. Whitman 1988; Otani & Whitman 1991). Consider the following examples.

(5) a. *Taroo-wa [$_{DP}$ zibun-no kuruma]-o arat-ta.*
      Taro-TOP   self-GEN car-ACC   wash-PST
      (Lit.) 'Taro washed [$_{DP}$ self's car].'

   b. *Ziroo-mo [$_{DP}$ △]   arat-ta.*
      Ziro-also   wash-PST
      (Lit.) 'Ziro also washed [$_{DP}$ △].'

   b'. *Ziroo-mo [$_{DP}$ sore]-o arat-ta.*
      Ziro-also   it-ACC wash-PST
      'Ziro also washed [$_{DP}$ it].'

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2.   A number of languages other than Japanese have been argued to allow argument ellipsis, e.g. American Sign Language (Koulidobrova 2012, 2017), Burmese (Lee 2016), Chinese (Cheng 2013), Colloquial Singapore English (Sato 2014), Hebrew (Landau 2018), Javanese (Sato 2015), Korean (Kim 1999; Takahashi 2007), Mongolian (Takahashi 2007; Sakamoto 2012), Persian (Sato & Karimi 2016), and Turkish (Şener & Takahashi 2010). It has been hotly debated what characterizes the languages that allow argument ellipsis, e.g. why Japanese allows argument ellipsis, while English does not. The previous literature has proposed several possibilities. Oku (1998) claims that the possibility of argument ellipsis is related to the possibility of scrambling; Saito (2007) argues that absence of obligatory φ-agreement is the key to licensing argument ellipsis; Cheng (2013) proposes the generalization that argument ellipsis is available only in languages without articles, i.e. NP-languages in Bošković's (2008) sense; Otaki (2014) claims that argument ellipsis arises from non-fusional case morphology. While I will not fully discuss this issue in the book, I will note a new possibility for characterizing argument ellipsis languages in Chapter 6.

In (5a), the object contains a *self* anaphor *zibun* 'self'. With (5a) as its antecedent, (5b) is ambiguous in that the null object can be interpreted as either Taro's car or Ziro's car. The former interpretation is generally referred to as the strict reading and the latter interpretation as the sloppy reading (cf. Sag 1976; Williams 1977; Fiengo & May 1994). Importantly, if the null object in (5b) is replaced by an overt pronoun *sore* 'it', as in (5b′), the sloppy reading becomes unavailable: (5b′) can only mean that Ziro also washed Taro's car, not his own car. Under the assumption that empty pronouns are silent counterparts of overt pronouns, the availability of the sloppy reading in (5b) is taken to be problematic for the empty pronoun analysis because the analysis in question would be able to yield only the strict reading, as the overt pronoun *sore* 'it' does. By contrast, the sloppy reading in (5b) can be accommodated if the null object in question is derived via ellipsis because ellipsis can productively yield sloppy interpretations, as the following English VP-ellipsis data demonstrates.

(6)   John will [$_{VP}$ wash his car]. Bill will [$_{VP}$ △] too.

In the second sentence, the VP has undergone ellipsis under 'identity' with the antecedent VP in the first sentence. Importantly, the second sentence can receive the sloppy reading: it can mean that Bill will wash his own car. Therefore, the argument ellipsis analysis of Japanese null arguments can attribute the availability of the sloppy reading of the null object in (5b) to whatever is responsible for the sloppy reading in the English VP-ellipsis case in (6).[3]

As noted above, most of the recent literature on Japanese-type null arguments has argued for the argument ellipsis view on the basis of their interpretive possibilities. Once it is taken for granted that Japanese-type null arguments can be derived via argument ellipsis, a question arises as to whether they exhibit the syntactic properties that other instances of ellipsis constructions such as English VP-ellipsis do. It has been well-known since Hankamer & Sag's (1976) seminal work that there are certain syntactic properties that are characteristic of ellipsis, but not (silent) proforms. An important difference between ellipsis and (silent) proforms involves the presence/absence of internal structure: only the former involves internal structure. For example, under the empty pronoun analysis, a null argument position is occupied by *pro*, which is an atomic element without any internal structure; under the ellipsis analysis, null arguments involve silent full-fledged nominal structure. While a number of diagnostics have been proposed to differentiate ellipsis from (silent) proforms (Grinder & Postal 1971; Bresnan 1971; Hankamer & Sag 1976; Sag

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3.   I will also discuss the possibility of analyzing Japanese null arguments in terms of VP-ellipsis, where the verb raises out of the VP which is to be elided (cf. Otani & Whitman 1991), arguing against this analysis.

1976; Sag & Hankamer 1984; Depiante 2000; Johnson 2001; among many others), Merchant (2013b) notes that the possibility of extraction is one of the most reliable diagnostics for differentiating ellipsis and (silent) proforms: if extraction is possible, there must be something to be extracted from in the syntax. Null Complement Anaphora (NCA) is generally contrasted with VP-ellipsis to illustrate the difference between ellipsis and (silent) proforms in light of extraction possibilities. NCA is a case of anaphora where the complement domain of a lexical verb is phonologically empty, as shown in (7) (cf. Shopen 1972; Hankamer & Sag 1976; Grimshaw 1979; Tanenhaus & Carlson 1990; Depiante 2000; Merchant 2013a).

(7)   John refused [to see this film], but Bill agreed [$_{NCA}$ △].

Here, the complement domain of the verb *agreed* is phonologically missing, but the second sentence can be appropriately interpreted as "Bill agreed to see this film". The following examples demonstrate that VP-ellipsis and NCA behave differently regarding extraction possibilities out of their domains.

(8)   a.   Which films$_1$ did he refuse to [$_{VP}$ see ___$_1$], and which films$_2$ did he agree to [$_{VP}$ △]?
      b.   *Which films$_1$ did he refuse [to see ___$_1$], and which films$_2$ did he agree [$_{NCA}$ △]?   (Merchant 2013b: 538)
(9)   a.   Some boy [$_{VP}$ admires every teacher], and some girl does [$_{VP}$ △] too.
                                                        ∃»∀;∀»∃ (Fox 2000: 4)
      b.   Some doctor volunteered [to visit every patient], and some nurse also volunteered [$_{NCA}$ △].   ∃»∀;*∀»∃ (Depiante 2000: 97)

In (8a), *which films* has been extracted out of the VP-ellipsis domain, and the sentence is grammatical; in (8b), *which films* has been extracted out of the NCA domain, and the sentence is unacceptable. In (9), although both the VP-ellipsis case (9a) and the NCA case (9b) are grammatical, inverse scope, which requires QR out of the null element, is available only in the former. This contrast is generally attributed to the ellipsis versus (silent) proform distinction: the VP-ellipsis cases (8a) and (9a) involve ellipsis of the VP-domain, while the NCA cases (8b) and (9b) involve a silent proform, not ellipsis. Specifically, the VP-ellipsis cases are generally analyzed as in (10), and the NCA cases as in (11) (Ø in (11) is taken to stand for an atomic silent proform).

(10)   a.   Which films$_1$ did he refuse to [$_{VP}$ see ___$_1$], and which films$_2$ did he agree to [$_{VP}$ see ___$_2$]?
       b.   Some boy [$_{VP}$ admires every teacher], and some girl does [$_{VP}$ admire every teacher] too.

(11) a. *Which films$_1$ did he refuse [to see ___$_1$], and which films$_2$ did he agree [$_{NCA}$ Ø]?

b. Some doctor volunteered to visit every patient, and some nurse also volunteered [$_{NCA}$ Ø].

In (10a) and (10b), the VP-ellipsis domain involves full-fledged structure, thus being able to accommodate an appropriate position for the 'trace' of *wh*-movement and QR. On the other hand, in (11a) and (11b), the NCA domain involves an atomic silent proform which does not involve any internal structure so that nothing can be extracted out of the domain in question, hence the ungrammaticality of (11a) and the lack of inverse scope in (11b). Therefore, although VP-ellipsis and NCA both make the anaphora domain phonologically silent, they exhibit different behavior regarding extraction possibilities, which can be attributed to the presence/absence of internal structure in the relevant anaphora domain.

The previous work on Japanese-type null arguments has paid a great deal of attention to the ellipsis versus empty pronoun debate in light of their interpretations, paying little attention to it in light of the presence/absence of internal structure. In this respect, one question that I will tackle in this book is the following.

(12)   Is there unpronounced internal structure in Japanese-type null arguments?

Using extraction possibilities as a diagnostic for the presence of internal structure in anaphora sites, I will show that Japanese-type null arguments do allow certain types of extraction out of them. This indicates that there is unpronounced internal structure in Japanese-type null arguments, which in turn provides strong evidence that they are derivable via ellipsis. However, I will also show that Japanese-type null arguments exhibit a hitherto unnoticed pattern of extraction possibilities out of anaphora sites. Specifically, they uniformly disallow overt extraction, while they uniformly allow covert extraction, e.g. QR, out of their domain.

In light of this conclusion, I will address the question of the proper analysis of ellipsis. It has been highly controversial how ellipsis should be implemented theoretically. There are two major analyses: PF-deletion (Sag 1976; Tancredi 1992; Fox 2000; Johnson 2001; Merchant 2001; Goldberg 2005; Aelbrecht 2010; among others) and LF-copying (Williams 1977; Fiengo & May 1994; Chung et al. 1995; Lappin 1999; Fortin 2007, 2011; among others). Under the PF-deletion analysis, an ellipsis site involves full-fledged internal structure both in overt syntax and covert syntax/LF, but the structure is deleted at PF so that the relevant site is phonologically null. The PF-deletion analysis thus provides ellipsis sites with syntactic structure throughout the entire syntactic derivation. On the other hand, under the LF-copy analysis, an ellipsis site is empty both in overt syntax and PF, but it has full-fledged

internal structure in LF via copying of its antecedent. For example, consider the following VP-ellipsis example.

(13)   John will [$_{VP}$ visit UConn], and Bill will [$_{VP}$ △] too.

Here, the VP in the second conjunct is elided, taking the VP in the first conjunct as its antecedent. Table 1.1 illustrates how the PF-deletion analysis and the LF-copy analysis treat the elliptic VP in (13).

Table 1.1 PF-deletion versus LF-copying

	PF-deletion	LF-copying
Overt Syntax	VP → V (visit), DP (UConn)	VP → e
PF	VP → V (visit), DP (UConn) [struck through]	VP → e
Covert Syntax/LF	VP → V (visit), DP (UConn)	VP → V (visit), DP (UConn)

What is important for us is that under the PF-deletion analysis, the VP involves internal structure in both overt and covert syntax, while under the LF-copy analysis, it has internal structure only in covert syntax. The PF-deletion analysis has been quite influential for VP-ellipsis in the literature. One of the reasons is that both *wh*-movement and QR, i.e. overt movement and covert movement, are possible out of English VP-ellipsis sites, cf. (8a) and (9a). This extraction pattern straightfor-wardly follows under the PF-deletion analysis since this analysis provides the elided VP with internal structure in both overt and covert syntax, so that both operations that apply in overt syntax and those that apply in covert syntax should be able to apply to the relevant domain. By contrast, the LF-copy analysis does not provide the elided VP with internal structure in overt syntax, so that overt extraction in

(8a) should be banned, contrary to the fact (see also Aelbrecht 2010; Lee 2014 for relevant discussion). Therefore, the availability of overt extraction out of English VP-ellipsis sites is generally taken to argue for the PF-deletion analysis of the construction in question.[4]

Given that Japanese-type null arguments can be derived via argument ellipsis, I will then tackle the following question in this book.

(14)   Is there unpronounced internal structure in Japanese-type null arguments throughout the entire syntactic derivation?

Based on the extraction pattern that Japanese-type null arguments exhibit, I will claim that the answer to the question (14) is negative. Specifically, as noted above, it will be shown that Japanese-type null arguments exhibit an overt/covert extraction asymmetry: they allow covert, but not overt extraction out of them. Taking the possibility of overt extraction out of anaphora sites as an indication of the presence of internal structure in overt syntax and the possibility of covert extraction as an indication of the presence of internal structure in covert syntax/LF, I will then argue that the extraction asymmetry in question provides supporting evidence for

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4.   Fiengo & May (1994) proposed an LF-copy-based analysis of overt *wh*-movement out of English VP-ellipsis sites. Under their analysis, (8a), repeated here as (i), is analyzed as in (ii) (cf. Fiengo & May 1994: 229).

(i)   Which films$_1$ did he refuse to [$_{VP}$ see _____$_1$], and which films$_2$ did he agree to [$_{VP}$ △]?

(ii)   a.   *Overt Syntax*
Which films$_1$ did he refuse to [$_{VP}$ see x$^\alpha$$_1$], and which films$_1$ did he agree to [$_{VP}$ e]?

b.   *Covert Syntax/LF*
Which films$_1$ did he refuse to [$_{VP}$ see x$^\alpha$$_1$], and which films$_1$ did he agree to [$_{VP}$ see x$^\alpha$$_1$]?

Leaving aside technical details, what is crucial for Fiengo & May's (1994) analysis of cases like (i) is the base-generation of 'extracted' elements in a position outside of the ellipsis domain. Given the standard assumption that islandhood is derivational in nature, i.e. that it involves derivational violations (cf. Chomsky 1995, 2000; Epstein & Seely 2002; Stroik 2009; Müller 2010, 2011; among others), the base-generation analysis of VP-ellipsis cases like (i) is hard to maintain because VP-ellipsis exhibits islands effects, as in (iiia) (see Chung et al. 1995 for relevant discussion).

(iii)   a.   *Abby [$_{VP}$ wants to hire someone who speaks a Balkan language], but I don't remember which (Balkan language) Ben does [$_{VP}$ △].

b.   *Abby [$_{VP}$ wants to hire someone who speaks a Balkan language], but I don't remember which (Balkan language) Ben does [$_{VP}$ want to hire someone who speaks].

(iiia) is ungrammatical presumably due to a relative clause island effect, on a par with its non-elided counterpart (iiib). If the *wh*-phrase *which (Balkan language)* can be base-generated outside of the ellipsis domain, it is difficult to explain the ungrammaticality of (iiia). I will discuss this issue in more detail in Chapter 5.

the LF-copy analysis, which provides an ellipsis domain with internal structure only in covert syntax/LF so that only covert movement should be possible out of the relevant domain under this analysis. I will, however, also argue that there are certain ellipsis processes that involve PF-deletion (see in fact the above discussion of VP-ellipsis), which will lead me to the conclusion that both LF-copying and PF-deletion are available as strategies for deriving ellipsis. I will then propose a principled phase-based approach which predicts for every ellipsis process whether it involves LF-copying or PF-deletion. The proposed analysis will be confirmed by data from a number of languages. It will also be shown to have consequences for a number of constructions and phenomena, including the timing of null operator movement and the proper analysis of control and *wh*-in-situ in languages like Japanese. The discussion of the timing of null operator movement will in turn be shown to have consequences for implementation of the driving force of movement. Regarding control and *wh*-in-situ, investigating their interactions with null arguments will be shown to provide a novel window into the proper analysis of the phenomena in question (i.e. it provides a novel diagnostic for determining the nature of control and *wh*-in-situ).

1.2   Outline of the book

This book is structured as follows: In Chapter 2, I will review the previous literature on null arguments in radical *pro*-drop languages, in particular Japanese, including arguments that have been taken to motivate the existence of the ellipsis strategy in radical *pro*-drop languages. Also, I will provide several new diagnostics that can tease apart the two major ellipsis analyses of Japanese-type null arguments, namely the verb-stranding verb phrase ellipsis analysis and the argument ellipsis analysis, showing that the latter is favored over the former by the diagnostics in question.

In Chapter 3, I will first introduce the distinction between ellipsis and (silent) proforms (surface anaphora and deep anaphora in Hankamer & Sag's (1976) sense). Specifically, the two behave rather differently regarding extraction possibilities out of them: extraction is possible out of ellipsis domains, not out of (silent) proform domains. Then, I will examine whether extraction is allowed out of Japanese null arguments, using e.g. long-distance scrambling and raising-to-object as instances of overt movement and e.g. QR as an instance of covert movement. Investigating the extraction patterns out of Japanese null arguments will lead us to the generalization that they disallow overt extraction out of them, while they allow covert extraction, more precisely extraction that does not affect word order, out of them.

In Chapter 4, I will examine whether the relevant overt/covert extraction asymmetry out of null arguments is cross-linguistically observed in argument ellipsis

languages. The novel data on extraction out of null arguments from Chinese, Korean, Mongolian, and Turkish will provide us with the confirmation that null arguments in languages where argument ellipsis is claimed to be possible exhibit an overt/covert extraction asymmetry.

In Chapter 5, I will discuss how the overt/covert extraction asymmetry regarding extraction out of null arguments in the above languages can be theoretically accommodated. Specifically, I will claim that the extraction pattern in question is best analyzed under the LF-copy analysis of ellipsis, which in turn provides evidence that LF-copying is an available option for implementing ellipsis. Nevertheless, I will also argue that both PF-deletion and LF-copying are available options based on the fact that sluicing and VP-ellipsis productively allow overt extraction out of their domains. Then, I will propose a phase-based account regarding the dichotomy between PF-deletion and LF-copying, building on Bošković's (2014) phase-based analysis of ellipsis, where only phases and phasal complements can undergo ellipsis. Specifically, I will claim that ellipsis of phases, e.g. argument ellipsis, is implemented by LF-copying, whereas ellipsis of phasal complements, e.g. sluicing and VP-ellipsis, is implemented by PF-deletion. Furthermore, the LF-copy-based analysis of argument ellipsis will be shown to provide us with a tool to tease apart the competing analyses of several syntactic phenomena in Japanese syntax, including *wh*-in-situ. Specifically, investigating interactions between null arguments and *wh*-in-situ will be shown to support the view that *wh*-in-situ in Japanese involves overt movement (namely, movement that affects word order; see Hagstrom 1998, among others, for such a view), which will be shown to have consequences for *wh*-in-situ in other languages as well. The analysis proposed in this chapter will also enable us to determine the timing of null operator movement, the proper analysis of control, as well as Case-marked clefts and split QP phenomena in Japanese.

In Chapter 6, I will summarize the book, also exploring a possible way to capture the cross-linguistic variability regarding the availability of argument ellipsis, building on Bošković's (2012) generalization regarding radical *pro*-drop and Cheng's (2013) generalization regarding argument ellipsis. The discussion in question will also have consequences for the internal structure of various pronominal elements.

Silent arguments as elliptic arguments

In this chapter, I will review the discussion of Japanese null arguments from the previous literature, also providing novel arguments for the argument ellipsis analysis. This chapter is organized as follows. In Section 2.1, I will introduce a general classification of null arguments. In Section 2.2, I will discuss empty pronoun approaches to Japanese null arguments, showing that they cannot account for the full paradigm regarding the interpretation of Japanese null arguments. In Section 2.3, I will introduce the ellipsis analyses of Japanese null arguments, namely the verb-stranding verb phrase ellipsis analysis and the argument ellipsis analysis, summarizing the existing arguments that favor the latter approach over the former approach. In Section 2.4, I provide new arguments for the argument ellipsis analysis, which involve 'immobile' elements and complex predicates. Section 2.5 summarizes the chapter.

2.1   Radical *pro*-drop

The syntax of null arguments has been a hotly debated issue since the early stages of the study of generative grammar. Null arguments are generally classified into two types: agreement-licensed null arguments and discourse-licensed null arguments (the latter are also referred to as radical *pro*-drop).[1]

Agreement-licensed null arguments are observed in e.g. Italian and Spanish, where arguments can be phonologically null in the presence of rich agreement inflection on the verb (cf. Taraldsen 1980; Rizzi 1982, 1986; Jaeggli & Safir 1989; Barbosa 1995; Alexiadou & Anagnostopoulou 1998; among many others). Consider the following examples from Italian.

(1)   Italian
      a.   △ *bevo*.
               drink.1sɢ
            (Lit.) '△ drink.' = 'I drink.'

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1.   See Roberts & Holmberg (2010) and references cited therein for different types within the first group regarding null subjects.

b.   △ *bevi.*
     drink.2SG
     (Lit.) '△ drink.' = 'You drink.'

c.   △ *beve.*
     drink.3SG
     (Lit.) '△ drink.' = 'He/She drinks.'

d.   △ *beviamo.*
     drink.1PL
     (Lit.) '△ drink.' = 'We drink.'

e.   △ *bevete.*
     drink.2PL
     (Lit.) '△ drink.' = 'You guys drink.'

f.   △ *bevono.*
     drink.3PL
     (Lit.) '△ drink.' = 'They drink.'

In (1a)–(f), the subject is phonologically null, but it can be assigned an appropriate interpretation based on the morphology of the verb. For example, the null subject of (1a) is interpreted as 'I' because the verb *bevo* encodes the 1st person singular information. In this type of languages, null arguments are licensed by the rich agreement morphology on the verb. As a result, since Italian has subject-verb agreement but not object-verb agreement, there is no corresponding object *pro*-drop in Italian, as in (2).[2]

(2)   Italian
      *Mario ha   costretto △   a partire.
      Mario has forced   me/you/him/her/us/you guys/them to leave
      (Lit.) 'Mario has forced △ to leave.'   (Rizzi 1986: 517)

Here, the object is phonologically empty, and the sentence is ungrammatical, in contrast to (1).

   Discourse-licensed null arguments, also referred to as radical *pro*-drop, are observed in languages like Chinese, Japanese, Korean, Mongolian, Thai, Turkish, Vietnamese, among many others. In this type of languages, arguments such as subjects and direct/indirect objects can be dropped under an appropriate context in the absence of agreement morphology on the verb (see e.g. Huang 1984; Tomioka 2003; Neeleman & Szendröi 2007; Bošković 2012 for discussion regarding what

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2.   Objects can be occasionally dropped in Italian but only when they are interpreted as arbitrary. See Rizzi (1986) for relevant discussion.

characterizes radical *pro*-drop languages).[3] Consider the following examples from Japanese (the data in the following discussion in this chapter are all from Japanese, unless otherwise noted).

(3) a. *Watasi/Anata/Kare/Kanozyo/Watasi-tati/Anata-tati/Karera-wa*
   I/you/he/she/I-PL/you-PL/they-TOP
   hon-o   yon-da.
   book-ACC read-PST
   'I/You/He/She/We/You guys/They read a book.'

   b. $\triangle_{SUBJ}$ *zassi-mo   yon-da.*
      magazine-also read-PST
      (Lit.) '$\triangle$ also read a magazine.'
      = 'I/You/He/She/We/You guys/They also read a magazine.'

(3) shows that Japanese does not have overt agreement morphology on the verb (cf. Fukui 1986, 1988; Kuroda 1988), and that subjects can still be dropped regardless of their person specifications. For example, if the subject in (3a) is *watasi* 'I', the null subject in (3b) is interpreted as 'I'. Note that radical *pro*-drop languages allow not only subjects but also other arguments like direct objects and indirect objects to be phonologically null. Consider the following examples.

(4) a. *Taroo-wa Kanako-ni   John-o   shookaisi-ta.*
   Taro-TOP Kanako-DAT John-ACC introduce-PST
   'Taro introduced John to Kanako.'

   b. i. *Sosite,* $\triangle_{SUBJ}$ *Ayaka-ni   Bill-o   shookaisi-ta.*
      then   Ayaka-DAT Bill-ACC introduce-PST
      (Lit.) 'Then, $\triangle_{SUBJ}$ introduced Bill to Ayaka.'

      ii. *Ziroo-wa* $\triangle_{IO}$ *Bill-o   shookaisi-ta.*
      Ziro-TOP   Bill-ACC introduce-PST
      (Lit.) 'Ziro introduced Bill $\triangle_{IO}$.'

      iii. *Ziroo-wa Ayaka-ni $\triangle_{DO}$ shookaisi-ta.*
      Ziro-TOP Ayaka-DAT   introduce-PST
      (Lit.) 'Ziro introduced $\triangle_{DO}$ to Ayaka.'

(4a) contains three arguments, the subject, the indirect object, and the direct object. Each of the sentences in (4b) involves a null argument corresponding to the relevant argument in (4a). Specifically, the null subject in (4b–i) is interpreted as Taro, the null indirect object in (4b–ii) as Kanako, and the null direct object in (4b–iii) as John. The data in (4) thus indicate that definite/referential arguments can be left

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3. Note that Turkish exhibits subject agreement but not object agreement. See Öztürk (2004) for the claim that Turkish is a radical *pro*-drop language despite the presence of subject agreement.

phonologically unexpressed in the absence of appropriate agreement in radical *pro*-drop languages like Japanese.[4]

This book focuses on radical *pro*-drop languages, aiming to unearth their nature. It has been argued in the literature that the reason why null arguments in radical *pro*-drop languages are extremely productive is because they can be derived via ellipsis. In the following sections, I will review the analyses of null arguments in radical *pro*-drop languages, showing that their interpretive possibilities motivate the ellipsis view. Also, I will provide several diagnostics that can differentiate two major ellipsis analyses of null arguments in radical *pro*-drop languages, namely the Verb-stranding Verb Phrase Ellipsis (VVPE) analysis and the argument ellipsis analysis, arguing for the latter.

2.2   Pronoun-based approach to radical *pro*-drop

2.2.1   Pronominal nature of radical *pro*-drop and related issues

Already Kuroda (1965) argued that Japanese null arguments are empty pronouns (*pro*). One of the supporting arguments for the pronominal approach comes from condition B of the binding theory, which prohibits pronouns from being bound in their domains (cf. Chomsky 1981, 1986). Consider the following examples.

(5) a. *John$_i$ criticized him$_i$.
     b. *Everyone$_i$ criticized him$_i$.

(6) a. *Taroo$_i$-ga e$_i$ hihansi-ta.
         Taro-NOM   criticize-PST
         (Lit.) 'Taro$_i$ criticized e$_i$.'

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4. Not only nominal arguments but also pre/post-positional arguments and clausal arguments can be phonologically dropped in radical *pro*-drop languages like Japanese (this also holds for Chinese, Korean, Mongolian, and Turkish; see Chapter 4 for relevant discussion), as in (i).

(i) a. *Taroo-wa [$_{PP}$ Hanako-kara]$_i$ tegami-o morat-ta.   Ziroo-wa [$_{PP}$ △]$_i$*
         Taro-TOP   Hanako-from   letter-ACC receive-PST Ziro-TOP
         kukkii-o   morat-ta.
         cookie-ACC receive-PST
         (Lit.) 'Taro received a letter [$_{PP}$ from Hanako]$_i$. Ziro received cookies [$_{PP}$ △]$_i$.'
     b. *Taroo-wa [$_{CP}$ Hanako-ga   hasit-ta to]$_i$ omot-te-iru.   Ziroo-mo [$_{CP}$ △]$_i$*
         Taro-TOP   Hanako-NOM run-PST C   think-PROG-PRES Ziro-also
         omot-te-iru.
         think-PROG-PRES
         (Lit.) 'Taro thinks [$_{CP}$ that Hanako ran]$_i$. Ziro also thinks [$_{CP}$ △]$_i$.'

    b. **Dono gakusei-mo e_i hihansi-ta.*
       which student-MO$_\forall$ criticize-PST
       (Lit.) 'Every student$_i$ criticized e_i.'

English (5a) and (5b) are ungrammatical under the interpretation where the subject and the object pronouns are co-indexed. The ungrammaticality of these sentences is generally attributed to a violation of condition B of the binding theory. A similar observation holds for Japanese (6a) and (6b): the subject and the null object cannot be co-indexed. If the null object in (6a) and (6b) is pronominal, the ungrammaticality of these sentences under the intended co-indexed interpretation follows from condition B of the binding theory, as in (7a) and (7b), respectively, on a par with English (5a) and (5b).

(7) a. *Taro$_i$ *pro*$_i$ criticized
     b. *Every student$_i$ *pro*$_i$ criticized

The similarity between English (5a)–(b) and Japanese (6a)–(b) can thus be taken as an argument for the pronominal view on Japanese null arguments.

    As illustrated by (3) and (4), referential arguments can be left unexpressed in Japanese. Hoji (1985) observes that Japanese null arguments can also function as bound variables. Consider the following examples.

(8) a. *Dono gakusei-mo$_i$ [$_{CP}$ e_i tensai da   to] omot-te-iru.*
       which student-MO$_\forall$ genius COP.PRES C think-PROG-PRES
       (Lit.) 'Every student$_i$ thinks [$_{CP}$ that e_i is a genius].'
     b. *Taroo-dake$_i$-ga [$_{CP}$ e_i tensai da   to] omot-te-iru.*
       Taro-only-NOM   genius COP.PRES C think-PROG-PRES
       (Lit.) 'Only Taro$_i$ thinks [$_{CP}$ that e_i is a genius].'

Here, the null subject within the embedded clause serves as a bound variable bound by the matrix Quantificational Phrase (QP) subject. Thus, (8a) is interpreted as follows: for every x, x a student, x thinks that x is genius. That Japanese null arguments can be referential and that they can behave as bound variables can be captured if they are phonologically empty pronouns since pronouns can accommodate these two functions, as shown below.

(9) a. John kissed Mary$_i$, but Bill hit her$_i$.
     b. Everyone$_i$ thinks that he$_i$ is a genius.

The pronoun *her* in (9a) can be interpreted as referential in that it can refer to *Mary*. The pronoun *he* in (9b) can function as a bound variable, so (9b) can mean that for every x, x a person, x thinks that x is a genius.

However, if we consider other interpretations that Japanese null arguments can yield, the situation becomes complicated. For example, Whitman (1988), Otani & Whitman (1991), among many others, show that Japanese null arguments can yield the sloppy reading. Consider the following examples.

(10)   a.   *Taroo-wa zibun-no kuruma-o kaizoosi-ta.*
           Taro-TOP self-GEN   car-ACC   modify-PST
           (Lit.) 'Taro modified self's car.'

       b.   *Ziroo-mo △ kaizoosi-ta.*   strict; sloppy
           Ziro-also   modify-PST
           (Lit.) 'Ziro also modified △.'

       b′. *Ziroo-mo sore-o kaizoosi-ta.*   strict;*sloppy
           Ziro-also it-ACC modify-PST
           'Ziro also modified it.'

With (10a) as its antecedent, (10b) is ambiguous in that the null object can be interpreted as either Taro's car or Ziro's car. The former interpretation is referred to as the strict interpretation and the latter interpretation as the sloppy interpretation (cf. Sag 1976; Williams 1977; among others). Although the strict interpretation can be straightforwardly captured under the empty pronoun analysis with the simple co-indexation of *zibun-no kuruma* 'self's car' in (10a) and the null object in (10b) because they refer to the same entity, the sloppy interpretation cannot be captured under this analysis because they refer to a different entity: the object in (10a) is interpreted as Taro's car and the null object in (10b) as Ziro's car. Also note that the sloppy reading in (10b) becomes impossible if the null object is replaced by an overt pronoun *sore* 'it', as in (10b′). Specifically, (10b′) can only mean that Ziro also modified Taro's car, not his own car. Given that empty pronouns are silent counterparts of overt pronouns, the availability of the sloppy reading of the null object in (10b) suggests that Japanese must employ a strategy other than empty pronouns (at least as an additional option) to derive the null object in question.[5]

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5.   Overt pronouns that generally behave as referential/definite pronouns are sometimes capable of accommodating the sloppy reading. One such case involves paycheck pronouns. Consider (i).

(i)   The man$_i$ who gave his$_i$ paycheck to his wife is wiser than the man$_j$ who gave it to his mistress.   (Karttunen 1969: 114)

Here, the pronoun *it* can be interpreted sloppily: it can mean his$_j$ own paycheck. This kind of pronouns are referred to as pronouns of laziness. Then, one might wonder whether adopting a null counterpart of English pronouns of laziness in Japanese could capture the sloppy reading of null arguments. However, it is well-known that pronouns of laziness are typically found in the 'paycheck' environment. For example, pronouns of laziness cannot easily appear in a sentence uttered by a different speaker or in a backward anaphora context, as in (i) and (ii), respectively

2.2.2 Radical *pro*-drop as null indefinite pronoun

So far, we have seen that the availability of the sloppy reading of Japanese null arguments poses an issue for the pronoun-based analysis. However, it is well-known that pronouns are not always referential/definite; there are also indefinite pronouns, e.g. *one* in English, which can accommodate the sloppy reading (cf. Bach et al. 1972). In the following subsections, I will discuss the possibility that Japanese null arguments can be a null counterpart of indefinite pronouns, which could capture their sloppy reading without taking recourse to a strategy other than pronouns. It will be shown that postulating a silent variant of indefinite pronouns still cannot cover the

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(Tomioka (2003) notes that pronouns of laziness in German and Dutch are also highly restricted with respect to their distribution).

(i) A: I heard that Gary totaled his car.
   B: #Did you know his brother also totaled it only a week ago?   (Tomioka 2003: 327)

(ii) The man$_j$ who gave it to his wife is wiser than the man$_i$ who gave his$_i$ paycheck to his mistress.   (Takahashi 1996b: 266)

In none of the above sentences is the sloppy reading available. For example, (ii) cannot have the interpretation where the pronoun *it* refers to the first man's paycheck. By contrast, Japanese null arguments allow the reading in question much more easily. The following sentences illustrate this point.

(iii) A: *Dan-wa   zibun-no kuruma-o sugoku   taisetuni   si-te-iru*
      Dan-TOP self-GEN car-ACC   very.much importantly do-PROG-PRES
      n-da-tte.
      C-COP.PRES-SFP
      'I heard that Dan treasures his car.'

   B: *Aasoo. Oniisan-ga   △ somatuni si-te-iru   no-to-wa   erai*
      really brother-NOM   roughly   do-PROG-PRES NML-C-TOP very
      tigai   da.
      different COP.PRES
      (Lit.) 'Really? How different from his brother, who abuses △.' (Tomioka 2003: 328)

(iv) *Mary-ga   △ seme-ta   atode, John-mo zibun-no sensei-o   seme-ta.*
   Mary-NOM   blame-PST after   John-also self-GEN teacher-ACC blame-PST
   (Lit.) 'After Mary blamed △, John also blamed self's teacher.' (Takahashi 1996b: 266)

In both (iii) and (iv), the null argument can yield the sloppy reading. For example, (iv) can mean that after Mary blamed her own teacher, John also blamed his own teacher. Therefore, while English referential pronouns can occasionally yield the sloppy reading, the availability of such a reading with the relevant pronouns is much more restricted than with Japanese null arguments. Importantly, it is not available for pronouns of laziness in English in the examples in the text (see Takahashi 1996b; Tomioka 1998, 2003 for relevant discussion). In light of this, I conclude that the availability of the sloppy reading of Japanese null arguments cannot be attributed to the availability of a null counterpart of English paycheck pronouns in Japanese.

whole paradigm concerning interpretive possibilities of Japanese null arguments and would also face overgeneration issues, which means that a non-pronoun-based strategy is still required.

2.2.2.1 *Null bare noun*

Ishii (1991) observes that Japanese null arguments can be indefinite, based on the following kind of examples.

(11) a. *Taroo-wa hon-o   san-satu kat-ta.*
          Taro-TOP book-ACC three-CL buy-PST
          (Lit.) 'Taro bought three book.'
      b. *Hanako-wa △ go-satu kat-ta.*
          Hanako-TOP   five-CL buy-PST
          (Lit.) 'Hanako bought five △.'
      b'. *Hanako-wa hon-o   go-satu kat-ta.*
          Hanako-TOP book-ACC five-CL buy-PST
          (Lit.) 'Hanako bought five book.'

With (11a) as its antecedent, (11b) can be naturally interpreted as Hanako bought five books, i.e. (11b) can receive the same interpretation as (11b'). This suggests that the null argument in (11b) is indefinite: it means *hon* 'book' without any further specification.

Ishii's observation (11) led Hoji (1998) to conclude that bare nouns like *hon* 'book' can be left unexpressed in Japanese: Japanese employs null indefinite arguments, namely silent proforms that stand for bare nouns. Specifically, (11b) is analyzed as in (12b) under Hoji's analysis.

(12) a. *Taroo-wa hon-o   san-satu kat-ta.*
          Taro-TOP book-ACC three-CL buy-PST
          (Lit.) 'Taro bought three book.'
      b. *Hanako-wa pro$_{BOOK}$ go-satu kat-ta.*
          Hanako-TOP   five-CL buy-PST
          (Lit.) 'Hanako bought five *pro$_{BOOK}$*.'

In (12b), the object position is occupied by a null indefinite pronoun, which stands for the bare noun *hon* 'book'. This provides us with the appropriate interpretation in (11b).

Then, Hoji (1998) argues that the sloppy reading of Japanese null arguments, cf. (10b), repeated here as (13b), does not involve a true sloppy reading, and that it is just a sloppy-like reading that null indefinite pronouns allow. Consider the following examples.

(13) a. *Taroo-wa zibun-no kuruma-o kaizoosi-ta.*
          Taro-TOP self-GEN   car-ACC   modify-PST
          (Lit.) 'Taro modified self's car.'
      b. *Ziroo-mo △ kaizoosi-ta.*   strict; sloppy
          Ziro-also   modify-PST
          (Lit.) 'Ziro also modified △.'
      b'. *Ziroo-mo kuruma-o kaizoosi-ta.*
          Ziro-also car-ACC   modify-PST
          'Ziro also modified a car.'

As noted in (10), the null object in (13b) is ambiguous in that it can be interpreted
as either Taro's car (strict) or Ziro's car (sloppy). Interestingly, (13b'), where the
object position is occupied by a bare noun *kuruma* 'car', can yield the reading which
is compatible with the situation where Ziro modified his own car: the statement
'Ziro modified a car' is compatible with 'Ziro modified his car' (Hoji dubs the
sloppy reading that is obtained through the use of bare nouns in (13b') sloppy-like
reading). Then, Hoji analyzes (13b) as involving a null indefinite pronoun standing
for a bare noun *kuruma* 'car', as in (14b).

(14) a. *Taroo-wa zibun-no kuruma-o kaizoosi-ta.*
          Taro-TOP self-GEN   car-ACC   modify-PST
          (Lit.) 'Taro modified self's car.'
      b. *Ziroo-mo pro$_{CAR}$ kaizoosi-ta.*
          Ziro-also   modify-PST
          (Lit.) 'Ziro also modified *pro*$_{CAR}$.'

In (14b), a null indefinite pronoun occupies the object position, providing us with
the relevant sloppy-like reading. Hoji claims pragmatics plays a crucial role in li-
censing sloppy-like readings like the one in (13b). Therefore, if Hoji' (1998) null
indefinite pronoun, which is a silent counterpart of bare nouns, is available in
Japanese, the sloppy reading of Japanese null arguments would not pose an issue
for the pronominal approach.

    However, Hoji's (1998) null indefinite pronoun analysis cannot fully capture
the available interpretations of Japanese null arguments. There are at least two in-
terpretations that cannot be captured by the null indefinite pronoun analysis under
consideration: the sloppy reading in negative contexts (Saito 2007) and the quanti-
ficational reading (cf. Shinohara 2004; Saito 2007; Takahashi 2008a, b).[6]

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6. In addition to these two readings, Tomioka (1998) claims that Hoji's (1998) null indefinite
pronoun approach to Japanese null arguments faces a difficulty if the antecedent of the relevant
null pronoun is complex, as in (i):

First, Saito (2007) claims that we can differentiate the true sloppy reading and the sloppy-like reading by using negation. Consider the following examples.

(15)   a.   *Taroo-wa zibun-no kuruma-o kaizoosi-ta.*
            Taro-TOP self-GEN car-ACC   modify-PST
            (Lit.) 'Taro modified self's car.'

    b.   *Ziroo-wa △ kaizoosi-nakat-ta.*   strict; sloppy
            Ziro-TOP   modify-NEG-PST
            (Lit.) 'Ziro did not modify △.'

    b'. *Ziroo-wa kuruma-o kaizoosi-nakat-ta.*
            Ziro-TOP car-ACC   modify-NEG-PST
            (Lit.) 'Ziro did not modify car.'

In (15b) and (15b′), the negation is attached to the verbal complex. With (15a) as its antecedent, (15b) is ambiguous in that it can mean either that Ziro did not modify Taro's car (strict) or that Ziro did not modify his own car (sloppy). On the other hand, (15b′), where the object position is occupied by the bare noun *kuruma* 'car', can only mean that Ziro did not modify any cars. Therefore, Hoji's null indefinite pronoun analysis, which would provide the null object position in (15b) with the null bare noun pro_{CAR}, cannot capture the sloppy reading available for (15b).

(i)   a.   *Ken-wa   [[zibun-ga sotugyoosi-ta] daigaku]-ga kirai   da.   Erika-mo*
            Ken-TOP   self-NOM   graduate-PST   college-NOM hateful COP.PRES Erika-also
            △ kirai   da.
              hateful COP.PRES
            (Lit.) 'Ken hates [college [that self graduated from]]. Erika also hates △.'
                                                          (Tomioka 1998: 523)

    b.   #*Ken-wa   [[zibun-ga sotugyoosi-ta] daigaku]-ga kirai   da.   Erika-mo*
            Ken-TOP   self-NOM   graduate-PST   college-NOM hateful COP.PRES Erika-also
            daigaku-ga kirai   da.
            college-NOM hateful COP.PRES
            (Lit.) 'Ken hates [college [that self graduated from]]. Erika also hates college.'

The null object in (ia) can easily yield the sloppy reading: the second sentence of (ib) can mean that Erika also hates the college that she graduated from. On the other hand, (ib), where the object position of the second sentence is occupied by the bare noun *daigaku* 'college', is almost non-sensical presumably due to the presence of the particle *mo* 'also' on the subject *Erika*. Specifically, without the particle in question, the interpretation that can be most naturally obtained from the second sentence of (ib) is that Erika hates colleges in general. This interpretation is incompatible with the particle *mo* 'also', as we can see that the sequence of the English sentence *Ken hates the college that he graduated from and Erika also hates a college* is ill-formed (cf. Tomioka 1998: 523). Therefore, Hoji's null indefinite pronoun seems unlikely to be responsible for the sloppy reading of the null object in (ia).

Second, Hoji's (1998) null indefinite pronoun analysis cannot capture the quantificational reading of Japanese null arguments. Specifically, Shinohara (2004), Saito (2007), Takahashi (2008a, b), among others, observe that QP arguments can be phonologically dropped in Japanese, regardless of whether a quantifier involved in the relevant QP argument is strong or weak, as the following examples demonstrate.

(16) a. *Taroo-wa taitei/san-dai-no   kuruma-o kaizoosi-ta.*
          Taro-TOP most/three-CL-GEN car-ACC   modify-PST
          'Taro modified most/three cars.'

     b. *Ziroo-mo △ kaizoosi-ta.*   E-type; quantificational
          Ziro-also   modify-PST
          (Lit.) 'Ziro also modified △.'

     b'. *Ziroo-mo sorera-o   kaizoosi-ta.*   E-type;*quantificational
          Ziro-also they-ACC modify-PST
          'Ziro also modified them.'

Let us use the numeral classifier *sandai* 'three' in (16a) for illustration. With (16a) as its antecedent, (16b) can be interpreted in two ways. First, the null object can be paraphrased as *the cars*. In other words, it can be interpreted as an E-type pronoun (cf. Evans 1980), semantically a definite description 'disguised' as a pronoun. Under this interpretation, it follows that the set of cars that Ziro modified is identical to the set of cars that Taro modified. Second, the null object can retain the quantificational meaning of the antecedent object: the set of cars that Ziro modified can be different from the set of cars that Taro modified. Although the E-type reading is generally obtained with overt pronouns, the quantificational reading poses an issue for the pronoun-based analysis of Japanese null arguments because it is generally believed that quantificational pronouns, i.e. anaphoric expressions that themselves are quantificational, do not exist (cf. Saito 2007; Tomioka 2014). This can be confirmed by the fact that if we replace the null object in (16b) by an overt pronoun *sorera* 'they' as in (16b'), the quantificational reading becomes unavailable: in (16b'), the pronominal object can only be assigned the E-type interpretation. The following data show that Hoji's (1998) null indefinite pronoun approach does not account for the quantificational reading of the null object in (16b).

(17) a. *Taroo-wa taitei/san-dai-no   kuruma-o kaizoosi-ta.*
          Taro-TOP most/three-CL-GEN car-ACC   modify-PST
          (Lit.) 'Taro modified most/three car.'

     b. *Ziroo-mo kuruma-o kaizoosi-ta.*
          Ziro-also car-ACC   modify-PST
          (Lit.) 'Ziro also modified car.'

In (17b), the object position is occupied by a bare noun *kuruma* 'car'. Importantly, with (17a) as its antecedent, (17b) cannot yield the quantificational interpretation: it can only mean that Ziro also washed a car, not that Ziro also washed three cars. The difference between the indefinite reading and the quantificational reading becomes clearer if we attach the negation to the verb in (17b), as shown in (18) (cf. Otaki 2014: 21).

(18)   a.   *Taroo-wa taitei/san-dai-no   kuruma-o kaizoosi-ta.*
            Taro-TOP most/three-CL-GEN car-ACC   modify-PST
            'Taro modified most/three cars.'

       b.   *Ziroo-wa △ kaizoosi-nakat-ta.*   E-type; quantificational
            Ziro-TOP   modify-NEG-PST
            (Lit.) 'Ziro did not modify △.'

       b′.   *Ziroo-wa kuruma-o kaizoosi-nakat-ta.*   *quantificational
            Ziro-TOP car-ACC   modify-NEG-PST
            (Lit.) 'Ziro did not modify car.'

With (18a) as its antecedent, (18b) is three-way ambiguous: it can mean that Ziro did not modify the cars that Taro modified (E-type), Ziro did not modify three cars that may be different from the cars that Taro modified (quantificational), and Ziro did not modify any cars (indefinite). By contrast, (18b′), which involves a bare nominal object *kuruma* 'car', can only yield the indefinite reading. Therefore, it seems difficult for Hoji's null indefinite pronoun analysis to account for the quantificational reading of Japanese null arguments.

     To sum up, although Hoji's (1998) null indefinite pronoun approach would be able to accommodate certain cases of sloppy readings of Japanese null arguments, it cannot cover the full range of interpretations that they exhibit, namely the sloppy reading in negative contexts and the quantificational reading. Thus, the availability of these readings of Japanese null arguments calls for another strategy for deriving Japanese null arguments.

2.2.2.2 *Null counterpart of English one*
Before moving onto the analysis of the two readings that Hoji's (1998) null indefinite pronoun cannot accommodate, let us consider another potential approach to Japanese null arguments based on the English indefinite pronoun *one*. Bach et al. (1972) observe that *one* allows sloppy interpretations, as in (19).

(19)   Harry found a place to park his car before Harriet could find one.
                                               (Bach et al. 1972: 612)

Importantly, the pronoun *one* within the adjunct clause can be interpreted as a place to park her (= Harriet's) car. The availability of the sloppy reading with *one* is

rather productive (compared with referential pronouns such as *it*; see footnote 5 for relevant discussion), so one might wonder whether the interpretations that Hoji's (1998) null indefinite pronoun cannot cover could be captured if Japanese employs a silent counterpart of English *one* (see Tomioka 2014 for relevant discussion). It is worth noting here that English *one* does not suffer from the issue with the sloppy reading in negative contexts, unlike Hoji's null indefinite pronoun. Consider the following data.

(20)   John washed a car of his. Mary did not wash one.

With the first sentence as its antecedent, the second sentence of (20) is three-way ambiguous: the indefinite pronoun *one* can be interpreted as John's car (strict), a car of hers (sloppy), and a car (indefinite). Hence, if a null counterpart of English *one* were available in Japanese, the sloppy reading in the negative context in (15b), repeated here as (21b), which was shown to pose an issue for Hoji's null indefinite pronoun analysis, could be analyzed as in (21b′).

(21)   a.   *Taroo-wa zibun-no kuruma-o kaizoosi-ta.*
            Taro-TOP self-GEN car-ACC   modify-PST
            (Lit.) 'Taro modified self's car.'
       b.   *Ziroo-wa △ kaizoosi-nakat-ta.*   strict; sloppy
            Ziro-TOP   modify-NEG-PST
            (Lit.) 'Ziro did not modify △.'
       b′. *Ziroo-wa pro_{ONE} kaizoosi-nakat-ta.*
            Ziro-TOP   modify-NEG-PST
            (Lit.) 'Ziro did not modify pro_{ONE}.'

In (21b′), the null counterpart of the English indefinite pronoun *one*, pro_{ONE}, occupies the object position. Under the analysis in question, the second sentence of (20) and (21b) would be handled in the same way, so that (21b′) should be able to accommodate the relevant sloppy interpretation. Therefore, if a silent counterpart of English *one* were operative in Japanese grammar, the sloppy reading of Japanese null arguments in negative contexts would no longer be an argument against the pronoun-based analysis.[7]

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7.   However, it is not clear how the null counterpart of English *one* could capture the quantificational reading of Japanese null arguments. Thus, although the relevant null proform might be able to capture the sloppy reading in negative contexts, it still may not capture the full range of interpretations that Japanese null arguments exhibit. See also Sakamoto (2017: 128–129) for the observation that English *one* exhibits a different extraction pattern from Japanese null arguments, which indicates that a strategy other than a silent counterpart of English *one* is required to derive null arguments in Japanese.

However, there is an empirical argument against the existence of a null version of English *one* in Japanese grammar. Let us consider a particular instance of indefinite interpretations based on disjunction. Simons (1996, 1998) observes that English referential pronouns which are anaphoric on disjunctive arguments can only yield what she calls the disjunctive E-type reading. Consider the following example.[8]

(22)   John scolded Mary or Nancy. Bill scolded her too.

The first sentence involves a disjunctive object. In the second sentence, the object pronoun *her* takes the disjunctive object from the first sentence as its antecedent. What is of interest to us here is that the pronoun in the second sentence is interpreted as the one who John scolded (disjunctive E-type) but not as a disjunctive argument as a whole, namely either Mary or Nancy (disjunctive). In contrast to English referential pronouns, Japanese null arguments can yield the disjunctive reading, as the following data demonstrate.[9]

(23)   a.   *Taroo-wa Kanako-ka Ayaka-o   sonkeisi-te-iru.*
              Taro-TOP Kanako-or Ayaka-ACC respect-PROG-PRES
              'Taro respects Kanako or Ayaka.'
        b.   *Ziroo-mo △ sonkeisi-te-iru.*
              Ziro-also   respect-PROG-PRES
              (Lit.) 'Ziro also respects △.'

The null object in (23b) can be interpreted as a disjunctive argument as a whole, namely either Kanako or Ayaka. This reading cannot be obtained by a simple co-indexation of the antecedent disjunctive object in (23a) and the null object in (23b) since they can refer to a different entity.

Interestingly, the disjunctive reading can be obtained by using a 'variant' of the indefinite pronoun *one*, namely the indefinite expression *one of them*, in English. Consider (24).

(24)   John scolded Mary or Nancy. Bill scolded one of them too.

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8.   Simons (1996, 1998) in fact argues that pronouns cannot take disjunctive arguments that contain a proper name as their antecedents. In (i), I give her judgments.

(i)   a.   Either a soprano or an alto will sing. She will stand on that platform.
       b.   #Either Jane or Maud will sing. She will stand on that platform.

                                                              (Simons 1996: 250)

However, my informants (four linguists) all accept the disjunctive E-type reading but reject the disjunctive reading in (22). I will leave this matter for future research, but the issue does not affect the discussion here.

9.   See Sakamoto (2015b) for discussion of cross-linguistic interaction of disjunction and null arguments.

Here, the second sentence can be paraphrased as Bill scolded either Mary or Nancy. Then, the proponents of a silent counterpart of English *one*, pro_{ONE}, could analyze the disjunctive reading of the null object in (23b) by positing pro_{ONE} in the object position, as in (25b).

(25) a. *Taroo-wa Kanako-ka Ayaka-o   sonkeisi-te-iru.*
          Taro-TOP Kanako-or Ayaka-ACC respect-PROG-PRES
          'Taro respects Kanako or Ayaka.'
      b. *Ziroo-mo pro_{ONE} sonkeisi-te-iru.*
          Ziro-also   respect-PROG-PRES
          (Lit.) 'Ziro also respects pro_{ONE}.'

Under the analysis in question, the second sentence of (24) and (25b) is treated in the same manner, so that (25b) should allow the relevant disjunctive interpretation. Then, if a null counterpart of English *one*, i.e. pro_{ONE}, is available in Japanese, not only the sloppy reading in negative contexts but also the disjunctive reading of Japanese null arguments could be captured by the pronominal-based analysis. However, such a null indefinite pronoun causes an issue with respect to interactions between disjunction and null arguments in negative contexts. Funakoshi (2013) observes that if negation is attached to the verb in the target clause (23b), disjunction obligatorily takes scope under negation, as illustrated in (26).

(26) a. *Taroo-wa Kanako-ka Ayaka-o   sonkeisi-te-iru.*
          Taro-TOP Kanako-or Ayaka-ACC respect-PROG-PRES
          'Taro respects Kanako or Ayaka.'
      b. *Ziroo-wa △ sonkeisi-te-ina-i.*   *OR » NEG; NEG » OR
          Ziro-TOP   respect-PROG-NEG-PRES
          (Lit.) 'Ziro does not respect △.'

With (26a) as its antecedent, (26b) can only mean that Ziro respects neither Kanako nor Ayaka: (26b) cannot be uttered under the context where Ziro respects either Kanako or Ayaka. This restriction on the interpretation of disjunction within null arguments is not 'replicated' with the English indefinite expression *one (of them)*. Consider (27).

(27) John scolded Mary or Nancy. Bill did not scold one of them. ∃» NEG; NEG »∃

Here, the second sentence is ambiguous in that the indefinite object can take scope under negation and vice versa: this sentence is felicitous when Bill scolded either Mary or Nancy. Therefore, if a silent counterpart of English *one* exists in Japanese, (26b) should be analyzable as in (28b), which would incorrectly predict the wide scope reading of the indefinite object to be available in (26b).

(28) a. *Taroo-wa Kanako-ka Ayaka-o   sonkeisi-te-iru.*
          Taro-TOP Kanako-or Ayaka-ACC respect-PROG-PRES
          'Taro respects Kanako or Ayaka.'
      b. *Ziroo-wa pro$_{ONE}$ sonkeisi-te-ina-i.*
          Ziro-TOP   respect-PROG-NEG-PRES
          (Lit.) 'Ziro does not respect *pro*$_{ONE}$.'

The above observations lead to the conclusion that if a null counterpart of English *one*, i.e. *pro*$_{ONE}$, is available in Japanese, unavailable interpretations of Japanese null arguments, e.g. the higher scope of the disjunctive null object with respect to negation in (26b), would be incorrectly ruled in, which would cause an overgeneration issue.[10] Thus, I claim that Japanese does not employ the null indefinite pronoun in question, which means that the sloppy reading in negative contexts is still an issue for the pronoun-based approach of Japanese null arguments.

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10. The overgeneration issue discussed here would also hold for Hoji's (1998) null bare noun analysis of Japanese null arguments. A bare noun *dotiraka* 'one of the two' can yield the disjunctive reading, as in (i).

(i)   a. *Taroo-wa Kanako-ka Ayaka-o   sonkeisi-te-iru.*
          Taro-TOP Kanako-or Ayaka-ACC respect-PROG-PRES
          'Taro respects Kanako or Ayaka.'
      b. *Ziroo-mo dotiraka-o   sonkeisi-te-iru.*
          Ziro-also one.of.the.two-ACC respect-PROG-PRES
          'Ziro also respects one of the two.'

With (ia) as its antecedent, (ib) can be interpreted as Ziro also respects either Kanako or Ayaka. Thus, Hoji's null indefinite pronoun approach would analyze (23b) as (ii), which would provide us with the relevant disjunctive interpretation.

(ii) *Ziroo-mo pro$_{DOTIRAKA}$ sonkeisi-te-iru.*
      Ziro-also   respect-PROG-PRES
      (Lit.) 'Ziro also respects *pro*$_{DOTIRAKA}$.'

However, once we assume that there is a null counterpart of *dotiraka* 'one of the two' in Japanese, as Hoji's analysis would expect, the obligatory low scope of the null object with respect to negation in (26b) would not be captured because *dotiraka* 'one of the two' obligatorily takes higher scope than negation, as in (iii).

(iii) a. *Taroo-wa Kanako-ka Ayaka-o   sonkeisi-te-iru.*
          Taro-TOP Kanako-or Ayaka-ACC respect-PROG-PRES
          'Taro respects Kanako or Ayaka.'
      b. *Ziroo-wa dotiraka-o   sonkeisi-tei-na-i.*
          Ziro-TOP one.of.the.two-ACC respect-PROG-NEG-PRES
          'Ziro does not respect one of the two.'

(iii) can be uttered when Ziro respects either Kanako or Ayaka. Therefore, if Japanese adopts a null counterpart of *dotiraka* 'one of the two', it is expected that (26b) would allow the null disjunctive object to take scope over negation, contrary to the fact.

2.2.3   Interim summary

In Section 2.2, it has been shown that the availability of the sloppy reading in negative contexts and the quantificational reading of Japanese null arguments are difficult to capture under the pronoun-based analysis of Japanese null arguments. Specifically, Japanese overt pronouns generally cannot yield the relevant readings, which means that under the standard assumption that empty pronouns are different from overt pronouns only in the presence/absence of a phonological matrix, the non-referential readings in question need to be captured by a non-pronominal-based strategy. It was also shown that adopting a silent counterpart of indefinite pronouns, namely Japanese bare nouns and English *one*, cannot capture the whole paradigm of interpretations that Japanese null arguments exhibit, and also leads to several overgeneration problems. Then, I take the availability of the readings in question to indicate that Japanese must have a strategy other than empty pronouns. It has been a standard assumption in the literature that the relevant readings are derived

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In Sakamoto (2015b, 2016b), I discussed another overgeneration issue that the indefinite-pronoun-based analyses of Japanese null arguments face. Consider the following example.

(iv) *Taroo-wa Kanako-ka Ayaka-ni* $[_{CP}$ *sensei-ga* △ *ai-tagat-te-iru*
Taro-TOP Kanako-or Ayaka-DAT   teacher-NOM   meet-want.to-PROG-PRES
to] it-ta.
C   say-PST
(Lit.) 'Taro told Kanako or Ayaka $[_{CP}$ that the teacher wanted to see △].'

Here, the null object within the embedded clause is c-commanded by its antecedent within the matrix clause, *Kanako-ka Ayaka* 'Kanako or Ayaka', and it can only be assigned the disjunctive E-type reading: (iv) can only mean that Taro told Kanako or Ayaka that the teacher wanted to see whoever Taro told, not that Taro told Kanako or Ayaka that the teacher wanted to see Kanako or Ayaka. However, if the embedded object position in (iv) is replaced by the indefinite expressions under consideration, the disjunctive reading becomes available. Consider the following data.

(v) *Taroo-wa Kanako-ka Ayaka-ni* $[_{CP}$ *sensei-ga* *dotiraka-ni*
Taro-TOP Kanako-or Ayaka-DAT   teacher-NOM one.of.the.two-DAT
ai-tagat-te-iru   *to] it-ta.*
meet-want.to-PROG-PRES C   say-PST
(Lit.) 'Taro told Kanako or Ayaka $[_{CP}$ that the teacher wanted to see one of the two].'

(vi) Taro told Kanako or Ayaka $[_{CP}$ that the teacher wanted to see one of them].

In (v), the embedded object position is occupied by the bare noun *dotiraka* 'one of the two', and the disjunctive reading is available. In English (vi), the relevant position is occupied by *one*, and the reading in question is obtainable. This indicates that both the bare noun *dotiraka* 'one of the two' and English *one* can yield the disjunctive reading even if they are c-commanded by their disjunctive antecedents, unlike Japanese null arguments. In other words, if a silent counterpart of the expressions in question were available in Japanese, (iv) should be able to yield the relevant disjunctive reading, contrary to the fact.

via ellipsis. In the following sections, I will discuss two major ellipsis approaches to Japanese-type null arguments, namely VVPE and argument ellipsis, providing several arguments that favor the latter over the former.[11]

2.3   Ellipsis-based approach to radical *pro*-drop

2.3.1   Verb-stranding verb phrase ellipsis and argument ellipsis

Building on Huang (1987, 1991a), Otani and Whitman (1991) argue that VVPE is responsible for the sloppy reading of Japanese null arguments (see Hayashi 2015; Hayashi & Fujii 2015; Funakoshi 2016; Abe 2019 for more arguments for VVPE). It has been well-known since early studies of anaphora/ellipsis (cf. Sag 1976; Williams 1977) that English VP-ellipsis can accommodate sloppy interpretations. Consider the following example.

(29)   John will [$_{VP}$ wash his car]. Bill will [$_{VP}$ △] too.   strict; sloppy

Here, the second sentence contains an elliptic VP with the strict/sloppy ambiguity. Specifically, the sentence can mean either that Bill will wash John's car (strict) or that Bill will wash his own car (sloppy). Otani and Whitman (1991) take the availability of the sloppy reading in English VP-ellipsis to indicate that a similar mechanism should be responsible for the relevant reading of Japanese null arguments: they claim that Japanese adopts VVPE, where V overtly moves out of the VP-domain, which is followed by VP-ellipsis.[12] Schematically, the VVPE analysis accounts for the sloppy reading of the null object in (10b), repeated here as (30b), as in (31).

(30)   a.   *Taroo-wa zibun-no kuruma-o kaizoosi-ta.*
            Taro-TOP self-GEN car-ACC   modify-PST
            (Lit.) 'Taro modified self's car.'
        b.   *Ziroo-mo △ kaizoosi-ta.*   strict; sloppy
            Ziro-also   modify-PST
            (Lit.) 'Ziro also modified △.'

---

11.   Additional arguments against the empty pronoun analysis will be given in Section 2.4.

12.   VVPE is attested in a number of languages including Hebrew (Doron 1990, 1999), Irish (McCloskey 1991), Ndendeule (Ngonyani 1996), and Swahili (Ngonyani 1996). See Goldberg (2005) for an extensive discussion of VVPE.

(31)

```
                    TP
              ┌──────┴──────┐
             DP             T′
             △          ┌───┴────┐
            Ziro        VP      V_modify+T
                     ┌───┴───┐
                    DP    ___Vmodify    Domain of VVPE
                    △
                 self's car
```
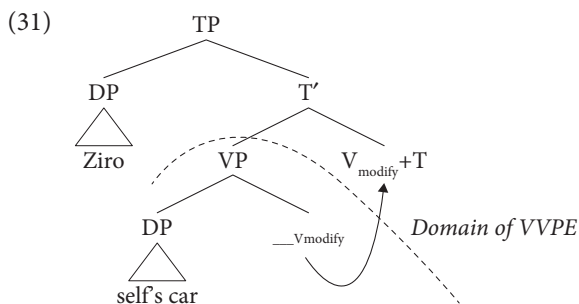
In (31), the verb *kaizoos-* 'modify' moves out of the VP-domain, and the VP containing the gap of the verb in question undergoes ellipsis. Since the ellipsis site involves a *self* anaphor *zibun* 'self', the availability of the sloppy reading in (30b) straightforwardly follows.

On the other hand, Oku (1998) argues that sloppy interpretations of Japanese null arguments should be derived via argument ellipsis, where arguments can directly undergo ellipsis (see also Kim 1999; Saito 2004a, b, 2007; Takahashi 2006, 2008a, b; Takita 2010, 2011a, b, 2018; Otaki 2014; Sakamoto 2015a, b, 2016a, b; Sugisaki 2018; among others, for more arguments for argument ellipsis). For example, the null object in (30b) is then analyzed as in (32).

(32)

```
                    TP
              ┌──────┴──────┐
             DP             T′
             △          ┌───┴────┐
            Ziro        VP        T
                     ┌───┴───┐
                    DP     V_modify
                    △
                 self's car    Domain of Argument Ellipsis
```

Here, the direct object containing a *self* anaphor is elided, which provides us with the intended sloppy interpretation.[13]

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13. Argument ellipsis is also attested in a number of other languages including American Sign Language (Koulidobrova 2012, 2017), Bangla (Simpson et al. 2013), Basque (Duguine 2008, 2012; Otaki 2014), Burmese (Lee 2016), Chinese (Cheng 2013), Colloquial Singapore English (Sato 2015), Hebrew (Landau 2018), Hindi (Simpson et al. 2013; Otaki 2014), Javanese (Sato 2014), Korean (Kim 1999; Takahashi 2007), Malayalam (Takahashi 2013a), Mongolian (Takahashi 2007; Sakamoto 2012), Persian (Sato & Karimi 2016), and Turkish (Şener & Takahashi 2010). See also Bošković (2017, 2018) for an analysis of a clitic construction in Serbo-Croatian as involving argument ellipsis.

Both the VVPE analysis and the argument ellipsis analysis can capture the sloppy reading in negative contexts as well as the quantificational reading of Japanese null arguments that were shown to be problematic for indefinite-pronoun-based analyses. Specifically, the sloppy reading of null arguments in the negative context in (21b), repeated here as (33b), is analyzed under the VVPE analysis and the argument ellipsis analysis as in (34a) and (34b) respectively.

(33) a. *Taroo-wa zibun-no kuruma-o kaizoosi-ta.*
          Taro-TOP self-GEN car-ACC   modify-PST
          (Lit.) 'Taro modified self's car.'
      b. *Ziroo-wa* △ *kaizoosi-nakat-ta.*   strict; sloppy
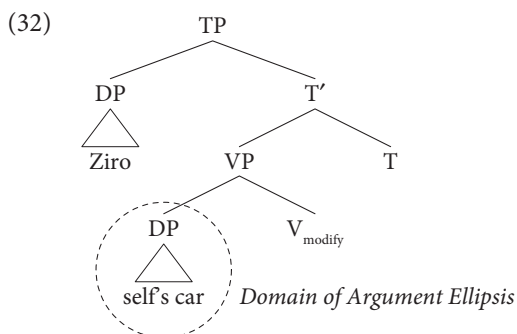   Ziro-TOP   modify-NEG-PST
          (Lit.) 'Ziro did not modify △.'

(34) a. *VVPE*
          [$_{TP}$ Ziro {$_{NegP}$ {$_{VP}$ {$_{DP}$ ~~self's car~~} ~~$_v$~~} ~~$_{Neg}$~~} V$_{modify}$+Neg+T]
                                                                  V-movement
      b. *Argument Ellipsis*
          [$_{TP}$ Ziro [$_{NegP}$ [$_{VP}$ {$_{DP}$ ~~self's car~~} V$_{modify}$] Neg] T]

The *self* anaphor is included in the ellipsis domain in (34a) and (34b), so the sloppy reading can be accommodated under the analyses in question. The availability of the quantificational reading of Japanese null arguments can be handled in a similar way. Specifically, (16b), repeated here as (35b), is analyzed under the VVPE analysis and the argument ellipsis as in (36a) and (36b), respectively.

(35) a. *Taroo-wa taitei/san-dai-no   kuruma-o kaizoosi-ta.*
          Taro-TOP most/three-CL-GEN car-ACC   modify-PST
          'Taro modified most/three cars.'
      b. *Ziroo-mo* △ *kaizoosi-ta.*   E-type; quantificational
          Ziro-also   modify-PST
          (Lit.) 'Ziro also modified △.'

(36) a. *VVPE*
          [$_{TP}$ Ziro {$_{NegP}$ {$_{VP}$ {$_{DP}$ ~~most/three car~~} ~~$_v$~~} ~~$_{Neg}$~~} V$_{modify}$+Neg+T]
                                                                  V-movement
      b. *Argument Ellipsis*
          [$_{TP}$ Ziro [$_{NegP}$ [$_{VP}$ {$_{DP}$ ~~most/three car~~} V$_{modify}$] Neg] T]

Here, the ellipsis domain includes the relevant quantifier, so the fact that (35b) allows the quantificational reading can be accommodated.

Furthermore, the disjunction data (26), repeated here as (37), can also be accommodated under the ellipsis analyses.

(37) a. *Taroo-wa Kanako-ka Ayaka-o   sonkeisi-te-iru.*
          Taro-TOP Kanako-or Ayaka-ACC respect-PROG-PRES
          'Taro respects Kanako or Ayaka.'

      b. *Ziroo-wa △ sonkeisi-te-ina-i.*   *OR » NEG; NEG » OR
          Ziro-TOP   respect-PROG-NEG-PRES
          (Lit.) 'Ziro does not respect △.'

Crucial for our discussion is that the disjunctive null argument must take scope under negation, which I claimed poses an overgeneration issue for the null indefinite pronoun analyses. Importantly, Goro (2007) claims that Japanese disjunction *-ka* is a positive polarity item on the basis of its interaction with negation.[14] Consider (38).

(38) *Taroo-wa Kanako-ka Ayaka-o   sonkeisi-te-ina-i.*
      Taro-TOP Kanako-or Ayaka-ACC respect-PROG-NEG-PRES
      'Taro does not respect Kanako or Ayaka.'   OR » NEG;*NEG » OR

Here, the disjunctive object obligatorily takes scope over negation. Specifically, (38) can only mean that Taro either does not respect Kanako or does not respect Ayaka, not that Hanako respects neither Kanako nor Ayaka. Given that Japanese disjunction *-ka* is a positive polarity item, the fact that the disjunctive null object

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14. Szabolsci (2002, 2004) observes that positive polarity items like English *some* exhibits a so-called rescuing effect, as illustrated in (i).

  (i) a. John didn't call someone.   *NEG » SOME
       b. I don't think that John didn't call someone.   NEG » NEG » SOME
                                                            (Goro 2007: 265–266)

In (ia), *someone* cannot take scope under negation. However, in (ib), where there is another downward entailing operator, i.e. negation, in the matrix clause, *someone* can take scope under the local negation (i.e. two downward entailing operators cancel each other out). Keeping this in mind, consider the following Japanese sentence.

  (ii) *John-wa* [CP *Taroo-ga piza-ka pasuta-o tabe-nakat-ta to] omowa-nakat-ta.*
        John-TOP   Taro-NOM pizza-or pasta-ACC eat-NEG-PST C think-NEG-PST
        (Lit.) 'John didn't think [CP that Taro didn't eat either pizza or pasta].'
                            NEG » SOME » NEG;*NEG » NEG » SOME (Goro 2007: 65)

Although there are two downward entailing operators in (ii) on a par with (ib), the rescuing effect is not observed: the disjunctive object within the embedded clause must take scope over the local negation. Based on the absence of the rescuing effect of Japanese disjunction *-ka*, Goro (2007) concludes that Japanese disjunction *-ka* is a different type of a positive polarity item from English *some*. Shibata (2015), however, takes the absence of the rescuing effect to indicate that Japanese disjunction *-ka* is not a positive polarity item. I have nothing new to add regarding this issue, simply assuming with Goro (2007) that Japanese disjunction *-ka* is a positive polarity item that does not exhibit the rescuing effect.

must take scope under negation can be accommodated under the ellipsis analyses, on a par with the English Example (39) (cf. Klima 1964).[15]

(39)   John [$_{VP}$ bought something]. Mary didn't [$_{VP}$ △].

In the first sentence, the VP contains a positive polarity item *something*. Crucial for the current discussion is that with the first sentence as its antecedent, the second sentence means that Mary did not buy anything. This means that the positive polarity item *someone* loses its positive polarity nature, functioning as a negative polarity item, under ellipsis. Then, if Japanese disjunction *-ka* is a positive polarity item and the null object in (37b) is derived via ellipsis, the fact that the null disjunctive object must take scope under negation can be captured: it loses its positive polarity feature under ellipsis, instead obtaining the negative polarity feature, which results in the obligatory scope under negation in (37b).[16]

Another argument for the ellipsis analysis comes from condition B of the binding theory. As noted in (6), repeated here as (40), subjects and objects in the same clause cannot be co-indexed in an out-of-the-blue context.

(40)   a.   *$Taroo_i$-ga e_i hihansi-ta.
              Taro-NOM   criticize-PST
              (Lit.) 'Taro$_i$ criticized e_i.'
         b.   *Dono gakusei-mo e_i hihansi-ta.
              which student-MO$_∀$ criticize-PST
              (Lit.) 'Every student$_i$ criticized e_i.'

We have seen in Section 2.2.1 that the ungrammaticality of the above sentences follows if the null objects are empty pronouns since the configuration would then cause a violation of condition B of the binding theory. Importantly, the above sentences become grammatical once they are preceded by appropriate antecedent

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15. The disjunction data in question can also be accommodated by the definite/referential pronoun analysis. For example, Funakoshi (2013) proposes that the null object in (37b) is *pro* that is interpreted as 'the two languages/them'.

16. Shinohara (2004), Tanaka and Tsulas (2006), and Saito (2007) note that cases like (39) are also independently observed in Japanese, as in (i).

(i)   *Sono toki, Taroo-wa nani-ka   kat-ta-ga,   Hanako-wa △ kawa-nakat-ta.*
       that   time Taro-TOP what-KA$_∃$ buy-PST-but Hanako-TOP   buy-NEG-PST
       (Lit.) 'At that time, Taro bought something, but Hanako did not buy △.'

<div align="right">(Saito 2007: 208)</div>

Here, the null object is interpreted as a negative polarity item *nanimo* 'anything'. As Saito (2007) points out, this kind of examples may be taken as an argument for the ellipsis view of Japanese null arguments since there seem to be no pronouns that themselves function as negative polarity items.

sentences, as the following examples demonstrate (see Xu 1986; Takahashi 2008a, b for relevant discussion).

(41) A: *Dare-ga   zibun-o hihansi-ta   no?*
  who-NOM self-ACC criticize-PST Q
  (Lit.) 'Who criticized self?'

  B[1]: *Taroo-ga   e hihansi-ta.*
  Taro-NOM   criticize-PST
  (Lit.) 'Taro criticized *e*.'

  B[2]: *Dono gakusei-mo   e hihansi-ta.*
  which student-MO$_\forall$ criticize-PST
  (Lit.) 'Every student criticized *e*.'

With (41A) as its antecedent, (41B[1]) can mean that Taro criticized himself, and (41B[2]) can mean that every student criticized himself: the subject and the null object can be co-indexed. If the null objects in the (B) examples were empty pronouns, the sentences would be incorrectly ruled out as violations of condition B of the binding theory. However, if the null objects in question are derived via ellipsis (this option becomes available for (41) because of the antecedent sentence A), the grammaticality of the (B) sentences with the intended interpretation trivially follows. Specifically, the (B) sentences are analyzed under the VVPE analysis and the argument ellipsis analysis as in (42a) and (42b) respectively.

(42) a. *VVPE*
  [$_{TP}$ Taro/Everyone [$_{VP}$ [$_{DP}$ self] $_v$] V$_{criticize}$+T]
  b. *Argument Ellipsis*
  [$_{TP}$ Taro/Everyone [$_{VP}$ [$_{DP}$ self] V$_{criticize}$] T]

Under both the VVPE analysis and the argument ellipsis analysis, the object position in the (B) examples of (41) can be occupied by a *self* anaphor, so that condition B of the binding theory does not matter. Therefore, the grammaticality of the (B) sentences in (41) provides a strong argument for the ellipsis view of Japanese null arguments.

Above, I have shown that both the VVPE analysis and the argument ellipsis analysis of Japanese null arguments succeed in capturing the availability of the sloppy reading in negative contexts and the quantificational reading that were shown to be difficult to be accommodated by the indefinite-pronoun-based analyses. Based on the above discussion, it is now a standard assumption that the availability of the sloppy reading and the quantificational reading indicates ellipsis for Japanese-type null arguments. I will also follow the assumption in question: the availability of the relevant readings of Japanese null arguments requires ellipsis.

Once the existence of an ellipsis strategy is taken for granted, a question arises as to which ellipsis strategy Japanese adopts to derive the readings in question. It has in fact been controversial in the literature how the VVPE analysis and the argument ellipsis analysis can be teased apart. In the following sections, I will introduce several (novel) diagnostics that favor one over the other, showing that argument ellipsis is operative in Japanese.

2.3.2 Verb-stranding verb phrase ellipsis versus argument ellipsis

2.3.2.1 *Ellipsis of subject*
Oku (1998) argues that ellipsis of subjects is a potential argument that favors argument ellipsis over VVPE because subjects are generally taken to occupy a higher position than the VVPE domain, as illustrated in (43).

(43)   a. *Argument Ellipsis*   b. *VVPE*
      [$_{TP}$ ~~Subject~~ T [$_{VP}$ V ~~Obj~~]]   [$_{TP}$ Subject V+T [$_{VP}$ ~~v~~ ~~Obj~~]]

                                          Domain of VVPE

VVPE is an operation where V overtly moves to T followed by VP-ellipsis, as in (43b), so subjects should not be affected by VVPE. Oku (1998) makes an observation that null subjects as well as null objects can yield the sloppy reading, attributing it to Nobu Miyoshi. Consider (44).

(44)   a. *Taroo-wa [$_{CP}$ [$_{DP}$ zibun-no gakusei]-ga eego-o   hana-su   to]*
      Taro-TOP   self-GEN   student-NOM English-ACC speak-PRES C
      omot-te-ina-i.
      think-PROG-NEG-PRES
      (Lit.) 'Taro does not think [$_{CP}$ that [$_{DP}$ self's student] speaks English].'
    b. *Ziroo-wa [$_{CP}$ [$_{DP}$ △] huransugo-o hana-su   to] omot-te-ina-i.*
      Ziro-TOP   French-ACC speak-PRES C   think-PROG-NEG-PRES
      (Lit.) 'Ziro does not think [$_{CP}$ that [$_{DP}$ △] speaks French].'   strict; sloppy

In (44a), the embedded subject contains a *self* anaphor. With (44a) as its antecedent, (44b) can yield both the strict and the sloppy interpretations: the null subject in (44b) can be interpreted as either Taro's student (strict) or Ziro's student (sloppy). The quantificational reading is also obtained for Japanese null subjects, as in (45).

(45) a. *Taroo-wa [*$_{CP}$ *[*$_{DP}$ *taitei/san-nin-izyoo-no   gakusei]-ga Amerika-ni*
Taro-TOP   most/three-CL-or.more-GEN student-NOM America-in
ryuugakusi-ta   to] omot-te-iru.
study.abroad-PST C think-PROG-PRES
'Taro thinks [$_{CP}$ that [$_{DP}$ most/more than three students] studied abroad in the US].'

b. *Ziroo-wa [*$_{CP}$ *[*$_{DP}$ △] *Huransu-ni ryuugakusi-ta   to] omot-te-iru.*
Ziro-TOP   France-to study.abroad-PST C think-PROG-PRES
(Lit.) 'Ziro thinks [$_{CP}$ that [$_{DP}$ △] studied abroad in France].'
                                         E-type; quantificational

The antecedent sentence (45a) involves an embedded subject with a quantifier. With (45a) as its antecedent, (45b) is ambiguous in that the set of students that Ziro thinks studied abroad in France can be either identical to the set of students that Taro thinks studied abroad in the US (E-type) or different from it (quantificational).

Given that the sloppy reading and the quantificational reading of Japanese null arguments indicate ellipsis, the data in (44) and (45) favor the argument ellipsis analysis over the VVPE analysis because the null argument that yields the relevant readings in question is a subject, an argument which occupies a higher position than the domain that the VVPE affects, cf. (43).

2.3.2.2 *Manner adverb*

The interpretation of manner adverbs is also relevant to the argument ellipsis versus VVPE debate. Park (1994, 1997) and Oku (1998) argue against positing VVPE in Korean and Japanese based on the distribution of manner adverbs. Specifically, Oku observes that VP-ellipsis in English and 'VVPE' in Japanese behave differently regarding the availability of manner adverb interpretation. In English, manner adverbs, which are standardly assumed to adjoin to VP, in the antecedent clause can modify a VP-ellipsis target clause, as shown in (46).

(46) a. Bill washed the car carefully.
b. But John didn't △.   (Oku 1998: 171–172)

The most sailent interpretation in (46b) is that John did not wash the car carefully, which implies that John did wash the car but not in a careful manner. This is straightforward if we assume that manner adverbs such as *carefully* are part of the elided VP, as in (47).
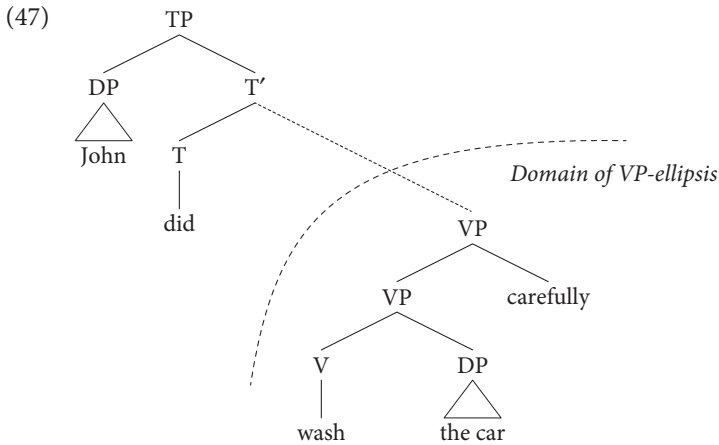
(47)

```
                    TP
              _____|_____
             DP            T'
            /\         ____|·····
          John        T        ·····  ____ ____ ____
                      |              ·····            Domain of VP-ellipsis
                     did              VP
                                  _____|_____
                                 VP         carefully
                              ___|___
                             V       DP
                             |       /\
                           wash    the car
```

On the other hand, manner adverbs in antecedent clauses cannot be interpreted in target clauses of what should be 'VVPE' in Japanese, as in (48).

(48) a. *Bill-wa   kuruma-o teineini   arat-ta.*
          Bill-TOP car-ACC   carefully wash-PST
          'Bill washed the car carefully.'
      b. *John-wa   △   arawa-nakat-ta.*
          John-TOP   wash-NEG-PST
          (Lit.) 'John did not wash △.'   (Oku 1998: 171)

In (48b), it is difficult to obtain the interpretation that would include the manner adverb in the missing part. Specifically, (48b) can only mean that John did not wash the car at all: it cannot mean that John washed the car but not carefully.[17] This

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17. There actually seems to be speaker variation with respect to the possibility of the manner adverb interpretation in cases like (48b) (see Funakoshi 2016). However, even for the speakers who allow the manner adverb interpretation in question in (48b), the following examples do not allow the interpretations in question.

(i) a. *Taroo-wa △ arawa-nakat-ta-kedo,   Hanako-wa kuruma-o teineini   arat-ta.*
         Taro-TOP   wash-NEG-PST-though Hanako-TOP car-ACC   carefully wash-PST
         (Lit.) 'Although Taro did not wash △, Hanako washed the car carefully.'
     b. *Taroo-wa [$_{CP}$ sono kuruma-ga teineini   araw-are-ta   to]*
         Taro-TOP   that car-NOM   carefully wash-PASS-PST C
         omot-te-iru-kedo,   Hanako-wa [$_{CP}$ sono kuruma-ga △
         think-PROG-PRES-though Hanako-TOP   that car-NOM
         araw-are-nakat-ta   to] omot-te-iru.
         wash-PASS-NEG-PST C   think-PROG-PRES
         (Lit.) 'Although Taro thinks [$_{CP}$ that that car was washed carefully], Hanako thinks [$_{CP}$ that that car was not washed].'

---

appears to be mysterious if VVPE is available in Japanese, since we should then be able to derive the empty domain in (48b) as in (49).

(49)

```
                          TP
                      ___/  \___
                   Subj         T′
                                / \
                               /   V+T
            - - - - - - - - - /
                           \ /
                           VP
                          /  \
                        VP    Adv        Domain of VVPE
                       /  \
                     Obj   __v
```
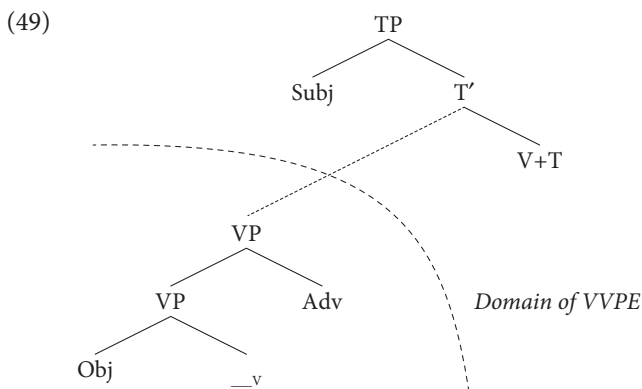
Here, the ellipsis site includes a manner adverb adjoined to the VP, so it is expected that the adverb should be interpreted in (48b), on a par with the English VP-ellipsis case in (46b), which is however not the case. In other words, the VVPE analysis faces an overgeneration problem regarding manner adverb interpretation. Argument ellipsis, however, correctly captures the absence of the manner adverb interpretation in the relevant case because the ellipsis site never involves the VP-adjoined adverb, so manner adverbs must be overtly present to be interpreted. The adverb data noted above thus favor the argument ellipsis analysis over the VVPE analysis.[18]

(ia) involves backward anaphora and it can only mean that although Taro did not wash the car at all, Hanako washed the car carefully: it cannot mean that although Taro did not wash the car carefully, Hanako washed the car carefully. (ib) involves passive and it can only be interpreted as although Taro thinks that that car was washed carefully, Hanako thinks that that car was not washed at all: the second conjunct of (ib) cannot mean that Hanako thinks that that car was not washed carefully. Importantly, the corresponding English VP-ellipsis cases allow the relevant manner adverb interpretation as in (ii).

(ii) a. Although John did not [$_{VP}$ △], Bill [$_{VP}$ washed the car carefully].
      b. Although John thinks [$_{CP}$ that that car was [$_{VP}$ washed carefully]], Bill thinks [$_{CP}$ that that car wasn't [$_{VP}$ △]].

In both (iia) and (iib), the VP-ellipsis site can include the manner adverb *carefully*, in contrast to Japanese in (ia) and (ib).

18. See Oku (1998), Saito (2007), and Chapter 6 for discussion regarding why argument ellipsis cannot target manner adverbs.

2.3.2.3 *The verb-identity requirement*

The verb-identity requirement developed by Goldberg (2005) can also be taken as an argument for argument ellipsis. It has been well-established that stranded Vs must be identical in the antecedent clause and the target clause of VVPE. The following is cited from Goldberg (2005).

(50)   The antecedent- and target-clause Vs of VP-ellipsis must be identical, minimally, in their root and derivational morphology.[19]   (Goldberg 2005: 171)

Goldberg (2005) maintains that this identity requirement on stranded Vs holds for Irish, Hebrew, and Swahili, all of which have been claimed to have VVPE (see Gribanova 2013 for relevant discussion of Russian). Consider the following examples from Irish to illustrate this requirement.

(51)   Irish
       Q: *Ar [cheannaigh siad teach]?*
          c   bought   they house
       'Did they buy a house?'
       A: *Creidim gur [cheannaigh △].*
          believe c   bought
       (Lit.) 'Believe (I) that [bought △].'   (McCloskey 1991: 274)

Irish is a VSO language where null subjects are possible only with the synthetic form of V and null direct objects are not allowed with finite Vs (cf. McCloskey 1991). In (51), the stranded V *cheannaigh* 'bought' is an analytic form, so that the elided subject in the Answer cannot be an instance of a null subject. Moreover, the second elided argument is a direct object (*teach* 'house') to a finite V, so this elided object cannot be an instance of a null object. Therefore, the surface string of the Answer in (51) is taken to be an instance of VVPE, as illustrated in (52).

(52)   Q: Ar [$_{TP}$ cheannaigh$_1$ [$_{VP}$ siad ___$_1$ teach]]
       A: Creidim gur [$_{TP}$ cheannaigh$_2$ [$_{VP}$ siad ___$_2$ teach]]

Here, the verb *cheannaigh* 'bought' undergoes overt movement to T followed by VP-ellipsis of its complement domain. The elided part includes the subject and the direct object in question, yielding the surface string (51A). According to Goldberg (2005), VVPE in (51) is allowed since the stranded V matches the V in the antecedent clause. Next, consider the following case where the stranded V cannot count as identical under (50).

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19. Goldberg (2005) deduces this requirement based on Merchant's (2001) Isomorphism requirement on ellipsis.

(53)   Irish
    *[Léigh mé an dán] ach níor [thuig △].
    read   I   the poem but not understand
    (Int.) 'I read the poem, but I didn't understand it.'   (Goldberg 2005: 168)

(54)   *[$_{TP}$ Léigh$_1$ [$_{VP}$ mé ___$_1$ an dán]] ach níor [$_{TP}$ thuig$_2$ [$_{VP}$ ~~mé ___$_2$ an dán~~]]

In contrast to (51), VVPE in (53) is impossible. The ungrammaticality of (53) argues for the verb identity requirement on the stranded V in (50): the stranded V in (53), i.e. *léigh* and *thuig*, do not count as identical, and (53) is ungrammatical. The verb identity requirement is thus one of the crucial aspects of VVPE.[20]

Returning now to Japanese, in contrast to VVPE in Irish, Hebrew, and Swahili, Japanese constructions which would be analyzed as VVPE under the VVPE analysis of null arguments do not obey the requirement in question, as shown below (see Otaki 2014; Sugisaki 2018 for relevant discussion).

(55)   a.   *Taroo-wa zibun-no ronbun-o shoosansi-nakat-ta.*
         Taro-TOP self-GEN paper-ACC praise-NEG-PST
         (Lit.) 'Taro did not praise self's paper.'
      b.   *Hanako-wa   △ hihansi-nakat-ta.*   strict; sloppy
         Hanako-TOP   criticize-NEG-PST
         (Lit.) 'Hanako did not criticize △.'

(56)   a.   *Taroo-wa taitei/san-nin-no   sensei-o   sonkeisi-te-iru.*
         Taro-TOP most/three-CL-GEN teacher-ACC respect-PROG-PRES
         'Taro respects most/three teachers.'
      b.   *Hanako-wa   △ keibetusi-te-iru.*   E-type; quantificational
         Hanako-TOP   despise-PROG-PRES
         (Lit.) 'Hanako despises △.'

In the above examples, the stranded Vs in the (a) sentences and the (b) sentences do not count as identical under (50), so VVPE should not be an option. However, the sentences are all grammatical and the readings which would indicate ellipsis are available, which suggests that Japanese needs to be able to exploit an ellipsis strategy other than VVPE to derive the elliptic arguments here. Under the argument ellipsis analysis, these sentences are not problematic, since this strategy is not subject to the verb identity requirement in (50). Therefore, the data here also favor argument ellipsis over VVPE.

To sum up, I have discussed the diagnostics reported in the literature that can tease apart the VVPE analysis and the argument ellipsis analysis. By testing the

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20. See Goldberg (2005) for the observation that English VP-ellipsis also respects the verb identity requirement on the stranded V.

behavior of Japanese null arguments against the relevant diagnostics, we have seen that argument ellipsis is favored over VVPE as the ellipsis strategy in the relevant cases in Japanese. In the reminder of this chapter, I will provide novel arguments that favor argument ellipsis over VVPE in light of 'immobile' elements and complex predicates.

2.4   More arguments for argument ellipsis

2.4.1   'Immobile' element

Kim (1999) is the first study to note that constructions which involve 'immobile' elements provide an ellipsis context where VVPE cannot apply but argument ellipsis can. Consider Korean (57).

(57)   Korean
    a.   *Mike-nun [$_{DP1}$ James]-lul [$_{DP2}$ tali]-lul ketecha-ss-ta.*
        Mike-TOP   James-ACC   leg-ACC kick-PST-DECL
        'Mike kicked James on the leg.'
    b.   **Mike-nun [$_{DP2}$ tali]-lul [$_{DP1}$ James]-lul ketecha-ss-ta.*
        Mike-TOP   leg-ACC   James-ACC kick-PST-DECL
        'Mike kicked James on the leg.'

In (57a), *James* is the whole argument (DP$_1$) and *tali* is the part argument (DP$_2$). What is interesting in this construction is that the order between the two arguments is rigid: (57b), where the part argument precedes the whole argument, is ungrammatical. Kim (1999) observes that the whole argument can be independently dropped, allowing the sloppy reading, as in (58).

(58)   Korean
    a.   *Mike-nun [$_{DP1}$ caki ai]-lul   [$_{DP2}$ phal]-lul ttayli-ci an-h-ass-ta.*
        Mike-TOP   self child-ACC   arm-ACC hit-CI   NEG-do-PST-DECL
        (Lit.) 'Mike did not kick [$_{DP1}$ self's child] on the arm.'
    b.   *James-nun [$_{DP1}$ △] [$_{DP2}$ tali]-lul ttayli-ci an-h-ass-ta.*
        James-TOP   leg-ACC hit-CI   NEG-do-PST-DECL
        (Lit.) 'James did not kick [$_{DP1}$ △] on the leg.'   strict; sloppy

With (58a) as its antecedent, (58b) is ambiguous: it can mean either that James did not kick Mike's child on his/her leg (strict reading) or that James did not kick his own child on his/her leg (sloppy reading). Therefore, the null argument in (58b) should be derived via ellipsis.

Important for the current discussion is the fact that the part argument *tali* 'leg' phonologically survives in (58b). Consider the following schematic structure of the relevant part in (58b).
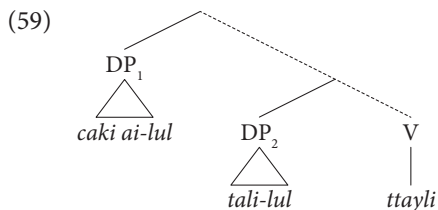
(59)

```
              DP₁
           △
      caki ai-lul        DP₂          V
                      △            |
                   tali-lul       ttayli
```

Here, DP_1 occupies a higher position than DP_2, and this hierarchical relation is rigid (cf. the ungrammaticality of (57b)). In order to elide DP_1, the VVPE analysis must raise the V *ttyali* 'hit' to a higher position than DP_1, as in (60).

(60)

```
                                   V
                                   |
              DP₁               ttyali
           △
      caki ai-lul        DP₂
                      △        ___ᵥ
                   tali-lul
```

The problem with the VVPE analysis here is that, not only DP_1 but also DP_2 must be affected by ellipsis. For the examples in question to be derived via VVPE, both the verb and DP_2 must move out of the VP, with DP_1 remaining inside of the VP to be elided under VVPE. The problem is that DP_2 cannot move here, as discussed above. Therefore, the phonological realization of DP_2 is not expected if VVPE is responsible for ellipsis of DP_1 in the relevant configuration, as in (61).

(61)

```
                                   V
                                   |
              DP₁               ttyali
           △
      caki ai-lul        DP₂           tᵥ    Domain of VVPE
                      △
                   tali-lul
```

On the other hand, the argument ellipsis analysis does not suffer from the above problem since it can directly target an argument: argument ellipsis can apply to only DP_1, leaving DP_2 intact, as in (62).

(62)

Domain of
Argument Ellipsis

Therefore, the fact that the null argument in (58b) allows the sloppy reading with the phonological realization of the part argument (i.e. DP_2 in the above tree diagrams) argues for argument ellipsis: we are dealing here with a context where argument ellipsis can apply but VVPE cannot. What the above discussion indicates is that we can get an argument for argument ellipsis over VVPE if we can find a configuration which satisfies the following conditions: (i) there are two arguments whose order is rigid, and (ii) only the higher argument undergoes ellipsis, leaving the lower argument phonologically overt.

Turning to Japanese, Miyagawa and Tsujioka (2004) and Kishimoto (2009) observe that the accusative part of certain idiomatic expressions resists movement by itself, as illustrated in (63).[21]

(63)   a.   *Taroo-wa kono ryoori-ni keti-o   tuke-ta.*
            Taro-TOP this   dish-DAT meanness-ACC attach-PST
            (Lit.) 'Taro attached meanness to this dish.'
            ≈ 'Taro criticized this dish.'
       b. **Taroo-wa keti-o   kono ryoori-ni tuke-ta.*
            Taro-TOP meanness-ACC this   dish-DAT attach-PST

In (63a), *keti* 'meanness' and *tuketa* 'attached' form an idiomatic expression 'criticized'. Interestingly, if the accusative part of the idiomatic expression is moved across the dative phrase, the sentence becomes ungrammatical, as in (63b). This shows that the order between the two is rigid.

Keeping this in mind, consider the following examples.

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21. The judgment in (63) may not be quite as robust for some speakers. For example, Miyagawa (1997) finds examples such as (63b) grammatical, though Miyagawa and Tsujioka (2004) report contrasts as in (63a)–(b). I leave open how this potential speaker variation could be captured.

(64) a. *Taroo-wa zibun-no ryoori-ni keti-o   tuke-ta.*
          Taro-TOP self-GEN dish-DAT meanness-ACC attach-PST
          (Lit.) 'Taro attached meanness to self's dish.'
          ≈ 'Taro criticized his dish.'
      b. *Hanako-wa △ keti-o   tuke-nakat-ta.*   strict; sloppy
          Hanako-TOP   meanness-ACC attach-NEG-PST
          (Lit.) 'Hanako did not attach meanness △.'

With (64a) as its antecedent, (64b) can yield both the strict and the sloppy read-
ings: the null argument in (64b) can be interpreted as either Taro's dish (strict) or
Hanako's dish (sloppy). This poses a difficulty for the empty pronoun analysis since
this analysis would only predict the strict reading. The null argument in (64b) also
seems not to be derivable via VVPE since under such a strategy the accusative part
of the idiomatic expression *keti-o* 'meanness' which must remain within the VP
domain should be affected by VP-ellipsis as well, as shown in (65).

(65) $[_{TP}$ Hanako $[_{NegP}[_{VP}[_{DP}$ self's dish] $[_{DP}$ meanness] $\_\_v]\_\_Neg]$ V$_{attach}$+Neg+T]
                                                                    V-movement

Here, V overtly moves to T, which is followed by VP-ellipsis. The issue here is that in
order for VVPE to elide the dative argument *self's dish*, it must elide the accusative
argument *meanness* as well. However, the option to move the accusative argument
out of the VVPE domain should not be available here since such movement, namely
movement of an accusative argument across a dative argument, is independently
excluded in this context, as in (63b). Therefore, VVPE should not be responsible for
the sloppy reading of the null argument in (64b). On the other hand, the argument
ellipsis analysis correctly derives the null argument in question since it allows only
the dative argument *self's dish* to undergo ellipsis, leaving the relevant accusative
argument intact, as in (66).

(66) $[_{TP}$ Hanako $[_{NegP}[_{VP}[_{DP}$ self's dish] $[_{DP}$ meanness] V$_{attach}]$ Neg] T]

Therefore, the availability of the sloppy reading in (64b) favors the argument ellipsis
analysis over the VVPE analysis.[22]

---

22. The same argument applies to the quantificational test, as in the following.

(i) a. *Taroo-wa taitei/mi-ttu-no   resutoran-ni   keti-o   tuke-ta.*
          Taro-TOP most/three-CL-GEN restaurant-DAT meanness-ACC attach-PST
          (Lit.) 'Taro attached meanness to most/three restaurants.'
     b. *Hanako-mo △ keti-o   tuke-ta.*
          Hanako-also   meanness-ACC attach-PST
          (Lit.) 'Hanako also attached meanness △.'

One might argue that the accusative part and the verb of idiomatic expressions form a complex predicate, which might still make VVPE an option for deriving the null argument in (64b): the complex predicate consisting of *keti-o* 'meanness' and the verb *tuker-* 'attach' would overtly move to T, which would be followed by ellipsis of the VP that contains the dative argument *zibun-no ryoori-ni* 'self 's dish'. However, there are at least three arguments against such a view.

First, focus particles can intervene between the accusative part and the verb in (64b), as shown in (67b).

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Here, the set of restaurants that Hanako criticized can be either identical to the set of restaurants that Taro criticized or different from it. The latter reading argues for argument ellipsis in the same way as (64b). Also, idiomatic expressions like *X-ni tuba-o tuker-* 'prevent others from taking X' provide an argument that favors argument ellipsis over VVPE from a different perspective. Consider (ii).

(ii)   a.   *Taroo-wa kono kuruma-ni tuba-o   tuke-ta.*   (literal/idiomatic)
            Taro-TOP this car-DAT   spit-ACC attach-PST
            (Lit.) 'Taro attached spit on this car.'

       b.   *Taroo-wa tuba-o   kono kuruma-ni tuke-ta.*   (literal/*idiomatic)
            Taro-TOP spit-ACC this car-DAT   attach-PST
            (Lit.) 'Taro attached spit on this car.'

(iia) allows the idiomatic reading, i.e. "Taro prevented others from taking this car", in addition to the literal meaning. By contrast, (iib), where the accusative argument has undergone movement across the dative argument, only allows the literal meaning. This leads to the conclusion that the accusative argument is 'immobile' when it functions as a part of the idiomatic expression. Keeping this in mind, consider (iii).

(iii) a.   *Taroo-wa san-dai-no   kuruma-ni tuba-o   tuke-ta.*
            Taro-TOP three-CL-GEN   car-DAT   spit-ACC attach-PST
            (Lit.) 'Taro attached spit on three cars.'

       b.   *Hanako-mo △ tuba-o   tuke-ta.*
            Hanako-also   spit-ACC attach-PST
            (Lit.) 'Hanako also attached spit △.'

(iiia) allows the idiomatic interpretation, namely "Taro prevented others from taking three cars". Importantly, with (iiia) as its antecedent, (iiib), which involves a null object anaphoric on the object QP in (iiia), allows the quantificational reading as well as the idiomatic interpretation. Specifically, (iiib) can be uttered when Hanako prevented others from taking the three cars that are different from the three cars that Taro prevented others from taking. The availability of the quantificational reading is problematic for the empty pronoun analysis, as has been discussed above. Crucially, the VVPE analysis is also unlikely to be the source of the null argument in (iiib) because of the availability of the idiomatic interpretation. To be more specific, the VVPE analysis requires the accusative argument *tuba-o* 'spit' to move out of the VP-domain across the dative argument *san-dai-no kuruma-ni* 'three cars', but such movement would deprive (iiib) of the idiomatic reading on a par with (iib). Therefore, the fact that (iiib) allows the quantificational reading as well as the idiomatic interpretation also provides an argument for argument ellipsis.

(67)   a.   *Taroo-wa zibun-no ryoori-ni keti-o   tuke-ta.*
Taro-TOP self-GEN dish-DAT meanness-ACC attach-PST
(Lit.) 'Taro attached meanness to self's dish.'
≈ 'Taro criticized his dish.'

   b.   *Hanako-wa △ keti-sae/-wa/-mo   tuke-nakat-ta.* strict; sloppy
Hanako-TOP   meanness-even/-TOP/-also attach-NEG-PST
(Lit.) 'Hanako did not attach meanness-even/-TOP/-also △.'

In (67b), the focus particle is attached to the accusative argument of the idiomatic expression, and the sentence is grammatical with the relevant sloppy reading. This shows that the accusative argument and the verb do not form a complex predicate because focus particles cannot intervene between elements that form a typical complex predicate, as illustrated in (68) (cf. Kishimoto 2005b, 2008, 2009).

(68)   a.   *Taroo-wa kusuri-o   nomi-wasure-ta.*
Taro-TOP medicine-ACC drink-forget-PST
'Taro forgot to take medicine.'

   b.   **Taroo-wa kusuri-o   nomi{-sae/-wa/-mo}-wasure-ta.*
Taro-TOP medicine-ACC drink{-even/-TOP/-also}-forget-PST

In (68a), *nom-* 'drink' and *wasurer-* 'forget' form a complex predicate 'forget to drink'. The ungrammaticality of (68b) then shows that focus particles cannot be attached to the first element of a complex predicate. Therefore, that the sloppy reading is available in (67b) suggests that VVPE is not an option for deriving the null argument in question.

    Second, if the accusative part can be modified by another phrase, it would be difficult to analyze the accusative part and the verb as a complex predicate. In fact, the accusative part in (64b) can be modified by a genitive phrase such as *ooku-no* 'much', as the following data show.

(69)   a.   *Taroo-wa zibun-no ryoori-ni keti-o   tuke-ta.*
Taro-TOP self-GEN dish-DAT meanness-ACC attach-PST
(Lit.) 'Taro attached meanness to self's dish.'
≈ 'Taro criticized his dish.'

   b.   *Hanako-wa △ amari ooku-no   keti-o   tuke-nakat-ta.*
Hanako-TOP   not.so much-GEN meanness-ACC attach-NEG-PST
(Lit.) 'Hanako did not attach much meanness △.'   strict; sloppy

Importantly, even if the accusative part is modified by another phrase, the sentence is still grammatical with the sloppy reading. Then, (69b) provides another argument against the complex predicate view of the accusative argument and the verb in the relevant idiomatic formation, which in turn argues against the VVPE analysis of the sloppy reading of the null argument in (64b).

Third, as Mamoru Saito (personal communication) points out, the particle *ne*, which cannot intervene between elements that form a typical complex predicate, as in (70), can intervene between the accusative part and the verb in (64b), as in (71).

(70)   *Taroo-wa (ne) kusuri-o   (ne) nomi(*-ne)-wasure-ta (ne).*
        Taro-TOP NE   medicine-ACC NE   drink(-NE)-forget-PST NE
        'Taro forgot to take medicine.'

(71)   a.   *Taroo-wa zibun-no ryoori-ni keti-o   tuke-ta.*
              Taro-TOP self-GEN   dish-DAT meanness-ACC attach-PST
              (Lit.) 'Taro attached meanness to self's dish.'
              ≈ 'Taro criticized his dish.'
        b.   *Hanako-wa ne △ keti-o   ne tuke-nakat-ta ne.* strict; sloppy
              Hanako-TOP NE   meanness-ACC NE attach-NEG-PST NE
              (Lit.) 'Hanako did not attach meanness △.'

Therefore, the accusative argument and the verb seem not to constitute a complex predicate in (71b). Then, the null argument in (71b) cannot be derived via VVPE, which provides another argument that favors argument ellipsis over VVPE. The idiomatic expression thus provides an argument that argument ellipsis is operative in Japanese grammar.

2.4.2 Complex predicate and anti-reconstruction

In this subsection, I will discuss interactions of null arguments and complex predicates in Japanese. Koizumi (1995) (for later discussions, see Bobaljik & Wurmbrand 2005, 2007; Takahashi 2012; Shimamura & Wurmbrand 2014; among others) observes that QP objects obligatorily take scope over negation in Japanese complex predicate constructions with e.g. *wasurer-* 'forget' (namely, control-type complex predicates in Koizumi's 1995 sense and lexical restructuring in Wurmbrand's 2001 sense), as the following examples demonstrate.

(72)   a.   *John-wa   ringo-dake-o   tabe-wasure-ta.*
              John-TOP apple-only-ACC eat-forget-PST
              'John forgot to eat only apples.'   ONLY » FORGET;*FORGET » ONLY
                                                              (Koizumi 1995: 62)
        b.   *John-wa subete-no ringo-o   tabe-wasure-ta.* ∀» FORGET;*FORGET »∀
              John-TOP all-GEN   apple-ACC eat-forget-PST
              'John forgot to eat all the apples.'   (Bobaljik & Wurmbrand 2007: 28)

In (72a), the QP object with *-dake* 'only' must take scope over *wasurer-* 'forget' (scope-wise, *wasurer-* 'forget' functions as negation; see Bobaljik & Wurmbrand 2007: 28). Specifically, (72a) means that among many things John was supposed to eat, it is only apples that he forgot to eat; it cannot mean that it is eat only apples that John forgot to do. A similar observation applies to the universal QP object in (72b): it obligatorily takes scope over *wasurer-* 'forget'. To be more specific, (72b) lacks the partial-negation interpretation where John may have eaten some but not all apples: (72b) is paraphrasable as 'all the apples are such that John did not eat them'. Following Bobaljik & Wurmbrand (2005, 2007), I will refer to the obligatory wide scope of QPs over negation in cases like (72) as the anti-reconstruction effect. The following examples demonstrate that the anti-reconstruction effect in the relevant complex predicate construction cannot be attributed to the nature of the QPs in question since the object QPs with *-dake* 'only' and universal quantifier can take scope under negation in other contexts, i.e. non-complex-predicate contexts. Consider (73).

(73) a. *John-wa   ringo-dake-o   tabe-nakat-ta.*   ONLY » NEG; NEG » ONLY
          John-TOP apple-only-ACC   eat-NEG-PST
          'John did not eat only apples.'   (cf. Kato 2011)
      b. *John-wa   subete-no ringo-o   tabe-nakat-ta.*   ∀» NEG; NEG »∀
          John-TOP all-GEN   apple-ACC eat-NEG-PST
          'John forgot to eat all the apples.'   (cf. Miyagawa 2001; Shibata 2015)

In both (73a) and (73b), the object QP can take scope under negation, in contrast to the complex predicate constructions in (72a) and (72b).

Although the exact analysis of the complex predicate construction is still under debate (see Koizumi 1995, 2008; Saito & Hoshi 1998; Hoshi 1999; Saito 2000; Kato 2003; Takano 2003; Bobaljik & Wurmbrand 2005, 2007; Nomura 2005; Takahashi 2011, 2012; Sugimura 2011; Shimamura & Wurmbrand 2014; Keine & Bhatt 2016; among many others), what seems to be agreed on in the previous literature is that the structural position of the QP and the scope-bearing predicate is crucial for scope interpretations given the standard assumption that scope is read off the syntactic structure. In the following, I will briefly discuss two major approaches to the complex predicate construction under consideration, showing how the two analyses in question capture the anti-reconstruction effect noted in (72).

The first analysis of the complex predicate construction that I will discuss is the derived complex predicate analysis (cf. Saito & Hoshi 1998; Hoshi 1999; Saito 2000; Kato 2003). Under this analysis, the VP domain of (72b) is schematically represented as in (74).

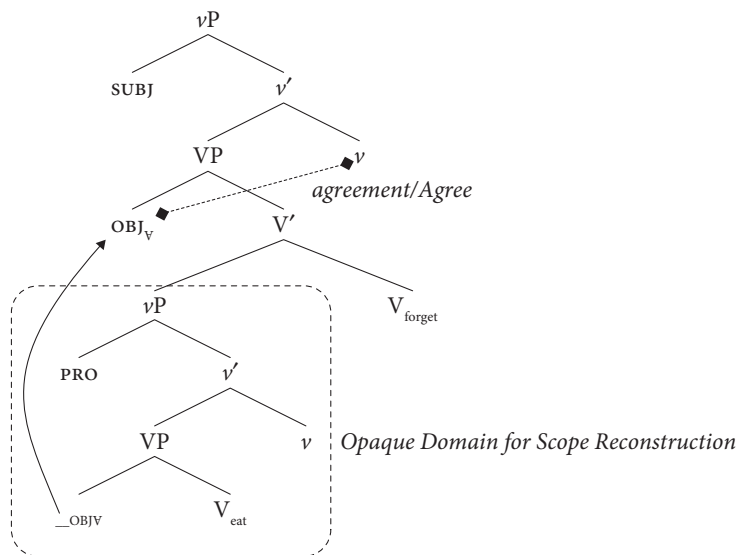(74) *Derived Complex Predicate Analysis (V–V Incorporation)*

vP
SUBJ v'
VP v
OBJ$_V$ V′
VP   V°
V°   V$_1$°   V$_2$°
V1   *V-V Incorporation*
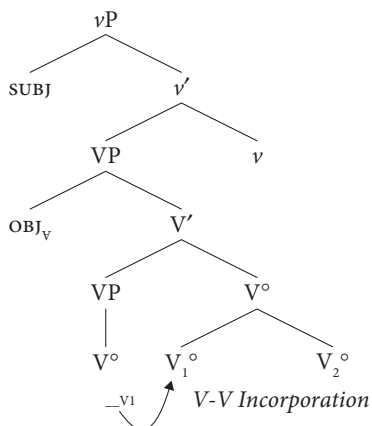
Here, the V$_1$ *taber-* 'eat' is incorporated into V$_2$ *wasurer-* 'forget', forming a complex predicate, and the object QP is base-generated as an object of the complex predicate. This analysis can straightforwardly explain the lack of the narrow scope of the object QP with respect to V$_2$ because there is no point in the derivation where V$_2$ occupies a higher position than the object QP, namely a position where the former would c-command the latter. Therefore, the anti-reconstruction effect in (72) trivially follows under the derivational complex predicate analysis.

The second analysis of the complex predicate construction that I will consider is the VP-complementation analysis (cf. Bobaljik & Wurmbrand 2005, 2007; Takahashi 2012; Shimamura & Wurmbrand 2014). Under this analysis, (72b) is schematically represented as in (75).

Under the VP-complementation analysis, the object QP is base-generated as a direct object of the V *taber-* 'eat'. The object QP then moves out of the lower vP to enter into an agreement/Agree relation with the higher v. Although there are several implementations proposed for this effect, the consensus seems to be that the complement domain of the higher verb, here *wasurer-* 'forget', constitutes an opaque domain for scope reconstruction. Thus, the object QP extracted out of the opaque domain in question occupies a higher position than the verb *wasurer-* 'forget' in light of scope interpretations, hence the former obligatorily takes scope over the latter. Therefore, the anti-reconstruction effect observed in (72b) can be captured under the VP-complementation analysis as well, given the derivation in (75).

Regarding the anti-reconstruction effect, what is shared by the derived complex predicate analysis and the VP-complementation analysis is that the structural position of a QP and a scope-bearing predicate is crucial to the effect in question. Specifically, both analyses claim that a QP syntactically occupies a higher position than a scope-bearing predicate, thus the former takes scope over the latter. This argumentation has an interesting consequence for verb raising in Japanese. It

(75) *VP-complementation Analysis*

vP
SUBJ   v′
VP   v
          agreement/Agree
OBJᵥ   V′
vP   V_forget
PRO   v′
VP   v   *Opaque Domain for Scope Reconstruction*
__OBJV   V_eat

has been well-established in the literature that syntactic verb movement has inter-
pretive effects (cf. Ladusaw 1979, 1980; McCloskey 1996; Lechner 2005; Vicente
2007; Roberts 2010; Szabolcsi 2011; Funakoshi 2014; Gribanova & Harizanov 2017;
among others).[23] Then, if the complex predicate containing the scope-bearing verb

---

23. For example, in Shupamem, movement of aspectual raising verbs to a clause-initial position
yields a new scope interpretation with respect to a lower adverbial, as shown in (i) (cf. Szabolcsi
2011; Gribanova & Harizanov 2017).

(i) a. *Ndúú Maria ká jéʃɔ̃ jìngét ndáá lì?.*
        only Maria PST begin have.INF good roles
        'Only Mary is such that she began to get good roles.'
                                                        ONLY » BEGIN (Szabolcsi 2011: 10)

     b. *Á ká jéʃɔ̃ ndúú Maria jìngét ndáá lì?.*
        it PST begin only Maria have.INF good roles
        'It began to be the case that only Mary god good roles.'
                                                        BEGIN » ONLY (Szabolcsi 2011: 11)

In (ia), the QP subject *ndúú Maria* 'only Maria' takes scope over the aspectual verb *jéʃɔ̃* 'begin',
and in (ib), the latter takes scope over the former. This indicates that syntactic verb movement
can affect scope interpretations. Also, syntactic verb movement affects the NPI licensing, as in
(ii) (cf. Ladusaw 1979, 1980; McCloskey 1996).

(ii) a. *Which one of them does anybody not like?
      b. Which one of them doesn't anybody like?

The grammaticality of (iib) indicates that the head movement of T to C carrying negation along
can license the NPI *anyone*, which in turn means that syntactic head movement can have inter-
pretational effects. See the references cited above for more discussion of this issue.

wasurer- 'forget' in (72) could move to a higher position than the QP, the anti-reconstruction effect should disappear because such movement would provide us with a point in the derivation where the relevant predicate occupies a higher position than the QP, which should allow the former to take scope overt the latter. This in turn means that, given the anti-reconstruction effect, the verb in complex predicate constructions like (72) does not raise to a higher position than the relevant QP argument, as illustrated in (76).
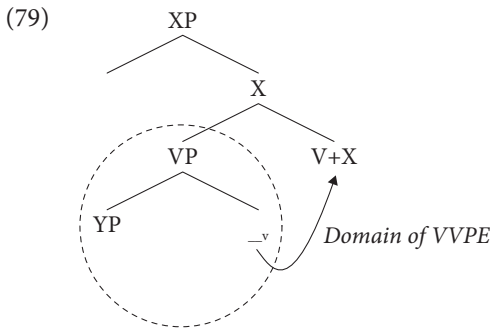
(76)
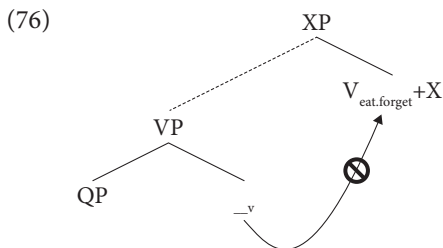
Keeping the above discussion in mind, consider the following examples.

(77) a. *Taroo-wa subete-no zibun-no ronbun-o   inyoosi-wasure-ta.*
          Taro-TOP all-GEN   self-GEN paper-ACC cite-forget-PST
          (Lit.) 'Taro forgot to cite all of self's paper.'   ∀» FORGET;*FORGET »∀
      b. *Hanako-mo △ inyoosi-wasure-ta.*   ∀» FORGET;*FORGET »∀
          Hanako-also   cite-forget-PST
          (Lit.) 'Hanako also forgot to cite △.'

(78) a. *Taroo-wa [_CP subete-no zibun-no gakusei-ga   eego-no*
          Taro-TOP   all-GEN   self-GEN student-NOM English-GEN
          siken-o   uke-wasure-ta to] omot-te-iru.   ∀» FORGET;*FORGET »∀
          exam-ACC take-forget-PST C   think-PROG-PRES
          (Lit.) 'Taro thinks [_CP that all of self's students forgot to take the English exam].'
      b. *Hanako-wa [_CP △ huransugo-no siken-o   uke-wasure-ta to]*
          Hanako-TOP   French-GEN   exam-ACC take-forget-PST C
          omot-te-iru.   ∀» FORGET;*FORGET »∀
          think-PROG-PRES
          (Lit.) 'Hanako thinks [_CP that △ forgot to take the French exam].'

In (77a), the object QP which contains a *self* anaphor obligatorily takes scope over negation: the sentence can only mean that for all of his papers, Taro forgot to cite them. Therefore, the anti-reconstruction effect is at work in (77a). Important for the current discussion is (77b), where the null object is taken to be anaphoric on the object QP in (77a). There are two important points here. First, the null object QP obligatorily takes scope over negation; in other words, the anti-reconstruction effect

is observed in (77b) as well. Second, the null object can be interpreted sloppily. (77b) thus means that for all of her papers, Hanako forgot to cite them. A similar observation applies to (78). Specifically, with (78a), where the QP containing a *self* anaphor is a transitive subject, as its antecedent, the null subject in (78b) obligatorily takes scope over negation and can yield the sloppy reading. To be more specific, besides the strict reading (78b) can only mean that for all of her students, Hanako thinks that they forgot to take the French exam.[24] The empty pronoun analysis seems unlikely to be responsible for the source of the null arguments in (77b) and (78b) due to the availability of the sloppy reading. More interesting for us here is that the null arguments in question are not derivable via VVPE either. As we have already seen, VVPE is an operation which overtly moves V out of the VP domain, which is followed by VP-ellipsis. This analysis tacitly presupposes that elements that are affected by VVPE must be in the domain of the raised V. To illustrate this point, let us reconsider the schematic structure in (79), which shows how the VVPE analysis derives a null argument.

(79)

```
                    XP
            _____|_____
                            X
                     _____|_____
                  VP                V+X
            _____|_____
          YP            __v      Domain of VVPE
```

Suppose that YP is the target argument of VVPE. In order for VVPE to elide YP, V overtly moves out of the VP which contains YP, which is followed by ellipsis of the VP. Therefore, in order to be elided by VVPE, elements affected by ellipsis must be located in the complement domain of the raised V. In other words, elements that are affected by VVPE must be in a lower position than the raised V, i.e. they must be in a position c-commanded by the raised V. Given the discussion here, the VVPE analysis then faces a difficulty in deriving the null arguments in (77b) and (78b): in order to elide the relevant QPs, the VVPE analysis must raise the complex predicate

---

24. Universal QP subjects can take scope under negation in non-complex-predicate contexts, as in (i) (cf. Saito 2006).

(i)   *[Zen'in-no gakusei-ga   siken-o   uke-nakat-ta to] omow-u.*   ∀» NEG; NEG »∀
      all-GEN   student-NOM exam-ACC take-NEG-PST C   think-PRES
      'I think that every student did not take the exam.'

to a higher position than the QPs in question, but this predicts the raised complex predicate to be able to take scope over the QPs, which loses the explanation of the anti-reconstruction effect in (77b) and (78b). To paraphrase, the VVPE analysis faces a paradoxical situation where the complex predicate must raise to a higher position than the QP for ellipsis reason, but the complex predicate must stay in a lower position than the QP for scope reason. In light of this, I conclude that it is unlikely that the VVPE analysis is responsible for the sloppy reading of the null arguments in (77b) and (78b). The argument ellipsis analysis, on the other hand, does not face this paradox because the analysis in question does not require the relevant complex predicate to move to a higher position than the QPs in question, unlike the VVPE analysis: argument ellipsis can directly apply to the object QP in (77b) and the subject QP in (78b). Therefore, the fact that (77b) and (78b) simultaneously exhibit the sloppy reading and the anti-reconstruction effect provides a strong argument that favors argument ellipsis over VVPE, which in turn supports the existence of argument ellipsis as an ellipsis strategy in Japanese grammar.

2.5   Summary of the chapter

In this chapter, I have discussed the interpretive possibilities of radical *pro*-drop languages with special attention to Japanese, also reviewing the proposed analyses of Japanese-type null arguments in the literature.

In the first half of this chapter, I provided several arguments that Japanese null arguments can be derived via ellipsis. First, I introduced the null pronoun analysis of Japanese null arguments. Based on the fact that Japanese null arguments exhibit condition B effects, it was shown that there are contexts where Japanese null arguments behave as empty pronominals. However, at the same time, I provided several arguments for a non-pronominal behavior of Japanese null arguments, including the sloppy identity reading in negative contexts, the quantificational reading, and the flip-flop phenomenon of disjunction, also showing that these properties of Japanese null arguments can be successfully accommodated under the ellipsis analysis.

In the second half of this chapter, I have provided several diagnostics that can tease apart two ellipsis-based analyses of Japanese null arguments, the VVPE analysis and the argument ellipsis analysis. The diagnostics attested in the literature involve ellipsis of subjects, manner adverb interpretations, and the verb-identity requirement. All of these diagnostics favor the argument ellipsis analysis over the VVPE analysis. I also provided new arguments for argument ellipsis in Japanese on the basis of 'immobile' elements and the anti-reconstruction effect. The investigation of the behavior of Japanese null arguments in these contexts has provided us

with ellipsis contexts where argument ellipsis is applicable but VVPE is not, which in turn supports the existence of argument ellipsis in Japanese.

Although it was shown in this chapter that the argument ellipsis analysis is supported in light of the interpretive possibilities of Japanese null arguments, a question arises as to whether we can support the argument ellipsis analysis based on their syntactic properties. In the next chapter, I will take up this issue, showing that Japanese null arguments in fact exhibit the syntactic properties that are exclusively available with ellipsis, not with pronouns.

The silent syntax of silent arguments

In this chapter, I will examine the issue of whether null arguments in Japanese have internal structure, exploiting a widely-adopted diagnostic in the anaphora literature, namely that the possibility of extraction signals the presence of internal structure in an anaphora site. In Section 3.1, I will introduce Hankamer & Sag's (1976) surface anaphora versus deep anaphora distinction, providing a diagnostic for the former concerning extraction possibilities out of anaphoric domains. In Section 3.2, I will investigate whether overt extraction is possible out of Japanese null arguments, using long-distance scrambling, pseudoraising/Raising-to-Object (RtO), and PP left-branch extraction. It will be shown that overt extraction is uniformly disallowed out of Japanese null arguments. In Section 3.3, I will examine whether covert extraction, more precisely, extraction that does not affect word order (e.g. QR and null operator movement), is possible out of Japanese null arguments. The conclusion that will be reached is that covert extraction is uniformly allowed out of Japanese null arguments, unlike overt extraction. Section 3.4 summarizes the chapter, also discussing theoretical consequences/implications of the overt/covert extraction asymmetry out of Japanese null arguments.

3.1   Diagnosing anaphora

Since Hankamer & Sag (1976), it has been widely assumed that there are two types of anaphora: surface anaphora and deep anaphora (model-interpretive anaphora/ ellipsis and record-interpretive anaphora in Sag & Hankamer's 1984 sense). For example, in English, VP-ellipsis in (1a) and *do it* in (1b) are considered to illustrate surface anaphora and deep anaphora, respectively.

(1)   a.   John will [$_{VP}$ kiss Mary], and Bill will [$_{VP}$ △] too.
       b.   John will [$_{VP}$ kiss Mary], and Bill will [$_{VP}$ do it] too.

Although the second conjunct in (1a) and (1b) is "incomplete" in that the VP is phonologically missing in the former and the VP is replaced by *do it* in the latter, both can be interpreted as Bill will kiss Mary: the phonologically "incomplete" VPs can refer to the antecedent VP *kiss Mary*.

The difference between surface anaphora and deep anaphora is generally claimed to involve the presence/absence of internal structure: only the former includes internal structure. Specifically, the second conjunct of (1a) and (1b) is generally analyzed as in (2a) and (2b), respectively (the gray part means that the part in question is phonologically empty).

(2) a.

```
              TP
           /     \
         DP       T'
        /\       /   \
      Bill      T      VP
               |     /    \
              will  V      DP
                    |      /\
                   kiss   Mary
```

   b.

```
              TP
           /     \
         DP       T'
        /\       /   \
      Bill      T      VP_i
               |     /    \
            {past}  V      DP
                    |      /\
                   do      it
```
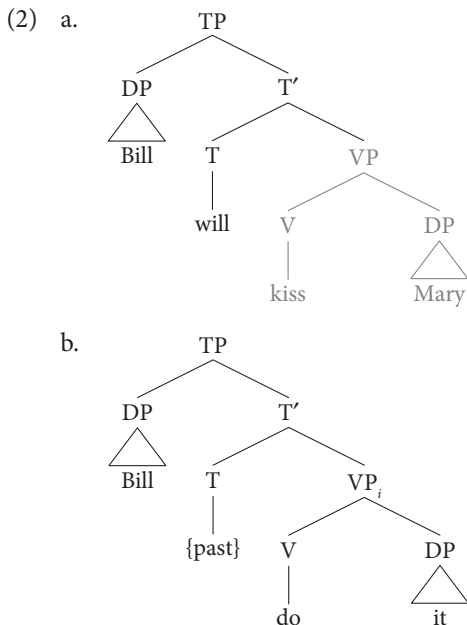
The missing VP in (1a) has full-fledged internal structure (at least in LF), and the interpretation of the missing VP is taken to result from the presence of this structure, as in (2a). On the other hand, the VP in (1b) consists of *do it* throughout the derivation, as in (2b), and its interpretation is taken to be obtained through the assignment function (cf. Heim & Kratzer 1998), e.g. [$i \rightarrow \lambda x.$ x kiss Mary]. While a number of diagnostics have been proposed to differentiate these two types of anaphora (cf. Grinder & Postal 1971; Bresnan 1971; Hankamer & Sag 1976; Sag 1976; Sag & Hankamer 1984; Haïk 1987; Tomioka 1997; Depiante 2000; Johnson 2001; among many others), Merchant (2013b) observes that the possibility of extraction is one of the most reliable tests for surface anaphora: if extraction is possible, there must be something to be extracted out of in the syntax. Consider the following examples.

(3) a.   I know which book$_1$ Mary [$_{VP}$ read ____$_1$], and which book$_2$ Bill didn't [$_{VP}$ read ____$_2$].

       b. *I know which book$_1$ Mary [$_{VP}$ read ___$_1$], and which book$_2$ Bill didn't [$_{VP}$ do it].   (Fiengo & May 1994: 247)

(3a) and (3b) show that overt *wh*-movement (overt Ā-movement) is possible from a VP-ellipsis site but not from a *do it* site, which is taken to indicate that the former involves internal structure, while the latter does not. Specifically, only VP-ellipsis (surface anaphora) sites include internal structure, thereby being able to accommodate a place for the origin of *wh*-movement (see Shuyler 2001 for discussion of *wh*-extraction out of VP-ellipsis sites).

    Other types of extraction, i.e. overt A-movement, null operator (Op) movement, and QR, are also used as diagnostics for surface anaphora, as in the examples below.
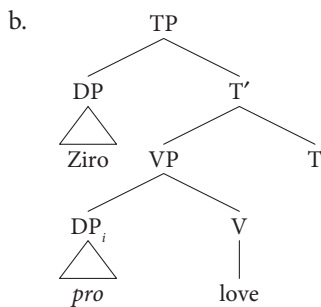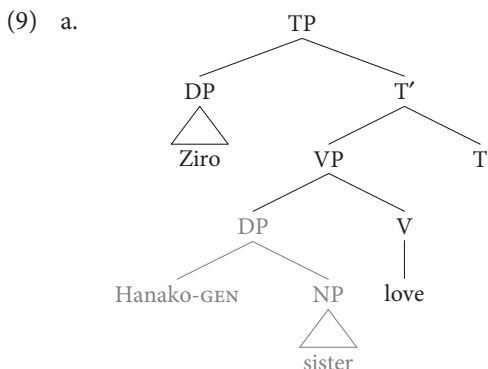
(4)   a.   John$_1$ might be visited ___$_1$ by Sally, and Fred$_2$ might be visited ___$_2$ by Sally too.

      b.   *John$_1$ might be visited ___$_1$ by Sally, and Fred$_2$ might be done it too.

                                    (Abels 2012: 30)

(5)   a.   Max talked to everyone Op$_1$ that Bill did talk to ___$_1$.

      b.   *Max talked to everyone Op$_1$ that Bill did it.

                   ((5b) from Fiengo & May 1994: 247)

(6)   a.   I have read more books Op$_1$ than Joe has read ___$_1$.

      b.   *I have read more books Op than Joe has done it.   (Abels 2012: 30)

(7)   a.   One of the boys met every teacher and one of the girls did meet every teacher too. $\exists»\forall;\forall»\exists$

      b.   One of the boys met every teacher and one of the girls did it too. $\exists»\forall;*\forall»\exists$

                                  (Depiante 2000: 95)

In (4), *Fred* is passivized (overtly A-moved) out of the VP-anaphora sites, and only (4a) is grammatical. In (5) and (6), relative Op and comparative Op are extracted out of the relevant anaphora sites, and only the VP-ellipsis case in (5a) and (6a) is grammatical. In (7), although both the VP-ellipsis case in (7a) and the *do it* case in (7b) are grammatical, inverse scope, which requires QR out of the phonologically empty site, is available only in the former (cf. Hirschbühler 1982; Fox 1995, 2000; Tomioka 1997; among others). The data from (4) to (7) thus show that extraction is possible only out of VP-ellipsis (surface anaphora) sites but not from *do it* (deep anaphora) sites: only surface anaphora includes internal structure so that it can provide an appropriate position for the origin of moved elements.

    In Chapter 2, I argued that Japanese null arguments can be derived via not only *pro* but also argument ellipsis. In light of the distinction between surface anaphora and deep anaphora, the argument ellipsis analysis entails that null arguments

should be able to involve surface anaphora, which in turn entails that null arguments should be able to include internal structure. To be more specific, a simple null object construction such as (8b) is analyzed as in (9a) and (9b) under the argument ellipsis analysis and the *pro* analysis, respectively.

(8) a. *Taroo-wa [$_{DP}$ Hanako-no   imooto]-o aisi-te-iru.*
         Taro-TOP   Hanako-GEN sister-ACC love-PROG-PRES
         'Taro loves [$_{DP}$ Hanako's sister].'

  b. *Ziroo-mo [$_{DP}$ △]   aisi-te-iru.*
         Ziro-also   love-PROG-PRES
         (Lit.) 'Ziro also loves [$_{DP}$ △].'

(9) a.

```
                    TP
             ┌──────┴──────┐
            DP             T′
            △         ┌────┴────┐
           Ziro      VP         T
                 ┌────┴────┐
                DP         V
            ┌────┴────┐    │
       Hanako-GEN    NP   love
                     △
                   sister
```

  b.

```
                 TP
          ┌──────┴──────┐
         DP             T′
         △         ┌────┴────┐
        Ziro      VP         T
              ┌────┴────┐
            DP$_i$       V
             △           │
            pro         love
```

Under the argument ellipsis analysis in (9a), the null object includes internal structure, receiving the relevant interpretation because of the presence of that internal structure. On the other hand, under the *pro* analysis, the null object does not include internal structure, and its interpretation is generally assumed to be obtained through the assignment function with the index *i*. Then, in light of the extraction possibilities discussed above, the argument ellipsis analysis predicts extraction to be possible here: surface anaphora includes internal structure, thereby being able to accommodate a position for the origin of movement. In the following, I will show

that the prediction is in fact borne out: Japanese null arguments allow certain types of extraction out of them. The extraction possibility provides a strong argument that Japanese null arguments cannot be uniformly *pro* since *pro* is by assumption an instance of deep anaphora, which disallows all types of movement, as shown by the *do it* data in (3)–(7). However, it will also be shown that Japanese null arguments exhibit a non-uniform behavior regarding extraction out of them. Specifically, they exhibit an overt/covert asymmetry regarding extraction out of them: they uniformly disallow overt extraction, whereas they uniformly allow covert extraction, more precisely, extraction which does not affect word order.

3.2 Overt extraction out of Japanese null arguments

3.2.1 Long-distance scrambling

Extraction out of Japanese null arguments has been mainly discussed in the context of null CPs in the literature (cf. Shinohara 2006; Saito 2007; Tanaka 2008; Takita 2010; Takahashi 2013b; Bošković 2014; Kasai 2014). Recall that not only nominal arguments but also clausal arguments can be dropped in Japanese, as in (10b′).

(10) a. *Taroo-wa [$_{CP}$ Hanako-ga   hon-o   yon-da   to] omot-ta.*
        Taro-TOP   Hanako-NOM book-ACC read-PST c   think-PST
        'Taro thought [$_{CP}$ that Hanako read a book].'

     b. *Ziroo-mo [$_{CP}$ Hanako-ga   hon-o   yon-da   to] omot-ta.*
        Ziro-also   Hanako-NOM book-ACC read-PST c   think-PST
        'Ziro also thought [$_{CP}$ that Hanako read a book].'

     b′. *Ziroo-mo [$_{CP}$ △] omot-ta.*
        Ziro-also   think-PST
        (Lit.) 'Ziro also thought [$_{CP}$ △].'

With (10a) as its antecedent, (10b′) involves a null CP, but the sentence receives exactly the same interpretation as (10b), namely that Ziro also thought that Hanako read a book.

First, let us consider the possibility of overt Ā-extraction out of Japanese null arguments. Since Saito (1985) scrambling has been claimed to involve syntactic movement that is sensitive to islands, as in (11b).

(11) a. *Taroo-wa [[_relative clause_ Hanako-ni   sono hon-o   age-ta]*
          Taro-TOP   Hanako-DAT that book-ACC give-PST
          hito]-o   hihansi-ta.
          person-ACC criticize-PST
          'Taro criticized [the person [_relative clause_ who gave that book to Hanako]].'

     b. **Sono hon₁-o   Taroo-wa [[_relative clause_ Hanako-ni   ___₁ age-ta]*
          that book-ACC Taro-TOP   Hanako-DAT   give-PST
          hito]-o   hihansi-ta.
          person-ACC criticize-PST
          (Lit.) 'That book₁, Taro criticized [the person [_relative clause_ who gave ___₁ to Hanako]].'

In (11b), the object *sono hon* 'that book' has been extracted out of the relative clause via scrambling, and the ungrammaticality of the sentence sharply contrasts with the non-scrambled case in (11a). This can be taken to indicate that scrambling involves movement.

Importantly, it is also well-known that there are many asymmetries between clause-internal scrambling and long-distance scrambling in Japanese (cf. Oka 1989; Tada 1990, 1993; Saito 1992; Abe 1993; Nemoto 1993; Takano 2010; among others): e.g. the former can create a new binding relation but the latter cannot, as shown in (12) and (13).

(12) a. **Soitu_i-no   hahaoya-ga [san-nin-izyoo-no*
          the.guy-GEN mother-NOM three-CL-or.more-GEN
          gakusei]_i-o   sikat-ta.
          student-ACC scold-PST
          (Lit.) 'Their_i mothers scolded [three or more students]_i.'

     b. *[San-nin-izyoo-no   gakusei]_{1/i}-o soitu_i-no   hahaoya-ga*
          three-CL-or.more-GEN student-ACC the.guy-GEN mother-NOM
          ___₁ sikat-ta.
              scold-PST
          (Lit.) '[Three or more students]_{1/i}, their_i mothers scolded ___₁.'

(13) a. **Soitu_i-no   hahaoya-ga [_CP Taroo-ga [san-nin-izyoo-no*
          the.guy-GEN mother-NOM   Taro-NOM three-CL-or.more-GEN
          gakusei]_i-o sikat-ta   to] omot-ta.
          student-ACC scold-PST c   think-PST
          (Lit.) 'Their_i mothers thought [_CP that Taro scolded [three or more students]_i].'

With (14a) as its antecedent, (14b), where no extraction has taken place, is grammatical, whereas (14b′), where *sono hon* 'that book' is extracted out of the null CP via long-distance scrambling, is ungrammatical. This indicates that null arguments in Japanese disallow overt Ā-movement out of their domains.[1]

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1.   Note that Shinohara (2006) observes that long-distance scrambling is disallowed out of null CPs in Japanese even if elements scrambled long-distance out of them are different in the antecedent sentence and the target sentence, as in (i) (see also Bošković 2014).

(i)   a.   *Hon₁-o*   *John-wa*   [CP *Mary-ga*   ___₁ *kat-ta*   *to] omot-ta-si,*
            book-ACC John-TOP   Mary-NOM   buy-PST C   think-PST-and
            zassi₂-o   *Ken-wa*   [CP *Mary-ga*   ___₂ *kat-ta*   *to] omot-ta.*
            magazine-ACC Ken-TOP   Mary-NOM   buy-PST C   think-PST
            (Lit.) 'A book₁, John thought [CP that Mary bought ___₁], and a magazine₂, Ken thought [CP that Mary bought ___₂].'
      b.   **Hon₁-o   *John-wa*   [CP *Mary-ga*   ___₁ *kat-ta*   *to] omot-ta-si,*
            book-ACC John-TOP   Mary-NOM   buy-PST C   think-PST-and
            zassi₂-o   *Ken-wa*   [CP △] *omot-ta.*
            magazine-ACC Ken-TOP   think-PST
            (Lit.) 'A book₁, John thought [CP that Mary bought ___₁], and a magazine₂, Ken thought [CP △].'   (Shinohara 2006: 2)

In (ib), what has been extracted out the null CP, i.e. *zassi* 'magazine', is different from what has been extracted out of the embedded clause in the antecedent clause, i.e. *hon* 'book', and the sentence is still ungrammatical. It is also wroth noting here Goto's (2011) claim that examples like (14b′) and (ib) become improved if the topic particle *-wa* is attached to the extracted elements, as in (ii).

(ii) a.   *Honᵢ-wa*   *Taroo-ga*   [CP *Hanako-ga*   *eᵢ kat-ta*   *to] it-ta-ga,*
            book-TOP Taro-NOM   Hanako-NOM   buy-PST C   say-PST-but
            (Lit.) 'Although, bookᵢ, Taro said [CP that Hanako bought *eᵢ*].'
      b.   *Zassiⱼ-wa*   *Ziroo-ga*   [CP △] *it-ta.*
            magazine-TOP Ziro-NOM   say-PST
            (Lit.) 'Magazineⱼ, Ziro said [CP △].'   (Goto 2011: 245)

In (iib), the topicalized object *zassi* 'magazine' is associated with the gap within the embedded null CP, and the sentence is acceptable. This seems to be a counterexample to the claim that overt Ā-movement out of Japanese null arguments is banned; however, it has been well-known since Saito (1985) that DP topicalization does not exhibit subjacency effects so that it need not involve movement. By contrast, Saito shows that PP topicalization is subject to subjacency effects, hence involving movement in the creation of the relevant dependency. As is expected, PP topicalization out of Japanese null arguments is disallowed, unlike DP topicalization, as in (iii).

(iii) a.   *Kono ginkoo-kara₁-wa Taroo-ga*   [CP *Hanako-ga*   ___₁ *okane-o*
            this bank-from-TOP Taro-NOM   Hanako-NOM   money-ACC
            kari-ta   *to] it-ta-ga,*
            borrow-PST C   say-PST-but
            (Lit.) 'Although, from this bank₁, Taro said [CP that Hanako borrowed money ___₁].'

It is also worth noting here Takahashi's (1993) claim that long-distance scrambling in Japanese behaves as *wh*-movement in certain contexts. Consider the following examples.

(15) *Nani₁-o   John-wa   [CP Mary-ga   ___₁ tabe-ta ka]*
   what-ACC John-TOP   Mary-NOM   eat-PST Q
   siritagat-te-iru.
   want.to.know-PROG-PRES
   (Lit.) 'What₁, John wants to know [CP Q Mary ate ___₁].'

(16) a. *John-wa   [CP Mary-ga   nani-o   tabe-ta ka]*
    John-TOP   Mary-NOM what-ACC eat-PST Q
    siritagat-te-iru   no?
    want.to.know-PROG-PRES Q
    (Lit.) 'Q John wants to know [CP Q Mary ate what]?'
    = Does John want to know what Mary ate?
    = What does John want to know Mary ate?
  b. *Nani₁-o   John-wa   [CP Mary-ga   ___₁ tabe-ta ka]*
    what-ACC John-TOP   Mary-NOM   eat-PST Q
    siritagat-te-iru   no?
    want.to.know-PROG-PRES Q
    (Lit.) 'What₁ Q John wants to know [CP Q Mary ate ___₁]?'
    ≠ Does John want to know what Mary ate?
    = What does John want to know Mary ate?   (Takahashi 1993: 657)

(15) illustrates the radical reconstruction property of scrambling (cf. Saito 1989). Specifically, the *wh*-phrase *nani* 'what' is scrambled out of the embedded CP, occupying a position in the matrix clause, but the sentence is interpreted as an embedded question, namely Taro wants to know what Mary ate. Given that *wh*-phrases must be included within the scope of the relevant Q element in LF (cf. Harada 1972), the grammaticality of (15) suggests that the relevant *wh*-phrase undergoes total reconstruction in LF so that it is embedded within the scope of the embedded Q-particle *ka* in LF. What Takahashi (1993) observes, however, is that scrambled elements do not always undergo radical reconstruction. In (16a), the *wh*-phrase is

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  b. **Ano ginkoo-kara₂-wa Ziroo-ga   [CP △] it-ta.*
    that bank-from-TOP Ziro-NOM   say-PST
    (Lit.) 'From that bank₂, Ziro said [CP △].'

In (iiia), the PP *kono ginkoo-kara* 'from this bank' has been topicalized out of the embedded CP. With (iiia) as its antecedent, (iiib), which involves topicalization of the PP *ano ginkoo-kara* out of the embedded null CP, is ungrammatical. In light of the above discussion, I conclude that overt Ā-movement out of Japanese null arguments is banned.

located within the embedded CP, and it can take scope either in the matrix clause or the embedded clause: (16a) is ambiguous in that it can be interpreted as either a matrix *wh*-question or an embedded *wh*-question. Importantly, (16b), where the *wh*-phrase is scrambled across a clause boundary, is unambiguous in that it can only be interpreted as a matrix *wh*-question. In other words, the scrambled *wh*-phrase in (16b) does not reconstruct into the embedded CP, creating an operator-variable relation with its 'trace'. This type of scrambling has been argued to involve actual *wh*-movement because of that.[2] Given the above discussion, consider the following examples (cf. Cheng 2013: 233).

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2.   *Wh*-movement is known to fix the scope of moved *wh*-phrases, as in (i) (cf. Baker 1970).

   (i) $^?$What$_1$ do you wonder who$_2$ ___$_2$ bought ___$_1$ where?

Here, the in-situ *wh*-phrase *where* can take either matrix or embedded scope, whereas the moved *wh*-phrases *what* and *who* can only take surface scope, i.e. the former can only take the matrix scope and the latter the embedded scope. Therefore, it seems reasonable to attribute the lack of the embedded scope of *nani* 'what' in cases like (16b) to the presence of *wh*-movement. Takahashi also argues for *wh*-movement in Japanese on the basis of superiority effects (cf. Chomsky 1973; Pesetsky 1982; Lasnik & Saito 1992; Kitahara 1997; Bošković 1999). Consider (ii) and (iii).

   (ii)   a.   Who saw what?
          b.   *What$_1$ did who see ___$_1$?
   (iii) a.   *John-ga   dare-ni   [$_{CP}$ Mary-ga   nani-o   tabe-ta to] it-ta   no?*
               John-NOM who-DAT   Mary-NOM what-ACC eat-PST C say-PST Q
               (Lit.) 'Q John told who [$_{CP}$ that Mary ate what]?'
          b.   ??*Nani$_1$-o   John-ga   dare-ni   [$_{CP}$ Mary-ga   ___$_1$ tabe-ta to] it-ta   no?*
               what-ACC John-NOM who-DAT   Mary-NOM   eat-PST C say-PST Q
               (Lit.) 'What$_1$, Q John told who [$_{CP}$ that Mary ate ___$_1$]?'   (Takahashi 1993: 664)

In (iib), the *wh*-phrase *what* originally located in a lower position than the other *wh*-phrase *who* has undergone movement, crossing the latter, and the sentence is ungrammatical. In (iiib), the *wh*-phrase *nani* 'what' within the embedded CP has undergone movement, crossing the other *wh*-phrase *dare* 'who' in the matrix clause. The ungrammaticality of (iiib) indicates that long-distance scrambling of *wh*-phrases induces a superiority effect, which is generally considered to be a hallmark of *wh*-movement. That *wh*-movement is responsible for the ungrammaticality of (iiib) is further confirmed by the fact that (iiib) becomes grammatical if the long-distance scrambled *wh*-phrase is replaced by a non-*wh*-phrase, as in (iv).

   (iv)   *Pizza$_1$-o John-ga   dare-ni   [$_{CP}$ Mary-ga   ___$_1$ tabe-ta to] it-ta   no?*
          pizza-ACC John-NOM who-DAT   Mary-NOM   eat-PST C say-PST Q
          (Lit.) 'Pizza$_1$, Q John told who [$_{CP}$ that Mary ate ___$_1$]?'   (Takahashi 1993: 664)

Here, the non-*wh*-phrase *pizza* originally located within the embedded CP has undergone long-distance scrambling, crossing the *wh*-phrase in the matrix clause, and the sentence is grammatical, contrary to (iiib). The grammaticality of (iv) thus provides evidence that the ungrammaticality of (iiib) is caused by *wh*-movement.

(17) A^1: *Nani$_1$-o   John-wa   [$_{CP}$ Mary-ga   ___$_1$ tabe-ta ka]*
             what-ACC John-TOP   Mary-NOM   eat-PST Q
             siritagat-te-iru   no?
             want.to.know-PROG-PRES Q
             (Lit.) 'What$_1$ Q John wants to know [$_{CP}$ Q Mary ate ___$_1$]?'
             = What does John want to know Mary ate?

       B: *Pan   da   yo.*
             bread COP.PRES SFP
             'Bread.'

       A^2: i.   *Zyaa, nani$_2$-o   Peter-wa [$_{CP}$ Mary-ga   ___$_2$ tabe-ta ka]*
                  then   what-ACC Peter-TOP   Mary-NOM   eat-PST Q
                  siritagat-te-iru   no?
                  want.to.know-PROG-PRES Q
                  (Lit.) 'Then, what$_2$ Q did Peter want to know [$_{CP}$ Q Mary ate ___$_2$]?'
                  = 'Then, what does Peter want to know Mary ate?'

             ii. **Zyaa, nani$_2$-o   Peter-wa [$_{CP}$ △] siritagat-te-iru   no?*
                  then   what-ACC Peter-TOP   want.to.know-PROG-PRES Q
                  (Lit.) 'Then, what$_2$ Q did Peter want to know [$_{CP}$ △]?'
                  (Int.) 'Then, what does Peter want to know Mary ate?'

With (17A^1) as its antecedent, (17A^2–ii) with the intended interpretation is unacceptable (the sentence is acceptable only with the interpretation, 'What does Peter want to know?'). Given that the movement involved in (17A^1) and (17A^2) is an instance of *wh*-movement, the ungrammaticality of (17A^2–ii) shows that *wh*-movement as well as ordinary long-distance scrambling, both of which count as overt Ā-movement, is banned out of Japanese null arguments.

3.2.2 Pseudoraising and raising-to-object

A-movement out of CPs in Japanese has been widely discussed in the literature. In this section, I will discuss two relevant constructions: pseudoraising (Takahashi & Uchibori 2003) and Raising-to-Object (RtO) (cf. Kuno 1976a; Kaneko 1988; Bruening 2001; Hiraiwa 2001, 2005; Tanaka 2002, 2004; Takano 2003; among others). Typical examples of pseudoraising and RtO are shown in (18) and (19).[3]

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3. Although Kuno (1976a) claims that verbs such as *say* and *claim* do not license RtO in Japanese, most native speakers of Japanese including me accept the relevant cases, e.g. (19). In this section, I will consistently use the verb *shutyoos-* 'claim', which cannot take nominal arguments like *Hanako*, as in (ia). Verbs like *omow-* 'think' can take a nominal argument, as in (ib), which makes it in principle possible to analyze a potential RtO example like (iia) in terms of the prolepsis analysis, as in (iib):

(18) *Pseudoraising*

a. *Taroo-ni(-wa)* [*CP* *John-ga   Nihon-ni ryuugakusu-ru   to] omoe-ta.*
Taro-to(-TOP)   John-NOM Japan-in study.abroad-PRES C   seem-PST
'It seemed to Taro [CP that John will study abroad in Japan].'

b. *John₁-ga   Taroo-ni(-wa)* [*CP* ___₁ *Nihon-ni ryuugakusu-ru*
John-NOM Taro-to(-TOP)   Japan-in study.abroad-PRES
to] omoe-ta.
C   seem-PST
(Lit.) 'John₁ seemed to Taro [CP that ___₁ will study abroad in Japan].'

(19) *RtO*

a. *Taroo-ga orokanimo* [*CP* *Hanako-o   tensai da*
Taro-NOM stupidly   Hanako-ACC genius COP.PRES
to] shutyoosi-ta.
C   claim-PST
'Taro stupidly claimed [CP that Hanako is a genius].'

b. *Taroo-ga Hanako₁-o   orokanimo* [*CP* ___₁ *tensai da*
Taro-NOM Hanako-ACC stupidly   genius COP.PRES
to] shutyoosi-ta.
C   claim-PST
(Lit.) 'Taro, Hanako₁, stupidly claimed [CP that ___₁ is a genius].'

It is standardly assumed that *John* in (18b) and *Hanako* in (19b) have undergone long-distance movement out of the embedded clause: the connection between the gap and *John/Hanako* is not mediated via binding.[4] One of the arguments for the movement view, for example, concerns the ability of idiom chunks to appear in

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(i) a. #*Taroo-wa   Hanako-o   shutyoosi-ta.*
Taroo-TOP Hanako-ACC claim-PST
(Lit.) 'Taro claimed Hanako.'

b. *Taroo-wa Hanako-o   omot-te-iru.*
Taro-TOP Hanako-ACC think-PROG-PRES
'Taro thinks of Hanako.'

(ii) a. *Taroo-wa Hanako-o   tensai da   to omot-te-iru.*
Taro-TOP Hanako-ACC genius COP.PRES c think-PROG-PRES
'Taro thinks that Hanako is genius.'

b. [*TP* Taro [*VP* Hanako*ᵢ* [*CP* *proᵢ* genius COP C] V] T]

4. In (19b), *orokanimo* 'stupidly' is a matrix adverb, which can only modify the matrix predicate *shutyoosita* 'claimed', not the embedded predicate *tensai* 'genius', as in (i) (cf. Kuno 1976a; Takeuchi 2010).

(i) #*Taroo-wa   orokanimo tensai da.*
Taro-TOP rstupidly   genius COP.PRES
(Lit.) 'Taro is stupidly a genius.'

It then follows that *Hanako* in (19b) is located in the matrix clause.

these constructions, as in (20) and (21) (cf. Kuno 1976a; Bruening 2001; Takahashi & Uchibori 2003).

(20) *Pseudoraising*

    a. *Taroo-ni(-wa)* [$_{CP}$ *Hanako-no me-ga husiana da to] omoe-ta.*
        Taro-to-(-TOP)   Hanako-GEN eye-NOM knothole COP.PRES C seem-PST
        (Lit.) 'It seemed to Taro [$_{CP}$ that Hanako's eyes are knothole].'
        ≈ 'It seemed to Taro that Hanako does not see the nature of things.'

    b. *Hanako-no me$_1$-ga Taroo-ni(-wa)* [$_{CP}$ ___$_1$ *husiana da*
        Hanako-GEN eye-NOM Taro-to-(-TOP)   knothole COP.PRES
        to] omoe-ta.
        C   seem-PST
        (Lit.) 'Hanako's eyes$_1$ seemed to Taro [$_{CP}$ that ___$_1$ are knothole].'
        ≈ 'It seemed to Taro that Hanako does not see the nature of things.'

(21) *RtO*

    a. *Taroo-ga orokanimo* [$_{CP}$ *Hanako-no me-o husiana da*
        Taro-NOM stupidly   Hanako-GEN eye-ACC knothole COP.PRES
        to] shutyoosi-ta.
        C   claim-PST
        (Lit.) 'Taro stupidly claimed [$_{CP}$ that Hanako's eyes are knothole].'
        ≈ 'Taro stupidly claimed that Hanako does not see the nature of things.'

    b. *Taroo-ga Hanako-no me$_1$-o orokanimo* [$_{CP}$ ___$_1$ *husiana da*
        Taro-NOM Hanako-GEN eye-ACC stupidly   knothole COP.PRES
        to] shutyoosi-ta.
        C   claim-PST
        (Lit.) 'Taro, Hanako's eyes$_1$, stupidly claimed [$_{CP}$ that ___$_1$ are knothole].'
        ≈ 'Taro stupidly claimed that Hanako does not see the nature of things.'

Here, *me* 'eye' and *husiana* 'knothole' constitute an idiom meaning that one does not see the nature of things. In (20b) and (21b), *me* 'eye' and *husiana* 'knothole' do not form a constituent, but the idiomatic meaning in question is still obtained, which indicates that the former is base-generated with the latter, with the former undergoing movement, under the standard assumption that the availability of idiomatic interpretations in this type of cases indicates a movement dependency (cf. Brame 1968; Kayne 1994; Postal 2004; among many others). This then leads us to conclude that *John* in (18b) and *Hanako* in (19b) have undergone movement from the gap position within the embedded clause (see Kuno 1976a; Hiraiwa 2001, 2005; Tanaka 2002; Takahashi & Uchibori 2003; Takahashi 2011 for more arguments for the movement view).[5]

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5. See Takahashi & Uchibori (2003) for several arguments that movement involved in pseudo-raising is not an instance of (long-distance) scrambling.

Given that movement is involved in pseudoraising and RtO, the question to be asked is whether the movement involved in these constructions is an instance of Ā-movement like long-distance scrambling or A-movement. Regarding this issue, Takahashi and Uchibori (2003) and Tanaka (2002) observe that elements that have undergone pseudoraising and RtO can create a new binding relation, as in (22) and (23), respectively.

(22) *Pseudoraising*

    a. *$*Soitu_i$-no   hahaoya-ni(-wa) [$_{CP}$ [san-nin izyoo-no   gakusei]$_i$-ga*
        the.guy-GEN mother-to(-TOP)   three-CL or.more-GEN student-NOM
        Nihon-ni ryuugakusu-ru   to] omoe-ta.
        Japan-in study.abroad-PRES C   seem-PST
        (Lit.) 'It seemed to their$_i$ mothers [$_{CP}$ that [three or more students]$_i$ will study abroad in Japan].'

    b. *[San-nin izyoo-no   gakusei]$_{1/i}$-ga soitu$_i$-no   hahaoya-ni(-wa)*
        three-CL or.more-GEN student-NOM the.guy-GEN mother-to(-TOP)
        [$_{CP}$ ——$_1$ Nihon-ni ryuugakusu-ru   to] omoe-ta.
        Japan-in study.abroad-PRES C   seem-PST
        (Lit.) '[Three or more students]$_{1/i}$ seemed to their$_i$ mothers [$_{CP}$ that ——$_1$ will study abroad].'

(23) *RtO*

    a. *$*Soitu_i$-no   hahaoya-ga orokanimo [$_{CP}$ [san-nin izyoo-no*
        the.guy-GEN mother-NOM stupidly   three-CL or.more-GEN
        gakusei]$_i$-o tensai da   to] shutyoosi-ta.
        student-ACC genius COP.PRES C   claim-PST
        (Lit.) 'Their$_i$ mothers stupidly claimed [$_{CP}$ that [three or more students]$_i$ are genius].'

    b. *[San-nin izyoo-no   gakusei]$_{1/i}$-o soitu$_i$-no   hahaoya-ga*
        three-CL or.more-GEN student-ACC the.guy-GEN mother-NOM
        orokanimo [$_{CP}$ ——$_1$ tensai da   to] shutyoosi-ta.
        stupidly   genius COP.PRES C   claim-PST
        (Lit.) '[Three or more students]$_{1/i}$, their$_i$ mothers stupidly claimed [$_{CP}$ that ——$_1$ are genius].'

Although (22a) and (23a), where *soitu* 'the guy' is not bound by the relevant QP, cannot yield a bound variable interpretation, (22b) and (23b), where the QPs have undergone pseudoraising and RtO over the element containing *soitu*, can. That is, (22b) can be interpreted as there are three or more x, x a student, such that x seemed to x's mother to study abroad in Japan, and (23b) as there are three or more x, x a student, such that x's mother stupidly considered x to be a genius. The availability of the bound variable interpretations in (22b) and (23b) thus constitutes

evidence that *san-nin izyoo-no gakusei* 'three or more students' in these sentences occupies an A-position, which in turn indicates that it has undergone long-distance A-movement out of the embedded clause.

Given that the movement involved in pseudoraising and RtO is an instance of A-movement, let us then consider whether overt A-movement is allowed out of Japanese null arguments. Tanaka (2008) observes that RtO out of them is disallowed, as in (24).

(24) *RtO*

    a. *Taroo-wa Kanako$_1$-o   orokanimo [$_{CP}$ ____$_1$ tensai da*
        Taro-TOP Kanako-ACC stupidly   genius COP.PRES
        to] shutyoosi-ta.
        C claim-PST
        (Lit.) 'Taro, Kanako$_1$, stupidly claimed [$_{CP}$ that ____$_1$ is a genius].'

    b. *Ziroo-wa Ayaka$_2$-o   orokanimo [$_{CP}$ ____$_2$ tensai da*
        Ziro-TOP Ayaka-ACC stupidly   genius COP.PRES
        to] shutyoosi-ta.
        C claim-PST
        (Lit.) 'Ziro, Ayaka$_2$, stupidly claimed [$_{CP}$ that ____$_2$ is a genius].'

    b′. *Ziroo-wa Ayaka$_2$-o   orokanimo [$_{CP}$ △] shutyoosi-ta.*
        Ziro-TOP Ayaka-ACC stupidly   claim-PST
        (Lit.) 'Ziro, Ayaka$_2$, stupidly claimed [$_{CP}$ △].'

In (24a), *Kanako* has undergone long-distance A-movement out of the embedded CP. With this sentence as its antecedent, (24b) is grammatical, while (24b′), which involves overt A-movement of *Ayaka* out of the null CP, is ungrammatical. Note that embedded CPs in the RtO construction can be in principle phonologically dropped, as in (25).

(25) a. *Taroo-wa orokanimo [$_{CP}$ Kanako-o   tensai da   to] shutyoosi-ta.*
        Taro-TOP stupidly   Kanako-ACC genius COP.PRES C claim-PST
        (Lit.) 'Taro stupidly claimed [$_{CP}$ that Kanako is a genius].'

    b. *Ziroo-mo orokanimo [$_{CP}$ △] shutyoosi-ta.*
        Ziro-also stupidly   claim-PST
        (Lit.) 'Ziro also stupidly claimed [$_{CP}$ △].'

This suggests that what matters for the ungrammaticality of (24b′) is in fact extraction out of the embedded null CP, which in turn indicates that RtO is prohibited out of Japanese null arguments.[6]

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6. It is also worth noting here Tanaka's (2008) observation that control clauses can be phonologically null, as in (i).

The following data show that pseudoraising is also disallowed out of Japanese null arguments.

(26)   a.   *Taroo-ni(-wa) [$_{CP}$ John-ga   Nihon-ni ryuugakusu-ru*
            Taro-to(-TOP)   John-NOM Japan-in study.abroad-PRES
            to] omoe-ta.
            C   seem-PST
            'It seemed to Taro [$_{CP}$ that John will study abroad in Japan].'

       b.   *Ziroo-ni-mo [$_{CP}$ △] omoe-ta.*
            Ziro-to-also   seem-PST
            (Lit.) 'It seemed to Ziro [$_{CP}$ △], too.'

(27)   *Pseudoraising*
       a.   *John$_1$-ga   Taroo-ni(-wa) [$_{CP}$ ___$_1$ Nihon-ni ryuugakusu-ru*
            John-NOM Taro-to(-TOP)   Japan-in study.abroad-PRES
            to] omoe-ta.
            C   seem-PST
            (Lit.) 'John$_1$ seemd to Taro [$_{CP}$ that ___$_1$ will study abroad in Japan].'

       b.   *Bill$_2$-ga   Ziroo-ni-wa [$_{CP}$ ___$_2$ Nihon-ni ryuugakusu-ru*
            Bill-NOM Ziro-to-TOP   Japan-in study.abroad-PRES
            to] omoe-ta.
            C   seem-PST
            (Lit.) 'Bill$_2$ seemd to Ziro [$_{CP}$ that ___$_2$ will study abroad in Japan].'

(i)   *Hanako-wa Taroo$_i$-ni [$_{CP}$ PRO$_i$ fugu-o   tabe-ru   yooni] meezi-ta-kedo,*
      Hanako-TOP Taro-DAT   blowfish-ACC eat-PRES C   order-PST-but
      Sachiko-wa Ziroo$_j$-ni [$_{CP}$ △] meezi-ta.
      Sachiko-TOP Ziro-DAT   order-PST
      (Lit.) 'Hanako ordered Taro$_i$ [$_{CP}$ PRO$_i$ to eat a blowfish], but Sachiko ordered Ziro$_j$ [$_{CP}$ △].'
      (Tanaka 2008: 14)

The grammaticality of (i) can be taken to support the movement account of the RtO construction, because if accusative subjects in RtO in Japanese are base-generated in matrix clauses, being co-indexed with empty pronouns, e.g. *pro*, within embedded CPs, (24b′) should be grammatical on a par with (i): the prolepsis analysis of RtO basically treats (24) and (i) in the same way, i.e. in terms of binding/control, so extraction could not be responsible for the ungrammaticality of (24b′). The contrast between (24b′) and (i) would then remain mysterious under the prolepsis analysis of the RtO construction. Note also that the grammaticality of (i) can be taken as an argument against the movement theory of control developed by Hornstein (1999, 2001), which connects controllers and controllees, e.g. *Taro* and *PRO* in (i), via movement (see Takano 2010 for relevant discussion). Specifically, under Hornstein's analysis, the controller *Ziro* in the second conjunct must have undergone A-movement out of the embedded null CP, but such movement is banned in Japanese, cf. (24b′). The contrast between (24b′) and (i) straightforwardly follows if RtO and control clauses in Japanese involve movement and pronominal binding (i.e. PRO), respectively.

b′. *Bill₂-ga   Ziroo-ni-wa [_CP △] omoe-ta.
     Bill-NOM Ziro-to-TOP   seem-PST
     (Lit.) 'Bill₂ seemd to Ziro [_CP △].'

With (26a) as its antecedent, (26b), which involves an embedded null CP from which no raising has taken place, is grammatical. In (27b′), the missing CP is anaphoric on the embedded CP in (27a), and *Bill* has undergone pseudoraising out of it. Therefore, what matters for the ungrammaticality of (27b′) is extraction out of the embedded null CP; the ungrammaticality of (27b′) then indicates that pseudoraising out of Japanese null arguments is banned, just like RtO is.

The above data thus lead us to conclude that pseudoraising and RtO, both of which are instances of overt A-movement, are uniformly prohibited out of Japanese null arguments, just like long-distance scrambling, i.e. overt Ā-movement, is.

3.2.3 PP left-branch extraction

Now, let us turn to overt extraction out of nominal missing arguments. The possibility of such an extraction is hard to test since it is well-known that Japanese generally does not allow left-branch extraction, as in (28b) (cf. Kikuchi 1987; Snyder et al. 1995; Nomura & Hirotsu 2005; Kato 2007).

(28) a. *Taroo-ga [_DP Hanako-no   tegami]-o sute-ta.*
          Taro-NOM   Hanako-GEN letter-ACC discard-PST
          'Taro discarded [_DP Hanako's letter].'
      b. **Hanako₁-no Taroo-ga   [_DP ___₁ tegami]-o sute-ta.*
          Hanako-GEN Taro-NOM   letter-ACC discard-PST
          (Lit.) 'Hanako's₁, Taro discarded [_DP ___₁ letter].'

In (28b), the left-branch element *Hanako* is extracted out of the object DP. The ungrammaticality of this sentence suggests that left-branch extraction is prohibited in Japanese.

However, Takahashi and Funakoshi (2013) observe that the left-branch extraction ban is obviated if what is extracted from an DP is a PP *wh*-phrase, as in (30). ((29) shows that it is crucial for the PPs to be *wh*-phrases in order for them to be able to extract out of DPs).

(29) a. *Taroo-ga [_DP Hanako-kara-no   tegami]-o sute-ta   no?*
          Taro-NOM   Hanako-from-GEN letter-ACC discard-PST Q
          'Did Taro discard [_DP a letter from Hanako]?'
      b. **Hanako-kara₁-no Taroo-ga [_DP ___₁ tegami]-o sute-ta   no?*
          Hanako-from-GEN Taro-NOM   letter-ACC discard-PST Q
          (Lit.) 'From Hanako₁, did Taro discard [_DP a letter ___₁].'
                                              (Takahashi & Funakoshi 2013: 244)

(30) a.   *Taroo-ga [_{DP} dare-kara-no   tegami]-o sute-ta   no?*
         Taro-NOM   who-from-GEN letter-ACC discard-PST Q
         (Lit.) 'Taro discarded [_{DP} a letter from whom]?'

   b.   *Dare-kara₁-no Taroo-ga [_{DP} ___₁ tegami]-o sute-ta   no?*
         who-from-GEN Taro-NOM   letter-ACC discard-PST Q
         (Lit.) 'From whom₁, did Taro discard [_{DP} a letter ___₁]?'
                                                    (Takahashi & Funakoshi 2013: 237)

In (29b) and (30b), the PP *Hanako-kara-no* 'from Hanako' and the PP *wh*-phrase *dare-kara-no* 'from whom' are extracted out of the object DP, respectively, and only the latter extraction is allowed. Takahashi & Funakoshi provide two arguments for a movement analysis of this construction. First, extracted PPs receive genitive case, which is generally assigned within nominals (cf. Kitagawa & Ross 1982), so it is reasonable to assume that they originate inside of the nominal phrases. Second, PP left-branch extraction exhibits subjacency effects, as in (32). ((31) shows that a long-distance dependency is in principle allowed under the relevant movement).

(31) a.   *Hanako-ga   [_{CP} Taroo-ga [_{DP} dare-kara-no   tegami]-o sute-ta*
         Hanako-NOM   Taro-NOM   who-from-GEN letter-ACC discard-PST
         to] omot-te-iru   no?
         C   think-PROG-PRES Q
         (Lit.) 'Does Hanako think [_{CP} that Taro read [_{DP} a letter from whom]]?'

   b.   *Dare-kara₁-no Hanako-ga   [_{CP} Taroo-ga [_{DP} ___₁ tegami]-o*
         who-from-GEN Hanako-NOM   Taro-NOM   letter-ACC
         sute-ta   to] omot-te-iru   no?
         discard-PST C   think-PROG-PRES Q
         (Lit.) 'From whom₁, does Hanako think [_{CP} that Taro read [_{DP} a letter ___₁]]?'   (Takahashi & Funakoshi 2013: 239)

(32) a.   *Hanako-ga   [[_{relative clause} [_{DP} dare-kara-no   tegami]-o sute-ta]*
         Hanako-NOM   who-from-GEN letter-ACC discard-PST
         hito]-o   sagasi-te-iru   no?
         person-ACC look.for-PROG-PRES Q
         (Lit.) 'Is Hanako looking for [a person [_{relative clause} who discarded [_{DP} a letter from whom]]]?'

   b.   **Dare-kara₁-no Hanako-ga   [[_{relative clause} [_{DP} ___₁ tegami]-o*
         who-from-GEN Hanako-NOM   letter-ACC
         sute-ta]   hito]-o   sagasi-te-iru   no?
         discard-PST person-ACC look.for-PROG-PRES Q
         (Lit.) 'From whom₁, is Hanako looking for [a person [_{relative clause} who discarded [_{DP} a letter ___₁]]]?'   (Takahashi & Funakoshi 2013: 239)

In (31b), the left-branch PP *dare-kara* 'from whom' has been extracted out of the object DP within the embedded clause. The grammaticality of (31b) indicates that long-distance PP left-branch extraction is allowed here. In (32b), the relevant PP is extracted out of a relative clause, which is an island for movement, and the sentence is ungrammatical. This suggests that PP left-branch extraction involves movement, rather than binding or control.[7]

Given that movement is involved in PP left-branch extraction, let us then consider whether the relevant movement is possible out of Japanese null arguments. Consider (33).

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7. Takahashi & Funakoshi (2013) also claim that PP left-branch extraction is an instance of Ā-movement based on the fact that the movement in question exhibits weak crossover violations. Consider the following examples.

   (i) a. *Who$_{1/i}$ does his$_i$ mother love ___$_1$?
        b. Who$_{1/i}$ ___$_1$ seems to his$_i$ mother [___$_1$ to be intelligent]?

   (ii) a. *Kinoo   soko$_i$-no shain-ga   [$_{DP}$ [dono kaisha]$_i$-kara-no
           yesterday it-GEN   employee-NOM   which company-from-GEN
           shootaizyoo]-o uketot-ta   no?
           invitation-ACC receive-PST Q
           (Lit.) 'Did its$_i$ employees receive [$_{DP}$ invitations from [which company]$_i$] yesterday?'
        b. *Dono kaisha$_i$-kara$_1$-no   kinoo   soko$_i$-no shain-ga   [$_{DP}$ ___$_1$
           which company-from-GEN yesterday it-GEN   employee-NOM
           shootaizyoo]-o uketot-ta   no?
           invitation-ACC receive-PST Q
           (Lit.) 'From which company$_{1/i}$, did its$_i$ employees receive [$_{DP}$ invitations ___$_1$] yesterday?'
        c. *Dono kaisha-kara$_1$-no   kinoo   Toyota-no shain-ga   [$_{DP}$ ___$_1$
           which company-from-GEN yesterday Toyota-GEN employee-NOM
           shootaizyoo]-o uketot-ta   no?
           invitation-ACC receive-PST Q
           (Lit.) 'From which company$_1$, did Toyota's employees receive [$_{DP}$ invitations ___$_1$] yesterday?'   (Takahashi & Funakoshi 2013: 243)

In (ia), *who* crosses over the co-indexed *his*, and the sentence is ungrammatical. This is taken to indicate that Ā-movement induces weak crossover effects. In (ib), *who* crosses over the co-indexed *his* via A-movement (raising), and the sentence is grammatical. This indicates that, unlike Ā-movement, A-movement does not induce weak crossover effects. Given this, consider (ii). (iia) is ungrammatical since the bound pronoun *soko* 'it' is not c-commanded by its antecedent *dono kaisha* 'which company'. In (iib), *dono kaisha* 'which company' crosses over the bound pronoun *soko* 'it', and the sentence is ungrammatical, cf. (ia). This suggests that PP left-branch extraction involves Ā-movement rather than A-movement. See Takahashi & Funakoshi (2013) for more discussion of the data in (ii).

(33)   A¹: *Dare-kara₁-no   Taroo-wa [DP ___₁ tegami]-o sute-ta   no?*
who-from-GEN Taro-TOP   letter-ACC discard-PST Q
(Lit.) 'From whom₁, did Taro discard [DP a letter ___₁]?'

B: *Bill-da   yo.*
Bill-PRES SFP
'Bill.'

A²: i.   *Zyaa, dare-kara₂-no   Ziroo-wa [DP ___₂ tegami]-o sute-ta   no?*
then   who-from-GEN Ziro-TOP   letter-ACC discard-PST Q
(Lit.) 'Then, from whom₂, did Ziro scold [DP a letter ___₂]?'

ii.   **Zyaa, dare-kara₂-no   Ziroo-wa [DP △] sute-ta   no?*
then   who-from-GEN Ziro-TOP   discard-PST Q
(Lit.) 'Then, from whom₂, did Ziro scold [DP △]?'

In (33A¹), the left-branch PP *dare-kara* 'from whom' is extracted out of the object DP. (33B) is the answer to (33A¹). Interesting for us here is (33A²). In (33A²–i), the left-branch PP *dare-kara* 'from whom' is extracted from the object DP, and the sentence is grammatical. In (33A²–ii), the PP in question is extracted out of the null object DP which is anaphoric on the object DP in (33A¹), and the sentence is ungrammatical. This indicates that PP left-branch extraction is banned out of Japanese null arguments, which in turn means that overt extraction out of null DPs is prohibited in Japanese, just like overt extraction out of null CPs is.

3.2.4   Interim summary

To sum up, the above observations lead us to conclude that overt extraction is uniformly excluded out of Japanese null argument sites regardless of the type of movement (Ā or A) or the category of null arguments (clausal or nominal). In the following section, I will discuss covert movement, more precisely, movement that does not affect word order. I will show that there is a surprising contrast regarding overt extraction and covert extraction. More precisely, it will be demonstrated that covert extraction is uniformly allowed out of Japanese null arguments, in contrast to overt extraction.[8]

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8.   The readers should bear in mind that what I mean by covert movement is simply extraction that does not affect word order. I will discuss in Chapter 5 how what I call covert movement is implemented in terms of the analysis.

3.3   Covert extraction out of Japanese null arguments

3.3.1   Null operator movement

First, I will discuss null operator (Op) movement (see here footnote 8). I will focus here on three constructions which have been argued to involve null operator movement, namely comparative deletion (cf. Kikuchi 1987), PP-*Tough* (PPT) constructions (cf. Takezawa 1987), and *half* relatives (cf. Ishii 1991), the basic examples of which are illustrated in (34a)–(c).[9]

(34)   a.   *Comparative Deletion*
      John-ga   [Mary-ga   e mot-te-iru   yori(mo)] takusan
      John-NOM   Mary-NOM   have-PROG-PRES than   many
      hon-o   mot-te-iru.
      book-ACC have-PROG-PRES
      (Lit.) 'John has more books [than Mary has *e*].'   (Kikuchi 1987: 2)

      b.   *PPT*
      Sono dai-kara$_i$-ga   (John-nitotte) [e$_i$ tobikomi]-yasu-i.
      that   board-from-NOM John-for   jump-easy-PRES
      (Lit.) 'From that board$_i$ is easy for John [to jump *e$_i$*].'   (Takezawa 1987: 215)

      c.   Half *Relative*
      John-wa   [[Bob-ga yatin-ni e tuka-u] hanbun]-o gyanburu-ni tuka-u.
      John-TOP Bob-NOM rent-for   use-PRES half-ACC gambling-for use-PRES
      (Lit.) 'John uses for gambling [half (the amount) [Bob uses *e* for rent]].'
                                                      (Ishii 1991: 222)

The gap *e* corresponds to the amount of the books that Mary has in (34a), the matrix PP *sono dai-kara* 'from that board' in (34b), and the amount of money that Bob uses for his rent in (34c). Importantly, these constructions exhibit subjacency effects, as shown in (36a)–(c), though unbounded dependencies are in principle possible here, as (35a)–(c) demonstrate.

(35)   a.   *Comparative Deletion*
      [[$_{CP}$ John-ga   e yon-da   to] iw-are-te-iru   yori(mo)]
            John-NOM   read-PST C say-PASS-PROG-PRES than
      Mary-wa   takusan hon-o   yon-de-ita.
      Mary-TOP many   book-ACC have-PROG-PRES
      (Lit.) 'Mary read more books [than it is said [$_{CP}$ that John read *e*]].'
                                                      (Kikuchi 1987: 6)

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9.   I will discuss *wh*-in-situ and the Case-marked/PP cleft construction (cf. Hoji 1987, 1990), which are also sometimes claimed to involve null operator movement, in Chapter 5, where it will be shown that these constructions also support the claim made in this chapter.

b. *PPT*
   Zibun-no otooto-kara$_i$-ga   (John-nitotte) [[$_{CP}$ e$_i$ okane-o   takusan
   self-GEN   brother-from-NOM John-for   money-ACC many
   kari-te-iru   to] mitome]-nuku-i.
   borrow-PROG-PRES   C   admit-hard-PRES
   (Lit.) 'From self's brother$_i$ is hard for John [to admit [$_{CP}$ that he has bor-
   rowed much money e$_i$]].'   (Takezawa 1987: 196)

c. Half *Relative*
   John-wa   [[Mary-ga [$_{CP}$ zibun-no imooto-ga maituki   e
   John-TOP Mary-NOM   self-GEN   sister-NOM every.month
   mora-u   to] it-te-iru]   hanbun]-o tyokinsu-ru.
   receive-PRES C   say-PROG-PRES half-ACC save-PRES
   (Lit.) 'John saves [half (the amount) [Mary says [$_{CP}$ that her sister receives
   e every month]]].'   (adapted from Ishii 1991: 225)

(36) a. *Comparative Deletion*
   *[[[$_{relative\ clause}$ Sono tukue-de e yon-de-ita]   hito]-o   John-ga
                   that desk-on   read-PROG-PAST person-ACC John-NOM
   nagut-ta yori(mo)] Paul-wa   takusan hon-o   yon-de-ita.
   hit-PST than   Paul-TOP many   book-ACC read-PROG-PST
   (Lit.) 'Paul read more books [than John hit [the person [$_{relative\ clause}$ who
   was reading *e* on that desk]]].'   (Kikuchi 1987: 7)

b. *PPT*
   *Sooiu   kinyuukikan-kara$_i$-ga (John-nitotte) [[[$_{relative\ clause}$ e$_i$
   money-ACC borrow-PROG-PRES   person-ACC
   itumo   okane-o kari-te-iru]   hito]-o
   trust-hard-PRES such   financial.agency-from-NOM John-for
   sinyoosi]-niku-i.
   always
   (Lit.) 'From such a financial agency$_i$ is hard for John [to trust [a person
   [$_{relative\ clause}$ who always loans a lot of money e$_i$]]].'   (Takezawa 1987: 216)

c. Half *Relative*
   *John-wa   [[Bob-ga [[$_{relative\ clause}$ e kasei-da] hito]-o   hihansi-ta]
   John-TOP Bob-NOM   earn-PST person-ACC criticize-PST
   hanbun]-o tyokinsu-ru.
   half-ACC   save-PRES
   (Lit.) 'John saves [half (the amount) [Bob criticized [the person [$_{relative\ clause}$
   who earned *e*]]]].'   (cf. Ishii 1991: 226)

In (35a)–(c), the gap is inside of the embedded CP, and the sentences are gram-
matical. This indicates that long-distance dependencies are possible in the relevant
constructions. By contrast, (36a)–(c), where the gap is inside of the relative clause,

which is an island for movement, are all ungrammatical. Given that the presence of subjacency effects is a hallmark of movement, the ungrammaticality of (36) indicates that the relevant gap is created by movement. Kikuchi (1987), Takezawa (1987), and Ishii (1991) then claim that the above constructions involve Op-movement, i.e. covert Ā-movement, analyzing (34a)–(c) as in (37a)–(c), respectively.[10]

(37) a. *Comparative Deletion*
John-ga   [[Op$_1$ Mary-ga ___$_1$ mot-te-iru]   yori(mo)] takusan
John-NOM   Mary-NOM   have-PROG-PRES than   many
hon-o   mot-te-iru.
book-ACC have-PROG-PRES
(Lit.) 'John has more books [than [Op$_1$ Mary has ___$_1$]].'

b. *PPT*
Sono dai-kara$_i$-ga   (John-nitotte) [Op$_1$ [___$_{1/i}$ tobikomi]]-yasu-i.
that   board-from-NOM John-for   jump-easy-PRES
(Lit.) 'From that board$_i$ is easy for John [Op$_1$ [to jump ___$_{1/i}$]].'

c. Half *Relative*
John-wa   [[Op$_1$ Bob-ga   yatin-ni ___$_1$ tuka-u]   hanbun]-o
John-TOP   Bob-NOM rent-for   use-PRES half-ACC
gyanburu-ni   tuka-u.
gambling-for use-PRES
(Lit.) 'John uses for gambling [half (the amount) [Op$_1$ Bob uses ___$_1$
for rent]].'

The ungrammaticality of (36a)–(c) now follows since Op-movement crosses the relative clause island boundary, resulting in a subjacency violation.

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10. Takezawa (1987) argues that what is involved in PP *tough* constructions is Op-movement, not overt movement of PPs, based on examples like (i).

(i) *(John-nitotte) [$_{CP}$ okane-o   [zibun-no otooto-kara]-ga   takusan
John-for   money-ACC self-GEN   brother-from-NOM many
kari-te-iru   to] hito-ni   ii]-niku-i.
borrow-PROG-PRES c   person-to say-hard-PRES
(Lit.) 'It is hard [to tell people [$_{CP}$ that one has borrowed a lot of money from self's
brother]].'   (Takezawa 1987: 198)

Here, the nominative PP is placed right in the middle of the embedded clause, and the sentence is ungrammatical. This indicates that the PP subject receives nominative case within the matrix clause. Then, Takezawa reasons, given that movement involved in Case-assignment/licensing is A-movement, the PP *tough* constructions such as (35b) cannot involve overt movement of the PP subject out of the embedded clause since that would result in a violation of the condition A of the binding theory. Takezawa then argues that we can ensure that the PP *tough* construction involves Op-movement if we use a matrix subject with nominative case.

Given that Op-movement is involved in the above constructions, the following data demonstrate that Op-movement is possible out of Japanese null arguments.[11]

(38)   *Comparative Deletion*
    a.   *[[Op$_1$ [$_{CP}$ Taroo-ga ___$_1$ yon-da   to] Kanako-ni iw-are-te-iru]*
               Taro-NOM   read-PST c Kanako-by say-PASS-PROG-PRES
        yori(mo)] Hanako$_i$-wa takusan hon-o   yon-de-ita.
        than   Hanako-TOP many   book-ACC have-PROG-PST
        (Lit.) 'Hanako$_i$ read more books [than [Op$_1$ it is said by Kanako [$_{CP}$ that Taro read ___$_1$]]].'

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11. Kennedy and Merchant (2000) claim that the complement of the verb *thought* in (ia) is not an instance of a missing CP, but an instance of a trace of a phonologically null nominal operator, which is a variant of the overt operators in (ii), as in (ib).

  (i) a.   Jones published more papers than Smith thought *e*.
                                        (Kennedy & Merchant 2000:(1))
      b.   Jones published more papers than [$_{CP}$ Op$_{DP}$ Smith thought ___$_{DP}$].
                      (Kennedy & Merchant 2000:(24) with a slight modification)
  (ii) a.   What was {necessary/expected/predicted/reported}?
      b.   The committee took much longer to decide than what was expected.
                           (Kennedy & Merchant 2000:(23)(24))

Kasai (2014) argues that the missing CP in (iiia) may be an instance of Kennedy & Merchant's (2000) null nominal operator rather than an instance of a(n) missing/elided CP, as in (iiib).

  (iii) a.   *John-wa [Mary-ga e$_{CP}$ omot-te-ita   yori] takusan hon-o   kat-ta.*
               John-TOP Mary-NOM   think-PROG-PAST than many   book-ACC buy-PST
               (Lit.) 'John bought more books than Mary thought *e$_{CP}$*'   (Ishii 1991: 164)
      b.   John [Op$_{DP}$ Mary ___$_{DP}$ thought than] many book bought

Then, one might wonder whether the missing CP in (38b′) could be a trace of null nominal operator, in which case the example may not show that Op-extraction is possible out of Japanese missing CPs. However, the following data show that Kennedy and Merchant's (2000) null nominal operator can obtain its interpretation only from its matrix clause, but not from its antecedent clause.

  (iv) a.   John$_1$ published more books than Mary thought [$_{CP}$ that Nancy published].
      b.   Furthermore, he$_1$ published more books than [$_{CP}$ Op$_{DP}$ Bill thought ___$_{DP}$].
            = … than Bill thought that John/he$_1$ published
            ≠… than Bill thought that Nancy published   (Michael Yoshitaka Erlewine, p.c.)

Op$_{DP}$ in (iv-b) cannot refer to the CP in (iv-a); it can only refer to the matrix clause. Therefore, even if the null nominal operator in question were available in Japanese comparatives, the phonologically missing complement of *iwareteiru* 'be.said' in (38b′) cannot be an instance of a trace of the operator; it must be a missing CP, so the claim that Op-extraction is possible out of Japanese missing arguments made here is not undermined.

b. *Sarani,   [[Op$_2$ [$_{CP}$ Taroo-ga ___$_2$ yon-da   to] Ayaka-ni*
   furthermore   Taro-NOM   read-PST C Ayaka-by
   iw-are-te-iru   yori(mo)] kanozyo$_i$-wa takusan
   say-PASS-PROG-PRES than   she-TOP   many
   hon-o   yon-de-ita.
   book-ACC have-PROG-PST
   (Lit.) 'Furthermore, she$_i$ read more books [than [Op$_2$ it is said by Ayaka [$_{CP}$ that Taro read ___$_2$]]].'

b′. *Sarani,   [[Op$_2$ [$_{CP}$ △] Ayaka-ni iw-are-te-iru   yori(mo)]*
   furthermore   Ayaka-by say-PASS-PROG-PRES than
   kanozyo$_i$-wa takusan hon-o   yon-de-ita.
   she-TOP   many   book-ACC have-PROG-PST
   (Lit.) 'Furthermore, she$_i$ read more books [than [Op$_2$ it is said by Ayaka [$_{CP}$ △]]].'

(39) *PPT*

a. *Hahaoya-kara$_i$-ga Taroo-nitotte-wa [Op$_1$ [$_{CP}$ ___$_{1/i}$ aizyoo-o*
   mother-from-NOM Taro-for-TOP   love-ACC
   uke-te-iru   to] kanzi]-yasu-i.
   receive-PROG-PRES C   feel-easy-PRES
   (Lit.) 'From his mother$_i$ is easy for Taro [Op$_1$ to feel [$_{CP}$ that he receives love ___$_{1/i}$]].'

b. *Titioya-kara$_j$-ga Ziroo-nitotte-wa [Op$_2$ [$_{CP}$ ___$_{2/j}$ aizyoo-o*
   father-from-NOM Ziro-for-TOP   love-ACC
   uke-te-iru   to] kanzi]-yasu-i.
   receive-PROG-PRES C   feel-easy-PRES
   (Lit.) 'From his father$_j$ is easy for Ziro [Op$_2$ to feel [$_{CP}$ that he receives love ___$_{2/j}$]].'

b′. *Titioya-kara$_j$-ga Ziroo-nitotte-wa [Op$_2$ [$_{CP}$ △] kanzi]-yasu-i.*
   father-from-NOM Ziro-for-TOP   feel-easy-PRES
   (Lit.) 'From his father$_j$ is easy for Ziro [Op$_2$ to feel [$_{CP}$ △]].'

(40) Half *Relative*

a. *Taroo-wa [[Op$_1$ Kanako-ga   [$_{CP}$ daigakukyoozyu-ga maituki*
   Taro-TOP   Kanako-NOM   professor-NOM   every.month
   ___$_1$ kaseg-u to] sinzi-te-iru]   hanbun]-o tyokinsu-ru.
       earn-PRES C believe-PROG-PRES half-ACC save-PRES
   (Lit.) 'Taro saves [half (the amount) [Op$_1$ Kanako believes [$_{CP}$ that professors earn ___$_1$ every month]]].'

b. *Ziroo-wa [[Op$_2$ Ayaka-ga   [$_{CP}$ daigakukyoozyu-ga maituki*
    Ziro-TOP   Ayaka-NOM   professor-NOM   every.month
    ___$_2$ kaseg-u   to] sinzi-te-iru]   hanbun]-o tyokinsu-ru.
       earn-PRES C   believe-PROG-PRES half-ACC save-PRES
    (Lit.) 'Ziro saves [half (the amount) [Op$_2$ Ayaka believes [$_{CP}$ that professors earn ___$_2$ every month]]].'

b'. *Ziroo-wa [[Op$_2$ Ayaka-ga   [$_{CP}$ △] sinzi-te-iru]*
    Ziro-TOP   Ayaka-NOM   believe-PROG-PRES
    hanbun]-o tyokinsu-ru.
    half-ACC   save-PRES
    (Lit.) 'Ziro saves [half (the amount) [Op$_2$ Ayaka believes [$_{CP}$ △]]].'

In the above examples, the (a) sentences involve null operator movement out of the embedded CP. With the (a) sentences as their antecedents, the (b) sentences, where nothing is phonologically dropped, are all grammatical, and the (b′) examples, which involve null operator movement out of the null CP that is anaphoric on the embedded CP in the (a) sentences, are also grammatical, which shows that null operator movement is allowed out of Japanese null arguments, unlike overt movement.

3.3.2 Quantifier raising

Let us turn now to covert scope-shifting operation, i.e. QR. Based on examples like (41b), much literature has claimed that Japanese is a scope-rigid language (see Kuroda 1970; Hoji 1985; among others; but see Shibata 2015 for an opposing view).

(41) a. Someone loves everyone.   ∃»∀;∀»∃
      b. *Dareka-ga   daremo-o   aisi-te-iru.*   ∃»∀;*∀»∃
          someone-NOM everyone-ACC love-PROG-PRES
          'Someone loves everyone.'

Although both the surface scope and the inverse scope are available in English (41a), only the former scope interpretation is available in Japanese (41b). Given this, it does not seem easy to test whether QR is possible out of missing arguments in Japanese. However, it has been noted in the literature that QP objects in Japanese interact with scope bearers attached to the verbal complex, e.g. negation, as in (42) (cf. Kuno 1980, 1983; Kato 1985; Takubo 1985; Miyagawa 2001; Kataoka 2006; among others).

(42) *Taroo-wa subete-no gakusei-o   sikara-nakat-ta.*   Neg »∀;∀» Neg
      Taro-TOP all-GEN   student-ACC scold-NEG-PST
      'Taro did not scold all the students.'

(42) can mean either that Taro scolded no teachers or that it is not the case that Taro scolded all the students. Therefore, the object universal quantifier can take scope over negation and vice versa. In light of this, the following ECM construction is a plausible case of QR on the inverse scope interpretation, i.e. the interpretation where the ECMed QP subject takes scope over negation.

(43) *Kyonen-wa   Yamada sensei-ga   [CP daiamondo-mitaini subete-no*
      last.year-TOP Yamada teacher-NOM   diamond-like   all-GEN
      sinnyuusei-o   kagayai-te-iru   to] iwa-nakat-ta.   Neg »∀;∀» Neg
      freshman-ACC shine-PROG-PRES C   say-NEG-PST
      (Lit.) 'Last year, Prof. Yamada did not say [CP that, like a diamond, all the freshman students are shining].'

(44) #*Yamada sensei-ga   daiamondo-mitaini iwa-nakat-ta.*
      Yamada teacher-NOM diamond-like   say-NEG-PST
      'Prof. Yamada did not say like a diamond.'

In (43), the QP is inside of the embedded clause, and the negation is attached to the matrix verb. This sentence is ambiguous in that it can mean either that it is not the case that Taro said that all the freshman students are shining like a diamond last year or that no students are such that Taro said that they are shining like a diamond last year. (44) indicates that the adverb *diamondo-mitaini* 'like a diamond' cannot modify the verb *iwanakatta* 'not said'. This shows that the adverb in question is an embedded adverb in (43), which in turn means that the ECMed subject *subete-no sinnyuusei* 'all the freshman students' stays within the embedded clause (see Bruening 2001; Hiraiwa 2001; 2005; among many others for the claim that ECMed subjects can remain within embedded clauses). Therefore, it is plausible that QR is responsible for the inverse scope reading in (43).[12] Given that QR

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12. It should be noted here that a number of superficially scope rigid languages have been argued to have QR (see, e.g., Sauerland 2001; Wurmbrand 2008 for German; Oh 2006 for Korean; and Fitzgibbons 2010 for Russian). Many authors have also argued for QR in Japanese (see Sano 1985; Shoji 1986; Harada & Noguchi 1992; Aoyagi 1998, 2006; Futagi 2004; Saito 2005; Bobaljik & Wurmbrand 2007; Goro 2007; Takahashi 2011; among many others). See also Bobaljik (1995, 2002), Diesing (1997), Chierchia (1998), and especially Takahashi (2011) and Bobaljik & Wurmbrand (2012) for discussion related to the question why QR in Japanese is more 'restricted' than QR in English, i.e. why QR is possible only in cases like (43), not in cases like (41b). Notice also that the inverse scope in question cannot be obtained by scrambling both the embedded adverb and the ECM subject. One of the major reasons for this is that scrambling of elements to a post-subject position across a clause boundary is independently known to be impossible, as Saito (1985), Nemoto (1993), among many others, demonstrate, as in (i) (Furthermore, adverbs quite generally cannot undergo long-distance scrambling; see e.g. Miyara 1982; Saito 1985; Bošković & Takahashi 1998):

is involved in constructions such as (43), the following data indicate that QR is allowed out of Japanese missing arguments.[13]

(45) a. *Kyonen-wa   Yamada sensei-ga   [CP daiamondo-mitaini subete-no*
last.year-TOP Yamada teacher-NOM   diamond-like   all-GEN
sinnyuusei-o   kagayai-te-iru   to] iwa-nakat-ta.
freshman-ACC shine-PROG-PRES C   say-NEG-PST
(Lit.) 'Last year, Prof. Yamada did not say [CP that, like a diamond, all the freshman students are shining].'   Neg »∀;∀» Neg [cf. (43)]

b. *Kotosi-wa   Tanaka sensei-ga   [CP △] iwa-nakat-ta.*   Neg »∀;∀» Neg
this.year-TOP Tanaka teacher-NOM   say-NEG-PST
(Lit.) 'This year, Prof. Tanaka did not say [CP △].'

With (45a) as its antecedent, (45b), which involves a missing CP, is ambiguous: it can mean either that it is not the case that Prof. Tanaka said that all the students are shining like a diamond this year or that as for all the students Prof. Tanaka did not say that they are shining like a diamond this year. The ambiguity of (45b) then provides evidence for QR out of Japanese missing arguments: the universal quantifier within the missing CP scopes outside of it.[14]

(i) ?**John-ga   sono hon$_1$-o   minna-ni   [CP Hanako-ga   ___$_1$ yon-da to] it-ta.*
John-NOM that book-ACC everyone-DAT   Hanako-NOM   read-PST C   say-PST
(Lit.) 'John, that book$_1$, said to everyone [CP that Hanako read ___$_1$].'

(Nemoto 1993: 60)

Here, the landing-site of the long-distance scrambled object *sono hon* 'that book' is the post-matrix subject position, and the sentence is degraded. Importantly, (43) is fully acceptable with the inverse scope reading, which makes multiple scrambling unlikely to be responsible for the inverse scope in question.

13. Note that Fox's (2000) Scope Parallelism is observed in (45a) and (45b). Specifically, if we get the surface scope in (45a), we can only get the surface scope in (45b); if we get the inverse scope in (45a), we must get the inverse scope in (45b). The same holds in (48a) and (48b) too.

14. That the QP within the missing CP can take scope outside of it is further supported by the following examples with other quantifiers.

(i) a. *Kyonen-wa   Yamada sensei-ga   [CP diamondo-mitaini*
last.year-TOP Yamada teacher-NOM   diamond-like
{hotondo/sukunakutomo huta-ri/ookutomo huta-ri}-no   sinnyuusei-o
most/at.least two-CL/at.most two-CL-GEN   freshman-ACC
kagayai-te-iru   to] iwa-nakat-ta.   ✓QP » NEG
shine-PROG-PRES C   say-NEG-PST
(Lit.) 'Last year, Prof. Yamada did not say [CP that, like a diamond, {most/at least two/at most two} freshman students are shining].'

The claim that QR is possible out of Japanese null arguments gains further support from the scope of focus particles. Consider (46).

(46)   *John-wa   [_{CP} Mary-ga   sinabita ringo-sae   tabe-ta to] omot-te-iru.*
       John-TOP   Mary-NOM wilted   apple-even eat-PST C   think-PROG-PRES
       'John thinks [_{CP} that Mary ate an even wilted apple].'   (Aoyagi 1994: 25)

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   b.   *Kotosi-wa   Tanaka sensei-ga   [_{CP} △] iwa-nakat-ta.*   ✓QP » Neg
        this.year-TOP Tanaka teacher-NOM   say-NEG-PST
        (Lit.) 'This year, Prof. Tanaka did not say [_{CP} △].'

In (ia), the QP is inside of the embedded clause and it can take scope over the matrix negation. Importantly, the same scope interpretation is also obtained in (ib), which involves a missing CP anaphoric on the embedded CP in (ia). This also supports the claim that QR is allowed out of Japanese missing arguments.

   Notice also that the in-situ approach to inverse scope, namely choice function (cf. Reinhart 1997; Kratzer 1998; Winter 2004; among others) would not account for the inverse scope in (45b) and (ib) since the quantifiers such as *all*, *most*, *at least X*, and *at most X*, are known to be non-choice-functional, as in (ii) and (iii).

   (ii)   a.   If three experiments succeed, Tom will be happy.   *if » three ; three » if*
          b.   If every experiment succeed, Tom will be happy.   *if » every ;*every » if*
          c.   If most experiments succeed, Tom will be happy.   *if » most ;*most » if*
          d.   If at least three experiments succeed, Tom will be happy.

                                                          if » at least three ;*at least three » if
          e.   If at most three experiments succeed, Tom will be happy.

                                                          if » at most three;*at most three » if

   (iii) a.   *Huta-ri-no zyosei-ga   paatii-ni ki-ta-ra,   John-wa   yoroko-bu   daroo.*
               two-CL-GEN woman-NOM party-to come-PST-if John-TOP happy-PRES will
               'If two women come to the party, John will be happy.'   *if » two ; two » if*
          b.   *{Subete/hotondo/sukunakutomo huta-ri/ookutomo huta-ri}-no   zyosei-ga*
               all/most/at   least two-CL/at   most two-CL woman-NOM
               paatii-ni ki-ta-ra,   John-wa   yoroko-bu   daroo.
               party-to come-PST-if John-TOP happy-PRES will
               'If every/most/at most two/at least two wom{a/e}n come(s) to the party, John will be happy.'

                    if » every/most/at least two/at most ;*every/most/at least two/at most two » if
                                                          (cf. Nakanishi 2002: 144)

Although adjunct clauses such as *if*-clauses are generally islands for movement, indefinites such as *three experiments* can take scope outside of them, as in (iia), and the same holds for Japanese, as in (iiia). The standard assumption to account for this exceptionally wide scope out of islands is to adopt the choice function analysis, which makes available (long-distance) inverse scope without QR. The unavailability of the wide scope out of islands in (iib–e) and (iiib) indicates that choice function does not apply to strong quantifiers as well as *at least X* and *at most X*. The inverse scope in (45b) and (ib) should then be obtained through QR.

Aoyagi (1994) observes that (46) is ambiguous in that the embedded object QP *sinabita ringo-sae* 'a wilted apple' can take either embedded or matrix scope (see also Sano 2001; Abe 2012; among others). Under the embedded scope reading, (46) is interpreted as John thinks that Mary ate a wilted apple in addition to some other thing: the scaler implicature of *-sae* 'even' comes from only the embedded clause, i.e. a wilted apple is the least likely thing for Mary to eat. On the other hand, under the matrix scope interpretation, (46) is interpreted as even for a wilted apple, John has an idea that Mary ate it (in addition to some other idea about some other thing): the relevant scaler implicature comes from the entire sentence, i.e. a wilted apple is the least likely thing for John to think that Mary ate it. There is evidence that movement is responsible for the matrix scope interpretation in (46): the availability of the matrix scope interpretation is regulated by subjacency effects, as in (47).

(47) *Mary-ga   [[_relative clause gakubusei-zidai-ni   Barriers-sae   yon-da]*
      Mary-NOM   undergraduate-time-at Barriers-even read-PST
      hito]-ni   at-ta.
      person-DAT   meet-PST
      'Mary met [a person [_relative clause who read even Barriers when he/she was an undergraduate student]].'   (Aoyagi 1994: 32)

Here, only the embedded scope interpretation of *Barriers-sae* 'even Barriers' is possible. Specifically, (47) can be interpreted as Mary met a person who read Barriers in addition to some other thing when he/she was an undergraduate student, where the scaler implicature of *-sae* 'even' comes from only the object DP, i.e. Barriers is the least likely thing for undergraduate students to read; (47) cannot be interpreted as even for Barriers Mary met a person who read it when he/she was an undergraduate student, where the scaler implicature comes from the entire sentence, i.e. Barriers is the least likely thing for Mary to meet a person who read it when he/she was an undergraduate student. Given that the presence of subjacency effects is a hallmark of movement, it follows that covert movement is involved in the matrix scope interpretation in examples such as (46).

Let us then investigate whether the relevant covert movement is possible out of Japanese missing arguments. Consider (48).

(48) a. *John-wa   [_CP Mary-ga   sinabita ringo-sae   tabe-ta to]*
          John-TOP   Mary-NOM wilted   apple-even eat-PST C
          omot-te-iru.
          think-PROG-PRES
          'John thinks [_CP that Mary ate even an wilted apple].'   [cf. (46)]
      b. *Bill-mo   [_CP △] omot-te-iru.*
          Bill-also   think-PROG-PRES
          (Lit.) 'Bill also thinks [_CP △].'

With (46)/(48a) as its antecedent, (48b) is ambiguous in that the QP within the embedded missing CP can take scope either in the matrix clause or in the embedded clause. Specifically, (48b) can mean either that Bill also thinks that Mary ate a wilted apple in addition to some other thing, where the scaler implicature of *-sae* 'even' comes from the embedded CP, i.e. a wilted apple is the least likely thing for Mary to eat, or that even for a wilted apple Bill also has an idea that Mary ate it (in addition to some other idea about some other thing), where the relevant scaler implicature comes from the entire sentence, i.e. a wilted apple is the least likely thing for Bill to think that Mary ate. The availability of the matrix scope interpretation in (48b) then provides further evidence that QR is possible out of Japanese missing arguments.

3.3.3 Covert possessor raising

There are two constructions which have been claimed to involve covert extraction out of Japanese nominal arguments: Kikuchi's (1994) inalienable possessor constructions and Kishimoto's (2013) possessor raising idioms. In the following, using these constructions, I will investigate whether covert extraction out of Japanese null nominal arguments is allowed.

3.3.3.1 *Inalienable possessor raising*
First, I will discuss Kikuchi's (1994) inalienable possessor construction (see also Ogawa 2001; Funakoshi 2017). Kikuchi argues that inalienable possessor constructions like (49a) can involve covert raising of a genitive possessor out of the object DP, as in (49b).

(49) a. *John-ga   kinoo   [$_{DP}$ Mary-no   tume]-o kit-ta.*
          John-NOM yesterday   Mary-GEN nail-ACC cut-PST
          'John clipped Mary's nails yesterday.'
      b. John-NOM yesterday Mary-GEN [$_{DP}$ Mary-GEN nail]-ACC cut
                                                covert possessor raising

Specifically, Kikuchi claims that the genitive possessor *Mary* that is located within the inalienable possessum nominal object on the surface can covertly occupy a position outside of it. He bases his argument on an observation regarding the distribution of floating numeral quantifiers (FNQs) and secondary predicates. Consider the following examples.

(50) a. *Gakusei-ga san-nin sake-o   non-da.*
          student-NOM three-CL alcohol-ACC drink-PST
          'Three students drank alcohol.'

b. *Taroo-wa gakusei-o   san-nin sikat-ta.*
    Taro-TOP student-ACC three-CL scold-PST
    'Taro scolded three students.'

(51) a. **Hito-ga   [PP [DP tiisai mura]-kara] huta-tu ki-ta.*
         people-NOM   small village-from two-CL come-PST
         (Int.) 'People came from two small villages.'
      b. **Gakusei-tati-wa [PP [DP kuruma]-de] ni-dai ki-ta.*
         student-PL-NOM   car-in   2-CL   come-PST
         (Int.) 'Students came in two cars.'   (Miyagawa 1989: 31)

In (50a)–(b), the FNQ *san-nin* 'three-CL' is associated with the DP *gakusei* 'student'.
In (51a)–(b), the FNQs *huta-tu* 'two-CL' and *ni-dai* 'two-CL' are intended to be asso-
ciated with the DPs *tiisai mura* 'small town' and *kuruma* 'car', both of which are em-
bedded within the PPs, respectively, and the sentences are both ungrammatical. The
contrast in (50) and (51) is generally attributed to the condition on FNQs in (52).

(52)   An FNQ or its trace must be c-commanded by an DP which it predicates of.
                              (Kikuchi 1994: 81 with a slight modification)

Under (52), the grammaticality of the sentences in (50) and the ungrammaticality
of the ones in (51) follow. Specifically, in (50), the FNQs are c-commanded by their
associate DPs, while in (51) the FNQs are not c-commanded by their associate DPs
within the PPs. Therefore, under the condition (52), the contrast in (50) and (51) con-
cerns the issue of whether the FNQs are c-commanded by their associate DPs. (52)
can also be extended to the licensing of secondary predicates, as (53) and (54) show.

(53) a. *Hanako-ga   deesuizyootaide odot-ta.*
         Hanako-NOM dead.drunk   dance-PST
         'Hanako danced dead-drunk'
      b. *Taroo-ga katuo-o   namade tabe-ta.*
         Taro-NOM bonito-ACC raw   eat-PST
         'Taro ate the bonito raw.'   (Koizumi 1994: 27)

(54) a. **Taroo-ga [PP [DP Hanako]-kara] kimonosugatade ringo-o   morat-ta.*
         Taro-NOM   Hanako-from kimono.dress   apple-ACC receive-PST
         (Int.) 'Taro received an apple from Hanako in kimono.'
      b. **Hanako-ga [PP [DP kuruma]-de] tyuukode   ki-ta.*
         Hanako-NOM   car-by   second.hand come-PST
         (Int.) 'Hanako came by a car used.'   (Koizumi 1994: 28)

In (53a)–(b), the secondary predicates *deesuizyootaide* 'dead-drunk' and *namade*
'raw' are c-commanded by their associate DPs *Hanako* and *katuo* 'bonito', respec-
tively, and the sentences are grammatical. In (54a)–(b), the secondary predicates

kimonosugatade 'kimono dress' and *tyuukode* 'used' are not c-commanded by their associate DPs *Hanako* and *kuruma* 'car' embedded within the PPs, and the sentences are ungrammatical. Therefore, (52) can correctly capture the distribution of secondary predicates as well as that of FNQs.

Building on the above observations, Kikuchi (1994) claims that possessors within inalienable possessum nominals and the ones within simple nominals behave differently regarding the licensing of FNQs and secondary predicates. Consider the following data.

(55) *Simple Nominal*
 a. *John-ga   [_{DP} *tomodati-no kuruma*]-o *san-nin   norimawasi-ta*.
   John-NOM   friend-GEN car-ACC   three-CL drive.around-PST
   (Int.) 'John drove his three friends' cars around.'
 b. *John-ga   [_{DP} *gakusei-no   tukue*]-o *san-nin kat-ta*.
   John-NOM   student-GEN desk-ACC three-CL buy-PST
   (Int.) 'John bought three students' desks.'
 c. *John-ga   [_{DP} *kodomo-tati-no omotya*]-o *san-nin   kowasi-ta*.
   John-NOM   child-PL-GEN   toy-ACC   three-CL break-PST
   (Int.) 'John broke three children's toys.'   (Kikuchi 1994: 82)

(56) *Simple Nominal*
 a. *Hanako-ga   [_{DP} *katuo-no   hako*]-o *namade hakon-da*.
   Hanako-NOM   bonito-GEN box-ACC raw   carry-PST
   (Int.) 'Hanako carried the box of the bonito raw.'   (Koizumi 1994: 28)
 b. *Hanako-ga   [_{DP} *John-no   tukue*]-o *deesuizyootaide tatai-ta*.
   Hanako-NOM   John-GEN desk-ACC dead.drunk   hit-PST
   (Int.) 'Hanako hit John's desk dead-drunk.'   (Kikuchi 1994: 86)

(57) *Inalienable Possessum Nominal*
 a. *Hanako-wa* [_{DP} *kodomotati-no tume*]-o *san-nin   kit-ta*.
   Hanako-TOP   children-GEN nail-ACC three-CL cut-PST
   'Hanako clipped three children's nails.'
 b. *Ano isha-wa*   [_{DP} *zidoo-no me*]-o   *sanzyuu-nin sirabe-ta*.
   that doctor-TOP   pupil-GEN eye-ACC thirty-CL   examine-PST
   'That doctor examined thirty pupil's eyes.'
 c. *John-ga*   [_{DP} *kodomotati-no yubi*]-o   *zyuu-nin ot-ta*.
   John-NOM   children-GEN finger-ACC ten-CL   break-PST
   'John broke ten children's fingers.'   (Kikuchi 1994: 86)

(58) *Inalienable Possessum Nominal*
 a. *Hanako-ga* [_{DP} *katuo-no   uroko*]-o *namade kezuritot-ta*.
   Hanako-NOM   bonito-GEN scale-ACC raw   strip.away-PST
   'Hanako stripped away the bonito's scales raw.'

b. *Hanako-ga   [_{DP} John-no   kaminoke]-o deesuizyootaide kit-ta.*
Hanako-NOM   John-GEN hair-ACC   dead.drunk   cut-PST
'Hanako cut John's hair dead-drunk.'   (Kikuchi 1994: 86)

In (55) and (56), the genitive possessors within the simple nominals do not c-command the relevant FNQs and secondary predicates, respectively, and the sentences are ungrammatical, which falls under (52).[15] What Kikuchi (1994) observes is that if the host noun of genitive phrases is an inalienable possessum noun, FNQs and secondary predicates are licensed by genitive possessors, as (57) and (58) demonstrate. Specifically, the genitive possessors in (57) and (58), on the surface, do not c-command the associated FNQs and secondary predicates, respectively, but the sentences are all grammatical.[16] Given the c-command condition on FNQs and secondary predicates in (52), Kikuchi claims that genitive possessors within

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15. The c-command condition in (52) is a necessary condition, but not a sufficient condition, as in (i).

(i) **Gakusei-ga   sake-o   san-nin   non-da.*
student-NOM   alcohol-ACC three-CL   drink-PST
(Int.) 'Three students drank alcohol.'

In (i), the DP *gakusei* 'student' c-commands the FNQ *san-nin* 'three-CL', but the sentence is ungrammatical. For relevant discussion regarding examples like (i), see Miyagawa (1989); Nakanishi (2008).

16. Kikuchi (1994) claims that not only inalienable possessum nominals but also event nominals can license FNQs and secondary predicates even if possessors apparently do not c-command them, as in (i) and (ii).

(i) a. *Ano daigaku-ga   [_{DP} ryuugakusei-no   ukeire]-o*
that university-NOM   foreign.student-GEN acceptance-ACC
sanzyuu-nin kotowat-ta.
thirty-CL   refuse-PST
'That university refused the acceptance of thirty foreign students.'

b. *Hitati-ga   [_{DP} gakusei-no saiyoo]-o   sanbyaku-nin   tyuusisi-ta.*
Hitachi-NOM   student-GEN employment-ACC three.hundred-CL cancel-PST
'Hitachi canceled employment of three hundred students.'   (Kikuchi 1994: 83)

(ii) a. *John-ga   [_{DP} kuruma-no koonyuu]-o   tyuukode kime-ta.*
John-NOM   car-GEN   purchase-ACC used   decide-PST
'John decided the purchase of a car used.'

b. *Byooin-ga   [_{DP} John-no ukeire]-o   deesuizyootaide kotowat-ta.*
hospital-NOM   John-GEN acceptance-ACC dead.drunk   refuse-PST
'The hospital refused the acceptance of John dead-drunk.'   (Kikuchi 1994: 86)

Based on the above data, Kikuchi argues that genitive possessors of event nominals can also undergo covert possessor raising in covert syntax. However, Funakoshi (2017) notes the possibility that the FNQs and secondary predicates in sentences like (i) and (ii) may be licensed not by the genitive possessors but by the event nominals themselves. Therefore, throughout the discussion here, I will just refer to inalienable possessor nominals for expository purposes.

inalienable possessum nominals can undergo covert possessor raising out of in-alienable possessum nominals. (57a) is then analyzed as in (59) under Kikuchi's analysis (see also Ogawa 2001; Funakoshi 2017 for relevant discussion).[17]

(59)   Hanako-NOM children-GEN [$_{DP}$ children-GEN nail]-ACC FNQ cut

covert possessor raising

Given the derivation in (59), the C-command condition in (52) can be satisfied covertly, i.e. the genitive possessor is covertly located in a position where it can c-command the relevant FNQ, so the grammaticality of the sentences in (57) and (58) can be captured.[18]

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17. Funakoshi (2017) argues that genitive possessors are located within inalienable possessum nominals on the surface since adverbs cannot intervene between them, as in (i).

(i) a. *Ano isha-wa   [$_{DP}$ zidoo-no kinoo   me]-o   sanzyuu-nin sirabe-ta.*
         that doctor-TOP   pupil-GEN yesterday eye-ACC thirty-CL   examine-PST
         (Int.) 'That doctor examined thirty pupil's eyes yesterday.'

     b. *Hanako-ga   [$_{DP}$ katuo-no   kinoo   uroko]-o   namade kezuritot-ta.*
         Hanako-NOM   bonito-GEN yesterday scale-ACC raw   strip.away-PST
         (Int.) 'Hanako stripped away the bonito's scales raw yesterday.'

(Funakoshi 2017: 177)

If genitive possessors are located outside of inalienable possessum nominals on the surface, it is not clear why adverbs cannot intervene between them. Therefore, it seems safe to conclude that the genitive possessors in the relevant examples are internal to the inailenable possessum nominals in overt syntax.

18. Kikuchi (1994) further makes relevant observations regarding binding. Consider the following examples.

(i) *Condition A*

     a. ?? *Taroo-wa   [$_{DP}$ [John-to   Mary]$_i$-no tukue]-o otagai$_i$-no   hanmaa-de*
         Taroo-TOP   John-and Mary-GEN desk-ACC each.other-GEN hammer-with
         kowasi-ta.
         break-PST
         'Taro broke [$_{DP}$ [John's and Mary's]$_i$ desks] with each other$_i$'s hammers.'

     b. ? *Taroo-wa   [$_{DP}$ [John-to   Mary]$_i$-no kaminoke]-o otagai$_i$-no   hasami-de*
         Taroo-TOP   John-and Mary-GEN hair-ACC   each.other-GEN scissor-with
         kit-ta.
         cut-PST
         'Taro cut [$_{DP}$ [John's and Mary's]$_i$ hair] with each other$_i$'s scissors.'

(Kikuchi 1994: 87)

(ii) *Condition C*

     a. *Mary-ga   kagami-de   [$_{DP}$ kare$_i$-no tukue]-o John$_i$-ni   mise-ta.*
         Mary-NOM mirror-with   he-GEN desk-ACC John-DAT show-PST
         'Taro showed [$_{DP}$ his$_i$ desk] to John$_i$ with a mirror.'

Given that covert possessor raising can be involved in inalienable possessor constructions, the following sentences indicate that the relevant covert movement is possible out of Japanese null arguments.

(60) a. *Ano isha-wa   [$_{DP}$ nezumi-no me]-o   sanzyu-ppiki sirabe-ta.*
       that doctor-TOP   mouse-GEN eye-ACC thirty-CL   examine-PST
       'That doctor examined thirty [$_{DP}$ mice's eyes].'

    b. *Kono isha-wa   [$_{DP}$ nezumi-no me]-o   gozyu-ppiki sirabe-ta.*
       this   doctor-TOP   mouse-GEN eye-ACC fifty-CL   examine-PST
       'This doctor examined fifty [$_{DP}$ mice's eyes].'

    b'. *Kono isha-wa   [$_{DP}$ △] gozyu-ppiki sirabe-ta.*
       this   doctor-TOP   fifty-CL   examine-PST
       (Lit.) 'This doctor examined fifty [$_{DP}$ △].'

(61) a. *Hanako-wa [$_{DP}$ katuo-no   uroko]-o namade kezuritot-ta.*
       Hanako-TOP   bonito-GEN scale-ACC raw   strip.away-PST
       'Hanako stripped away [$_{DP}$ the bonito's scales] raw.'

    b. *Taroo-wa [$_{DP}$ katuo-no   uroko]-o   hankaitoode kezuritot-ta.*
       Taro-TOP   bonito-GEN scale-ACC half.frozen   strip.away-PST
       'Taro stripped away [$_{DP}$ the bonito's scales] half-frozen.'

    b'. *Taroo-wa [$_{DP}$ △]   hankaitoode kezuritot-ta.*
       Taro-TOP   half.frozen   strip.away-PST
       (Lit.) 'Taro stripped away [$_{DP}$ △] half-frozen.'

In (60a), the DP *nezumi* 'mouse' is located inside of the inalienable possessum nominal, but it can license the FNQ *sanzyu-ppiki* 'thirty-CL', which indicates that it is located outside of the relevant nominal covertly, after covert possessor raising.[19] With

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   b. *Mary-ga   kagami-de [$_{DP}$ kare$_i$-no kaminoke]-o John$_i$-ni   mise-ta.*
       Mary-NOM mirror-with   he-GEN hair-ACC   John-DAT show-PST
       'Taro showed [$_{DP}$ his$_i$ hair] to John$_i$ with a mirror.'   (Kikuchi 1987: 88)

Kikuchi claims that the contrast in (ia) and (ib) can be taken as an argument for covert raising of inalienable possessors. Specifically, in (ib), the possessum nominal is hosted by the inalienable nominal *kaminoke* 'hair', so the genitive possessor *John to Mary* 'John and Mary' can undergo covert raising out of the relevant nominal, c-commanding the reflexive pronoun *otagai* 'each other' (Kikuchi attributes the marginally acceptable status of (ia) to specifier binding developed by, e.g. Reinhart 1976 and Kayne 1994, which is observed in cases like *Everyone$_i$'s mother loves him$_i$*, where *everyone* in the specifier position within the subject DP binds out of the DP, licensing the object pronoun *him* as a bound variable). Furthermore, on the basis of the grammaticality of (iia) and (iib), Kikuchi concludes that covert possessor raising is an optional (not obligatory) operation.

19. It is worth noting here that covert possessor raising becomes impossible if the whole part of inalienable possessum nominals is replaced by an overt pronoun *sore* 'it' or *sorera* 'they'. For example, with (60a) as its antecedent, (i) is ungrammatical.

(60a) as its antecedent, both (60b) and (60b′), the latter of which involves covert possessor raising out of the null argument since the FNQ *gozyu-ppiki* 'fifty-CL' is licensed, are grammatical. Also, in (61a), *katuo* 'bonito' occupies the internal position of the host nominal, licensing the secondary predicate *namade* 'raw'. Important for us here is the grammaticality of (61b′), where the genitive possessor *katuo* 'bonito' inside of the null argument externally licenses the secondary predicate *hankaitoode* 'half-frozen'. (60) and (61) thus constitute evidence that covert possessor raising is allowed out of Japanese null arguments.

3.3.3.2　*Possessor raising idiom*

Kishimoto (2013) observes a novel type of possessor raising constructions, namely possessor raising idioms, which he claims involve covert A-movement. Consider (62).

(62)　a.　*[Sono toki-no　koto]-ga　[$_{DP}$ Taroo-no　kioku]-ni*
　　　　　that　time-GEN event-NOM　　Taro-GEN　memory-LOC
　　　　　nokot-te-iru.
　　　　　remain-PROG-PST
　　　　　(Lit.) '[The event at that time] remains in [$_{DP}$ Taro's memory].'
　　　　　≈ 'Taro remembers the event at that time.'
　　　b.　*Taroo$_1$-ni [sono toki-no　koto]-ga　[$_{DP}$ ——$_1$　kioku]-ni*
　　　　　Taro-DAT that　time-GEN event-NOM　　　　memory-LOC
　　　　　nokot-te-iru.
　　　　　remain-PROG-PST
　　　　　(Lit.) 'Taro$_1$, [the event at that time] remains in [$_{DP}$ ——$_1$ memory].'
　　　　　≈ 'Taro remembers the event at that time.'

Although (62a) and (62b) are logically equivalent, *Taro* can either remain in the possessum noun, as in (62a), or be moved out of it, being in dative case, as in (62b).[20] Importantly, Kishimoto claims that even the genitive possessor within the possessum noun in (62a) undergoes covert possessor raising, i.e. silent A-movement, out

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(i)　**Kono isha-wa　sore/sorera-o gozyu-ppiki sirabe-ta.*
　　　this　doctor-TOP it/they-ACC fifty-CL　examine-PST
　　　(Lit.) 'This doctor examined fifty it/them.'

This fact can also be taken as an argument for the presence of internal structure within the null argument in (60b′).

20. For some speakers overt possessor raising cases with dative possessors such as (62b) are marginal, but most speakers including me do accept them. I have nothing interesting to say here regarding this speaker variation. However, because what is important for the current discussion are cases such as (62a) with genitive possessors, not cases such as (62b) with dative possessors, I put aside the dative possessor case in the following for expository reasons.

of it. One of his arguments involves variable binding (see Kishimoto 2013 for other arguments to this effect). Consider the following examples.

(63) a. *Dare-mo$_i$-ga   [[e$_i$ at-ta]   hito]-o   home-ta.*
          who-MO$_\lor$-NOM   meet-PST man-ACC praise-PST
          (Lit.) 'Everyone$_i$ praised [the man [who met e$_i$]].'

      b. **[[e$_i$ at-ta]   hito]-ga   dare-mo$_i$-o   home-ta.*
             meet-PST man-NOM who-MO$_\lor$-ACC praise-PST
          (Lit.) '[The man [who met e$_i$]] praised everyone$_i$.'

      c. *Dare-mo$_{1/i}$-o   [[e$_i$ at-ta] hito]-ga   ___$_1$ home-ta.*
          who-MO$_\lor$-ACC meet-PST man-NOM   praise-PST
          (Lit.) 'Eveyone$_{1/i}$, [the man [who met e$_i$]] praised ___$_1$.'

(64) a. *His$_i$ wife admires [every husband]$_i$.

      b. [Every man]$_{1/i}$ seems to his$_i$ mother ___$_1$ to be smart.

Hoji (1985) observes that Japanese null arguments can serve as a variable bound by a c-commanding operator, as in (63a).[21] The ungrammaticality of (63b) is generally attributed to a weak crossover violation, on a par with (64a). Importantly, the grammaticality of (63c) with the relevant bound variable interpretation indicates that a violation of weak crossover effects can be 'rescued' via clause-internal scrambling, i.e. A-movement (cf. (12b)), on a par with (64b). Kishimoto then claims that the grammaticality of (65a) under the bound variable interpretation signals covert raising, i.e. covert A-movement, of the genitive possessor: he argues that e_i in (65a) is licensed as in (65b).[22]

(65) a. *[[Kyonen e$_i$ si-ta]   koto]-ga   [$_{DP}$ hotondo-no gakusei$_i$-no*
          last.year   do-PST thing-NOM   most-GEN student-GEN
          kioku]-ni   nokot-te-iru.
          memory-LOC remain-PROG-PST
          (Lit.) '[The thing [that e$_i$ did last year]] remains in [$_{DP}$ most students'$_i$ memories].'
          ≈ 'Most students$_i$ remember what they$_i$ did last year.'

      b. <u>most students</u>$_{1/i}$ [[last year e$_i$ did] thing] [$_{DP}$ ___$_1$ memory] remain.
          ⬆_____ *covert possessor raising*

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21. As discussed earlier, it is standardly assumed that the *pro* strategy is also available for null arguments in Japanese (in addition to argument ellipsis). This strategy is employed in (63).

22. For relevant discussion of covert A-movement, see also Polinsky (2009), Polinsky & Potsdam (2013), Deal (2017), and reference cited therein.

In covert syntax, the possessor *hotondo-no gakusei* 'most students' undergoes covert possessor raising, i.e. covert A-movement, from inside of the DP headed by *kioku* 'memory' over the nominative theme argument, licensing the null object in question as a bound variable: covert possessor raising obviates the violation of weak crossover effects in (65a), on a par with (63c) and (64b).[23]

One might wonder whether the bound variable reading here could be licensed via reconstructing the nominative argument (located in an A-position) to a position below the locative argument, as in (66).

(66) $[_{\text{DP}} \ldots e_i \ldots]_1$-NOM $[_{\text{DP}}$ Possessor$_i$ N]-LOC $\underline{}_1$ remain
       reconstruction
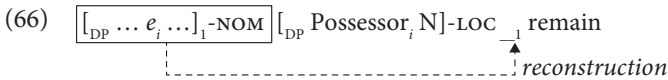
However, Kishimoto provides several arguments against such a view. First, the reconstruction approach would have to provide a lower position than the locative argument for the nominative argument, but this is called into question given that in (65a) what constitutes an idiomatic expression with the verb *nokotteiru* 'remain' is the locative argument, not the nominative argument, so that the latter should not intervene between the former and the relevant verb at the level of underlying structure (see Miyagawa & Tsujioka 2004; Kishimoto 2008; among others, for this effect in Japanese idiom formation). Second, even if a position lower than the locative argument turns out to be available, reconstruction does not rescue the weak crossover violation, as the following examples demonstrate.

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23. One might wonder whether FNQs could be licensed via the relevant covert possessor raising. (i) shows that the answer is negative.

   (i) *[Sono toki-no   koto]-ga   [gakusei-no kioku]-ni   san-nin nokot-te-iru.
          that   time-GEN thing-NOM student-GEN memory-LOC three-CL remain-PROG-PRES
          (Lit.) '[The event at that time] remains in [three students' memories].'
          ≈ 'Three students remember the event at that time.'

Under Kishimoto's analysis, the genitive possessor *gakusei* 'student' within the possessum nominal should undergo covert possessor raising out of it, c-commanding the FNQ *sannin*, but the sentence is unacceptable. However, even overt possessor raising cases do not license FNQs, as shown in (ii).

   (ii) *Gakusei$_1$-ni [sono toki-no   koto]-ga   [___$_1$ kioku]-ni   san-nin
          student-DAT that   time-GEN thing-NOM   memory-LOC three-CL
          nokot-te-iru.
          remain-PROG-PRES
          (Lit.) 'Three students$_1$, [the event at that time] remains in [___$_1$ memories].'
          ≈ 'Three students remember the event at that time.'

As noted in footnote 15, that DPs c-command FNQs is a necessary condition but not a sufficient condition for licensing FNQs. I refer the reader to Miyagawa (1989) and Nakanishi (2008), among others, for relevant discussion.

(67) a. *[[e*ᵢ* nadame-ta] hito]₁-ga   dareᵢ-no   okaasan-kara-mo ____₁
soth-PST   person-NOM anyone-GEN mother-from-MO
home-rare-nakat-ta.
praise-PASS-NEG-PST
(Lit.) '[The person [who soothed himᵢ]]₁ was not praised ____₁ by anyoneᵢ's
mother.'

b. *[[e*ᵢ* nadame-ta] hito]-ga   dareᵢ-no   okaasan-mo home-nakat-ta.*
sooth-PST   person-NOM anyone-GEN mother-MO praise-NEG-PST
(Lit.) '[The person [who soothed himᵢ]] did not praise anyoneᵢ's mother.'
(Kishimoto 2013: 192)

In (67a), the nominative argument undergoes passive movement from a position
lower than the argument which involves a quantifier taken to bind the bound pro-
noun within the nominative argument. Importantly, the relevant bound variable in-
terpretation cannot be obtained on a par with the active voice counterpart in (67b).
This suggests that the bound variable interpretation in (65a) is not related to recon-
struction, which in turn supports the idea that covert possessor raising is responsible
for the relevant bound variable interpretation, given that a quantifier within a nom-
inal cannot license the bound variable in a higher position in ordinary sentences.

Given that Kishimoto's (2013) possessor raising idioms involve covert raising
of possessors, we can test whether such raising is possible out of Japanese null ar-
guments. Interestingly, with (65a), repeated here as (68a) as its antecedent, (68b),
where the possessum nominal is phonologically empty, is grammatical with the
bound variable interpretation.

(68) a. *[[Kyonen e*ᵢ* si-ta]   koto]-ga   [_DP hotondo-no gakuseiᵢ-no*
last.year   do-PST thing-NOM   most-GEN   student-GEN
kioku]-ni   nokot-te-iru.
memory-LOC remain-PROG-PST
(Lit.) '[The thing [that *e*ᵢ did last year]] remains in [_DP most students'ᵢ
memories].'
≈ 'Most studentsᵢ remember what theyᵢ did last year.'

b. *[[Sannenmae-ni   e*ⱼ* si-ta]   koto]-mo [_DP △]   nokot-te-iru.*
three.years.ago-in   do-PST thing-also   remain-PROG-PRES
(Lit.) '[The thing [that *e*ⱼ did three years ago]] also remains in [_DP △].'
≈ 'Most studentsⱼ also remember what theyⱼ did three years ago.'

Here, the possessive operator within the null argument can bind the null object
within the nominative theme argument (also note that the quantifier *most* can
quantify over a different set in (68a) and (68b)). This can be accounted for if the
null argument is derived via ellipsis of the locative DP *hotondo-no gakusei-no kioku*
'most student's memory', with the possessor undergoing covert A-movement out of

the ellipsis site. (68b) is then derived in the same way as (65). The grammaticality of (68b) then indicates that covert possessor raising, i.e. silent A-movement, is also possible out of Japanese null arguments.[24]

3.4   Summary of the chapter and implications for *pro* and verb-stranding verb phrase ellipsis

In this chapter, I investigated the internal structure of Japanese null arguments, exploiting extraction possibilities as a tool to detect it. First, I introduced the distinction between two types of anaphora, i.e. surface anaphora, e.g. VP-ellipsis, and deep anaphora, e.g. *do it* (cf. Hankamer & Sag 1976), on the basis of the (im)possibility of extraction out of anaphora sites. It has been observed in the literature that only surface anaphora includes internal structure, thereby allowing extraction out of its domain, since it can accommodate an appropriate position for the origin of movement. On the other hand, deep anaphora does not include any internal structure, hence it is unable to accommodate a position for the origin of movement, so extraction is banned out of its domain. In light of the distinction between surface anaphora and deep anaphora, I investigated how Japanese null arguments, which can involve ellipsis, i.e. surface anaphora, via the argument ellipsis strategy, as extensively discussed in Chapter 2, fare with respect to the above distinctions. That is, if Japanese null arguments can be elliptic, as is standardly assumed, they should behave as surface anaphora regarding extraction out of them. More specifically, it is then expected that Japanese null arguments should allow extraction out of them, which is an indication of the presence of internal structure. The observations made in this chapter in this respect can be summarized as follows.

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24. It is also worth noting here that Kishimoto (2013) observes that the genitive possessor remaining within possessum nominals can take scope over the nominative thematic argument, as in (ia). Given this, the availability of inverse scope in (ib) may also provide an argument for the claim that silent movement is possible out of Japanese null arguments.

(i) a. *[Sishunki-no   nanika]-ga   [$_{DP}$ hotondo-no otona-no kioku]-ni*
         adolescence-GEN something-NOM   most-GEN   adult-GEN memory-LOC
         nokot-te-iru.   ✓∃» *most*;✓ *most* »∃
         remain-PROG-PRES
         (Lit.) '[Something in their$_i$ adolescence] remains in [$_{DP}$ most adults'$_i$ memories].'
         ≈ 'Most adults$_i$ remember something in their$_i$ adolescence.'

   b. *[Yooshooki-no nanika]-mo   [$_{DP}$ △] nokot-te-iru.*   ✓∃» *most*;✓ *most* »∃
         childhood-GEN something-also   remain-PROG-PRES
         (Lit.) '[Something in their$_j$ childhood] also remains in [$_{DP}$ △].'
   'Most adults$_j$ remember something in their$_j$ childhood too.'

(69) *Impossible Extraction out of Japanese Null Arguments*
  a. Long-distance scrambling, *Wh*-movement (Section 3.2.1)
  b. Pseudoraising and Raising-to-Object (Section 3.2.2)
  c. PP left-branch extraction (Section 3.2.3)

(70) *Possible Extraction out of Japanese Null Arguments*
  a. Null operator movement (Section 3.3.1)
  b. QR (Section 3.3.2)
  c. Covert possessor raising (Section 3.3.3)

What is important for our purposes is that Japanese null arguments do in fact allow certain types of extraction out of them. On the basis of the types of movement in (69) and (70), I conclude that covert movement, more precisely, movement that does not affect word order (see footnote 8), is allowed out of Japanese null arguments. The fact that certain types of extraction are possible out of Japanese null arguments has an important consequence for the *pro* versus ellipsis debate regarding the analysis of Japanese null arguments. To be more specific, although it is generally assumed in the literature that Japanese null arguments can be elliptic, as extensively discussed in Chapter 2, this assumption is in fact far from uncontroversial. For example, authors like Hoji (1998, 2003), Tomioka (1998, 2003, 2014), Kurafuji (1999), and Kasai (2014) claim that the evidence that was taken in the previous literature to argue for the ellipsis analysis should/can be treated via *pro*, this being the only option for Japanese null arguments for them. However, that Japanese null arguments allow extraction out of them, as was shown in the above discussion, is unexpected if they are uniformly *pro* since *pro* is by assumption an instance of deep anaphora such as *do it*, which should not include any internal structure. In other words, the uniform *pro* analysis of Japanese null arguments would wrongly predict extraction to be uniformly banned out of them; that it is not then provides evidence that Japanese null arguments can be derived via ellipsis. However, I have also shown that Japanese null arguments exhibit different behavior from VP-ellipsis, which shows uniform extraction possibilities in that extraction is uniformly allowed out of its domain (i.e. both overt and covert extraction is allowed): Japanese null arguments show an overt/covert extraction contrast, allowing covert, but not overt extraction out of them (in fact, regardless of the type of movement, i.e. A or Ā, or their domain, i.e. clausal or nominal). The discrepancy between Japanese null arguments and VP-ellipsis with respect to the possibility of overt extraction is a problem for the VVPE analysis of Japanese null arguments, on which we would expect that Japanese null arguments and VP-ellipsis should exhibit the same behavior in the relevant respect. Consider in this respect the following examples.

(71) *Ā-movement out of a VP-ellipsis Site*
I know which book$_1$ Mary [$_{VP}$ read ___$_1$], and which book$_2$ Bill didn't [$_{VP}$ read ___$_2$].

(72) *A-movement out of a VP-ellipsis Site*
John$_1$ might be visited ___$_1$ by Sally, and Fred$_2$ might be visited ___$_2$ by Sally too.

(73) *Ā-movement out of a Null CP*
   a. *Sono hon$_1$-o   Taroo-wa [$_{CP}$ Hanako-ga   ___$_1$ kat-ta   to] it-ta.*
       that book-ACC Taro-TOP   Hanako-NOM   buy-PST C say-PST
       (Lit.) 'That book$_1$, Taro said [$_{CP}$ that Hanako bought ___$_1$].'
   b. **Sono hon$_2$-o   Ziroo-wa [$_{CP}$ △] it-ta.*
       that book-ACC Ziro-TOP   say-PST
       (Lit.) 'That book$_2$, Ziro said [$_{CP}$ △].'   (cf. Saito 2007: 210)

(74) *A-movement out of a Null CP*
   a. *Taroo-wa Kanako$_1$-o   orokanimo [$_{CP}$ ___$_1$ tensai da*
       Taro-TOP Kanako-ACC stupidly   genius COP.PRES
       to] shutyoosi-ta.
       C   claim-PST
       (Lit.) 'Taro, Kanako$_1$, stupidly claimed [$_{CP}$ that ___$_1$ is a genius].'
   b. **Ziroo-wa Ayaka$_2$-o   orokanimo [$_{CP}$ △] shutyoosi-ta.*
       Ziro-TOP Ayaka-ACC stupidly   claim-PST
       (Lit.) 'Ziro, Ayaka$_2$, stupidly claimed [$_{CP}$ △].'

As discussed in Section 3.1, both overt Ā- and A-extraction are possible out of English VP-ellipsis sites, as in (71) and (72). On the other hand, neither overt Ā-nor A-movement is allowed out of Japanese null arguments. If VVPE is available in Japanese, nothing seems to prohibit the VVPE derivation for the null arguments in (73b) and (74b), which would then be analyzed as in (75a) and (75b), respectively.

(75) a.

b.
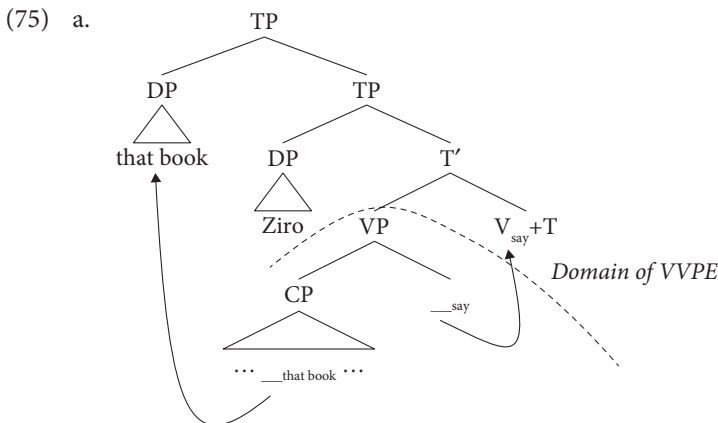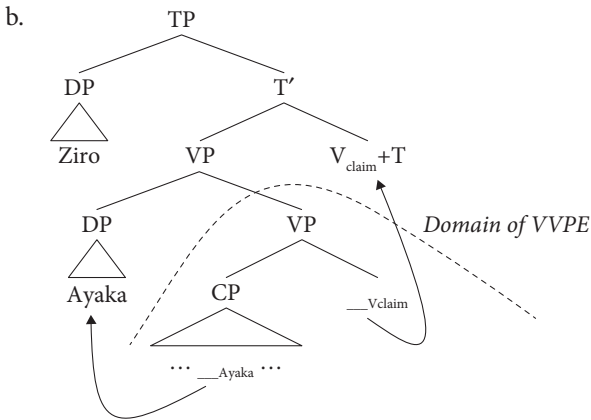
In (75a), the matrix verb *say* undergoes overt movement to T, which is followed by VP-ellipsis, the VP in question containing the embedded CP. The NP *that book* is extracted out of the VP-ellipsis domain via overt Ā-movement. In (75b), the matrix verb *claim* is overtly raised to T followed by VP-ellipsis that includes the embedded CP, and the DP *Ayaka* is extracted out of the VP-ellipsis domain via overt A-movement. Importantly, both derivations involve overt extraction out of the VP-ellipsis domain, which is independently known to be possible, as in (71) and (72). Thus, under the VVPE analysis, both (73b) and (74b) should be grammatical, on a par with (71) and (72), contrary to the fact. Therefore, the ungrammaticality of (73b) and (74b) can be taken to indicate that Japanese null arguments do not behave as VP-ellipsis regarding the overt extraction possibility: the VVPE analysis of Japanese null arguments faces an overgeneration problem here.

Incorporating extraction possibilities out of typical instances of surface anaphora, e.g. VP-ellipsis, and deep anaphora, e.g. *do it*, into the picture, we obtain the following table regarding extraction out of the anaphora sites in question.

Table 3.1 Summary of extraction possibilities

	Overt extraction	Covert extraction
VP-ellipsis (Surface Anaphora)	✓	✓
NCA (Deep Anaphora)	✗	✗
Japanese Null Arguments	✗	✓

As the table here illustrates, the extraction pattern out of Japanese null arguments adds a novel type of ellipsis to the relevant typology in that such elements exhibit non-uniform behavior, i.e. an overt/covert extraction contrast, with respect to extraction out of their domain. A question arises as to how the extraction pattern

exhibited by Japanese null arguments should be captured theoretically. Before moving on to a concrete analysis, in the next chapter, I will examine null arguments in other languages where argument ellipsis has been claimed to be available in light of extraction possibilities. The expectation here is that if the overt/covert extraction asymmetry is a by-product of the process which yields elliptic arguments, i.e. the argument ellipsis analysis, null arguments derived via argument ellipsis in other languages should also exhibit the relevant contrast. It will be shown that the expectation is indeed borne out: null arguments which are derived via argument ellipsis cross-linguistically exhibit the relevant overt/covert asymmetry regarding extraction out of them.

Appendix: Overt clausal proform *soo* 'so'

In this appendix, I will discuss the overt clausal "proform" *soo* 'so', focusing on extraction possibilities. In Japanese, clausal complements can be replaced by *soo* 'so', as in (76) (cf. Nakau 1973; Hasegawa 1980; Tanaka 2008).

(76) a. *Taroo-wa [CP Hanako-ga   uti-ni   kaet-ta   to] omot-te-iru.*
          Taro-TOP   Hanako-NOM home-to return-PST C   think-PROG-PRES
          'Taro thinks [CP that Hanako returned home].'

     b. *Ziroo-mo [CP soo] omot-te-iru.*
          Ziro-also   so   think-PROG-PRES
          'Ziro also thinks [CP so].'

If *soo* 'so' is an instance of deep anaphora such as English *do it* (cf. Section 3.1), it is expected that extraction should be uniformly disallowed out of its domain. However, this is not the case. Specifically, covert extraction is possible out of a clausal *soo* 'so' site in Japanese, as the following examples demonstrate (I will only discuss comparative deletion, PP *tough* constructions, and one case of QR here: the other tests discussed above which show that covert extraction is possible out of Japanese null arguments behave exactly in the same way in the relevant respect).

(77) *Comparative Deletion*
     a. *[[Op₁ [CP Taroo-ga   ___₁ yon-da   to] Kanako-ni iw-are-te-iru]*
                   Taro-NOM   read-PST C   Kanako-by say-PASS-PROG-PRES
          yori(mo)] Hanako_i-wa takusan hon-o   yon-de-ita.
          than   Hanako-TOP many   book-ACC have-PROG-PRES
          (Lit.) 'Hanako_i read more books [than [Op₁ it is said by Kanako [CP that Taro read ___₁]]].'

b. *Sarani,*   *[[Op₂ [_{CP} soo] Ayaka-ni iw-are-te-iru   yori(mo)]*
   furthermore   so   Ayaka-by say-PASS-PROG-PRES than
   kanozyo_i-wa takusan hon-o   yon-de-ita.
   she-TOP   many   book-ACC have-PROG-PRES
   (Lit.) 'Furthermore, she_i read more books [than [Op₂ it is said by Ayaka
   [_{CP} so]]].'

(78) *PPT*

a. *Hahaoya-kara_i-ga Taroo-nitotte-wa [Op₁ [_{CP} ___₁/ᵢ aizyoo-o*
   mother-from-NOM Taro-for-TOP   love-ACC
   uke-te-iru   to] kanzi]-yasu-i.
   receive-PROG-PRES C   feel-easy-PRES
   (Lit.) 'From his mother_i is easy for Taro [Op₁ to feel [_{CP} that he receives
   love ___₁]].'

b. *Titioya-kara_j-ga   Ziroo-nitotte-wa [Op₂ [_{CP} soo] kanzi]-yasu-i.*
   father-from-NOM Ziro-for-TOP   so   feel-easy-PRES
   (Lit.) 'From his father_j is easy for Ziro [Op₂ to feel [_{CP} so]].'

(79) *QR*

a. *Kyonen-wa   Yamada sensei-ga   [_{CP} daiamondo-mitaini subete-no*
   last.year-TOP Yamada teacher-NOM   diamond-like   all-GEN
   sinnyuusei-o   kagayai-te-iru   to] iwa-nakat-ta.
   freshman-ACC shine-PROG-PRES C   say-NEG-PST
   (Lit.) 'Last year, Prof. Yamada did not say [_{CP} that, like a diamond, all the
   freshman students are shining].'   Neg »∀;∀» Neg

b. *Kotosi-wa   Tanaka sensei-ga   [_{CP} soo] iwa-nakat-ta.*
   this.year-TOP Tanaka teacher-NOM   so   say-NEG-PST
   (Lit.) 'This year, Prof. Tanaka did not say [_{CP} so].'   Neg »∀;∀» Neg

The grammaticality of (77b) and (78b) indicates that null operator movement is possible out of a clausal *soo* 'so' site, and the availability of the inverse scope interpretation in (79b) shows that QR is allowed out of the relevant domain. Then, one might wonder whether the above data would undermine the claim that Japanese null arguments can be elliptic on the basis of the covert extraction possibility out of them. Specifically, one could argue that Japanese null arguments could be a covert instance of the proform *soo* 'so', which apparently allows covert extraction out if its domain, using this to argue that the ellipsis strategy is not necessary to account for the possibility of extraction out of Japanese null arguments. However, I maintain that the above data do not undermine the ellipsis view on Japanese null arguments. First, the overt clausal proform *soo* 'so' is highly exceptional, i.e. *soo* 'so' does not exhibit the general behavior of overt pronouns. For example, other types of overt proforms such as *do it*, *do so*, *do that*, clausal *it*, *so*, *that*, among

others, uniformly disallow covert extraction out of their domains (cf. Depiante 2000; Merchant 2013b), as the following examples show.

(80) *Null Operator Movement*
   a.   Max talked to everyone Op that Bill did △.
   b.   *Max talked to everyone Op that Bill *did it*.   (Fiengo &May 1994: 247)
   c.   *The boys put everything Op that he could *do so* in the car.
                                                             (Carlson 1977: 528)
   d.   *I examine every student Op that John *does that*.
                                                       (Cecchetto & Percus 2006: 10)
   e.   *This is the book Op$_1$ that you believe [$_{CP}$ that Nancy has read ___$_1$], and this is the book Op that I believe [$_{CP}$ *it/so/that*].

(81) *QR*
   a.   Some boy admires every teacher. Some girl does △ too.
                                                   ∃»∀;∀»∃ (Fox 2000: 4)
   b.   One of the boys met every teacher and one of the girls *did it* too.
                                                   ∃»∀;*∀»∃ (Depiante 2000: 95)
   c.   One of the boys likes every teacher and one of the girls *does so* too.
                                  ∃»∀;*∀»∃ (Depiante 2000: 94; attributed to Fox 1995)
   d.   A security agent inspected every plane and a technician *did that* too.
                                        ∃»∀;*∀»∃ (Cecchetto & Percus 2006: 10)
   e.   Some boy believes everyone to be a genius, and some girl believes *it/so/that* too.   ∃»∀;*∀»∃

In (80) and (81), the VP-ellipsis case (a) allows both null operator movement and QR out of the relevant domain, whereas the overt proform cases in (b–e) uniformly disallow these movements out of their domains. The overt clausal proform *soo* 'so' thus seems to be highly exceptional in the relevant respect.

   One crucial syntactic difference between the overt clausal proform *soo* 'so' and the other overt proforms discussed in (80) and (81), which in fact provides a clue for the analysis of the exceptional behavior of *soo* 'so', is that the former can co-occur with its 'associate' (cf. Tanaka 2008; Sakamoto 2016c), while the latter cannot. Consider the following examples.

(82) *Comparative Deletion*
   a.   *[[Op$_1$ [$_{CP}$ Taroo-ga ___$_1$ yon-da   to] Kanako-ni iw-are-te-iru]*
            Taro-NOM   read-PST c Kanako-by say-PASS-PROG-PRES
        yori(mo)] Hanako$_i$-wa takusan hon-o   yon-de-ita.
        than   Hanako-TOP many   book-ACC have-PROG-PRES
        (Lit.) 'Hanako$_i$ read more books [than [Op$_1$ it is said by Kanako [$_{CP}$ that Taro read ___$_1$]]].'

b. *Sarani, [[Op$_2$ [$_{CP}$ Taroo-ga ___$_2$ yon-da   to] soo Ayaka-ni*
furthermore Taro-NOM   read-PST C   so Ayaka-by
iw-are-te-iru]   yori(mo)] kanozyo$_i$-wa takusan hon-o
say-PASS-PROG-PRES than   she-TOP   many   book-ACC
yon-de-ita.
have-PROG-PRES
(Lit.) 'Furthermore, she$_i$ read more books [than [Op$_2$ it is said by Ayaka so, [$_{CP}$ that Taro read ___$_2$]]].'

(83) *PPT*
  a. *Hahaoya-kara$_i$-ga Taroo-nitotte-wa [Op$_1$ [$_{CP}$ ___$_{1/i}$ aizyoo-o*
  mother-from-NOM Taro-for-TOP   love-ACC
  uke-te-iru   to] kanzi]-yasu-i.
  receive-PROG-PRES to] C   feel-easy-PRES
  (Lit.) 'From his mother$_i$ is easy for Taro [Op$_1$ to feel [$_{CP}$ that he receives love ___$_{1/i}$]].'

  b. *Titioya-kara$_j$-ga   Ziroo-nitotte-wa [Op$_2$ [$_{CP}$ ___$_{2/j}$ aizyoo-o*
  father-from-NOM Ziro-for-TOP   love-ACC
  uke-te-iru   to] soo kanzi]-yasu-i.
  receive-PROG-PRES C   so feel-easy-PRES
  (Lit.) 'From his father$_j$ is easy for Ziro [Op$_2$ to feel so, [$_{CP}$ that he receives love ___$_{2/j}$]].'

(84) *QR*
  a. *Kyonen-wa   Yamada sensei-ga   [$_{CP}$ daiamondo-mitaini subete-no*
  last.year-TOP Yamada teacher-NOM   diamond-like   all-GEN
  sinnyuusei-o kagayai-te-iru   to] iwa-nakat-ta.   Neg »∀;∀» Neg
  freshman-ACC shine-PROG-PRES C   say-NEG-PST
  (Lit.) 'Last year, Prof. Yamada did not say [$_{CP}$ that, like a diamond, all the freshman students are shining].'

  b. *Kotosi-wa   Tanaka sensei-ga   [$_{CP}$ daiamondo-mitaini subete-no*
  this.year-TOP Tanaka teacher-NOM   diamond-like   all-GEN
  sinnyuusei-o kagayai-te-iru   to] soo iwa-nakat-ta.   Neg »∀;∀» Neg
  freshman-ACC shine-PROG-PRES C   so say-NEG-PST
  (Lit.) 'This year, Prof. Tanaka did not say so, [$_{CP}$ that, like a diamond, all the freshman students are shining].'

(85) *English Overt Pro-forms*
  a. *John [kissed Mary], and Bill did it [kiss Mary].
  b. *John [kissed Mary], and Bill did so [kiss Mary].
  c. *John [kissed Mary], and Bill did that [kiss Mary].
  d. *John believes [that Mary is smart], and Bill believes it/so/that [that Mary is smart].

(82b), (83b), and (84b) demonstrate that it is possible to have the overt clausal proform *soo* 'so' and the relevant CP at the same time. (85), on the other hand, shows that other types of overt proforms cannot generally co-occur with their 'associates'. Based on the fact that the overt proform *soo* 'so' and its 'associate' CP can co-occur, Tanaka (2008) claims that there are two types of *soo* 'so', namely the clausal proform *soo* 'so' and the adverbial *soo* 'so', and Sakamoto (2016c) claims that the overt proform *soo* 'so' takes its 'associate' CP as its complement and that the CP can optionally undergo ellipsis. What is important here is that the presence of the proform *soo* 'so' does not rule out the presence of a clause, as the above examples show. The relevant CP can be elided, which we have seen above is independently possible in Japanese, an analysis which was in fact argued for in Sakamoto (2016c). Whether we take Tanaka's (2008) analysis or Sakamoto's (2016c) analysis, crucial for the discussion in the book is that the availability of the bound variable interpretation in (77b) and (78b) and the availability of the inverse scope reading in (79b) with the overt proform *soo* 'so' do not undermine the claim that covert extraction is allowed out of Japanese null CPs since they can be derived as in (86a), (86b), and (86c), respectively.

(86)   a.   *Comparative Deletion*
             …, she reads more papers [than Op_2 it is said by Ayaka so [$_{CP}$ that Taro read __$_2$]]

       b.   *PP* Tough *Construction*
             From his father is easy for Ziro [Op_2 to feel so [$_{CP}$ that he receives love __$_2$]]

       c.   *QR*
             Ziro also did not say so [$_{CP}$ that, like a diamond, all the freshman students are shining]

Here, covert movement takes place out of null CPs with the overt proform *soo* 'so' outside of it (*soo* 'so' thus co-occurs here with a CP, which we know is independently possible). I refer the reader to Tanaka (2008) and Sakamoto (2016c) for more discussion regarding the overt clausal proform *soo* 'so' in Japanese. What is important for our current purposes is that *soo* 'so' can co-occur with a clause; since this clause can undergo ellipsis, it is not surprising that *soo* 'so' constructions appear to behave like argument ellipsis constructions regarding extraction (for another case where a pronominal element co-occurs with a phrase that undergoes argument ellipsis, see Bošković 2017, 2018).

Cross-linguistic investigations into silent arguments

In this chapter, I will investigate null arguments in several languages where argument ellipsis has been independently claimed to be available, namely Chinese (Cheng 2013), Korean (Kim 1999; Takahashi 2007), Mongolian (Takahashi 2007; Sakamoto 2012), and Turkish (Şener & Takahashi 2010), paying special attention to extraction possibilities out of them. In Section 4.1, I will provide background on null arguments in the above languages, showing that they pass the usual tests for argument ellipsis. In Section 4.2, I will investigate overt extraction possibilities out of null arguments in the relevant languages, using long-distance scrambling, and ECM-movement, among others. In Section 4.3, I will examine whether covert extraction is allowed out of null arguments in the relevant languages, using null operator movement and QR, among others. Section 4.4 will summarize the chapter.

4.1   Argument ellipsis in Chinese, Korean, Mongolian, and Turkish

4.1.1   Background

4.1.1.1   *Null arguments in Chinese, Korean, Mongolian, and Turkish*
Chinese, Korean, Mongolian, and Turkish (CKMT, hereafter) are all radical *pro*-drop languages in that arguments such as subjects and objects can be phonologically dropped under an appropriate context even when there is no agreement that could "recover" their interpretations (see Huang 1984, 1989, 1991a, 1999; Xu 1986; G. Li 2002; Lin 2005; Ting & Huang 2008; Lin & Liao 2011; Sigurðsson 2011; Cheng 2013; A. Li 2014; Liu 2014; among many others, for Chinese; Otani & Whitman 1991; Park 1994, 1997, 2014a, b; J.-S. Kim 1997; J.-S. Lee 1997, 2016; Kim 1999; Ahn & Cho 2009; Um 2011; W. Lee 2014, 2016; Moon 2015; among many others, for Korean; Takahashi 2007; Sakamoto 2012 for Mongolian; and Erguvanlı-Taylan 1984; Kornfilt 1987; 1997; Özsoy 1988; Turan 1995; Aygen 2001; Öztürk 2004; Şener & Takahashi 2010; among others, for Turkish).[1] Consider the following examples.

---

1.   Note that Turkish does have subject agreement, but it does not have object agreement.

(1)   Korean
    a.   A: *Nwu-ka   Chelswu$_i$-lul   piphanha-yss ni?*
               who-NOM Chelswu-ACC criticize-PST Q
               'Who criticized Chelswu$_i$?'
        B: *Yenghui-ka   △$_i$ piphanha-yss-ta.*
               Yenghui-NOM   criticize-PST-DECL
               (Lit.) 'Yenghi criticized △$_i$.'
    b.   A: *Chelswu$_i$-ka   nwukwu-ul piphanha-yss ni?*
               Chelswu-NOM who-ACC   criticize-PST Q
               (Lit.) 'Chelswu$_i$ criticized who?'
        B: △$_i$ *Yenghui-lul   piphanha-yss-ta.*
                   Yenghui-ACC criticize-PST-DECL
               (Lit.) '△$_i$ criticized Yenghui.'

(2)   Mongolian
    a.   A: *Ken-Ø   Ulayan$_i$-i   sigümjile-gsen   bui?*
               who-NOM Ulagan-ACC criticize-PST.ADN Q
               'Who criticized Ulagan$_i$?'
         B: *Bayatur-Ø   △$_i$ sigümjile-jei.*
               Bagatur-NOM   critciize-PST.CON
               (Lit.) 'Bagatur criticized △$_i$.'
    b.   A: *Bayatur$_i$-Ø   ken-i   sigümjile-gsen   bui?*
               Bagatur-NOM who-ACC criticize-PST.ADN Q
               (Lit.) 'Bagatur$_i$ criticized who?'
         B: △$_i$ *Ulayan-i   sigümjile-jei.*
                   Ulagan-ACC crticize-PST.CON
               (Lit.) '△$_i$ criticized Ulagan.'

(3)   Turkish
    a.   A: *Kim-Ø   Ahmet$_i$-i   eleştir-di?*
               who-NOM Ahmet-ACC criticize-PST.3SG
                'Who criticized Ahmet$_i$?'
         B: *Ayşe-Ø   △$_i$ eleştir-di.*
               Ayşe-NOM   criticize-PST.3SG
               (Lit.) 'Ayşe criticized △$_i$.'
    b.   A: *Ahmet$_i$-Ø   kim-i   eleştir-di?*
               Ahmet-NOM who-ACC criticize-PST.3SG
               (Lit.) 'Ahmet$_i$ criticized who?'
         B: △$_i$ *Ayşe-yi   eleştir-di.*
                   Ayşe-ACC criticize-PST.3SG
               (Lit.) '△$_i$ criticized Ayşe.'

(4)   Chinese
  a.   A: *Shui piping-guo   Zhangsan$_i$?*
      who criticize-ASP Zhangsan
      'Who criticized Zhangsan$_i$?'
      B: *Mali piping-guo △$_i$.*
      Mali criticize-ASP
      (Lit.) 'Mali criticized △$_i$.'
  b.   A: *Zhangsan$_i$ piping-guo   shui?*
      Zhangsan criticize-ASP who
      (Lit.) 'Zhangsan$_i$ criticized who?'
      B: △$_i$ *piping-guo   Mali.*
        criticize-ASP Mali
      (Lit.) '△$_i$ criticized Mali.'

In the above examples, with the (A) sentences as their antecedents, the (B) sentences all involve null arguments. Among the (B) sentences, the (a) examples involve null objects, and the (b) examples null subjects. Although the (B) sentences in the above examples are all phonologically 'incomplete', they can be interpreted appropriately. For example, the null object and the null subject in the Korean case (1a)–(B) and (1b)–(B) can be interpreted as Chelswu.

As in Japanese, CKMT allow not only nominal arguments but also clausal arguments to be phonologically dropped, as the following examples demonstrate.[2]

---

2.   Li (2005, 2007, 2014) claims that *think*-type verbs such as *yiwei* 'thought' which cannot take DPs as their complements do not allow CP-drop, as in (i) (the judgment here is taken from Li 2014).

(i)   **Wo yiwei [$_{CP}$ ta hen congming]; tamen ye   yiwei [$_{CP}$ △].*
      I   think   he very smart   they   also think
      (Lit.) 'I thought [$_{CP}$ he was smart]; they thought [$_{CP}$ △], too.'   (adapted from Li 2014: 62)

However, Cheng (2013) claims that (i) is acceptable for him and other native speakers he consulted. Then, he suggests that CP-drop in Chinese may require contrast so that Li's example (i) sounds degraded to some speakers since the example lacks contrast. Sentences such as (ii), where the antecedent sentence and the target sentence are clearly contrastive, which is confirmed by the presence of *que* 'whereas', uniformly allow CP-drop (the judgment is here taken from Cheng 2013).

(ii)   *Wo renwei [$_{CP}$ Zhangsan hen congming]. Tamen que   bu   renwei [$_{CP}$ △].*
      I   think   Zhangsan very smart   they   whereas NEG think
      (Lit.) 'I think [$_{CP}$ Zhangsan is very smart]. On the other hand, they do not think [$_{CP}$ △].'
                                                            (Cheng 2013: 180)

It appears that CP-drop in Turkish may also require such contrast. Specifically, if we remove *dün* 'yesterday' and *bugün* 'today' from (7a) and (7b), respectively, the sentences become degraded to my informants (see also Cheng 2013 for a relevant observation). At any rate, for my consultants for Chinese (all of them linguists), *juede* 'feel' easily allows CP-drop without any contrast, so I will use it throughout the discussion of CP-drop in Chinese.

(5)   Korean

    a.   *Chelswu-nun [$_{CP}$ Mia-ka   i   chayk-ul sa-ss-ta-ko]*
       Chelswu-TOP   Mia-NOM this book-ACC buy-PST-DECL-C
       sayngkakha-n-ta.
       think-PRES-DECL
       'Chelswu thinks [$_{CP}$ that Mia bought this book].'

    b.   *Yenghui-to   [$_{CP}$ △] sayngkakha-n-ta.*
       Yenghui-also   think-PRES-DECL
       (Lit.) 'Yenghui also thinks [$_{CP}$ △].'

(6)   Mongolian

    a.   *Bayatur-Ø   bol [$_{CP}$ Batu-Ø   ene šigr-i   ide-gsen   gejü]*
       Bagatur-NOM TOP   Batu-NOM this candy-ACC eat-PST.ADN C
       bodoju bai-na.
       think   COP-PRES
       'Bagatur thinks [$_{CP}$ that Batu ate this candy].'

    b.   *Ulayan-Ø   basa [$_{CP}$ △] bodoju bai-na.*
       Ulagan-NOM also   think   COP-PRES
       (Lit.) 'Ulagan also thinks [$_{CP}$ △].'

(7)   Turkish[3]

    a.   *Ahmet-Ø   [$_{CP}$ Mete-nin araba-sın-ı   yıka-dığ-ın]-ı*
       Ahmet-NOM   Mete-GEN car-3SG.POSS-ACC wash-NML.3SG-ACC
       dün   düşün-dü.
       yesterday think-PST.3SG
       'Yesterday, Ahmet thought [$_{CP}$ that Mete washed a car].'

---

3.   Embedded clauses in Turkish can be alternatively introduced by the complementizer *diye*, as in (i).

  (i)   *Ahmet-Ø   [$_{CP}$ Mete-Ø   bu araba-sın-ı   yika-dı   diye] düsün-dü.*
     Ahmet-NOM   Mete-NOM this car-3SG.POSS-ACC wash-PST.3SG C   think-PST.3SG
     'Ahmet thinks [$_{CP}$ that Mete washed this car].'

Embedded clause with the complementizer *diye* can also be phonologically null, as in (ii).

  (ii) *Can-Ø   dün-den   beri [$_{CP}$ Mete-Ø   Ali-yi gör-dü   diye]*
     Can-NOM yesterday-ABL since   Mete-NOM Ali-ACC see-PST.3SG C
     düşün-üyor. Aylin-Ø   de bügun-den beri [$_{CP}$ △] düşün-üyor.
     think-PRES.3SG Aylin-NOM TOP today-ABL since   think-PRES.3SG
     (Lit.) 'Can has thought since yesterday [$_{CP}$ that Mete saw Ali]. Can has thought since today [$_{CP}$ △].'

In this book, unless otherwise noted, I will use *dik*-clauses such as (7), which involve genitive subjects with nominal agreement on embedded verbs, for embedded clauses in Turkish for expository purposes.

    b.   *Ayşe-Ø   de   [$_{CP}$ △] bugün düşün-dü.*
       Ayşe-NOM TOP   today think-PST.3SG
       (Lit.) 'Today, Ayşe thought [$_{CP}$ △]'

(8) Chinese
    a.   *Zhangsan juede [$_{CP}$ Lisi mai -le   na-ben shu].*
       Zhangsan feel   Lisi buy-ASP that-CL book
       'Zhangsan feels [$_{CP}$ that Lisi bought that book].'
    b.   *Mali ye juede [$_{CP}$ △].*
       Mali also feel
       (Lit.) 'Mali also feels [$_{CP}$ △].'

With the (a) examples as their antecedents, the (b) examples can be interpreted as if nothing was omitted: the null CPs in the (b) examples can be assigned the same interpretation as the ones in the (a) examples. For example, taking (5a) as its antecedent, the Korean case (5b) means that Yenghui also thinks that Mia bought this book. Therefore, CP-drop is possible in the relevant languages.

    In the literature, null arguments in CKMT have been claimed to be derived via either *pro* or argument ellipsis, on a par with those in Japanese (see Cheng 2013 for Chinese; Kim 1999; Takahashi 2007 for Korean; Takahashi 2007; Sakamoto 2012 for Mongolian; and Şener & Takahashi 2010 for Turkish). In the following, I introduce several arguments for the ellipsis analysis of null arguments in the relevant langauges, also providing supporting evidence for the availability of argument ellipsis, on the basis of the diagnostics discussed in Chapter 2.

4.1.1.2 *Argument for ellipsis I: Obviation of condition B*

The first diagnostic for ellipsis that I will use is related to the condition B of the binding theory. Specifically, CKMT null arguments can obviate a violation of the binding condition B under an appropriate context.[4] Consider the following examples.

(9) Korean
    *Chelswu$_i$/Motuwu$_i$-ka   △$_i$ piphanha-yss-ta.
    Chelswu/everyone-NOM   criticize-PST-DECL
    (Lit.) 'Chelswu$_i$/Everyone$_i$ criticized △$_i$.'

(10) Mongolian
    *Bayatur$_i$/Kümün bükün$_i$-Ø △$_i$ sigümjile-jei.
    Bagatur/eveyone-NOM   criticize-PST.CON
    (Lit.) 'Bagatur$_i$/Everyone$_i$ criticized △$_i$.'

---

4. For discussion of the binding condition B in the literature in the languages in question, see, e.g. Xu (1986) for Chinese, Park (2014b) for Korean, and Şener & Takahashi (2010) for Turkish.

(11)   Tukrish
   *$Ahmet_i$/$Herkes_i$-Ø $\triangle_i$ eleştir-di.
   Ahmet/everyone-NOM   criticize-PST.3SG
   (Lit.) 'Ahmet$_i$/Everyone$_i$ criticized $\triangle_i$.'

(12)   Chinese
   *$Zhangsan_i$/$Meigeren_i$ piping-le $\triangle_i$.
   Zhangsan/everyone-NOM criticize-ASP
   (Lit.) 'Zhangsan$_i$/Everyone$_i$ criticized $\triangle_i$.'

Here, the subjects and the null objects are co-indexed, and the sentences are un-grammatical. The ungrammaticality of these sentences straightforwardly follows if the null object positions are occupied by *pro*. Specifically, if the null objects in the above examples are *pro*, the sentences violate the condition B of the binding theory, as in English *$John_i$/$Everyone_i$ criticized him_i*. What is important for the current discussion is that the above sentences become grammatical once they are preceded by appropriate sentences, as the following examples illustrate.

(13)   Korean
   A: *Nwu-ka   caki-lul piphanha-yss ni?*
      who-NOM self-ACC criticize-PST Q
      (Lit.) 'Who criticized self?'
   B: *Chelswu/Motuwu-ka   △ piphanha-yss-ta.*
      Chelswu/everyone-NOM   criticize-PST-DECL
      (Lit.) 'Chelswu/Everyone criticized △.'

(14)   Mongolian
   A: *Ken-Ø   öber-i-ben sigümjile-gsen   bui?*
      who-NOM self-ACC-RP criticize-PST.ADN Q
      (Lit.) 'Who criticized self?'
   B: *Bayatur/Kümün bükün-Ø △ sigümjile-jei.*
      Bagatur/everyone-NOM   criticize-PST.CON
      (Lit.) 'Bagatur/Everyone criticized △.'

(15)   Turkish
   A: *Kim-Ø   kendin-ni eleştir-di?*
      who-NOM self-ACC   criticize-PST.3SG
      (Lit.) 'Who criticized self?'
   B: *Ahmet/Herkes-Ø   △ eleştir-di.*
      Ahmet/everyone-NOM   criticize-PST.3SG
      (Lit.) 'Ahmet/Everyone criticized △.'

(16) Chinese
  A: *Shui piping-guo   ziji?*
    who criticize-ASP self
    (Lit.) 'Who criticized self?'
  B: *Zhangsan/Meigeren piping-guo   △.*
    Zhangsan/everyone criticize-ASP
    (Lit.) 'Zhangsan/Everyone criticized △.'

With the (A) sentences as their antecedents, the (B) sentences in (13)–(16), which correspond to the sentences in (9)–(12), are all grammatical with the interpretation where the subjects and the objects refer to the same entity. Thus, the Korean case (13B) receives the interpretation that Chelswu$_i$/everyone$_i$ criticized himself$_i$. If the null objects in the (B) sentences were *pro*, the sentences should be ungrammatical, just like (9)–(12) are, due to a violation of the binding condition B, as in (17a); on the other hand, if the null objects in question are derived via ellipsis, the grammaticality of the (B) sentences above is easy to explain since what occupies the null object position is then an elided *self*-anaphor, as in (17b), so the binding condition B does not matter for the (B) sentences.

(17) a. *Subject$_i$ *pro*$_i$ V
    b. Subject$_i$ self$_i$ V

Therefore, the sentences in (9)–(12) and the ones in (13)–(16) indicate that both *pro* and ellipsis are operative strategies in deriving null arguments in CKMT.

4.1.1.3 *Argument for ellipsis II: 'Sloppy' reading*
The second diagnostic for ellipsis is related to interpretive possibilities of CKMT null arguments: they allow ellipsis-indicating readings that (overt) pronouns generally cannot support in the relevant contexts. For example, they can yield the sloppy reading, as the following examples show.[5]

(18) Korean
  a. *Chelswu-nun [$_{DP}$ caki-uy   kong]-ul cha-ass-ta.*
    Chelswu-TOP   self-GEN ball-ACC kick-PST-DECL
    (Lit.) 'Chelswu kicked [$_{DP}$ self's ball].'
  b. *Yenghui-nun [$_{DP}$ △] cha-ci anha-ess-ta.*   strict; sloppy
    Yenghui-TOP   kick-CI NEG.do-PST-DECL
    (Lit.) 'Yenghui did not kick [$_{DP}$ △].'

---

5. For discussion of the availability of the sloppy reading of null arguments in CKMT, see, e.g., Xu (1986), Huang (1987, 1991a), and Cheng (2013) for Chinese, Otani & Whitman (1991) for Korean, Takahashi (2007) for Mongolian, and Şener & Takahashi (2010) for Turkish.

b′. *Yenghui-nun [$_{DP}$ kukes]-ul cha-ci anha-ess-ta.*   strict;*sloppy
Yenghui-TOP   it-ACC   kick-CI NEG.do-PST-DECL
'Yenghui did not kick [$_{DP}$ it].'

(19) Mongolian

a. *Bayatur-Ø   [$_{DP}$ (öber-ün) nom]-iyan ungsi-jai.*
Bagatur-NOM   self-GEN book-RP read-PST.CON
(Lit.) 'Bagatur read [$_{DP}$ self's book].'

b. *Ulayan-Ø   bol [$_{DP}$ △] ungsi-ysan   ügei.*   strict; sloppy
Ulagan-NOM TOP   read-PST.ADN NEG
(Lit.) 'Ulagan did not read [$_{DP}$ △].'

b′. *Ulayan-Ø   bol [$_{DP}$ tere]-yi ungsi-ysan   ügei.*   strict;*sloppy
Ulagan-NOM TOP   it-ACC read-PST.ADN NEG
'Ulagan did not read [$_{DP}$ it].'

(20) Turkish

a. *Ahmet-Ø   [$_{DP}$ pro araba-sın]-ı   yıka-dı.*
Ahmet-NOM   his car-3SG.POSS-ACC wash-PST.3SG
(Lit.) 'Ahmet washed [$_{DP}$ pro car].'

b. *Ayşe-Ø   de [$_{DP}$ △] yıka-ma-dı.*   strict; sloppy
Ayşe-TOP TOP   wash-NEG-PST.3SG
(Lit.) 'Ayşe did not wash [$_{DP}$ △].'

b′. *Ayşe-Ø   de [$_{DP}$ on]-u yıka-ma-dı.*   strict;*sloppy
Ayşe-NOM TOP   it-ACC wash-NEG-PST.3SG
'Ayşe did not wash [$_{DP}$ it].'

(21) Chinese

a. *Zhangsan piping-guo [$_{DP}$ ziji-de   laoshi].*
Zhangsan criticize-ASP   self-GEN teacher
(Lit.) 'Zhangsan criticized [$_{DP}$ self's teacher].'

b. *Mali mei piping-guo   [$_{DP}$ △].*   strict; sloppy
Mali NEG criticize-ASP
(Lit.) 'Mali did not criticize [$_{DP}$ △].'

b′. *Mali mei piping-guo   [$_{DP}$ ta].*   strict;*sloppy
Mali NEG criticize-ASP   him
'Mali did not criticize [$_{DP}$ him].'

With the (a) sentences as their antecedents, the (b) sentences which involve a null object can yield the sloppy reading as well as the strict reading. For example, Korean (18b) is ambiguous in that the null object can be interpreted as either Chelswu's ball (strict reading) or Yenghui's ball (sloppy reading). Importantly, if the null objects in the (b) sentences are replaced by overt pronouns as in the (b′) sentences, the sloppy reading becomes unavailable. Thus, Korean (18b′) cannot mean that

Yenghui did not kick Yenghui's ball: this sentence can only mean that Yenghui did not kick Chelswu's ball. Under the assumption that *pro* is a silent counterpart of overt pronouns so that it cannot yield the sloppy reading as in the (b′) sentences, the above data indicate that the null objects in the (b) sentences cannot be *pro* because the availability of the sloppy reading would not be captured under the *pro* analysis. The same observation holds for the quantificational reading case.[6] Consider the following examples.

(22) Korean
   a. *Chelswu-nun [DP sey   pwun-uy sensayngnim]-ul conkyengha-n-ta.*
      Chelswu-TOP   three CL-GEN   teacher-ACC   respect-PRES-DECL
      'Chelswu respects [DP three teachers].'
   b. *Yenghui-to   [DP △] conkyengha-n-ta.*   E-type; quantificational
      Yenghui-also   respect-PRES-DECL
      (Lit.) 'Yenghui also respects [DP △].'
   b′. *Yenghui-to   [DP kutul]-ul conkyengha-n-ta.*   E-type;*quantificational
      Yenghui-also   they-ACC respect-PRES-DECL
      'Yenghui also respects [DP them].'

(23) Mongolian
   a. *Bayatur-Ø   [DP ɣarban debter-un nom]-i   ungsi-jai.*
      Bagatur-NOM   three CL-GEN book-ACC read-PST.CON
      'Bagatur read [DP three books].'
   b. *Ulaɣan-Ø   basa [DP △] ungsi-jai.*   E-type; quantificational
      Ulagan-NOM also   read-PST.CON
      (Lit.) 'Ulagan also read [DP △].'
   b′. *Ulaɣan-Ø   basa [DP teden]-i ungsi-jai.*   E-type;*quantificational
      Ulagan-NOM also   they-ACC read-PST.CON
      'Ulagan also read [DP them].'

(24) Turkish
   a. *Ahmet-Ø   [DP üç   öğrenci]-yi azarla-dı.*
      Ahmet-NOM   three student-ACC scold-PST.3SG
      'Ahmet scolded [DP three students].'
   b. *Ayşe-Ø   de [DP △] azarla-dı.*   E-type; quantificational
      Ayşe-NOM also   scold-PST.3SG
      (Lit.) 'Ayşe also scolded [DP △].'

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6. For discussion of the availability of the quantificational reading of null arguments in CKMT, see, e.g. Cheng (2013) for Chinese, Um (2011) for Korean, Takahashi (2007) for Mongolian, and Şener & Takahashi (2010) for Turkish.

b′. *Ayşe-Ø   de   [$_{DP}$ onlar]-ı   azarla-dı.*   E-type;*quantificational
    Ayşe-NOM also   they-ACC scold-PST.3SG
    'Ayşe also scolded [$_{DP}$ them].'

(25) Chinese
  a. *Zhangsan kanjian-le [$_{DP}$ san-ge   xuesheng].*
      Zhangsan see-ASP   three-CL student
      'Zhangsan saw [$_{DP}$ three students].'
  b. *Lisi ye   kanjian-le [$_{DP}$ △].*   E-type; quantificational
      Lisi also see-ASP
      (Lit.) 'Lisi also saw [$_{DP}$ △].'
  b′. *Lisi ye   kanjian [$_{DP}$ tamen] le.*   E-type;*quantificational
      Lisi also see   they   ASP
      'Lisi also saw [$_{DP}$ them].'   (Cheng 2013: 127–128)

With the (a) sentences as their antecedents, the (b) sentences are ambiguous in that the null object can refer either to the same set of the entities in the (a) sentences (E-type reading) or to a different set of the entities (quantificational reading). For example, Korean (22b) is ambiguous in that the set of teachers that Yenghui respects can be either identical to the set of teachers that Chelswu respects or different from it. By contrast, if the null objects in the (b) sentences are replaced by overt pronouns, as in the (b′) sentences, the quantificational reading becomes unavailable. To give an example, Korean (22b′) is unambiguous in that the set of teachers that Yenghui respects must be identical to the set of teachers that Chelswu respects. Thus, the proponents of the ellipsis analysis of CKMT null arguments argue that the null objects in the (b) sentence cannot be analyzed as involving *pro* because the availability of the quantificational reading would not be then captured.

Under the assumption that *pro* cannot yield the sloppy or the quantificational reading (see Chapter 2), the previous literature has claimed that the relevant interpretations are handled with ellipsis. Specifically, if the null objects of the (b) sentences in (18)–(21) and (22)–(25) are derived via ellipsis, they are analyzed as follows.

(26) a. Subject [$_{DP}$ … self …] V NEG
     b. Subject [$_{DP}$ … quantifier …] V

Here, the ellipsis sites involve the *self*-anaphor and the quantifier, respectively. Therefore, the availability of the sloppy reading in the (b) sentences of (18)–(21) and the quantificational reading in the (b) sentences of (22)–(25) can be straightforwardly captured under the ellipsis analysis.

To sum up, the fact that null objects in CKMT can obviate a violation of the binding condition B under certain contexts and that they allow sloppy and quantificational readings constitutes evidence that the relevant null arguments can be derived via ellipsis; in other words, they cannot be uniformly *pro*.

4.1.2 Verb-stranding verb phrase ellipsis or argument ellipsis?

Once the availability of the ellipsis strategy is taken for granted, the next question to be asked is what kind of ellipsis CKMT exploit to derive null arguments. To be more specific, the question is whether CKMT adopt VVPE or argument ellipsis as their ellipsis strategy. In the following, I will use the diagnostics for the argument ellipsis analysis discussed in Chapter 2, showing that argument ellipsis is favored over VVPE in CKMT.

4.1.2.1 *Ellipsis of subject*
As discussed in Chapter 2, Oku (1998) argues that ellipsis of subjects is a potential argument for argument ellipsis over VVPE because subjects are generally taken to occupy a higher position than the VVPE domain, as illustrated in (27).

(27)   a.   *Argument Ellipsis*   b.   *VVPE*
       [$_{TP}$ ~~Subject~~ T [$_{VP}$ V ~~Obj~~]]   [$_{TP}$ Subject V+T [$_{VP}$ ~~v~~ ~~Obj~~]]

                                                      Domain of VVPE

VVPE is an operation where V overtly moves to T followed by VP-ellipsis, as in (27b), so subjects should not be affected by VVPE. Given this, the following examples can be taken to favor argument ellipsis over VVPE.[7]

(28)   Korean
       a.   *Chelswu-nun [$_{CP}$ [$_{DP}$ caki-uy ai]-ka   Yengmi-lul   ttayli-ci*
            Chelswu-TOP   self-GEN child-NOM Yengmi-ACC hit-CI
            an-h-ass-ta-ko]   sayngkakha-n-ta.
            NEG-do-PST-DECL-C think-PRES-DECL
            (Lit.) 'Chelswu thinks that [$_{CP}$ [$_{DP}$ self's child] did not hit Yengmi].'
       b.   *Junho-nun [$_{CP}$ [$_{DP}$ △] Mina-lul   ttayli-ci an-h-ass-ta-ko]*
            Junho-TOP   Mina-ACC hit-CI   NEG-do-PST-DECL-C
            sayngkakha-n-ta.   strict; sloppy
            think-PRES-DECL
            (Lit.) 'Junho thinks that [$_{CP}$ [$_{DP}$ △] did not hit Mina].'
(29)   Korean
       a.   *Olhay-nun   [$_{DP}$ say-myeng isang-uy   haksayng]-i*
            this.year-TOP   three-CL   more-GEN student-NOM
            Kim kyoswu-uy   swuep-ul tul-ess-ta.
            Kim professor-GEN class-ACC listen-PST-DECL
            (Lit.) 'This year, [$_{DP}$ more than three students] took Prof. Kim's class.'

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7.   For relevant discussion regarding the availability of the sloppy and the quantificational readings of null subjects, see, e.g. Cheng (2013) for Chinese, Abe & Park (2016) for Korean, and Takahashi (2007) for Mongolian.

b. *Caknyen-un   [_{DP} △]   Park kyoswu-uy   swuep-ul tul-ess-ta.*
   last.year-TOP   Park professor-GEN class-ACC listen-PST-DECL
   (Lit.) 'Last year, [_{DP} △] took Prof. Park's class.'   E-type; quantificational

(30) Mongolian

a. *Batu-Ø   [_{CP} [_{DP} (öber-ün) keüked]-yen Mongol   kele-Ø*
   Batu-NOM   self-GEN child-RP   Mongolian language-ACC
   kele-ne   ügei gejü] bodoju bai-na.
   speak-PRES NEG C   think COP-PRES
   (Lit.) 'Batu thinks [_{CP} that [_{DP} self's child] does not speak Mongolian].'

b. *Bayatur-Ø   bol [_{CP} [_{DP} △] Angyili kele-Ø   kele-Ø*
   Bagatur-NOM TOP   English language-ACC language-ACC
   kele-ne   ügei gejü] bodoju bai-na.   strict; sloppy
   speak-PRES NEG C   think COP-PRES
   (Lit.) 'Bagatur thinks [_{CP} that [_{DP} △] does not speak English].'

(31) Mongolian

a. *Nidunun [_{DP} tabu-eče yilegüü suruyči]-Ø   syntax-Ø   surulča-jai.*
   last.year   five-than more   student-NOM syntax-ACC study-PST.CON
   'Last year, [_{DP} five or more students] studied syntax.'

b. *Ene jil   bol [_{DP} △] semantics-Ø   surulča-jai.*
   this year TOP   semantics-ACC study-PST.CON
   (Lit.) 'This year, [_{DP} △] studied semantics.'   E-type; quantificational

With the (a) examples as their antecedents, the (b) examples in (28) and (30) and the ones in (29) and (31), all of which involve null subjects, can yield the sloppy reading and the quantificational reading, respectively. For example, Korean (28b) can mean either that Junho thinks that Chlswu's child hit Mina (strict reading) or that Junho thinks that his own child hit Mina (sloppy reading), and (29b) is also ambiguous in that the set of students who took Prof. Park's class last year can be either identical to the set of students who took Prof. Kim's class this year (E-type reading) or different from it (quantificational reading). To the extent that subjects in Korean and Mongolian occupy [Spec, TP], the above examples would constitute evidence for the availability of argument ellipsis in these languages.

In contrast to null subjects in Korean and Mongolian, those in Chinese and Turkish are generally reported to disallow the sloppy reading and the quantificational reading (see Takahashi 2007, 2008a; Cheng 2013 for Chinese; and Şener & Takahashi 2010 for Turkish), as shown in (32)–(35) (the judgment is taken from the relevant literature).

(32) Turkish

    a. *Can-Ø   [_{CP} [_{DP} pro oğl-u]-Ø   İngilizce öğren-iyor*
        Can-NOM   son-3SG.POSS-NOM English   learn-PRES.3SG
        diye] bil-iyor.
        C   believe-PRES.3SG
        (Lit.) 'Can believes [_{CP} that [_{DP} *pro* son] learns English].'

    b. *Filiz-se   [[_{DP} △] Fransızca öğren-iyor   diye] bil-iyor.*
        Filiz-however   French   learn-PRES.3SG C   believe-PRES.3SG
        (Lit.) 'Filiz believes [_{CP} that [_{DP} △] learns French].'   strict;*sloppy
                                           (adapted from Şener & Takahashi 2010: 91)

(33) Turkish

    a. *[_{DP} Üç   öğretmen] Can-ı   eleştir-di.*
           three teacher   Can-ACC criticize-PST.3SG
        '[_{DP} Three teachers] criticized Can.'

    b. *[_{DP} △] Filiz-i-yse   öv-dü.*   E-type;*quantificational
               Filiz-ACC-however praise-PST.3SG
        (Lit.) '[_{DP} △] criticized Filiz.'   (Şener & Takahashi 2010: 91)

(34) Chinese

    a. *Zhangsan renwei [_{CP} [_{DP} ziji de xiaohai] yihou yinggai dang yisheng].*
        Zhangsan think   self DE child   later should be   doctor
        (Lit.) 'Zhangsan thinks [_{CP} [_{DP} self's child] should be a doctor in the future].'

    b. *Lisi zeshi   renwei [_{CP} [_{DP} △] yinggai dang lushi].*
        Lisi whereas think   should be   lawyer
        (Lit.) 'Lisi, on the other hand, thinks [_{CP} [_{DP} △] should be a lawyer].'
                                  strict;*sloppy (Cheng 2013: 216)

(35) Chinese

    a. *You [_{DP} san-ge   laoshi] renwei [_{CP} Lisi hen congming].*
        have   three-CL teacher think   Lisi very smart
        'There are [_{DP} three teachers] who think [_{CP} Lisi is very smart].'

    b. *Dan [_{DP} △] que   renwei [_{CP} Zhangsan hen ben].*
        but   whereas think   Zhangsan very stupid
        (Lit.) 'But, [_{DP} △] think [_{CP} Zhangsan is very stupid].'
                        E-type;*quantificational (Cheng 2013: 217)

With the (a) sentences as their antecedents, the (b) sentences involve null subjects anaphoric on the relevant subjects in the (a) examples. The null subjects here cannot yield the ellipsis-indicating readings. For example, the Chinese case (34b) cannot mean that Lisi thinks that his own child should be a lawyer: it can only mean that Lisi thinks that Zhangsan's child should be a lawyer. However, it is not the case that the relevant readings are always excluded with null subjects in the relevant

languages. Abe & Park (2016) claim that there is an interfering factor which makes the relevant readings in (34b) and (35b) unavailable (i.e. they argue that argument ellipsis of subjects is in principle possible in Chinese), on the basis of their observation that Chinese null subjects allow the readings in question when they are located, e.g. in relative clauses or adjunct clauses, where the well-known topic-hood restriction on subjects in Chinese is not observed (cf. Kuno 1976b), as in (38) and (39) (see also Koulidobrova 2017 for relevant discussion). A similar 'amelioration' of the ban on the relevant readings of null subjects may also hold in Turkish, as shown in (36) and (37).[8]

(36) Turkish
  a. *Can-Ø   [[$_{DP}$ kendi öğrenci-si]-Ø   İngilizce*
     Can-NOM   self student-3SG.POSS-NOM English
     öğren-me-diğ-i   için]   kız-dı.
     learn-NEG-NML-NOM.3SG because angry-PST.3SG
     (Lit.) 'Can is angry [because [$_{DP}$ self's student] does not learn English].'
  b. *Filiz-se   [[$_{DP}$ △] Fransızca öğren-me-diğ-i   için]*
     Filiz-however   French learn-NEG-NML-NOM.3SG because
     kız-dı.   strict; sloppy
     angry-PST.3SG
     (Lit.) 'Filiz is angry [because [$_{DP}$ △] does not learn French].'

(37) Turkish
  a. *Can-Ø   [[$_{DP}$ bir-çok   öğrenci-si]-Ø   İngilizce*
     Can-NOM   one-many student-3SG.POSS-NOM English
     öğren-diğ-i   için]   sevin-di.
     learn-NML-NOM.3SG because be.pleased-PST.3SG
     'Can is pleased [because [$_{DP}$ many students] learn English].'
  b. *Filiz-se   [[$_{DP}$ △] Fransızca öğren-diğ-i   için]*
     Filiz-however   French learn-NML-NOM.3SG because
     sevin-di.   ??E-type[9]; quantificational
     be.pleased-PST.3SG
     (Lit.) 'Filiz is pleased [because [$_{DP}$ △] learn French].'

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8. The judgment in Şener & Takahashi's (2010) (32) and (33) has in fact been called into a question (cf. Simpson et al. 2013). What is important here, however, is that there are clear cases where null subjects can yield the relevant readings (note that, in (37b), the quantificational reading is even preferred, and the E-type reading is dispreferred).

9. My informant notes that if a plural morpheme *ler* is attached to the embedded verb, the E-type reading becomes available, excluding the quantificational reading, as in (i):

(38) Chinese

a. *Zhangsan mei du   [[$_{relative\ clause}$ [$_{DP}$ ziji zhidao de xuesheng] zhege*
Zhangsan NEG read   self advised DE student   this
xingqi xie   de] lunwen].
week   write DE paper
(Lit.) 'Zhangsan did not read [the paper [$_{relative\ clause}$ that [$_{DP}$ self's student] wrote this week]].'

b. *Lisi mei du   [[$_{relative\ clause}$ [$_{DP}$ △] shangge xingqi xie   de] lunwen].*
Lisi NEG read   last   week   write DE paper
(Lit.) 'Lisi did not read [the paper [$_{relative\ clause}$ that [$_{DP}$ △] wrote last week]].'
(??)strict[10]; sloppy
(adapted from Abe & Park 2016: 29)

(39) Chinese

a. *Zhangsan ti-le   [[$_{relative\ clause}$ [$_{DP}$ san-ge   pengyou] gei   Lisi*
Zhangsan hold-ASP   three-CL friend   gave Lisi
de] hualan].
REL bouquet
'Zhangsan held [the bouquet [$_{relative\ clause}$ that [$_{DP}$ three friends] gave to Lisi]].'

b. *Wangwu ti-le   [[$_{relative\ clause}$ [$_{DP}$ △] gei   Zhaoliu de] hualan].*
Wangwu hold-ASP   gave Zhaoliu REL bouquet
(Lit.) 'Wangwu held [the bouquet [$_{relative\ clause}$ that [$_{DP}$ △] gave to Zhaoliu]].'
E-type; quantificational (Abe & Park 2016: 29)

With the (a) sentences as their antecedents, the null subjects in the (b) sentences in the above cases allow the relevant ellipsis-indicating readings. For example, the Turkish case (36b) can mean that Filiz is angry because his own child does not learn French. If the null subjects here occupy [Spec, TP], which is presumably outside of the VVPE domain, the above data indicate that not all arguments with the ellipsis-indicating readings in CKMT can be derived via the VVPE approach: argument ellipsis should be available as a strategy to derive null arguments in CKMT.

(i) [With (37a) as an antecedent]
Filiz-se   [[$_{DP}$ △] Fransızca öğren-dik-ler-i   için]   sevin-di.
Filiz-however   French   learn-NML-3PL-NOM because be.pleased-PST.3SG
(Lit.) 'Filiz is pleased [because [$_{DP}$ △] learn French].   E-type;*quantificational'

10. Although Abe & Park (2016) claim that both the strict and the sloppy readings are available in cases like (38b), my informants find the strict reading difficult to obtain. I leave this potential speaker variation for future research, but it is important that even the speakers who disprefer the strict reading in (38b) allow the sloppy reading, which is crucial for the current discussion.

4.1.2.2 *'Immobile' element*

Second, as discussed in Chapter 2, constructions which involve 'immobile' elements provide an ellipsis context where VVPE cannot apply but argument ellipsis can. Recall Kim's (1999) argument for argument ellipsis on the basis of 'immobile' elements. Consider (40).

(40) Korean
    a. *Mike-nun [$_{DP1}$ James]-lul [$_{DP2}$ tali]-lul ketecha-ss-ta.*
        Mike-TOP   James-ACC   leg-ACC kick-PST-DECL
        'Mike kicked James on the leg.'
    b. **Mike-nun [$_{DP2}$ tali]-lul [$_{DP1}$ James]-lul ketecha-ss-ta.*
        Mike-TOP   leg-ACC   James-ACC kick-PST-DECL
        'Mike kicked James on the leg.'

In (40a), *James* is the whole argument (DP$_1$) and *tali* is the part argument (DP$_2$). What is interesting in this construction is that the order between the two arguments is rigid: (40b), where the part argument precedes the whole argument, is ungrammatical. Kim (1999) observes that the whole argument can be independently dropped, allowing the sloppy reading, as in (41). The quantificational reading is also allowed in the same context, as in (42).

(41) Korean
    a. *Mike-nun [$_{DP1}$ caki ai]-lul   [$_{DP2}$ phal]-lul ttayli-ci an-h-ass-ta.*
        Mike-TOP   self child-ACC   arm-ACC hit-CI   NEG-do-PST-DECL
        (Lit.) 'Mike did not kick [$_{DP1}$ self's child] on the arm.'
    b. *James-nun [$_{DP1}$ △] [$_{DP2}$ tali]-lul ttayli-ci an-h-ass-ta.*
        James-TOP   leg-ACC hit-CI   NEG-do-PST-DECL
        (Lit.) 'James did not kick [$_{DP1}$ △] on the leg.'   strict; sloppy

(42) Korean
    a. *Mike-nun [$_{DP1}$ sey-myeng-uy ai]-lul   [$_{DP2}$ phal]-lul ttayli-ess-ta.*
        Mike-TOP   three-CL-GEN child-ACC   arm-ACC hit-PST-DECL
        'Mike hit [$_{DP1}$ three children] on the arm.'
    b. *James-nun [$_{DP1}$ △] [$_{DP2}$ tali]-lul ttayli-ess-ta.*
        James-TOP   leg-ACC hit-PST-DECL
        (Lit.) 'James hit [$_{DP1}$ △] on the leg.'   E-type; quantificational

With (41a) and (42a) as their antecedents, (41b) and (42b) are ambiguous: the former can mean either that James did not kick Mike's child on his/her leg (strict reading) or that James did not kick his own child on his/her leg (sloppy reading), and the latter allows the set of children who James hit on their legs to be either identical to the set of children who Mike hit on their arms (E-type reading) or different from it (quantificational reading). Therefore, the null argument in (41b) and (42b) shoud be derived via ellipsis.

Important for the current discussion is the fact that the part argument *tali* 'leg' phonologically survives in (41b) and (42b). Consider the following schematic structure of the relevant part in (41b).
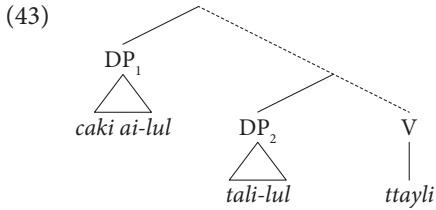
(43)

DP_1 *caki ai-lul* DP_2 *tali-lul*   V   *ttayli*

Here, DP_1 occupies a higher position than DP_2, and this hierarchical relation is rigid (cf. the ungrammaticality of (40b)). In order to elide DP_1, the VVPE analysis must raise the V *ttayli* 'hit' to a higher position than DP_1, as in (44).

(44)

V   *ttayli* DP_1 *caki ai-lul* DP_2 *tali-lul*   __v

The problem with the VVPE analysis here is that, not only DP_1 but also DP_2 must be affected by ellipsis. For the examples in question to be derived via VVPE, both the verb and DP_2 must move out of the VP, with DP_1 remaining inside of the VP to be elided under VVPE. The problem is that DP_2 cannot move here, as discussed above. Therefore, the phonological realization of DP_2 is not expected if VVPE is responsible for ellipsis of DP_1 in the relevant configuration, as in (45).

(45)

V   *ttayli* DP_1 *caki ai-lul* DP_2 *tali-lul* t_v *Ellipsis Domain of VVPE*

On the other hand, the argument ellipsis analysis does not suffer from the above problem since it can directly target an argument: argument ellipsis can apply to only DP$_1$, leaving DP$_2$ intact, as in (46).

(46)

Therefore, the fact that the null arguments in (41b) and (42b) allow the ellipsis-indicating readings with the phonological realization of the part arguments (i.e. DP$_2$ in the above tree diagrams) argues for argument ellipsis: we are dealing here with a context where argument ellipsis can apply but VVPE cannot. In sum, we can get an argument for argument ellipsis over VVPE if we can find configurations which satisfy the following conditions: (i) there are two arguments, e.g. DP$_1$ and DP$_2$, whose order is strictly rigid, and (ii) only DP$_1$ undergoes ellipsis, leaving DP$_2$ phonologically overt, which is exactly what happens in the Korean construction discussed above.

Now let us turn to the other languages in light of the 'immobile' element argument. Although Mongolian and Turkish do not allow the whole-part construction in ordinary contexts, they allow it in ECM contexts (see Kornfilt 1997 for relevant discussion in Turkish). Consider the following examples.

(47) Mongolian
  a. *Batu-Ø   [$_{DP1}$ Ulaɣan]-i   [$_{DP2}$ ɣar]-ni   ebedü-ne   gejü*
     Batu-NOM   Ulagan-ACC   arm-3PP   hurt-PRES.ADN C
     bodoju   bai-na.
     think   COP-PRES
     'Batu thinks that Bagatur's arm hurts.'
  b. **Batu-Ø   [$_{DP2}$ ɣar]-ni   [$_{DP1}$ Ulaɣan]-i   ebedü-ne   gejü*
     Batu-NOM   arm-3PP   Ulagan-ACC   hurt-PRES.ADN C
     bodoju   bai-na.
     think   COP-PRES
     (Int.) 'Batu thinks that Bagatur's arm hurts.'

(48) Turkish
  a. *Ali-Ø   [$_{DP1}$ Ahmet]-i   [$_{DP2}$ diş]-i*
     Ali-NOM   Ahmet-ACC   tooth-POSS.3SG.NOM
     ağrı-yor   san-ıyor-du.
     hurt-PROG.PRES.3SG   believe-PROG-PST.3SG
     'Ali believes Ahmet to have a toothache'

  b. *Ali-Ø   [_DP2_ *diş*]-*i*   [_DP1_ *Ahmet*]-*i*
      Ali-NOM   tooth-POSS.3SG.NOM   Ahmet-ACC
      ağri-yor   *san-ıyor-du.*
      hurt-PROG.PRES.3SG believe-PROG-PST.3SG
      (Int.) 'Ali believes Ahmet to have a toothache'

In the Mongolian Example (47) and the Turkish Example (48), *Ulayan* and *Ahmet* are the whole arguments and *ɣar* 'arm' and *diş* 'tooth' are the part arguments, respectively. Crucially, the order between the two arguments is rigid: (47b) and (48b), where the whole argument is preceded by the part argument, are ungrammatical. Given the rigidity of the word order in question, the following examples involve null arguments which can be analyzed via argument ellipsis, but not via VVPE.

(49) Mongolian
      a. *Batu-Ø*   [_DP1_ *(öber-ün) baysi*]-*yi-ban*   [_DP2_ *ɣar*]-*ni*
          Batu-NOM   self-GEN teacher-ACC-RP   arm-3PP
          ebedü-ne   *ügei gejü bodoju bai-na.*
          hurt-PRES.ADN NEG C   think   COP-PRES
          (Lit.) 'Batu thinks that self's teacher's arm does not hurt.'
      b. *Bayatur-Ø*   *bol* [_DP1_ △] [_DP2_ *khöl*]-*ni ebedü-ne*   *ügei gejü*
          Bagatur-NOM TOP   leg-3PP hurt-PRES.ADN NEG C
          bodoju bai-na.   strict; sloppy
          think COP-PRES
          (Lit.) 'Bagatur thinks that △ leg does not hurt.'

(50) Mongolian
      a. *Batu-Ø*   [_DP1_ *tabu-eče yilegüü baysi*]-*yi-ban*   [_DP2_ *ɣar*]-*ni*
          Batu-NOM   five-from more   teacher-ACC-RP   arm-3PP
          ebedü-ne   *gejü bodoju bai-na.*
          hurt-PRES.ADN C   think COP-PRES
          'Batu thinks that three or more teacher's arms hurt.'
      b. *Bayatur-Ø*   *bol* [_DP_ △] [_DP2_ *khöl*]-*ni ebedü-ne*   *gejü bodoju*
          Bagatur-NOM TOP   leg-3PP hurt-PRES.ADN C   think
          bai-na.   E-type; quantificational
          COP-PRES
          (Lit.) 'Bagatur thinks that △ leg hurt.'

(51) Turkish
      a. *Ali-Ø*   [_DP1_ *kendi öğrenci-sin*]-*i*   [_DP2_ *diş*]-*i*
          Ali-NOM   self student-3SG.POSS-ACC   tooth-POSS.3SG.NOM
          ağrı-mı-yor   *san-ıyor-du.*
          hurt-NEG-PROG.PRES.3SG believe-PROG-PST.3SG
          (Lit.) 'Ali believes self's student to have a toothache'

b. *Ayşe-yse*   [DP1 △] [DP2 *kol]-u*
  Ayşe-however   arm-POSS.3SG.NOM
  ağrı-mı-yor   *san-ıyor-du.*   strict; sloppy
  hurt-NEG-PROG.PRES.3SG believe-PROG-PST.3SG
  (Lit.) 'However, Ayşe believes △ to have an arm ache'

(52) Turkish
  a. *Ali-Ø*   [DP1 *üç-ten   çok   öğrenci-sin]-i*   [DP2
    Ali-NOM   three-ABL many student-3SG.POSS-ACC
    diş]-i   *ağrı-yor*   *san-ıyor-du.*
    tooth-POSS.3SG.NOM hurt-PROG.PRES.3SG believe-PROG-PST.3SG
    'Ali believes more than three students to have a toothache'
  b. *Ayşe-yse*   [DP1 △] [DP2 *kol]-u*   *ağrı-yor*
    Ayşe-however   arm-POSS.3SG.NOM hurt-PROG.PRES.3SG
    san-ıyor-du.   E-type; quantificational
    believe-PROG-PST.3SG
    (Lit.) 'However, Ayşe believes △ to have an arm ache'

With the (a) examples as their antecedents, the (b) examples in (49)–(52) allow the ellipsis-indicating readings. For example, the null argument of the Mongolian Example (49b) can yield the sloppy reading: the relevant null argument can be interpreted as either Batu's teacher (strict reading) or Bagatur's teacher (sloppy reading). That the null arguments in the above examples can yield the sloppy and the quantificational reading indicates that they are derived via ellipsis. Importantly, it is not clear how the VVPE analysis can derive the relevant null arguments because of the phonological overtness of the DP$_2$. Under the VVPE analysis, we would expect both DP$_1$ and DP$_2$ to be phonologically null in the relevant configurations; the fact that the DP$_2$ survives in the above examples provides evidence for argument ellipsis (recall that the movement of the part arguments *khöl* 'arm' in the Mongolian Examples (49b) and (50b) and *kol* 'arm' in the Turkish Examples (51b) and (52b) to a higher position than the whole argument, which is a prerequisite for VVPE to apply, is impossible). Therefore, the data in (49)–(52) constitute evidence for the availability of argument ellipsis in Mongolian and Turkish.[11]

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11. Another argument for argument ellipsis can be obtained from idiomatic expressions in Turkish. Kural (1992) observes that idiomatic objects need to be adjacent to the verb, as in (i).

(i) a. *Ahmet-Ø   o   araba-yı göz-den çıkar-dı.*
      Ahmet-NOM that car-ACC eye-ABL take.out-PST.3SG
      'Ahmet gave up on that car.'
  b. *Ahmet-Ø göz-den o araba-yı çıkar-dı.*
      'Ahmet took that car out of the drawer.'   (Kural 1992: 62)

Let us turn to the whole-part construction in Chinese, which involves the SVO word order unlike the other languages investigated here. Cheng (2013) argues that the whole-part construction in Chinese also provides us with a context which favors argument ellipsis over VVPE. Consider the following examples.

(53) Chinese

    a. *Zhangsan ba [$_{DP}$ ziji-de juzi] mei bo shang-ceng-de pi.*
       Zhangsan BA   self-GEN orange NEG peel upper-rim-GEN skin
       (Lit.) 'Zhangsan did not peel the skin of the upper rim of [$_{DP}$ self's oranges].'

    b. *Lisi zeshi*   *[$_{DP}$ △] mei bo xia-ceng-de pi.*   strict; sloppy
       Lisi whereas   NEG peel lower-rim-GEN skin
       (Lit.) 'On the other hand, Lisi did not peel the skin of the lower rim of [$_{DP}$ △].'

(54) Chinese

    a. *Zhangsan ba [$_{DP}$ san-ke juzi] bo-le shang-cheng-de pi.*
       Zhangsan BA   three-CL orange peel-ASP upper-rim-GEN skin
       'Zhangsan peeled the skin of the upper rim of [$_{DP}$ three oranges].'

    b. *Lisi zeshi*   *[$_{DP}$ △] bo-le xia-cheng-de pi.*
       Lisi whereas   peel-ASP lower-rim-GEN skin
       (Lit.) 'On the other hand, Lisi peeled the skin of the lower rim of [$_{DP}$ △].'
                           E-type; quantificational (Cheng 2013: 132)

In (ia), *gözden* 'eye' is located right in front of the verb *çikardı* 'took out', and they form an idiomatic expression meaning 'gave up'. By contrast, in (ib), *gözden* is not located in this position, and the idiomatic meaning is lost (note that *gözden* has two meanings, i.e. 'eye' or 'drawer', and the meaning of 'eye' is not available in (ib)). Given this, consider the following examples.

(ii) a. *Ahmet-Ø*   *[$_{DP}$ pro araba-sın]-ı*   *göz-den çıkar-dı.*
      Ahmet-NOM   his car-3SG.POSS-ACC eye-ABL take.out-PST.3SG
      'Ahmet gave up on [$_{DP}$ his car].'

    b. *Ayşe-yse*   *[$_{DP}$ △] göz-den çıkar-ma-dı.*   strict; sloppy
      Ayşe-however   eye-ABL take.out-NEG-PST.3SG
      (Lit.) 'However, Ayşe did not give up on [$_{DP}$ △].'

(iii) a. *Ahmet-Ø*   *[$_{DP}$ üç araba-sın]-ı*   *göz-den çıkar-dı.*
      Ahmet-NOM   three car-3SG.POSS-ACC eye-ABL take.out-PST.3SG
      'Ahmet gave up on [$_{DP}$ three cars].'

    b. *Ayşe-yse*   *[$_{DP}$ △] göz-den çıkar-ma-dı.*   E-type; quantificational
      Ayşe-however   eye-ABL take.out-NEG-PST.3SG
      (Lit.) 'However, Ayşe did not give up on [$_{DP}$ △].'

With (iia) and (iiib) as their antecedents, both (iib) and (iiib) can yield the sloppy and the quantificational reading, with the relevant idiomatic interpretation. Under the VVPE analysis, *gözden* must move to a higher position than the elided DP arguments to get out of the VVPE domain, which should result in the loss of the idiomatic interpretation in question, cf. (ib), contrary to the fact. Therefore, the data in (ii) and (iii) can be taken as another argument for argument ellipsis over VVPE in Turkish.

(53a) and (54a) are generally referred to as possessor raising constructions (see Kuo 2009 and references cited therein for discussions of this construction). Here, the whole argument precedes the verb and the verb is followed by the part argument. Interestingly, with (53a) and (54a) as their antecedent sentences, the whole argument in (53b) and (54b) can be phonologically dropped, allowing the sloppy reading and the quantificational reading, respectively. For example, (54b) is ambiguous in that the set of oranges that Lisi peeled the skin of the lower rim of can be either identical to the set of oranges that Zhangsan peeled the skin of the upper rim of or different from it. Cheng claims that VVPE is not a plausible candidate to derive the null arguments in the above cases because, e.g. (54b) would be analyzed under the VVPE analysis as in (55a), where both the verb *bo* 'peel' and the part argument *xia-cheng-de pi* 'the skin of the lower rim' are moved out of the VP followed by VP-ellipsis involving the whole argument *san-ke juzi* 'three oranges'. However, the relevant configurations are otherwise unacceptable, as in (55b).

(55) Chinese
    a. *Lisi zeshi bo$_1$-le [xia-cheng-de pi]$_1$ [$_{VP}$ t$_1$ [$_{DP}$ ~~san-ke juzi~~] t$_2$]*
       Lisi whereas peel-ASP lower-rim-GEN skin   three-CL orange
    b. **Zhangsan ba bo-le shang-cheng-de pi san-ke juzi.*
       Zhangsan BA peel-ASP upper-rim-GEN skin three-CL orange
       'Zhangsan peeled the skin of the upper rim of three oranges.'

(Cheng 2013: 132)

Therefore, it seems implausible to attribute the availability of the ellipsis-indicating readings of the null arguments in (53b) and (54b) to the VVPE analysis. By contrast, the above issue does not arise under the argument ellipsis analysis. Specifically, argument ellipsis can apply to only the whole arguments in (53b) and (54b), leaving the other material intact. Thus, the data in (53) and (54) can be taken to argue for argument ellipsis in Chinese.

    In addition to the whole-part construction, the ditransitive construction with reflexive arguments can also be adopted as an 'immobile' construction to argue for argument ellipsis over VVPE (cf. Oku 1998). The argument here applies to Korean, Mongolian, and Turkish (cf. Şener & Takahashi 2010) (but see Cheng 2013 for several arguments for argument ellipsis in Chinese based on different types of ditransitive constructions). Consider the following examples.

(56) Korean
    a. *Chelswu-nun kyosil-eyse [$_{DP1}$ caki-uy haksayng]-eykey [$_{DP2}$*
       Chelswu-TOP class.room-in   self-GEN student-DAT
       sero]-lul sokayha-yess-ta.
       each.other-ACC introduce-PST-DECL
       (Lit.) 'Chelswu introduced each other to self's students in the classroom.'

    b. **Chelswu-nun kyosil-eyse   [$_{DP2}$ sero]-lul   [$_{DP1}$ caki-uy*
      Chelswu-TOP class.room-in   each.other-ACC   self-GEN
      haksayng]-eykey sokayha-yess-ta.
      student-DAT   introduce-PST-DECL
      (Lit.) 'Chelswu introduced each other to self's students in the classroom.'
      (cf. S.-H. Park 1994: 99)

(57) Mongolian
    a. *Bayatur-Ø   [$_{DP1}$ öber-ün suruyči]-du-ban [$_{DP2}$ qarilčan]*
      Bagatur-NOM   self-GEN student-DAT-RP   each.other
      tanilčayul-jai.
      introduce-PST.CON
      (Lit.) 'Bagatur introduced each other to self's students.'
    b. **Bayatur-Ø   [$_{DP2}$ qarilčan] [$_{DP1}$ öber-ün suruyči]-du-ban*
      Bagatur-NOM   each.other   self-GEN student-DAT-RP
      tanilčayul-jai.
      introduce-PST.CON
      (Lit.) 'Bagatur introduced each other to self's students.'

(58) Turkish
    a. *Can-Ø   [$_{DP1}$ pro öğrenciler-in]-i   [$_{DP2}$ birbirleri]-yle*
      Can-NOM   student-3SG.POSS-ACC   each.other.PL-INST
      tanıştır-dı.
      introduce-PST.3SG
      'Can introduced his students to each other.'
    b. **Can-Ø   [$_{DP2}$ birbirleri]-yle   [$_{DP1}$ pro öğrenciler-in]-i*
      Can-NOM   each.other.PL-INST   student-3SG.POSS-ACC
      tanıştır-dı.
      introduce-PST.3SG
      'Can introduced his students to each other.'

In the (a) examples, the binder DP_1 precedes the reflexive anaphor DP_2 and the sentences are grammatical; in the (b) examples, the binder DP_1 is preceded by the relexive anaphor DP_2, and the sentences are ungrammatical. The contrast in the (a) and (b) examples in (56)–(58) then indicates that the *each other* expression in Korean, Mongolian, and Turkish cannot precede their binders in the ditransitvie construction, presumably due to the condition C of the binding theory. Given the above restriction on the word order in question, consider the following examples.

(59) Korean
    a. *Chelswu-nun kyosil-eyse   [$_{DP}$ caki-uy haksayng]-eykey*
      Chelswu-TOP class.room-in   self-GEN student-DAT
      sero-lul   sokayha-ci   anh-yess-ta.
      each.other-ACC introduce-CI NEG.do-PST-DECL
      (Lit.) 'Chelswu did not introduce each other to self's students in the classroom.'

b.   *Yenghui-nun wuntongcang-eyse [_{DP} △] sero-lul   sokayha-ci*
Yenghui-TOP ground-on   each.other-ACC introduce-CI
anh-yess-ta.
NEG.do-PST-DECL
(Lit.) 'Yenghui did not introduce each other △ on the ground.'

(60) Mongolian

a.   *Bayatur-Ø   [_{DP} öber-ün suruyči]-du-ban qarilčan*
Bagatur-NOM   self-GEN student-DAT-RP each.other
tanilčayul-jai.
introduce-PST.CON
'Bagatur introduced each other to self's students.'

b.   *Ulayan-Ø   bol [_{DP} △] qarilčan   tanilčayul-ysan   ügei.*
Ulagan-NOM TOP   each.other introduce-PST.CON NEG
(Lit.) 'Ulagan did not introduce each other △.'   strict; sloppy

(61) Turkish

a.   *Can-Ø   [_{DP} pro öğrenci-ler-in]-i   birbirleri-yle*
Can-NOM   student-PL-3SG.POSS-ACC each.other.PL-INST
tanıştır-ma-dı.
introduce-NEG-PST.3SG
'Can did not introduce his students to each other.'

b.   *Mete-yse   [_{DP} △] birbirleri-yle   yarış-tır-ma-dı.*
Mete-however   each.other.PL-INST race-CAUS-NEG-PST.3SG
(Lit.) 'However, Mete did not race △ with each other.'
strict; sloppy (cf. Şener & Takahashi 2010: 90)

With the (a) examples as their antecedents, the (b) sentences are grammatical with
the sloppy reading. For example, the Korean (59b), where the dative argument is
phonologically empty, can mean that Yenghui did not introduce each other to her
own students on the ground. The relevant null argument cannot be derived via
VVPE since such an analysis should also affect the accusative argument *sero-lul*
'each other', contrary to the fact.

To sum up, the above data involving an elliptic argument located in a higher
position than an 'immobile' element provide us with ellipsis contexts where VVPE
cannot apply but argument ellipsis can, which in turn indicates that argument
ellipsis should be available in the languages discussed here.

4.1.2.3 *Manner adverb*

The interpretation of manner adverbs is also relevant to the argument ellipsis versus
VVPE debate. As discussed in Chapter 2, Park (1994, 1997) and Oku (1998) argue
against the positing of VVPE in Korean and Japanese based on the distribution of
manner adverbs. Recall that Oku (1998) observes that VP-ellipsis in English and

'VVPE' in Japanese behave differently regarding the availability of manner adverb interpretation. In English, manner adverbs, which are standardly assumed to adjoin to VP, in the antecedent clause can modify the VP-ellipsis target clause as well, as shown in (62).

(62) a. Bill washed the car carefully.
　　 b. But John didn't △.

<div align="right">(Oku 1998: 171–172)</div>

The most sailent interpretation in (62b) is that John did not wash the car carefully, which implies that John did wash the car but not in a careful manner. This is straightforward if we assume that manner adverbs such as carefully are part of the elided VP, as in (63).
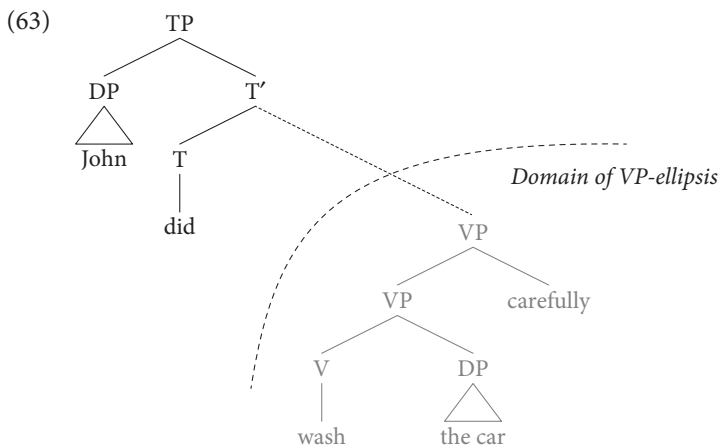
(63)

On the other hand, manner adverbs in antecedent clauses cannot be interpreted in target clauses of what should be 'VVPE' in CKMT, on a par with Japanese, as in (64)–(67).[12]

(64) Korean
　　 a. *Chelswu-nun cha-lul chosimsulupkey takk-ass-ta.*
　　　　 Chelswu-TOP car-ACC carefully wash-PST-DECL
　　　　 'Chelswu carefully washed a car.'
　　 b. *Yenghui-nun △ takk-ci an-h-ass-ta.*
　　　　 Yenghui-TOP wash-CI NEG-do-PST-DECL
　　　　 (Lit.) 'Yenghui did not wash △.'

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12. For discussion regarding the absence of the manner adverb interpretation in the literature on the languages in question, see, e.g. Cheng (2013) for Chinese, Park (1994, 1997) for Korean, and Şener & Takahashi (2010) for Turkish.

(65)   Mongolian
a.   *Baɣatur-Ø   üjüm-un   ariqi-yi   bošiɣu   uuɣu-jai.*
Bagatur-NOM grape-GEN alcohol-ACC quickly drink-PST.CON
'Bagatur quickly drank wine.'
b.   *Ulaɣan-Ø   bol △ uuɣu-ysan   ügei.*
Ulagan-NOM TOP   drink-PST.ADN NEG
(Lit.) 'Ulagan did not drink △.'

(66)   Turkish
a.   *Can-Ø   sorun-u   hızla   çoz-dü.*
Can-NOM problem-ACC quickly solve-PST.3SG
'Can quickly solved the problem.'
b.   *Filiz-se   △ çoz-me-di.*
Phillys-however   solve-NEG-PST
(Lit.) 'However, Philiz did not solve △.'

<div align="right">(adapted from Şener & Takahashi 2010: 89)</div>

(67)   Chinese
a.   *Zhangsan henkuaide du-le   zhe-ben shu.*
Zhangsan quickly   read-ASP this-CL book
'Zhangsan read this book quickly.'
b.   *Lisi mei du   △.*
Lisi NEG read
(Lit.) 'Lisi did not read △.'

In the above (b) examples, it is difficult to obtain the interpretation that would include the manner adverb in the missing part of these examples. For example, Korean (64b) can only mean that Yenghui did not wash the car at all: it cannot mean that Yenghui washed the car but not carefully. This appears to be mysterious if VVPE is available in the above languages, since we should then be able to derive the empty domain as in (68).

(68)
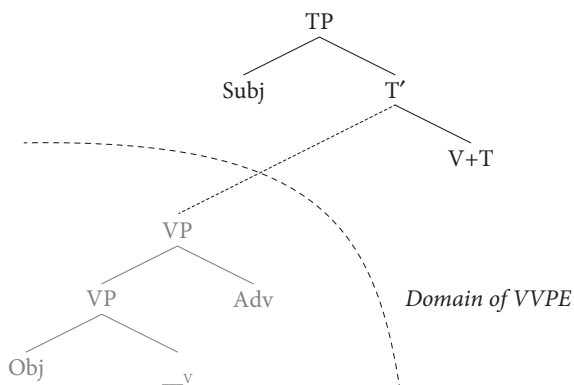
Here, the ellipsis site includes the manner adverb adjoined to the VP, so it is expected that the adverb should be interpreted in the (b) examples of (64)–(67), on a par with the English VP-ellipsis case (62b), which is not the case. In other words, the VVPE analysis faces an overgeneration problem regarding manner adverb interpretation. Argument ellipsis, however, correctly predicts the absence of the manner adverb interpretation in the relevant cases because the ellipsis site never involves the VP-adjoined adverb, so manner adverbs must be overtly present to be interpreted. The adverb data noted above thus favor the argument ellipsis analysis over the VVPE analysis.[13]

4.1.2.4 *The verb-identity requirement*

Finally, the verb-identity requirement developed by Goldberg (2005) can be taken to be a diagnostic for argument ellipsis. As discussed in Chapter 2, it has been well-established that stranded Vs must be identical in antecedent clauses and target clauses of VVPE.

(69)   The antecedent- and target-clause Vs of VP-ellipsis must be identical, minimally, in their root and derivational morphology.[14]   (Goldberg 2005: 171)

Goldberg (2005) maintains that this identity requirement on stranded Vs holds for Irish, Hebrew, and Swahili, all of which have been claimed to have the VVPE. Consider the following examples in Irish to illustrate this requirement.

(70)   Irish
    Q: *Ar [cheannaigh siad teach]?*
        c   bought   they house
        'Did they buy a house?'
    A: *Creidim gur [cheannaigh △].*
        believe c   bought
        (Lit.) 'Believe (I) that [bought △].'   (McCloskey 1991: 274)

Recall that Irish is a VSO language where null subjects are possible only with the synthetic form of V and null direct objects are not allowed with finite Vs (cf. McCloskey 1991). In (70), the stranded V *cheannaigh* 'bought' is an analytic form, so that the elided subject in the Answer cannot be an instance of null subjects. Moreover, the second elided argument is a direct object (*teach* 'house') to a finite V, so this elided

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13. As noted in Chapter 2, see Oku (1998), Saito (2007), Sakamoto (2015a), and Chapter 6 for the discussion regarding why argument ellipsis cannot target manner adverbs.

14. As noted in Chapter 2, Goldberg (2005) deduces this requirement based on Merchant's (2001) Isomorphism requirement on ellipsis.

object cannot be an instance of null objects. Therefore, the surface string of the Answer in (70) is taken to be a pure instance of VVPE, as illustrated in (71).

(71) Q: Ar [$_{TP}$ cheannaigh$_1$ [$_{VP}$ siad ___$_1$ teach]]
A: Creidim gur [$_{TP}$ cheannaigh$_2$ [$_{VP}$ ~~siad ___$_2$ teach~~]]

Here, the verb *cheannaigh* 'bought' undergoes overt movement to T followed by VP-ellipsis of its complement domain. The elided part includes the subject and the direct object in question, yielding the surface string (70A). According to Goldberg (2005), VVPE in (70) is allowed since the stranded V matches the V in the antecedent clause. Next, consider the following case where the stranded V cannot count as identical under (69).

(72) Irish
*[Léigh mé an dán] ach níor [thuig △].
read I the poem but not understand
(Int.) 'I read the poem, but I didn't understand it.' (Goldberg 2005: 168)

(73) *[$_{TP}$ Léigh$_1$ [$_{VP}$ mé ___$_1$ an dán]] ach níor [$_{TP}$ thuig$_2$ [$_{VP}$ ~~mé ___$_2$ an dán~~]]

In contrast to (70), VVPE in (72) is impossible. The ungrammaticality of (72) argues for the verb identity requirement on the stranded V in (69). The stranded V in (72), i.e. *léigh* and *thuig*, do not count as identical, and (72) is ungrammatical. As shown above (and as already noted in Chapter 2), the verb identity requirement is one of the crucial aspects of VVPE.

Returning now to CKMT, in contrast to the VVPE in Irish, Hebrew, and Swahili, the construction in CKMT which would be analyzed as VVPE under the VVPE analysis of missing arguments does not obey the requirement in question, as shown below.

(74) Korean
a. *Chelswu-nun* [$_{DP}$ *caki-uy sensayng*]-*ul conkyengha-ci*
Chelswu-TOP self-GEN teacher-ACC respect-CI
anha-n-ta.
NEG.do-PRES-DECL
(Lit.) 'Chelswu does not respect [$_{DP}$ self's teacher].'
b. *Yenghui-nun* [$_{DP}$ △] *silheha-ci anha-n-ta.* strict; sloppy
Yenghui-TOP hate-CI NEG.do-PRES-DECL
(Lit.) 'Yenghui does not hate [$_{DP}$ △].'

(75) Korean
a. *Chelswu-nun* [$_{DP}$ *sey pwun-uy sensayngnim*]-*ul conkyengha-n-ta.*
Chelswu-TOP three CL-GEN teacher-ACC respect-PRES-DECL
'Chelswu respects [$_{DP}$ three teachers].'

b. *Yenghui-nun [_{DP} △] silheha-n-ta.*   E-type; quantificational
   Yenghui-TOP   hate-PRES-DECL
   (Lit.) 'Yenghui hates [_{DP} △].'

(76) Mongolian
   a. *Bayatur-Ø [_{DP} (öber-ün) nom]-iyan ungsi-ysan ügei.*
      Bagatur-NOM   self-GEN book-RP read-PST.ADN NEG
      (Lit.) 'Bagatur did not read [_{DP} self's book].'
   b. *Ulayan-Ø bol [_{DP} △] biči-ysan   ügei.*   strict; sloppy
      Ulagan-NOM TOP   write-PST.ADN NEG
      (Lit.) 'Ulagan did not write [_{DP} △].'

(77) Mongolian
   a. *Bayatur-Ø [_{DP} yarban debter-un nom]-i   qudaldun-abu-čai.*
      Bagatur-NOM   three CL-GEN book-ACC buy-take-PST.CON
      'Bagatur bought [_{DP} three books].'
   b. *Ulayan-Ø bol [_{DP} △] sigümjile-jei.*   E-type; quantificational
      Ulagan-NOM TOP   criticize-PST.CON
      (Lit.) 'Ulagan criticized [_{DP} △].'

(78) Turkish
   a. *Ahmet-Ø   [_{DP} pro öğrenci-sin]-i   eleştir-me-di.*
      Ahmet-NOM   his student-3SG-ACC criticize-NEG-PST.3SG
      (Lit.) 'Ahmet did not criticize [_{DP} pro student].'
   b. *Ayşe-Ø   de [_{DP} △] öv-me-di.*   strict; sloppy
      Ayşe-NOM TOP   praise-NEG-PST.3SG
      (Lit.) 'Ayşe did not praise [_{DP} △].'

(79) Turkish
   a. *Ahmet-Ø   [_{DP} üç   hırsız] yakala-dı.*
      Ahmet-NOM   three burglar catch-PST.3SG
      'Ahmet caught [_{DP} three students].'
   b. *Ayşe-Ø   de [_{DP} △] sorgula-dı.*   E-type; quantificational
      Ayşe-NOM TOP   interrogate-PST.3SG
      (Lit.) 'Ayşe interrogated [_{DP} △].'   (cf. Şener & Takahashi 2010: 88)

(80) Chinese
   a. *Zhangsan mei piping-guo [_{DP} ziji-de   xuesheng].*
      Zhangsan NEG criticize-ASP   self-GEN student
      (Lit.) 'Zhangsan did not criticize [_{DP} self's teacher].'
   b. *Mali mei zayang-guo [_{DP} △].*   strict; sloppy
      Mali NEG praise-ASP
      (Lit.) 'Mali did not praise [_{DP} △].'

(81)   Chinese
    a.   *Zhangsan mei xie-guo*   *[$_{DP}$ san-ben shu]*.
       Zhangsan NEG write-ASP   three-CL book
       'Zhangsan did not write [$_{DP}$ three books].'

    b.   *Lisi ye   mei jiaodui-guo [$_{DP}$ △].*   E-type; quantificational
       Lisi also NEG edit-ASP
       (Lit.) 'Lisi did not edit [$_{DP}$ △].'

In all the examples here, the stranded Vs in the (a) sentences and the (b) sentences do not count as identical under (69), so VVPE should not be an option. However, the sentences are all grammatical and the readings which would indicate ellipsis are available, which suggests that CKMT need to be able to exploit an ellipsis strategy other than VVPE to derive the elliptic arguments discussed above.[15] Under the argument ellipsis analysis, these sentences are not problematic, since this strategy is not subject to the verb identity requirement in (69). Therefore, the data here also favor argument ellipsis over VVPE.

4.1.3   Interim summary

Above, I have shown that CKMT null arguments pass the diagnostics for argument ellipsis discussed in Chapter 2, on a par with Japanese null arguments. Specifically, the condition B obviation (Section 4.1.1.2) and the availability of the sloppy and the quantificational readings (Section 4.1.1.3) provide evidence that not all null arguments in CKMT can be reduced to *pro*, and the data in Section 4.1.2 provide several arguments that favor argument ellipsis over VVPE. Once the existence of argument ellipsis is taken for granted in CKMT, a prediction regarding extraction arises. Namely, we would expect that CKMT null arguments to behave like Japanese null arguments regarding extraction possibilities. To be more specific, if null arguments in CKMT can be derived via argument ellipsis, it is expected that they will exhibit an overt/covert contrast regarding extraction out of them, as Japanese null

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15. In the Chinese Example (81b), if negation is taken off, the quantificational reading seems harder to obtain, as in (i).

(i)   a.   *Zhangsan piping-guo   [$_{DP}$ san-ge   xuesheng].*
       Zhangsan criticize-ASP   three-CL student
       'Zhangsan criticized [$_{DP}$ three students].'

    b.   *Lisi zayang-guo [$_{DP}$ △].*   E-type;*quantificational
       Lisi praise-ASP
       (Lit.) 'However, Lisi praised [$_{DP}$ △].'

I have nothing interesting to say to account for the relevant contrast, leaving it for future research.

arguments do, as discussed in Chapter 3. The following discussion thus investigates both overt and covert extraction possibilities out of CKMT null arguments; it will be shown that the relevant overt/covert extraction asymmetry is indeed obtained with CKMT null argments, as is expected under the argument ellipsis analysis.

4.2   Overt extraction out of null arguments cross-linguistically

4.2.1 Long-distance scrambling: Korean Mongolian, and Turkish

Scrambling is possible both clause-internally and long-distance in Korean (cf. Cho 1994; H.-S. Park 1994; Choe 1995; Tsoulas 1999; McGinnis 2008; among many others), Mongolian (cf. Takahashi 2007; Sakamoto 2012; Bao 2015; among others), and Turkish (cf. Erguvanlı-Taylan 1984; Kural 1993, 1997; Aygen 2001; Kornfilt 2003; Öztürk 2004; Akan 2009; Şener 2010; among others). Consider the following examples.[16]

(82)   Korean
    a. *Chelswu-nun i   chayk-ul piphanha-yss-ta.*
        Chelswu-TOP this book-ACC criticize-PST-DECL
        'Chelswu criticized this book.'
    b. *I   chayk$_1$-ul Chelswu-nun ____$_1$ piphanha-yss-ta.*
        this book-ACC Chelswu-TOP   criticize-PST-DECL
        (Lit.) 'This book$_1$, Chelswu criticized ____$_1$.'

(83)   Mongolian
    a. *Bayatur-Ø   ene nom-i   ungsi-jai.*
        Bagatur-NOM this book-ACC read-PST.CON
        'Bagatur read this book.'
    b. *Ene nom$_1$-i   Bayatur-Ø   ____$_1$ ungsi-jai.*
        this book-ACC Bagatur-NOM   read-PST.CON
        (Lit.) 'This book$_1$, Bagatur read ____$_1$.'

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16. Although, as noted in Chapter 3, long-distance scrambling in Japanese uniformly counts as Ā-movement, the status of long-distance scrambling in Korean is somewhat controversial. I refer the reader to Cho (1994), H.-S. Park (1994), among many others, for relevant discussion. Long-distance scrambling in Turkish is claimed to uniformly behave as Ā-movement, on a par with long-distance scrambling in Japanese (see Akan 2009 and references cited therein). At any rate, whether long-distance scrambling uniformly counts as Ā-movement in the relevant languages is not crucial in the following discussion, so I will not go into any more details in this respect in this book.

(84) Turkish

    a. *Ahmet-Ø   bu   araba-sın-ı   yıka-dı.*
        Ahmet-NOM this car-3SG.POSS-ACC wash-PST.3SG
        'Ahmet washed this car.'

    b. *Bu   araba-sın$_1$-ı   Ahmet-Ø   ___$_1$ yıka-dı.*
        this car-3SG.POSS-ACC Ahmet-NOM   wash-PST.3SG
        (Lit.) 'This car$_1$, Ahmet washed ___$_1$.'

(85) Korean

    a. *Chelswu-nun [$_{CP}$ Yenghui-ka   i   chayk-ul piphanha-yss-ta-ko]*
        Chelswu-TOP   Yenghui-NOM this book-ACC criticize-PST-DECL-C
        sayngkakha-n-ta.
        think-PRES-DECL
        'Chelswu thinks [$_{CP}$ that Yenghui criticized this book].'

    b. *I   chayk$_1$-ul Chelswu-nun [$_{CP}$ Yenghui-ka   ___$_1$*
        this book-ACC Chelswu-TOP   Yenghui-NOM
        piphanha-yss-ta-ko] sayngkakha-n-ta.
        criticize-PST-DECL-C think-PRES-DECL
        (Lit.) 'This book$_1$, Chelswu thinks [$_{CP}$ that Yenghui criticized ___$_1$].'

(86) Mongolian

    a. *Bayatur-Ø   [$_{CP}$ Ulayan-Ø   ene nom-i   ungsi-ɣsan   gejü]*
        Bagatur-NOM   Ulagan-NOM this book-ACC read-PST.ADN C
        bodoju bai-na.
        think   COP-PRES
        'Bagatur thinks [$_{CP}$ that Ulagan read this book].'

    b. *Ene nom$_1$-i   Bayatur-Ø   [$_{CP}$ Ulayan-Ø   ___$_1$ ungsi-ɣsan*
        this book-ACC Bagatur-NOM   Ulagan-NOM   read-PST.ADN
        gejü] bodoju bai-na.
        C   think   COP-PRES
        (Lit.) 'This book$_1$, Bagatur thinks [$_{CP}$ that Ulagan read ___$_1$].'

(87) Turkish

    a. *Ahmet-Ø   [$_{CP}$ Mete-nin bu araba-sın-ı   yıka-dığ-ın]-ı*
        Ahmet-NOM   Mete-GEN this car-3SG.POSS-ACC wash-NML-3SG-ACC
        düşün-dü.
        think-PST.3SG
        'Ahmet thought [$_{CP}$ Mete washed this car].'

    b. *Bu araba-sın$_1$-ı   Ahmet-Ø   [$_{CP}$ Mete-nin ___$_1$*
        this car-3SG.POSS-ACC Ahmet-NOM   Mete-GEN
        yıka-dığ-ın]-ı   düşün-dü.
        wash-NML-3SG-ACC think-PST.3SG
        (Lit.) 'This car$_1$, Ahmet thought [$_{CP}$ Mete washed ___$_1$].'

(82)–(84) illustrate clause-internal scrambling: in each of the (b) examples, the object undergoes scrambling over the subject. (85)–(87) illustarate long-distance scrambling: in each of the (b) examples, the object within the embedded clause undergoes scrambling across a clause boundary. That scrambling in the above languages is an instance of movement, not binding/control, is supported by the fact that it is subject to subjacency effects, as shown in (88).[17]

(88) Korean

   a. *Chelswu-nun [[$_{relative\ clause}$ Yenghui-eykey i   chayk-ul cwu-ess-nun]*
       Chelswu-TOP   Yenghui-DAT this book-ACC give-PST-REL
       salam]-ul   piphanha-yss-ta.
       person-ACC criticize-PST-DECL
       'Chelswu criticized [the person [$_{relative\ clause}$ who gave this book to Yenghui]].'

   b. **I   chayk$_1$-ul Chelswu-nun [[$_{relative\ clause}$ Yenghui-eykey ___$_1$*
       this book-ACC Chelswu-TOP   Yenghui-DAT
       cwu-ess-nun] salam]-ul   piphanha-yss-ta.
       give-PST-REL person-ACC criticize-PST-DECL
       (Lit.) 'This book$_1$, Chelswu criticized [the person [$_{relative\ clause}$ who gave ___$_1$ to Yenghui]].'

(89) Mongolian

   a. *Bayatur-Ø   [[$_{relative\ clause}$ Oyunaa-du ene šiqir-i   ügkü-gsen]*
       Bagatur-NOM   Oyuna-DAT this candy-ACC give-PST.ADN
       eregtei]-tei aγulja-jai.
       man-with meet-PST.CON
       'Bagatur met [the person [$_{relative\ clause}$ who gave this candy to Oyuna]].'

   b. **Ene šiqir$_1$-i   Bayatur-Ø   [[$_{relative\ clause}$ Oyunaa-du ___$_1$*
       this candy-ACC Bagatur-NOM   Oyuna-DAT
       ügkü-gsen]   eregtei]-tei aγulja-jai.
       give-PST.ADN man-with meet-PST.CON
       (Lit.) 'This candy$_1$, Bagatur met [the person [$_{relative\ clause}$ who gave ___$_1$ to Oyuna]].'

(90) Turkish

   a. *Mete-Ø   [[$_{relative\ clause}$ Ahmet-e   bu araba-sın-ı   ver-en]*
       Mete-NOM   Ahmet-DAT this car-3SG.POSS-ACC give-REL
       adam]-ı   eleştir-di.
       man-ACC criticize-PST.3SG
       'Mete criticized [the person [$_{relative\ clause}$ who gave this car to Ahmet]].'

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17. Although Bao (2015) claims that scrambling in Mongolian is immune to subjacency effects, Özturk (2013) observes that it does exhibit subjacency effects. I have nothing interesting to say regarding the potential speaker variation (if there is one here), adopting the judgments reported in Özturk (2013) and my informant.

b. *Bu   araba-sın$_1$-ı   Mete-Ø   [[$_{relative\ clause}$ Ahmet-e   ___$_1$
   this car-3SG.POSS-ACC Mete-NOM   Ahmet-DAT
   ver-en] adam]-ı eleştir-di.
   give-REL man-ACC criticize-PST.3SG
   (Lit.) 'This car$_1$, Mete criticized [the person [$_{relative\ clause}$ who gave ___$_1$
   to Ahmet]].'

In the above (b) examples, the sentence-initial objects have undergone scrambling out of a relative clause island, and the sentences are ungrammatical. Assuming the presence of subjacency effects to be a hallmark of movement, I conclude that scrambling in Korean, Mongolian, and Turkish involves movement, on a par with Japanese scrambling.

   Now let us investigate whether scrambling is possible out of null arguments in the relevant languages. Saito & An (2010) observe that scrambling is disallowed out of Korean null arguments, as in (91), and the data in (92) and (93) demonstrate that it is also impossible out of null arguments in Mongolian and Turkish, respectively.[18]

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18. Even if scrambled elements out of null CPs are the same in the antecedent and the target clause, sentences are still unacceptable, as in (i)–(iii).

(i)   Korean
   *Ku   chayk$_1$-ul Chelswu-nun [$_{CP}$ Yenghui-ka   ___$_1$ ilke-ess-ta-ko]
   that book-ACC Chelswu-TOP   Yenghui-NOM   read-PST-DECL-C
   sayngkakha-n-ta. Ku chayk-ul Minswu-to   [$_{CP}$ △] sayngkakha-n-ta.
   think-PRES-DECL that book-ACC Minswu-also   think-PRES-DECL
   (Lit.) 'That book$_1$, Chelswu thinks [$_{CP}$ that Yenghui read ___$_1$]. That book, Minswu also thinks [$_{CP}$ △].'

(ii)   Mongolian
   *Ene šiqir$_1$-i   Bayatur-Ø   [$_{CP}$ Batu-Ø   ___$_1$ id-gsen   gejü] bodoj
   this candy-ACC Bagatur-NOM   Batu-NOM   eat-PST.ADN C   think
   bai-na. Ene šiqir-i   Ulayan-Ø   basa [$_{CP}$ △] bodoj bai-na.
   COP-PRES this candy-ACC Ulagan-NOM also   think COP-PRES
   (Lit.) 'This candy$_1$, Bagatur thinks [$_{CP}$ that Batu ate ___$_1$]. This candy, Ulagan also thinks [$_{CP}$ △].'

(iii)   Turkish
   *Bu araba-sın$_1$-ı   Ahmet-Ø   [$_{CP}$ Mete-nin   ___$_1$ yıka-dığ-ın]-ı
   this car-3SG.POSS-ACC Ahmet-NOM   Mete-GEN   wash-NML-3SG-ACC
   düşün-dü.   Bu araba-sın-ı   Ayşe-Ø   de [$_{CP}$ △] düşün-dü.
   think-PST.3SG this car-3SG.POSS-ACC Ayşe-NOM also   think-PST.3SG
   (Lit.) 'This car$_1$, Ahmet thought [$_{CP}$ Mete washed ___$_1$]. This car, Ayşe also thought [$_{CP}$ △].'

(91) Korean

a. *Ku   chayk$_1$-lul Chelswu-nun [$_{CP}$ Yenghi-ka   ___$_1$ ilk-ess-ta-ko]*
that book-ACC Chelswu-TOP   Yenghi-NOM   read-PST-DECL-C
sayngkakha-n-ta.
think-PRES-DECL
(Lit.) 'That book$_1$, Chelswu thinks [$_{CP}$ that Yenghui read ___$_1$].'

b. *I   chayk$_2$-lul Minswu-nun [$_{CP}$ Yenghi-ka   ___$_1$ ilk-ess-ta-ko]*
this book-ACC Minswu-TOP   Yenghi-NOM   read-PST-DECL-C
sayngkakha-n-ta.
think-PRES-DECL
(Lit.) 'This book$_2$, Minswu thinks [$_{CP}$ that Yenghui read ___$_2$].'

b'. **I   chayk$_2$-lul Minswu-nun [$_{CP}$ △] sayngkakha-n-ta.*
this book-ACC Minswu-TOP   think-PRES-DECL
(Lit.) 'This book$_2$, Minswu thinks [$_{CP}$ △].'

(92) Mongolian

a. *Ene šiqir$_1$-i   Baγatur-Ø   [$_{CP}$ Batu-Ø   ___$_1$ ide-gsen   gejü]*
this candy-ACC Bagatur-NOM   Batu-NOM   eat-PST.ADN C
boduju bai-na.
think   COP-PRES
(Lit.) 'This candy$_1$, Bagatur thinks [$_{CP}$ that Batu ate ___$_1$].'

b. *Ene boγursaγ$_2$-i Ulaγan-Ø   bol [$_{CP}$ Batu-Ø   ___$_2$ ide-gsen*
this cookie-ACC Ulagan-NOM TOP   Batu-NOM   eat-PST.ADN
gejü] boduju bai-na.
C   think COP-PRES
(Lit.) 'This cookie$_2$, Ulagan thinks [$_{CP}$ that Batu ate ___$_2$].'

b'. **Ene boγursaγ$_2$-i Ulaγan-Ø   bol [$_{CP}$ △] boduju bai-na.*
this cookie-ACC Ulagan-NOM TOP   think COP-PRES
(Lit.) 'This cookie$_2$, Ulagan thinks [$_{CP}$ △].'

(93) Turkish

a. *Mavi araba-sın$_1$-ı   Ahmet-Ø [$_{CP}$ Mete-nin   ___$_1$*
blue   car-3SG.POSS-ACC Ahmet-Ø   Mete.GEN
yıka-dığ-ın]-ı   dün   düşün-dü.
wash-NML-3SG-ACC yesterday think-PST.3SG
(Lit.) 'The blue car$_1$, yesterday, Ahmet thought [$_{CP}$ Mete washed ___$_1$].'

b. *Kırmızı araba-sın$_2$-ı   pro [$_{CP}$ Mete-nin   ___$_2$ yıka-dığ-ın]-ı*
red   car-3SG.POSS-ACC he   Mete-GEN   wash-NML-3SG-ACC
bugün düşün-dü.
today think-PST.3SG
(Lit.) 'The red car$_2$, today, he thought [$_{CP}$ Mete washed ___$_2$].'

b′. **Kırmızı arabas-ın₂-ı*   *pro* [꜀ₚ △] *bugün düşün-dü.*
    red   car-3SG.POSS-ACC he   today   think-PST.3SG
    (Lit.) 'The red car₂, today, he thought [꜀ₚ △].'

With the (a) examples as their antecedents, the (b) sentences are grammatical, while the (b′) sentences which involve long-distance scrambling out of the null CPs are ungrammatical. The ungrammaticality of the (b′) sentences then leads to the conclusion that null arguments in Korean, Mongolian, and Turkish disallow scrambling out of them, on a par with those in Japanese.

4.2.2 ECM-movement: Korean, Mongolian, and Turkish

Korean, Mongolian, and Turkish have the ECM construction (see J.-S. Lee 1992; Yoon 2007; among many others for Korean ECM; and Kornfilt 1977; Zidani-Eroğlu 1997; Şener 2008; among others for Turkish ECM). The (b) examples of (94)–(96) illustrate the basic cases of ECM constructions in Korean, Mongolian, and Turkish, respectively.

(94) Korean
    a.   *Cheli-nun Yenghi-ka*   *yenglihay-ss-ta-ko mitnu-n-ta.*
        Cheli-TOP Yenghui-NOM smart-PST-DECL-C believe-PRES-DECL
        'Cheli believes that Yenghui was smart.'
    b.   *Cheli-nun Yenghi-lul*   *yenglihay-ss-ta-ko mitnu-n-ta.*
        Cheli-TOP Yenghui-ACC smart-PST-DECL-C believe-PRES-DECL
        'Cheli believes that Yenghui was smart.'   (Yoon 2007: 616)

(95) Mongolian
    a.   *Batu-Ø Bayatur-Ø*   *qurča bai-na*   *gejü kele-jei.*
        Batu-NOM Bagatur-NOM genius COP-PRES C   say-PST.CON
        'Bat said that Bagatur is a genius.'
    b.   *Batu-Ø Bayatur-i*   *qurča bai-na*   *gejü kele-jei.*
        Batu-NOM Bagatur-ACC genius COP-PRES C   say-PST.CON
        'Bat said that Bagatur is a genius.'

(96) Turkish
    a.   *Pelin-Ø*   *ben-Ø Timbuktu-ya git-ti-m*   *san-ıyor.*
        Pelin-NOM I-NOM Timbuktu-DAT go-PST-1SG believe-PRES.3SG
        'Pelin believes that I went to Timbuktu.'
    b.   *Pelin-Ø*   *ben-i Timbuktu-ya git-ti-m*   *san-ıyor.*
        Pelin-NOM I-ACC Timbuktu-DAT go-PST-1SG believe-PRES.3SG
        'Pelin believes that I went to Timbuktu.'   (Şener 2008: 1)

In the (a) examples, the embedded subject receives ordinary nominative case. However, in the (b) examples, it receives accusative case. One of the crucial differences between the nominative case examples in (a) and the ECM examples in (b) is that only ECMed subjects can precede matrix adverbs, as illustrated below.

(97) Korean
    a. *John-i   Sue₁-ka ecey   [_CP ___₁ eyppu-ess-ta-ko]*
       John-NOM Sue-NOM yesterday   pretty-PST-DECL-C
       sayngkakha-ess-ta.
       think-PST-DECL
       (Lit.) 'John, Sue₁, yesterday thought [_CP that ___₁ was pretty].'
    b. *John-i   Sue₁-lul ecey   [_CP ___₁ eyppu-ess-ta-ko]*
       John-NOM Sue-ACC yesterday   pretty-PST-DECL-C
       sayngkakha-ess-ta.
       think-PST-DECL
       (Lit.) 'John, Sue₁, yesterday thought [_CP that ___₁ was pretty].'
                                                               (Hong 2005: 81)

(98) Mongolian
    a. *Batu-Ø   Bayatur₁-Ø   teneg-iyer [_CP ___₁ qurča bai-na*
       Batu-NOM Bagatur-NOM stupidly   genius COP-PRES
       gejü] kele-jei.
       C   say-PST.CON
       (Lit.) 'Batu, Bagatur₁, stupidly said [_CP that ___₁ is genius].'
    b. *Batu-Ø   Bayatur₁-i   teneg-iyer [_CP ___₁ qurča bai-na*
       Batu-NOM Bagatur-ACC stupidly   genius COP-PRES
       gejü] kele-jei.
       C   say-PST.CON
       (Lit.) 'Batu, Bagatur₁, stupidly said [_CP that ___₁ is genius].'

(99) Turkish
    a. *(Siz) Ali₁-Ø   sabah-tan   beri [_CP ___₁ öp-ül-dü]*
       you Ali-NOM morning-ABL since   kiss-PASS-PST.3SG
       san-ɨyor-sunuz.
       believe-PROG-2PL
       (Lit.) 'You have been believing, Ali₁, since this morning [_CP ___₁ was kissed].'
    b. *(Siz) Ali₁-yi sabah-tan   beri [_CP ___₁ öp-ül-dü]*
       you Ali-ACC morning-ABL since   kiss-PASS-PST.3SG
       san-ɨyor-sunuz.
       believe-PROG-2PL
       (Lit.) 'You have been believing, Ali₁, since this morning [_CP ___₁ was kissed].'   (Zidani-Eroğlu 1997: 222)

In the (a) examples of (97)–(99), the nominative subjects are located in front of a matrix adverbial, and the sentences are ungrammatical. On the other hand, the (b) examples of (97)–(99), where the ECMed subjects precede a matrix adverbial, are grammatical. This suggests that only ECMed subjects can undergo raising out of embedded CPs, occupying a position in the matrix clause.[19]

Now let us consider whether movement involved in the ECM construction is possible out of null arguments in the relevant languages. The data in (100)–(102) indicate that embedded CPs including ECMed subjects can be phonologically null.

(100)   Korean
  a.   *Chelswu-nun papokathi [$_{CP}$ Mia-lul   chencayla-ko] sayngkakha-n-ta.*
       Chelswu-TOP stupidly   Mia-ACC genius-C   think-PRES-DECL
       'Chelswu stupidly thinks [$_{CP}$ that Mia is genius].'

  b.   *Yenghi-to   papokathi [$_{CP}$ Mia-lul   chencayla-ko] sayngkakha-n-ta.*
       Yenghi-also stupidly   Mia-ACC genius-C   think-PRES-DECL
       'Yenghi also stupidly thinks [$_{CP}$ that Mia is genius].'

  b'. *Yenghi-to   papokathi [$_{CP}$ △] sayngkakha-n-ta.*
       Yenghi-also stupidly   think-PRES-DECL
       (Lit.) 'Yenghi also stupidly thinks [$_{CP}$ △].'

(101)   Mongolian
  a.   *Batu-Ø   [$_{CP}$ Bayatur-i   qurča bai-na   gejü] kele-jei.*
       Batu-NOM   Bagatur-ACC genius COP-PRES C   say-PST.CON
       'Bat said [$_{CP}$ that Bagatur is a genius].'

  b.   *Ulayan-Ø   basa [$_{CP}$ Bayatur-i   qurča bai-na*
       Ulagan-NOM also   Bagatur-ACC genius COP-PRES
       gejü] kele-jei.
       C   say-PST.CON
       'Ulagan also said [$_{CP}$ that Bagatur is a genius].'

  b'. *Ulayan-Ø   basa [$_{CP}$ △] kele-jei.*
       Ulagan-NOM also   say-PST.CON
       (Lit.) 'Ulagan also said [$_{CP}$ △].'

---

19. A number of arguments for the (optional) raising analysis and also against the prolepsis analysis of the relevant ECM constructions have been offered in the literature. For relevant discussion, see Lee (1990), Hong (2005), Yoon (2007), Hong & Lasnik (2010), among others, for Korean, and Zidani-Eroğlu (1997), Kural (1997), Moore (1998), Özsoy (2001), Şener (2008), among others, for Turkish.

(102)   Turkish
    a. *Zeynep-Ø   dün-den   beri [$_{CP}$ Can-ı   araba-sın-ı*
        Zeynep-NOM yesterday-ABL since   Can-ACC car-3SG.POSS-ACC
        yıka-dı]   san-ıyor.
        wash-PST.3SG believe-PROG.PRES.3SG
        'Zeynep has believed since yesterday [$_{CP}$ Can washed the car].'
    b. *Mete-Ø   de bugün-den beri [$_{CP}$ Can-ı   araba-sın-ı*
        Mete-NOM TOP today-ABL since   Can-ACC car-3SG.POSS-ACC
        yıka-dı]   san-ıyor.
        wash-PST.3SG believe-PROG.PRES.3SG
        'Mete has believed since today [$_{CP}$ Can washed the car].'
    b′. *Mete-Ø   de bugün-den beri [$_{CP}$ △] san-ıyor.*
        Mete-NOM TOP today-ABL since   believe-PROG.PRES.3SG
        (Lit.)'Mete has believed since today [$_{CP}$ △].'

Although the (b′) sentences are phonologically incomplete in that the embedded CPs are not PF-realized, they can be interpreted as if nothing were dropped: they receive the same interpretations as the (b) sentences. The following data show that if the relevant null embedded CPs involve a gap created by raising of the ECMed subjects, the sentences become ungrammatical.

(103)   Korean
    a. *Chelswu-nun Mia$_1$-lul papokathi [$_{CP}$ ___$_1$ chencayla-ko]*
        Chelswu-TOP Mia-ACC stupidly   genius-C
        sayngkakha-n-ta.
        think-PRES-DECL
        (Lit.) 'Chelswu, Mia$_1$, stupidly thinks [$_{CP}$ that ___$_1$ is genius].'
    b. *Yenghi-nun Swuni$_2$-lul papokathi [$_{CP}$ ___$_2$ chencayla-ko]*
        Yenghi-TOP Swuni-ACC stupidly   genius-C
        sayngkakha-n-ta.
        think-PRES-DECL
        (Lit.) 'Yenghi, Swuni$_2$, stupidly thinks [$_{CP}$ that ___$_2$ is genius].'
    b′. **Yenghi-nun Swuni$_2$-lul papokathi [$_{CP}$ △] sayngkakha-n-ta.*
        Yenghi-TOP Swuni-ACC stupidly   think-MOOD-DECL
        (Lit.) 'Yenghi, Swuni$_2$, stupidly thinks [$_{CP}$ △].'

(104)   Mongolian
    a. *Batu-Ø   Bayatur$_1$-i   teneg-iyer [$_{CP}$ ___$_1$ qurča bai-na*
        Batu-NOM Bagatur-ACC stupidly   genius COP-PRES
        gejü] kele-jei.
        C   say-PST.CON
        (Lit.) 'Batu, Bagatur$_1$, stupidly said [$_{CP}$ that ___$_1$ is genius].'

b. *Ulaɣan-Ø   bol Oyunaa$_2$-yi teneg-iyer [$_{CP}$ ___$_2$ qurča bai-na*
    Ulagan-NOM TOP Oyuna-ACC stupidly   genius COP-PRES
    gejü] kele-jei.
    C   say-PST.CON
    (Lit.) 'Ulagan, Oyuna$_2$, stupidly said [$_{CP}$ that ___$_2$ is genius].'

b′. **Ulaɣan-Ø   bol Oyunaa$_2$-yi teneg-iyer [$_{CP}$ △] kele-jei.*
    Ulagan-NOM TOP Oyuna-ACC stupidly   say-PST.CON
    (Lit.) 'Ulagan, Oyuna$_2$, stupidly said [$_{CP}$ △].'

(105) Turkish

a. *Zeynep-Ø   Can$_1$-ı   dün-den   beri [$_{CP}$ ___$_1$ araba-sın-ı*
    Zeynep-NOM Can-ACC yesterday-ABL since   car-3SG.POSS-ACC
    yıka-dı]   san-ıyor.
    wash-PST.3SG believe-PROG.PRES.3SG
    (Lit.) 'Zeynep has believed, Can$_1$, since yesterday [$_{CP}$ ___$_1$ washed the car].'

b. *Mete-Ø   de Ali$_2$-yi bugün-den beri [$_{CP}$ ___$_2$ araba-sın-ı*
    Mete-NOM TOP Ali-ACC today-ABL since   car-3SG.POSS-ACC
    yıka-dı]   san-ıyor.
    wash-PST.3SG believe-PROG.PRES.3SG
    (Lit.) 'Mete has believed, Ali$_2$, since today [$_{CP}$ ___$_2$ washed the car].'

b′. **Mete-Ø   de Ali$_2$-yi bugün-den beri [$_{CP}$ △] san-ıyor.*
    Mete-NOM TOP Ali-ACC today-ABL since   believe-PROG.PRES.3SG
    (Lit.) 'Mete has believed, Ali$_2$, since today [$_{CP}$ △].'

With the (a) sentences as their antecedents, the (b) sentences are grammatical, but the (b′) sentences which involve ECM-movement out of the embedded null CPs are ungrammatical. Given that the embedded CPs in the ECM construction can in principle be empty as shown in (100)–(102), what seems to be responsible for the ungrammaticality of the (b′) sentences in (103)–(105) is extraction out of the embedded null CPs. Therefore, the data in (103)–(105) lead to the conclusion that ECM-movement, which is an instance of overt movement, is banned out of null arguments in Korean, Mongolian, and Turkish, on a par with ECM-movement out of Japanese null arguments.[20]

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20. It is worth noting here that control clauses can be phonologically dropped in the relevant languages, as in (i)–(iii).

(i) Korean
    Chelswu-nun Mia$_i$-ykey [$_{CP}$ PRO$_i$ ttena-tolok] yaksokha-yess-ta.   Yenghui-nun
    Chelswu-TOP Mia-DAT   leave-C   persuade-PST-DECL Yenghui-TOP
    Swuni-ykey [$_{CP}$ △] yaksokha-yess-ta.
    Swuni-DAT   persuade-PST-DECL
    (Lit.) 'Chelswu persuaded Mia$_i$ [$_{CP}$ PRO$_i$ to leave]. Yenghui persuaded Swuni [$_{CP}$ △].'

4.2.3 Topicalization and superraising: Chinese

As for Chinese, I will employ topicalization and superraising to investigate whether overt extraction is possible out of null arguments because Chinese does not have either scrambling or ECM movement.

Let us first discuss topicalization. Although the basic word order in Mandarin Chinese is SVO, as in (106a), the OSV order is also allowed, as in (106b).

(106) a. *Wo hen xihuan yinyue.*
          I   very like   music
          'I like music.'

   b. *Yinyue$_i$, wo hen xihuan e$_i$.*
          music   I   very like
          (Lit.) 'Music$_i$, I like e$_i$.'   (Huang et al. 2009: 199)

The configuration where objects are fronted over subjects, e.g. (106b), is generally taken to involve topicalization in Chinese (cf. Li & Thompson 1976, 1981; Tang 1977; Paris 1979; Huang 1982; Huang et al. 2009; among many others). It has been reported in the literature that topicalization in Chinese exhibits subjacency effects, as in (107b), though a long-distance dependency is in principle possible, as in (107a).

   (ii) Mongolian
         Baγatur-Ø   Ulaganᵢ-du [$_{CP}$ PROᵢ surγayuli-du oči gejü] kele-jei.   Batu-Ø
         Bagatur-NOM Ulagan-DAT   school-to   go C   tell-PST.CON Batu-NOM
         bol Oyunaa-du [$_{CP}$ △] kele-jei.
         TOP Oyunaa-DAT   tell-PST.CON
         (Lit.) 'Bagatur told Ulagan$_i$ [$_{CP}$ PRO$_i$ to go to school]. Batu told Oyunaa [$_{CP}$ △]. '

   (iii) Turkish
         Ahmet-Ø   Ayşeᵢ-ye [$_{CP}$ PROᵢ okul-a   git-me-sin]-i   söyle-di.
         Ahmet-NOM Ayşe-DAT   school-to go-NML-3SG-ACC say-PST.3SG
         Mete-yse   Can-a   [$_{CP}$ △] söyle-di.
         Mete-however Can-DAT   say-PST.3SG
         (Lit.) 'Ahmet told Ayse$_i$ [$_{CP}$ PRO$_i$ to go to school]. However, Mete told Can [$_{CP}$ △].'

These data indirectly support the raising analysis of the ECM construction in Korean, Mongolian, and Turkish because if ECMed subjects in the relevant languages are base-generated in matrix clauses with co-indexed empty pronouns, e.g. *pro*, within embedded CPs, the (b') examples in (103)–(105) should be grammatical, on a par with (i)–(iii), because the prolepsis analysis basically treats (103)–(105) and (i)–(iii) in the same way, i.e. in terms of binding/control, so extraction cannot be responsible for the ungrammaticality of (103)–(105): the contrast between (103)–(105) and (i)–(iii) would remain mysterious under the prolepsis analysis of the ECM contruction (recall also that, as discussed in Chapter 3, examples like (i–iii) argue against the movement analysis of control).

(107) a. *Zhangsan_i, wo zhidao [_{CP} Lisi juede [_{CP} nimen dou hui xihuan e_i]].*
Zhangsan I know   Lisi feel   you   all   will like
(Lit.) 'Zhangsan_i, I know [_{CP} that Lisi feels [_{CP} that you will all like e_i]].'
                                             (Huang et al. 2009: 207)

b. **Lisi_i, wo renshi [henduo [_{relative clause} e_i xihuan de] ren].*
Lisi I   know many   like   DE person
(Lit.) 'Lisi_i, I know [many people [_{relative clause} who likes e_i]].'
                                             (Huang et al. 2009: 208)

In (107a), the gap related to the topicalized element *Zhangsan* is deeply embedded, but the sentence is grammatical. However, (107b), where the gap related to the topicalized element *Lisi* is located inside of a relative clause, is ungrammatical, which can be considered as an instance of a violation of Ross's (1967) complex NP constraint.[21] This indicates that topicalization in Chinese involves movement (see Tang 1977; among many others).

Given that movement is involved in topicalization, we can test whether overt movement is possible out of null arguements in Mandarin Chinese. It has been already observed by Li (2014) that topicalization is disallowed out of them. Consider the following examples.

(108) a. *Na-ben shu₁, Lisi juede [_{CP} Zhangsan mai-le ___₁].*
that-CL book Lisi feel   Zhangsan buy-ASP
(Lit.) 'That book₁, Lisi feels that [_{CP} Zhangsan bought ___₁].'

b. *Na-ben shu₂, Wangwu ye juede [_{CP} Zhangsan mai-le ___₂].*
that-CL book Wangwu also feel   Zhangsan buy-ASP
(Lit.) 'That book₂, Wangwu also feels [_{CP} that Zhangsan bought ___₂].'

b'. **Na-ben shu₂, Wangwu ye juede [_{CP} △].*
that-CL book Wangwu also feel
(Lit.) 'That book₂, Wangwu also feels [_{CP} △].'

In (108a), *na-ben shu* 'that book' is topicalized out of the embedded CP. With (108a) as its antecedent, (108b) is grammatical, while (108b'), which involves topicalization out of a null CP, is ungrammatical. As shown above, the CP-drop itself is possible (cf. (8)), so topicalization should be responsible for the ungrammaticality of

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21. Not all instances of topicalization in Chinese are subject to subjacency effects. For example, Huang et al. (2009: 209) mention, "[…,] island effects seem to be nullified when a given island occurs in a subject or pre-subject position", on the basis of the examples like (i).

(i) *Zhangsan_i, [[_{relative clause} e_i xihuan de] ren] hen duo.*
Zhangsan   like   DE person very many
(Lit.) 'Zhangsan_i, [people [_{relative clause} who e_i likes]] are many.' (Huang et al. 2009: 209)

Thus, in the following discussion, I will restrict my attention to the cases where a phrase including the relevant gap is not located in a subject or pre-subject position.

(108b′), which in turn means that topicalization, i.e. an instance of overt movement, is disallowed out of null arguments in Chinese.

Let us turn now to superraising. It has been reported in the literature that Chinese has several raising modals with clausal complements that can optionally implement raising out of a clausal boundary. Consider the following examples.

(109) a. *Keneng [*clause *Zhangsan reng-le   nei   kuai   rou   gei ta].*
    likely   Zhangsan toss-ASP that piece meat to   he

    'It is likely [clause that Zhangsan tossed that piece of meat to him].'

  b. *Ta₁ keneng [*clause *Zhangsan reng-le   nei   kuai   rou   ___₁].*
    he   likely   Zhangsan toss-ASP that piece meat

    (Lit.) 'He₁ is likely [clause that Zhangsan tossed that piece of meat ___₁].'

<div align="right">(Ura 1994: 16)</div>

Here, *keneng* 'likely' is a raising modal taking a clausal complement (see Li 1990; Lin & Tang 1995; Huang et al. 2009; among many others for relevant discussion). Although nothing has been raised out of the clausal complement in (109a), *ta* 'he' has been raised out of it in (109b).[22] Li (1990) claims that that (109b) involves raising is supported by the ability of idioms to occur in the relevant configuration, using *you-mo*, which is a V+O idiom chunk (cf. Huang 1983) historically transliterated from the English word *humor* (see Li 1990 for more arguments for the raising analysis). Consider the following example.

(110) *Wo you le   ta   yi   mo.*
    I   hu- ASP him one -mor
    'I humored him.'   (Li 1990: 126)

Here, *you* 'hu-' and *mo* '-mor' constitute an idiomatic expression meaning 'humor' with the latter being modified by *yi* 'one'. Li notes that *you* 'hu-' and *mo* '-mor' must co-occur, as in (111), and that *mo* '-mor' can undergo passivization, as in (112).

(111) a. **Wo bu   xihuan zheige mo.*
      I   NEG like   this   -mor

  b. **Wo bu   hui you.*   (Li 1990: 126)
      I   NEG can hu-

(112) *Zheige mo₁ bei ta   you-huai ___₁ le.*
    this   -mor by him hu-bad   ASP
    (Lit.) 'This -mor₁ was hu-ed bad ___₁ by him.'   (Li 1990: 127)
    ≈ 'This joke was ruined by him.'

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22. As Ura (1994) notes, (109b) may not be as acceptable as (109a) for some speakers. The discussion in this section is based on the judgments of the native speakers of Mandarin Chinese who accept (109a) and (109b) equally.

(111a) and (111b) are unacceptable because the former only involves *mo* '-mor' and the latter *you* 'hu-'. In (112), *zheige mo* 'this -mor' has been displaced under passivization. Importantly, Li observes that *mo* '-mor' can occur in front of raising modals, as in (113).

(113) *Zheig mo$_1$ keneng [$_{clause}$ bei ta   you-huai ___$_1$] ma?*
    this   -mor likely   by him hu-bad   Q
    (Lit.) 'Is this -mor likely to be hu-ed bad by him?'   (Li 1990: 127)
    ≈ 'Is it likely that this joke will be ruined by him?'

Here, *zheig mo* 'this -mor' occupies the matrix subject position, leaving its gap within the embedded clause. Given the standard assumption that parts of an idiomatic expression must be base-generated 'adjacently', the grammaticality of (113) with the intended interpretation indicates that elements placed in front of modals such as *keneng* 'likely' have been moved out of embedded clauses: a gap within clausal complements of raising modals related to fronted elements cannot be mediated via binding/control.

Given that movement is involved in superraising in Chinese, let us investigate whether the relevant movement is possible out of null arguments. Clausal complements of raising modals themselves can be phonologically dropped, as illustrated in (114).

(114) a. *Xu juede keneng [$_{clause}$ Zhangsan reng-le   nei kuai rou   gei ta].*
        Xu feel   likely   Zhangsan toss-ASP that piece meat to he
        'Xu feels that it is likely [$_{clause}$ that Zhangsan tossed that piece of meat to him].'
    b. *Lisi ye   juede keneng [$_{clause}$ △].*
        Lisi also feel   likely
        (Lit.) 'Lisi also feels that it is likely [$_{clause}$ △].'

Here, nothing has been raised out of the relevant clausal complement. With (114a) as its antecedent, (114b), where the embedded CP is phonologically null, is grammatical: the null clausal complement in (114b) can be successfully anaphoric on the clausal complement in (114a). The following examples then indicate that superraising is impossible out of null arguments in Chinese.

(115) a. *Xu juede ta$_1$ keneng [$_{clause}$ Zhangsan reng-le   nei kuai rou   ___$_1$].*
        Xu feel   him likely   Zhangsan toss-ASP that piece meat
        (Lit.) 'Xu feels that he$_1$ is likely [$_{clause}$ that Zhangsan tossed that piece of meat ___$_1$].'

      b.   *Lisi ye   juede ta₂ keneng [$_{clause}$ Zhangsan reng-le   nei kuai*
          Lisi also feel   he likely   Zhangsan toss-ASP that piece
          rou   ___₂].
          meat
          (Lit.) 'Lisi also feels that he₂ is likely [$_{clause}$ that Zhangsan tossed that piece
          of meat ___₂].'
     b'. *Lisi ye   juede ta₂ keneng [$_{clause}$ △].*
          Lisi also feel   he likely
          (Lit.) 'Lisi also feels that he₂ is likely [$_{clause}$ △].'

In (115a), *ta* 'he' has been raised out of the clausal complement. With (115a) as its antecedent, (115b) is grammatical, while (115b'), which involves raising of *ta* 'he' out of the embedded null clausal complement, is ungrammatical. Given that the relevant CP can be phonologically null without raising, cf. (114b), the ungrammaticality of (115b') indicates that what matters here is in fact superraising, which in turn means that superraising as well as topicalization, both of which involve overt movement, are banned out of null arguments in Chinese.

4.2.4 Interim summary

In this section, I have investigated overt extraction possibilities out of null arguments in CKMT. It has been shown that long-distance scrambling and ECM-movement are disallowed out of null arguments in Korean, Mongolian, and Turkish, and that topicalization and superraising are disallowed out of null arguments in Chinese. The above observations thus lead us to conlude that overt extraction is uniformly disallowed out of CKMT null arguments, on a par with overt extraction out of Japanese null arguments. If, as discussed in Section 4.1, null arguments can be derived via argument ellipsis in CKMT in the same way as in Japanese, it is expected that they should exibit the same behavior regarding not only overt extraction but also covert extraction out of them as Japanese null arguments. CKMT null arguments should then allow covert extraction out of them, on a par with Japanese null arguments. The following discussion demonstrates that this is indeed the case: CKMT null arguments uniformly allow covert extraction out of them.

4.3   Covert extraction out of null arguments cross-linguistically

4.3.1   Null operator movement

4.3.1.1   *Cleft and comparative deletion: Korean, Mongolian, and Turkish*

Now let us turn to the possibility of covert extraction out of CKMT null arguments, starting with null operator movement.[23] For Korean, Mongolian, and Turkish, I will use the cleft construction (see Sohn 2000; Yoon 2005; Kang 2006; Cho et al. 2008; among others for Korean clefts; Bao 2015 for Mongolian clefts; and İnce 2006 for Turkish clefts) and comparative deletion (see Lee 2002; Park 2008; Choe 2011 for Korean comparative deletion; Bao 2015 for Mongolian comparative deletion; and İşsever 2009 for Turkish comparative deletion) to test the possibility of null operator movement out of null arguments in the languages in question.

Let us first consider the cleft construction. (116a)–(c) iilustrate the basic example of the cleft construction in Korean, Mongolian, and Turkish, respectively.[24]

(116)   a.   Korean
   [$Op_{1/i}$ *Chelswu-ka* ____$_{1/i}$ *sa-n   kes]-un chayk$_i$-ul*
      Chelswu-NOM   buy-REL KES-TOP book-ACC
   (sey-kwen) i-ta.
   three-CL   COP-DEC
   'It is (three) books$_i$ [$Op_{1/i}$ that Chelswu bought ____$_{1/i}$].'

   b.   Mongolian
   [$Op_{1/i}$ *nidunun Ulayan-Ø   ____$_1$ biči-gsen]-ni-bol   ene*
      last.year Ulagan-NOM   write-PST.ADN-3PP-TOP this
   nom$_1$-i.
   book-ACC
   'It is this book$_i$ [$Op_{1/i}$ that Ulagan wrote ____$_{1/i}$ last year].'   (Bao 2015: 34)

   c.   Turkish
   [$Op_{1/i}$ *Ahmet-in   ____$_{1/i}$ sev-diğ]-i   Ayşe$_i$-Ø.*
      Ahmet-GEN   love-NML-POSS.3SG Ayşe-NOM
   'It is Ayşe$_i$ [$Op_{1/i}$ that Ahmet loves ____$_{1/i}$].'   (İnce 2006: 287)

Here, the focused elements are related to a gap within the presupposed part. For example, in Korean (116a), the focused element *chayk* 'book' is related to a gap in the complement of the verb *sa* 'buy'. That the gap within the presupposed parts in

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23.   Recall that by covert extraction I mean extraction that does not affect word order.

24.   Although Kang (2006) claims that case-marked clefts such as (116a) are not acceptable in Korean, some such examples are reported to be grammatical in much literature (see, e.g. Cho et al. 2008, and also my informants (all of them linguists) accept (116a)). I have nothing interesting to say to account for this speaker variation, putting aside the issue in the following discussion.

the cleft construction in the relevant languages is created via null operator movement is supported by the fact that the construction in question is subject to subjacency effetcs, as in the (b) examples of (117)–(119) though it in principle allows a long-distance dependency, as in the (a) examples of (117)–(119).[25]

(117) Korean

    a. *[Op$_{1/i}$ Chelswu-ka   [$_{CP}$ Yenghi-ka   ___$_{1/i}$ sa-ss-ta-ko]*
        Chelswu-NOM   Yenghi-NOM   buy-PST-DECL-C
        sayngkakha-n-un kes]-un i kulim$_i$-ul i-ta.
        think-PRES-REL KES-TOP this picture-ACC be-DEC
        'It is this picture$_i$ [Op$_{1/i}$ that Chelswu thinks [$_{CP}$ that Yenghi bought ___$_{1/i}$]].'

    b. **[Op$_{1/i}$ Chelswu-ka   [[$_{relative\ clause}$ ___$_{1/i}$ ssu-n]   salam]-ul*
        Chelswu-NOM   write-REL person-ACC
        piphanha-n kes]-un ku nonmwun$_i$-ul i-ta.
        criticize-REL KES-TOP the article-ACC   be-COP
        (Lit.) 'It is the article$_i$ [Op$_{1/i}$ that Chelswu criticized [the person [$_{relative\ clause}$ who wrote ___$_{1/i}$]]].'

(118) Mongollian

    a. *[Op$_{1/i}$ John-Ø   [$_{CP}$ Baɣatur-Ø   ___$_{1/i}$ jodu-ɣsan   gejü]*
        John-NOM   Bagatur-NOM   hit-PST.ADN C
        bodu-ɣsan]-ni-bol   Ulaɣan$_i$-i.
        think-PST.ADN-3PP-TOP Ulagan-ACC
        'It is Ulagan$_i$ [Op$_{1/i}$ that John thought [$_{CP}$ that Bagatur hit ___$_{1/i}$]].'

    b. **[Op$_{1/i}$ Batu-Ø   [[$_{relative\ clause}$ ___$_{1/i}$ jodu-ɣsan]   kümün]-i*
        Batu-NOM   hit-PST.ADN person-ACC
        sigümjile-gsen]-ni-bol   Ulaɣan$_i$-i.
        critciize-PST.ADN-3PP-TOP Ulagan-ACC
        (Lit.) 'It is Ulagan$_i$ [Op$_{1/i}$ that Batu criticized [the person [$_{relative\ clause}$ who hit ___$_{1/i}$]].'

(119) Turkish

    a. *[Op$_{1/i}$ Ahmet-in   [$_{CP}$ Mete-Ø   ___$_{1/i}$ gör-dü   diye]*
        Ahmet-GEN   Mete-NOM   see-PST.3SG C
        düşün-düğ]-ü   Ayşe$_i$-Ø.
        think-NML-POSS.3SG Ayşe-NOM
        'It is Ayşe$_i$ [Op$_{1/i}$ that Ahmet thought [$_{CP}$ that Mete saw ___$_{1/i}$]].'

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25. In the Turkish Example (119a), if the embedded clause within the presupposed part is replaced by a *dik*-clause without the overt complementizer *diye*, the sentence becomes marginal to my informants. I will leave this matter for future reseacrh.

b. *[Op$_{1/i}$ *Hasan'in* [[$_{relative\ clause}$ ——$_{1/i}$ *okuy-an] adam-a*
Hasan.GEN read-REL man-DAT
bağır-dığ]-ı dergi$_i$-Ø(-dir).
yell-NML-POSS.3SG magazine-NOM-COP
(Lit.) 'It is the mag$_i$ [Op$_{1/i}$ that Hasan yelled at [the man [$_{relative\ clause}$ who
read ——$_{1/i}$]]: (İnce 2006: 288)

In the (a) examples, the gap associated with the focused element is located within
the embedded clause of the presupposed part, and the sentences are grammatical.
In the (b) examples, the relevant gap is inside of a relative clause, and the sen-
tences are ungrammatical. The contrast in the (a) examples and the (b) examples
of (117)–(119) thus indicates that null operator movement is involved in the cleft
construction in Korean, Mongolian, and Turkish. Given this, the following data
demonstrate that null operator movement is possible out of null arguments in
Korean, Mongolian, and Turkish.

(120) Korean
a. *[Op$_{1/i}$ Chelswu-ka* [$_{CP}$ *Yenghi-ka* ——$_{1/i}$ *sa-ss-ta-ko]*
Chelswu-NOM Yenghi-NOM buy-PST-DECL-C
sayngkakha-nun kes]-un i kulim$_i$-ul i-ta.
think-REL KES-TOP this picture-ACC be-DEC
'It is this picture$_i$ [Op$_{1/i}$ that Chelswu thinks [$_{CP}$ that Yenghi bought ——$_{1/i}$]]:
b. *[Op$_{2/j}$ Mia-ka* [$_{CP}$ *Yenghi-ka* ——$_{2/j}$ *sa-ss-ta-ko]*
Mia-NOM Yenghi-NOM buy-PST-DECL-C
sayngkakha-nun kes]-un i nonmwun$_j$-ul i-ta.
think-REL KES-TOP this article-ACC be-DEC
'It is this article$_j$ [Op$_{2/j}$ that Mia thinks [$_{CP}$ that Yenghi bought ——$_{2/j}$]]:
b'. *[Op$_{2/j}$ Mia-ka* [$_{CP}$ △] *sayngkakha-nun kes]-un i nonmwun$_j$-ul i-ta.*
Mia-NOM think-REL KES-TOP this article-ACC be-DEC
(Lit.) 'It is this article$_j$ [Op$_{2/j}$ that Mia thinks [$_{CP}$ △]]:

(121) Mongolian
a. *[Op$_{1/i}$ John-Ø* [$_{CP}$ *Baγatur-Ø* ——$_{1/i}$ *jodu-ysan gejü]*
John-NOM Bagatur-NOM hit-PST.ADN C
bodu-ysan]-ni-bol Ulaγan$_i$-i.
think-PST.ADN-3PP-TOP Ulagan-ACC
'It is Ulagan$_i$ [Op$_{1/i}$ that John thought [$_{CP}$ that Bagatur hit ——$_{1/i}$]]:
b. *[Op$_{2/j}$ Bill-Ø* [$_{CP}$ *Baγatur-Ø* ——$_{2/j}$ *jodu-ysan gejü]*
Bill-NOM Bagatur-NOM hit-PST.ADN C
bodu-ysan]-ni-bol Batu$_j$-yi.
think-PST.ADN-3PP-TOP Batu-ACC
'It is Batu$_j$ [Op$_{2/j}$ that Bill thought [$_{CP}$ that Bagatur hit ——$_{2/j}$]]:

b′. *[Op$_{2/j}$ Bill-Ø   [$_{CP}$ △] bodu-ɣsan]-ni-bol   Batu$_j$-yi.*
      Bill-NOM   think-PST.ADN-3PP-TOP Batu-ACC
      (Lit.) 'It is Batu$_j$ [Op$_{2/j}$ that Bill thought [$_{CP}$ △]].'

(122) Turkish
   a. *[Op$_{1/i}$ Ahmet-in   [$_{CP}$ Mete-Ø   ___$_{1/i}$ gör-dü   diye] dün*
         Ahmet-GEN   Mete-NOM   see-PST.3SG C   yesterday
      düşün-düğ]-ü   Ayşe$_i$-Ø.
      think-NML-POSS.3SG Ayşe-NOM
      'It is Ayşe$_i$ [Op$_{1/i}$ that Ahmet thought [$_{CP}$ that Mete saw ___$_{1/i}$] yesterday].'
   b. *[Op$_{2/j}$ pro [$_{CP}$ Mete-Ø   ___$_{2/j}$ gör-dü   diye] bugün*
         he   Mete-NOM   see-PST.3SG C   today
      düşün-düğ]-ü   Can$_j$-Ø.
      think-NML-POSS.3SG Can-NOM
      'It is Can$_j$ [Op$_{2/j}$ that he thought [$_{CP}$ that Mete saw ___$_{2/i}$] today].'
   b′. *[Op$_{2/j}$ pro [$_{CP}$ △] bugün düşün-düğ]-ü   Can$_j$-Ø.*
         he   today think-NML-POSS.3SG Can-NOM
      (Lit.) 'It is Can$_j$ [Op$_{2/j}$ that he thought [$_{CP}$ △] today].'

In the (a) examples, null operator is extracted out of the embedded clause of the presupposed part. With the (a) sentences as their antecedents, the (b′) sentences which involve null operator movement out of a null CP are grammatical: they receive the same interpretation as the (b) examples. The grammaticality of the (b′) examples thus constitute evidence that null arguments in Korean, Mongolian, and Turkish allow null operator movement out of them.

Let us then turn to comparative deletion. (123a)–(c) exemplify the basic cases of comparative deletion in Korean, Mongolian, and Turkish, respectively.

(123) a. Korean
         Chelswu-nun [Op$_1$ Yenghui-ka   ___$_1$ pel-n   kes-pota] manhun
         Chelswu-TOP   Yenghui-NOM   earn-REL KES-than much
         ton-ul   pel-ess-ta.
         money-ACC earn-PST-DECL
         'Chelswu earned more money [Op$_1$ than Yenghui earned ___$_1$].'
      b. Mongolian
         Batu-Ø   [Op$_1$ Ulayan-Ø   ___$_1$ ungsi-ɣsan   ača] olan
         Batu-NOM   Ulagan-NOM   read-PST.ADN than many
         nom-Ø   ungsi-jai.
         book-ACC read-PST.CON
         'Batu read more books [Op$_1$ than Ulagan read ___$_1$].'   (cf. Bao 2015: 45)

c. Turkish
Can-Ø   [Op₁ Ali-nin ____₁ oku-düğ-ın-dan]   daha-çok
Can-NOM   Ali-GEN   read-NML-POSS.3SG-ABL more
kitap-Ø   oku-yor.
book-ACC read-PROG.PRES.3SG
'Can reads more books [Op₁ than Ali read ____₁].'

That the gap within the *than* clause in the above examples is created by movement of a comparative operator is confirmed by the fact that gaps in comparative deletion can in principle be embedded, as in the (a) examples of (124)–(126), while they cannot occur within islands, e.g. relative clauses, as in the (b) examples of (124)–(126).

(124)   Korean
a. *[Op₁ Chelswu-ka   [_CP Mia-ka   ____₁ pel-ess-ta-ko]*
        Chelswu-NOM   Mia-NOM   earn-PST-DECL-C
sayngkakha-yess-ta-n kes-pota] Bill-un   manhun
think-PST-REL   KES-than Bill-TOP   much
ton-ul   pel-ess-ta.
money-ACC earn-PST-DECL
'Bill earned more money [Op₁ than Chelswu thought [_CP that Mia earned ____₁]].'
b. **Ku-nun [Op₁ nay-ka [[_relative clause ____₁ ssu-n ku] cakka-lul] manna-n*
you-TOP   I-NOM   write-REL writer-ACC met-REL
kes-pota] te   manhun sosel-ul   ss-ess-ta.
KES-than more many   novel-ACC write-PST-DECL
(Lit.) 'You wrote more novels [Op₁ than I met [the writer [_relative clause who writes____₁]]].'

(125)   Mongolian
a. *John-Ø   [Op₁ Ulayan-Ø   [_CP Bayatur-Ø   ____₁ ungsi-ysan*
John-NOM   Ulagan-NOM   Bagatur-NOM   read-PST.ADN
gejü] bodu-ysan-eče]   olan nom-Ø   ungsi-jai.
C   think-PST.ADN-than more book-ACC read-PST.CON
'John read more books [Op₁ than Ulagan thought [_CP that Bagatur read ____₁]].'
b. **Batu-Ø   [Op₁ [[_relative clause alban ger-tü ____₁ ungsi-ysan]*
Batu-NOM   office-at   read-PST.ADN
kümün]-i Ulayan-Ø   sigümjile-gsen-eče]   olan
person-ACC Ulagan-NOM criticize-PST.ADN-than more
nom-Ø   ungsi-jai.
book-ACC read-PST.CON
(Lit.) 'Batu read more books [Op₁ than Ulagan criticized [the person [_relative clause who read ____₁ at the office]]].'

(126)   Turkish

    a.   *Can-Ø   [Op_1 Ali-nin [$_{CP}$ Mete-nin   ____$_1$ oku-duğ-un]-u*
          Can-NOM   Ali-GEN   Mete-GEN   read-NML-POSS.3SG-ACC
          san-dığ-ın-dan]   daha-çok kitap-Ø   oku-yor.
          think-NML-POSS.3SG-ABL   more   book-ACC read-PROG
          'Can reads more books [Op_1 than Ali thinks [$_{CP}$ that Mete read ____$_1$]].'

    b.   **Can-Ø   [Op_1 Ahmet-in   [[$_{relative\ clause}$ ____$_1$ oku-yan] adam]-ı*
          Can-NOM   Ahmet-GEN   read-REL man-ACC
          eleştir-diğ-in-den]   daha-çok kitap-Ø   oku-yor.
          criticize-NML-3SG-ABL   more   book-ACC read-PROG
          (Lit.) 'Can reads more books [Op_1 than Ahmet criticized [the man
          [$_{relative\ clause}$ who read ____$_1$]]].'

The contrast in the (a) and the (b) examples of the above cases straightforwardly follows if comparative deletion in the relevant languages involves null operator movement because null operator crosses an island boundary in the (b) examples, causing a violation of subjacency.

    Assuming that null operator movement is involved in comparative deletion in Korean, Mongolian, and Turkish, I will examine whether such movement is possible out of null arguments in these languages. Consider the following examples.

(127)   Korean

    a.   *[Op_1 Yenghi-ka   [$_{CP}$ Mia-ka   ____$_1$ pel-ess-ko] sayngkakha-ysste-n*
               Yenghi-NOM   Mia-NOM   earn-PST-C think-PST-REL
          kes-pota] John-un   manhun ton-ul   pel-ess-ta.
          KES-than John-TOP much   money-ACC earn-PST-DECL
          'John earned more money [Op_1 than Yenghi thought [$_{CP}$ that Mia earned ____$_1$]].'

    b.   *[Op_2 Chelswu-ka   [$_{CP}$ Mia-ka   ____$_2$ pel-ess-ko] sayngkakha-ysste-n*
               Chelswu-NOM   Mia-NOM   earn-PST-C think-PST-REL
          kes-pota] Bill-un   manhun ton-ul   pel-ess-ta.
           KES-than Bill-TOP much   money-ACC earn-PST-DECL
          'Bill earned more money [Op_2 than Chelswu thought [$_{CP}$ that Mia earned ____$_2$]].'

    b'. *[Op_2 Chelswu-ka   [$_{CP}$ △] sayngkakha-ysste-n kes-pota] Bill-un*
            Chelswu-NOM   think-PST-REL   KES-than Bill-TOP
         manhun ton-ul   pel-ess-ta.
         much   money-ACC earn-PST-DECL
         (Lit.) 'Bill earned more money [Op_2 than Chelswu thought [$_{CP}$ △]].'

(128)   Mongolian

    a.   *John-Ø   [Op$_1$ Ulaɣan-Ø   [$_{CP}$ Baɣatur-Ø   ___$_1$ ungsi-ɣsan*
        John-NOM   Ulagan-NOM   Bagatur-NOM   read-PST.ADN
        gejü] bodu-ɣsan-eče]   olan   nom-Ø   ungsi-jai.
        C   think-PST.ADN-than   more   book-ACC   read-PST.CON
        'John read more books [Op$_1$ than Ulagan thought [$_{CP}$ that Bagatur read
        ___$_1$]]'.

    b.   *Bill-Ø   bol [Op$_2$ Batu-Ø   [$_{CP}$ Baɣatur-Ø   ___$_2$ ungsi-ɣsan*
        Bill-NOM   TOP   Batu-NOM   Bagatur-NOM   read-PST.ADN
        gejü] bodu-ɣsan-eče]   olan   nom-Ø   ungsi-jai.
        C   think-PST.ADN-than   more   book-ACC   read-PST.CON
        'Bill read more books [Op$_2$ than Batu thought [$_{CP}$ that Bagatur read ___$_2$]]'.

    b′.   *Bill-Ø   bol [Op$_2$ Batu-Ø   [$_{CP}$ △] bodu-ɣsan-eče]   olan*
        Bill-NOM   TOP   Batu-NOM   think-PST.ADN-than   more
        nom-Ø   ungsi-jai.
        book-ACC   read-PST.CON
        (Lit.) 'Bill read more books [Op$_2$ than Batu thought [$_{CP}$ △]]'.

(129)   Turkish

    a.   *Can-Ø   [Op$_1$ Ali-nin [$_{CP}$ Mete-nin   ___$_1$ oku-duğ-un]-u*
        Can-NOM   Ali-GEN   Mete-GEN   read-NML-POSS.3SG-ACC
        san-dığ-ın-dan]   daha-çok kitap-Ø   oku-yor.
        think-NML-POSS.3SG-ABL   more   book-ACC   read-PROG.PRES.3SG
        'Can reads more books [Op$_1$ than Ali thinks [$_{CP}$ that Mete read ___$_1$]]'.

    b.   *Hasan-Ø   da [Op$_2$ Ahmet-in   [$_{CP}$ Mete-nin   ___$_2$*
        Hasan-NOM   TOP   Ahmet-GEN   Mete-GEN
        oku-duğ-un]-u   san-dığ-ın-dan]   daha-çok kitap-Ø
        read-NML-POSS.3SG-ACC   think-NML-POSS.3SG-ABL   more   book-ACC
        oku-yor.
        read-PROG.PRES.3SG
        'Hasan reads more books [Op$_2$ than Ahmet thinks [$_{CP}$ Mete read ___$_2$]]'.

    b′.   *Hasan-Ø   da [Op$_2$ Ahmet-in   [$_{CP}$ △] san-dığ-ın-dan]*
        Hasan-NOM   TOP   Ahmet-GEN   think-NML-POSS.3SG-ABL
        daha-çok kitap-Ø   oku-yor.
        more   book-ACC   read-PROG.PRES.3SG
        (Lit.) 'Hasan reads more books [Op$_2$ than Ahmet thinks [$_{CP}$ △]]'.

With the (a) sentences as their antecedents, both the (b) and the (b′) examples are grammatical. Important for our current discussion is the grammaticality of the (b′) examples, which involve comparative operator movement out of a null CP. Specifically, that the (b′) sentences are grammatical constitutes evidence that comparative operator movement, an instance of covert movement, is allowed out

of null arguments in Korean, Mongolian, and Turkish, on a par with null operator movement in the cleft construction in these languages.

4.3.1.2 *Relative clause: Chinese*

Now, let us turn to null operator movement in Chinese. As has been pointed out in the literature, it is not clear whether Chinese has the cleft construction or comparative deletion involving Ā-movement dependencies. The following is cited from Huang et al. (2009).

(130)   Other constructions that have been claimed to involve "*wh*-movement" or "Aʹ-movement" are cleft structures, pseudo-clefts, comparatives, etc. in English […] It is not clear Chinese has a pseudo-cleft construction, distinct from a relative structure. Nor it is clear that Aʹ-movement is involved in all these structures in Chinese.   (Huang et al. 2009: 197)

Therefore, examining whether null operator movement is allowed out of Chinese null arguments on the basis of the cleft construction and comparative deletion may not be appropriate/possible. However, Huang et al. (2009) note that there is a clear case where Ā-movement is involved, a relative clause structure (see also Huang 1982, 1990; Ning 1993; Del Gobbo 1999, 2007; Li 1997; Huang et al. 2000; Aoun & Li 2003 for discussion of Chinese relative clauses). (131) exemplifies a case of a relative structure in Chinese.

(131)   *[Op$_1$ Lisi mai ___$_1$ de] neixie shu*
        Lisi buy   DE those book
        'the books [that Lisi bought]'

The claim that Ā-movement is involved in the relative clause structure in Chinese is supported by the fact that the construction in question exhibits subjacency effects, as in (132b), though it in principle allows a long-distance dependency, as in (132a).

(132)   a.   *[[Op$_1$ wo zhidao [$_{CP}$ Lisi juede [$_{CP}$ nimen dou hui xihuan ___$_1$]] de]*
             I   know   Lisi feel   you   all   will like   DE
           ren]   lai-le.
           person come-ASP
           '[The person [Op$_1$ that I know [$_{CP}$ that Lisi feels [$_{CP}$ that you all will like ___$_1$]]]] came.'   (Del Gobbo 2007: 183)
     b.   **[[Op$_1$ wo renshi [henduo [$_{relative\ clause}$ xihuan ___$_1$ de] ren]   de]*
             I   know many   like   DE person DE
           nei-ge laoshi]   xing Wang.
           that-CL professor call   Wang
           (Lit.) '[The teacher [Op$_1$ that I know [many people [$_{relative\ clause}$ who likes ___$_1$]]]] has the surname Wang.'   (Del Gobbo 2007: 183)

In (132a), the gap is deeply embedded within the lowest CP, and the sentence is grammatical. By contrast, (132b), where the gap is located within a relative clause island, is ungrammatical. The data above thus indicate that Ā-movement, more precisely null operator movement, is in fact involved in the relative clause structure in Chinese.

Given this, let us investigate whether such movement is possible out of Chinese null arguments. Consider the following examples.

(133) a. *[[Op$_1$ Lisi juede [$_{CP}$ nimen dou xihuan ___$_1$] de] ren] lai -le.*
       Lisi feel   you   all like   DE people come-ASP
       '[The person [Op$_1$ that Lisi feels [$_{CP}$ that you all will like ___$_1$]]] came.'

   b. *Dan [[Op$_2$ Zhangsan juede [$_{CP}$ nimen dou xihuan ___$_2$] de] ren]*
       but   Zhangsan feel   you   all like   DE people
       mei lai.
       NEG come
       'But, [the person [Op$_2$ that Zhangsan feels [$_{CP}$ that you all will like ___$_2$]]] did not come.'

   b'. *Dan [[Op$_2$ Zhangsan juede [$_{CP}$ △] de] ren] mei lai.*
       but   Zhangsan feel   DE people NEG come
       (Lit.) 'But, [the person [Op$_2$ that Zhangsan feels [$_{CP}$ △]]] did not come.'

In (133a), relative operator is extracted out of the embedded CP. With (133a) as its antecedent, (133b'), which involves relative operator movement out of an embedded null CP, is grammatical: (133b') receives the same interpretation as (133b). This indicates that null operator movement, i.e. an instance of covert movement, is allowed out of null arguments in Chinese, on a par with Japanese, Korean, Mongolian, and Turkish.

4.3.2 Scope-shifting movement

4.3.2.1 *Quantifier raising: Korean and Turkish*
Although Korean and Turkish are generally classified as scope-rigid languages in the literature, it is not the case that quantifiers in these languages are always scopally rigid. This is, e.g. illustrated in (134) for an object QP and negation.[26]

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26. Not all types of object QPs in Turkish seem to interact with negation in this way. Consider the following examples.

(i) a. *Ali-Ø   bütün test-ler-e   gir-me-di.*   NEG » ∀;*∀ » NEG
      Ali-NOM all   test-PL-DAT take-NEG-PST
      'Ali did not take all the tests.'   (Öztürk 2005: 171)

(134) a.   Korean
            John-i   motun chayk-ul ilk-ci   ani-ha-yss-ta.
            John-NOM every book-ACC read-CI NEG-do-PST-DECL
            'John did not read all the books.'   NEG »∀;∀» NEG (Hagstrom 2000: 135)
      b.   Turkish
            Ahmet-Ø   en az   üç   bebeğ-i   azarla-ma-mış.
            Ahmet-NOM at.least three baby-ACC scold-NEG-EVID.PST
            'Ahmet did not scold at least three babies.'

                                   NEG » AT LEAST 3; AT LEAST 3 » NEG

In the Korean Example (134a), the universal object QP *motun chayk-ul* 'every book' can take scope over negation: (134a) can mean that John read no books. In the Turkish Example (134b), the QP object *en az üç bebeğ-i* 'at least three babies' can also take scope over negation: (134b) can mean that there are at least three babies that Ahmet did not scold (the sentence is true in the situation where there are three babies that Ahmet did not scold and there are five babies that Ahmet scolded).

Given the possibility of object QPs taking scope over negation in Korean and Turkish, the following ECM Examples (135a) and (135b) are plausible cases where QR is responsible for the inverse scope interpretation.

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      b.   *Can-Ø   Pelin-i   ya-da Cem-i   azarla-ma-mış.*
            Can-NOM Pelin-ACC or   Cem-ACC scold-NEG-EVID.PST
            'Can did not scold Pelin or Cem.'   NEG » OR;*OR » NEG

(ia) and (ib) show that negation obligatorily takes scope over universal and disjunctive QP objects, respectively. Thus, I will use *en az üç* 'at least three', which can take scope over negation, in the following discussion. It is also worth noting here that scope interactions between QP objects and negation in Mongolian are mediated by different negative markers as the following examples show.

(ii) a.   *Baɣatur-Ø   bükü kümün-i   maɣta-ysan   ügei.*   *NEG » ∀;∀ » NEG
            Bagatur-NOM all   people-ACC praise-PST.ADN NEG
            'Bagatur did not praise all the people.'
      b.   *Baɣatur-Ø   bükü kümün-i   maɣta-ysan   bisi.*   NEG » ∀;*∀ » NEG
            Bagatur-NOM all   people-ACC praise-PST.ADN NEG
            'Bagatur did not praise all the people.'   (Maki et al. 2015: 89)

(iia) involves a negative marker *ügei*, and the QP object *bükü kümün* obligatorily takes scope over negation. By contrast, (iib) involves a negative marker *bisi*, and the QP object in question must take scope under negation. Therefore, it seems difficult to investigate whether QR would be possible out of Mongolian null arguments by using QP arguments and negation.

(135) Korean
   a. *Chelswu-nun* [_{CP} *Seoul-kathi motun tosi-lul   hwalkicha-ta-ko]*
       Chelswu-TOP   Seoul-like all   city-ACC lively-DECL-C
       malhayss-ci anh-ess-ta.   NEG »∀;∀» NEG
       say-CI   NEG.do-PST-DECL
       'Chelswu did not say [_{CP} that, like Seoul, all the cities are lively].'
   b. *Yenghui-to   [_{CP} △] malhayss-ci anh-ess-ta.*   NEG »∀;∀» NEG
       Yenghui-also   say-CI   NEG.do-PST-DECL
       (Lit.) 'Chelswu did not say [_{CP} △], either.'

(136) Turkish
   a. *On yıl önce Ali-Ø   [_{CP} Ayşe-den en az   üç   bebeğ-i   güzel]*
       ten year before Ali-NOM   Ayşe-ABL at.least three baby-ACC pretty
       ilan   et-me-di.   NEG » AT LEAST 3; AT LEAST 3 » NEG
       declaration do-NEG-PST.3SG
       'Ten years ago, Ali did not declare [_{CP} that, more than Ayşe, at least three
       babies are pretty].'
   b. *Geçen yıl Ahmet-Ø   de   [_{CP} △] ilan   et-me-di.*
       last   year Ahmet-NOM also   declaration do-NEG-PST.3SG
       (Lit.) 'Last year, Ahmet did not declare [_{CP} △], either.'
                                    NEG » AT LEAST 3; AT LEAST 3 » NEG

Let us first consider the Korean examples in (135). In (135a), the ECMed QP sub-
ject *motun tosi-lul* 'all the cities' stays within the embedded CP on the surface,
as shown by the presence of the embedded clause adverb *Seoul-kathi* 'like Seoul',
which modifies the embedded predicate *hwalkicha* 'lively', in front of the ECMed
subject in question. Specifically, that the embedded clause adverb *Seoul-kathi* 'like
Seoul' precedes the relevant ECMed QP subject indicates that the latter is located
within the embedded CP (see Yoon 2007 for the possibility of Korean ECMed
subjects staying overtly within embedded CPs). Therefore, the inverse scope in-
terpretation where the ECMed subject QP *motun tosi-lul* 'all the cities' takes scope
over the matrix negation should be implemented via a covert operation, i.e. QR.
Importantly, with (135a) as its antecedent, (135b) is also ambiguous in that the
ECMed QP subject within the embedded null CP can take scope over the matrix
negation: it can take scope outside of the null embedded CP. A similar observation
also applies to the Turkish Examples (136). Specifically, in (136a), the presence
of the embedded clause adverb *Ayşe-dın* 'more than Ayşe' in front of the ECMed
subject QP *en az üç bebeğ-i* 'at least three babies' indicates that the latter stays inside
of the embedded CP on the surface (see Şener 2008 for the possibility that ECMed
subjects in Turkish can stay within embedded CPs). Therefore, QR seems to be
responsible for the inverse scope reading in (136a), i.e. the interpretation where

the relevant ECMed subject QP takes scope over the matrix negation. Crucially, with (136a) as its antecedent, (136b) also allows the inverse scope interpretation. In other words, in (136b), the ECMed subject QP *en az üç bebeğ-i* 'at least three babies' within the embedded null CP can take scope over the matrix negation. Therefore, the availability of the inverse scope in the (b) examples of (135) and (136) indicates that QR, i.e. an instance of covert movement, is possible out of null arguments in Korean and Turkish.

4.3.2.2 *A-not-A question: Chinese*

Let us turn to covert scope-shifting movement in Chinese. There is a particular disjunctive question construction called an "A-not-A" question, which is a type of question that has a function similar to that of a yes-no question. The basic example of the construction in question is illustrated in (137) (see Wang 1967; Li & Thompson 1979; Huang 1982, 1991b; Dai 1990; Ernst 1994; Lin 1994; McCawley 1994; Wu 1997a, b; Hsieh 2001; Hagstrom 2006; Law 2006; Huang et al. 2009; among many others for discussion of this construction).

(137)   *Ta xihuan-bu-xihuan zhe-ben shu?*
        he like-NEG-like   this-CL book
        'Does he like or not like this book?'   (Huang et al. 2009: 246)

The "A-not-A" question involves two copies of a predicate with one copy negated. In (137), we have two copies of the verb *xihuan* 'like', and the second copy is negated with *bu*. The "A-not-A" question is different from the ordinary yes/no question in that only the latter question can be answered yes or no; the former question can be answered by repeating the affirmative predicate or the negative predicate, e.g. *xihuan* or *bu xihuan*. It has been standardly assumed since Huang's (1982, 1991b) influential work that the "A-not-A" question involves reduplication. Thus, Huang et al. (2009) claim that (137) involves a simplex sentence with an interrogative functional head as its underlying source, as in (138).

(138)

(Huang et al. 2009:246)

Huang et al. (2009) claim that the Q morpheme first reduplicates the initial portion of the VP constituent, and then turns the second of the identical parts into its appropriate negative form. The process is taken to yield the surface string of the sentence (137), i.e. *ta xihuan-bu-xihuan zhe-ben shu*, on the basis of the structure in (138).

Generally, the Q-morpheme in question is considered akin to a *wh*-word, undergoing LF-movement to the CP domain to take scope. For example, (137) is generally analyzed as in (139a)–(b), receiving the interpretation in (139c).

(139) a. Overt Syntax: $[_{CP} [_{TP}$ ta … $Q_{[+A-not-A]}$ … $[_{VP}$ xihuan zhe-ben shu]]]
       b. LF: $[_{CP} Q_{[+A-not-A]} [_{TP}$ ta … $_Q$ … $[_{VP}$ xihuan zhe-ben shu]]]
       c. For which x, $x \in$ {affirmative, negative}, (ta x xihuan zhe-ben shu)

Importantly, the "A-not-A" question can be embedded, taking scope either within an embedded clause or within a matrix clause, depending on the type of matrix verbs. Consider the following examples.

(140) a. *Zhangsan bu   xiaode $[_{CP}$ ni   lai-bu-lai].*
           Zhangsan NEG know   you come-NEG-come
           'Zhangsan does not know whether you will come or not.'
       b. *Ni   juede $[_{CP}$ ta hui-bu-hui   lai]   (ne)?*
           you feel   he will-NEG-will come Q
           'Do you think he will come or will not come?'   (Huang et al. 2009: 246)

In (140a), *lai-bu-lai* 'come-not-come' is embedded, taking scope within the embedded clause: (140a) is interpreted as an indirect question. By contrast, in (140b), *hui-bu-hui lai* 'will-not-will come' is embedded, taking scope within the matrix clause: (140b) is interpreted as a matrix question. The above data thus show that the "A-not-A" question is not a root phenomenon. Under the LF-movement analysis of the Q-morpheme, the relevant scope readings can be derived by raising the Q-morpheme to the embedded CP in (140a) and to the matrix CP in (140b), as determined by the matrix verb.[27] The movement approach to the Q-morpheme in the "A-not-A" question is supported by the fact that the relevant Q-morpheme cannot be embedded within an island, as shown in (141).

(141) a. **Ni   bijiao xihuan $[[_{relative\ clause}$ lai-bu-lai   de] nei-ge ren]   (ne)?*
           you more like   come-NEG-come DE that-CL person Q
           (Int.) 'Do you prefer the person who will come or the one who will not
           come?'   (Huang et al. 2009: 246)

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27. In cases such as (140a) and (140b), Huang et al. (2009) actually claim that a coordinate structure [[VP] & [not VP]] with & being a null coordinator with a feature [+A-not-A] is base-generated, and the coordinate structure as a whole undergoes LF-movement to the relevant CP domain. I adopt the Q-morpheme movement view for ease of exposition.

b. *Ni   xiang-zhidao [$_{wh\text{-}island}$ shei gao-bu-gaoxing]?*
    you wonder   who hap-not-happy
    'Who is the person x such that you wonder whether x is happy or not?'
    (Huang et al. 2009: 256)
    *'Are you wondering who is happy or are you wondering who is unhappy?'

In (141a), the A-not-A constituent is embedded within the relative clause, and the sentence is ungrammatical with the intended interpretation, i.e. the interpretation that would be expected if the Q-morpheme can be interpreted in the matrix CP. In (141b), the A-not-A constituent is located within the *wh*-island, and the sentence can only be interpreted as a question such that the Q-morpheme takes scope in the embedded CP, not in the matrix CP. Given that the Q-morpheme undergoes LF-movement to the relevant CP domain, the above data can be accounted for in terms of a locality-of-movement effect (referred to below as the Empty Category Principle (ECP) for expository reasons). Specifically, both (141a) and (141b) involve movement of non-arguments out of islands, so the sentences should be unacceptable, on a par with the following example.

(142) *Ni   zui   xihuan [[$_{relative\ clause}$ Zhangsan shuo [Lisi weisheme piping] de] ren]*.
       you most like   Zhangsan say   Lisi why   criticize DE man
       (Int.) 'Why$_1$ do you like best [the man [$_{relative\ clause}$ Zhangsan said [Lisi criticized
       ____$_1$]]]'   (Lasnik & Saito 1992: 35)

In (142), the non-argumental *wh*-phrase *weisheme* 'why' is embedded within the relative clause island, and the intended interpretation is not obtained, due to an ECP violation. Therefore, under the LF-movement approach to the "A-not-A" question, the unavailability of the intended interpretations in (141a) and (141b) can be attributed to the ECP, on a par with (142).

Given that covert movement is involved in the "A-not-A" question in Chinese, the following examples demonstrate that the relevant covert movement is allowed out of Chinese null arguments.

(143) A^1: *Zhangsan juede [$_{CP}$ Lisi lai-bu-lai]   ne?*
            Zhangsan feel   Lisi come-NEG-come Q
            'Did Zhangsan feel that Lisi will come or did Zhagsan feel that Lisi will not?'
       B^1: *Ta juede Lisi lai.*
            he feel   Lisi come
            'He feels that Lisi would come.'
       A^2: i. *Na   Mali juede [$_{CP}$ Lisi lai-bu-lai]   ne?*
                then Mali feel   Lisi come-NEG-come Q
                'Then, did Mali feel that Lisi will come, or did Mali think that Lisi will
                not come?'

  ii.   *Na   Mali juede [$_{CP}$ △] ne?*
        then Mali feel   Q
        'Then, did Mali feel that Lisi will come, or did Mali think that Lisi will
        not come?'

B²: *Ta juede Lisi bu   lai.*
       she feel   Lisi NEG come
       'She feels that Lisi will not come.'

In (143A²–ii), the null CP is taken to be anaphoric on the antecedent CP in (143A¹).
Despite the phonological emptiness of the embedded CP, (143A²–ii) is interpreted
as if nothing were dropped: it receives the same interpretation as (143A²–i), which
is confirmed by the fact that (143A²–ii) can be followed by the answer (143B²).
That (143A²–ii) can yield the "A-not-A" interpretation indicates that the relevant
Q-morpheme within the null CP has undergone movement out of it, targeting the
matrix CP domain to take its scope, as in (144).

(144)   *Covert Movement*
        Na   [$_{CP}$ Q$_{[+A\text{-}not\text{-}A]}$ [$_{TP}$ Mali juede [$_{CP}$ Δ]]] ne?
        then   Mali feel   Q

Therefore, the grammaticality of (143A²–ii) with the "A-not-A" interpretation indi-
cates that the Q-morpheme movement in question, which is an instance of covert
movement, is possible out of null arguments in Chinese.

4.4   Summary of the chapter

In this chapter, I first provided arguments for the ellipsis analysis of null arguments
in CKMT. The evidence comes from the obviation of condition B of the binding
theory and the availability of ellipsis-indicating readings, i.e. the sloppy and the
quantificational readings, both of which are unavailable with overt pronouns in
the relevant contexts in the languages under consideration. Then, I showed that
there are several contexts that can tease apart argument ellipsis and VVPE, since
VVPE cannot apply in these contexts. The diagnostics that favor argument ellipsis
over VVPE in this respect which were used in this chapter involve ellipsis of sub-
jects, 'immobile' elements, the absence of manner adverb interpretation, and the
verb-identity requirement, all of which were discussed in Chapter 2. All the tests in
question favor the argument ellipsis analysis over the VVPE analysis as the ellipsis
strategy for deriving null arguments in CKMT. In the seond half of this chapter,
assuming that argument ellipsis is available in CKMT, I investigated extraction pos-
sibilities out of null arguments in the relevant languages. In particular, I investigated

whether null arguments in CKMT behave in the same manner as Japanese null arguments with respect to extraction in that they would exhibit an overt/covert extraction asymmetry which was discussed for Japanese null arguments in Chapter 3. It was shown that CKMT indeed behave like Japanese in the relevant respect: they allow covert but not overt extraction out of null arguments. That CKMT null arguments allow extraction is important because it provides evidence for the ellipsis view of null arguments in these languages since *pro*, which is by assumption an instance of deep anaphora, i.e. anaphora that uniformly disallows extraction, cannot explain why extraction is possible out of CKMT null argments. That CKMT null arguments exhibit an overt/covert extraction asymmetry just like Japanese in turn indicates that the null argments in all these languages should be analyzed in the same way, which means that these languages employ argument ellipsis.

To sum up the discussion so far, in the preceding two chapters, I have shown that argument ellipsis is available in the relevant languages, and that null arguments derived via argument ellipsis are different from both English VP-ellipsis and deep anaphora cases like *do it* in that they exhibit non-uniform behavior regarding extraction out of them: they exhibit an overt/covert asymmetry with respect to extraction out of their domains. This curious pattern of extraction not found with other instances of surface/deep anaphora noted in the book is apparently a 'deep' property of argument ellipsis given that all argument ellipsis languages investigated here exhibit it. In the following chapter, I will therefore focus on providing an account for this overt/covert extraction asymmetry, also exploring theoretical and empirical consequences of the proposed analysis.

Acknowledgments

CHAPTER 5

Silent arguments = Overtly empty but covertly complex

In this chapter, I will provide an account of the overt/covert asymmetry regarding extraction out of null arguments in Chinese, Japanese, Korean, Mongolian, and Turkish, which was established in Chapter 3 and 4, on the basis of the LF-copy analysis of ellipsis. In Section 5.1, I will discuss two major approaches to ellipsis in general, i.e. PF-deletion and LF-copying. In Section 5.2, I will show that the LF-copy analysis of argument ellipsis can explain in a principled way the overt/covert extraction asymmetry in question. In later sections, I will, however, argue that PF-deletion is also available as a strategy for deriving ellipsis structures and propose a principled criterion which determines whether an ellipsis operation involves LF-copying or PF-deletion based on Bošković's (2014) phase-based approach to ellipsis, where ellipsis can target either phases or phasal complements. I will also discuss the consequences of the proposed analysis for a number of constructions and phenomena, including the proper analysis of *wh*-in-situ in the languages under consideration (argument ellipsis will be shown to provide a novel diagnostic for investigating the nature of *wh*-in-situ), the timing of null operator movement, the theory of control, and the proper analysis of case-marked clefts and split QP constructions in Japanese.

5.1   PF-deletion versus LF-copying

As mentioned in the preceding chapters, whether anaphora sites involve internal structure has been a hotly debated issue. In Chapter 3, I introduced the distinction between surface anaphora and deep anaphora: surface anaphora is an instance of anaphora that involves internal structure and is assumed to be derived via ellipsis, and deep anaphora is the one that does not involve any internal structure and is claimed to be an instance of proforms (i.e. it does not involve ellipsis). It has been shown in Chapter 3 and Chapter 4 that null arguments in Chinese, Japanese, Korean, Mongolian, and Turkish allow certain types of extraction, which indicates that they are derivable via ellipsis (more precisely, argument ellipsis, as discussed in the preceding chapters) because if they were unformly silent proforms, i.e. deep anaphora, they should uniformly disallow extraction out of their domain.

Once the existence of argument ellipsis is taken for granted as the strategy to derive null arguments in the relevant languages, a question arises regarding how argument ellipsis should be theoretically implemented. There are two major approaches to ellipsis: PF-deletion (cf. Ross 1969; Sag 1976; Tancredi 1992; Johnson 2001; Merchant 2001; Goldberg 2005; Aelbrecht 2010; among many others) and LF-copying (cf. Williams 1977; Fiengo & May 1994; Chung et al. 1995; Fortin 2007, 2011; among many others). Under the PF-deletion analysis, an ellipsis site involves full-fledged internal structure both in overt syntax and covert syntax/LF, but the structure is deleted at PF so that the relevant site is phonologically null. On the other hand, under the LF-copy analysis, an ellipsis site is empty both in overt syntax and PF, but it has full-fledged internal structure in LF via copying of its antecedent (see Wasow 1972; Shopen 1972; Williams 1977; Fiengo & May 1994; Chung et al. 1995; Lappin 1999; Fortin 2007). For example, consider the following VP-ellipsis example.

(1)   John will [$_{VP}$ visit UConn], and Bill will [$_{VP}$ △] too.

Here, the VP in the second conjunct is elided, taking the VP in the first conjunct as its antecedent. Table 5.1 illustrates how the PF-deletion analysis and the LF-copy analysis treat the elliptic VP in (1).[1]

Table 5.1 PF-deletion versus LF-copying

	PF-deletion	LF-copying
Overt Syntax	VP → V (visit), DP (UConn)	VP → e
PF	VP → V (visit), DP (UConn) [circled/struck through]	VP → e
Covert Syntax/LF	VP → V (visit), DP (UConn)	VP → V (visit), DP (UConn)

What is important for us is that under the PF-deletion analysis, the VP involves internal structure in both overt and covert syntax, while under the LF-copy analysis, it has internal structure only in covert syntax. The PF-deletion analysis has been quite influential for VP-ellipsis in the literature. One of the reasons is that, as noted in Chapter 3, both overt and covert movement are possible out of English VP-ellipsis sites, as in (2a) and (2b).

(2) a. I know which book$_1$ Mary [$_{VP}$ read ___$_1$], and which book$_2$ Bill didn't [$_{VP}$ △].   (Fiengo & May 1994: 247)
    b. One of the boys [$_{VP}$ met every teacher], and one of the girls did [$_{VP}$ △] too.
                                ∃»∀;∀»∃ (Depiante 2000: 95)

In (2a), *which book* is extracted out of the VP-ellipsis site, and the sentence is grammatical; in (2b), *every teacher* within the VP-ellipsis site can take scope over *one of the girls* outside of it, which means that QR is possible out of a VP-ellipsis site. The grammaticality of (2a) and the availability of inverse scope in (2b) straightforwardly follow under the PF-deletion analysis since this analysis provides the elided VP with internal structure in both overt and covert syntax, thus being able to accommodate an appropriate position for the 'trace' of *wh*-movement and QR in (2). By contrast, the LF-copy analysis does not provide the elided VP with internal structure in overt syntax, so that overt extraction in (2a) should be banned, contrary to the fact (see also Aelbrecht 2010; Lee 2014; Thompson 2014 for relevant discussion).[2] Therefore, the availability of overt extraction out of English VP-ellipsis sites is generally taken to argue for the PF-deletion analysis of the construction in question.

  In the following, I will argue that, unlike English VP-ellipsis, argument ellipsis is best analyzed in terms of LF-copying on the basis of extraction possibilities out of its domain: as discussed above, only covert extraction is allowed out of argument ellipsis sites, and this is exactly what the LF-copy analysis predicts since the analysis in question provides an ellipsis domain with internal structure only in covert syntax/LF.

---

2. More precisely, additional assumptions would be needed under the LF-copy analysis to handle the cases involving overt extraction. I discuss what these assumptions would be in Section 5.3.2, also pointing out problems for these assumptions (see also footnote 4 in Chapter 1).

5.2   Elliptic arguments via LF-copying

Regarding the issue whether argument ellipsis involves PF-deletion or LF-copying, both views have actually been espoused in the literature: the LF-copy analysis is adopted in Oku (1998), Shinohara (2006), Takahashi (2006), Saito (2007), Takita (2010), Sato (2014, 2015), among others, but Takahashi (2013b) proposes a PF-deletion analysis. To illustrate, the null argument construction (3b) is analyzed under the PF-deletion and the LF-copy analyses as in (4) and (5) respectively.

(3)   a.   *Taroo-wa [*_{CP} *Hanako-ga   uti-ni   kaet-ta   to] omot-te-iru.*
            Taro-TOP   Hanako-NOM home-to return-PST C   think-PROG-PRES
            'Taro thinks [_{CP} that Hanako returned home].'
      b.   *Ziroo-mo [*_{CP} △*] omot-te-iru.*
            Ziro-also   think-PROG-PRES
            (Lit.) 'Ziro also thinks [_{CP} △].'

(4)   *PF-deletion Analysis*
      a.   *Overt Syntax*:
            Ziro-also [_{CP} Hanako home-to returned C] think
      b.   *PF*:
            Ziro-also [_{CP} ~~Hanako home-to returned C~~] think   *Deletion of the CP*
      c.   *Covert Syntax/LF*:
            Ziro-also [CP Hanako home-to returned C] think

(5)   *LF-copy Analysis*
      a.   *Overt Syntax*:
            Ziro-also [_{CP} e] think
      b.   *PF*:
            Ziro-also [_{CP} e] think
      c.   *Covert Syntax/LF*:
            Ziro-also [CP Hanako home-to returned C] think   *LF-copying*

Recall now that one difference between the PF-deletion analysis and the LF-copy analysis concerns the presence/absence of internal structure in overt syntax: only the former analysis posits internal structure in the ellipsis domain in overt syntax.

   Keeping this in mind, let us reconsider the extraction pattern out of null arguments in Chinese, Japanese, Korean, Mongolian, and Turkish, using Japanese examples for illustration (the other languages in question behave like Japanese in the relevant respect). Recall that overt extraction is uniformly excluded out of the relevant domains, as has already been discussed with respect to, e.g. the long-distance scrambling and the RtO cases as in (6) and (7) respectively.

(6) *Long-distance Scrambling*

    a. *Sono hon$_1$-o   Taroo-wa [$_{CP}$ Hanako-ga   ___$_1$ kat-ta to] it-ta.*
        that book-ACC Taro-TOP   Hanako-NOM   buy-PST c say-PST
        (Lit.) 'That book$_1$, Taro said [$_{CP}$ that Hanako bought ___$_1$].'

    b. *Sono hon$_2$-o   Ziroo-wa [$_{CP}$ Hanako-ga   ___$_2$ kat-ta to] it-ta.*
        that book-ACC Ziro-TOP   Hanako-NOM   buy-PST c say-PST
        (Lit.) 'That book$_2$, Ziro said [$_{CP}$ that Hanako bought ___$_2$].'

    b'. **Sono hon$_2$-o   Ziroo-wa [$_{CP}$ △] it-ta.*
        that book-ACC Ziro-TOP   say-PST
        (Lit.) 'That book$_2$, Ziro said [$_{CP}$ △].'

(7) *RtO*

    a. *Taroo-wa Kanako$_1$-o   orokanimo [$_{CP}$ ___$_1$ tensai da*
        Taro-TOP Kanako-ACC stupidly   genius COP.PRES
        to] shutyoosi-ta.
        c claim-PST
        (Lit.) 'Taro, Kanako$_1$, stupidly claimed [$_{CP}$ that ___$_1$ is a genius].'

    b. *Ziroo-wa Ayaka$_2$-o   orokanimo [$_{CP}$ ___$_2$ tensai da*
        Ziro-TOP Ayaka-ACC stupidly   genius COP.PRES
        to] shutyoosi-ta.
        c claim-PST
        (Lit.) 'Ziro, Ayaka$_2$, stupidly claimed [$_{CP}$ that ___$_2$ is a genius].'

    b'. **Ziroo-wa Ayaka$_2$-o   orokanimo [$_{CP}$ △] shutyoosi-ta.*
        Ziro-TOP Ayaka-ACC stupidly   claim-PST
        (Lit.) 'Ziro, Ayaka$_2$, stupidly claimed [$_{CP}$ △].'

The ungrammaticality of (6b') and (7b') indicates that overt extraction is excluded out of Japanese null arguments. On the other hand, silent extraction, i.e. movement that does not affect word order, is possible out of Japanese null arguments, as has been discussed with regard to, e.g. the QR and the covert possessor raising cases in (8) and (9).[3]

(8) *QR*

    a. *Kyonen-wa   Yamada sensei-ga   [$_{CP}$ daiamondo-mitaini subete-no*
        last.year-TOP Yamada teacher-NOM   diamond-like   all-GEN
        sinnyuusei-o kagayai-te-iru   to] iwa-nakat-ta.   Neg »∀;∀» Neg
        freshman-ACC shine-PROG-PRES c say-NEG-PST
        (Lit.) 'Last year, Prof. Yamada did not say [$_{CP}$ that, like a diamond, all the freshman students are shining].'

---

3. I will return to the null operator movement case separately in Section 5.3.1.

     b.   *Kotosi-wa*   *Tanaka sensei-ga*   *[$_{CP}$ △] iwa-nakat-ta.*
         this.year-TOP Tanaka teacher-NOM   say-NEG-PST
         (Lit.) 'This year, Prof. Tanaka did not say [$_{CP}$ △].'   Neg »∀;∀» Neg

(9)   *Covert Possessor Raising*
     a.   *[[Kyonen e_i si-ta]   koto]-ga   [$_{DP}$ hotondo-no gakusei$_i$-no*
         last.year   do-PST thing-NOM   most-GEN student-GEN
         kioku]-ni   nokot-te-iru.
         memory-LOC remain-PROG-PST
         (Lit.) '[The thing [that e_i did last year]] remains in [$_{DP}$ most students'$_i$ memories].'
         ≈ 'Most students$_i$ remember what they$_i$ did last year.'
     b.   *[[Sannenmae-ni e_j si-ta]   koto]-mo [$_{DP}$ △] nokot-te-iru.*
         three.years.ago-in   do-PST thing-also   remain-PROG-PRES
         (Lit.) '[The thing [that e_j did three years ago]] also remains in [$_{DP}$ △].'
         ≈ 'Most students$_j$ also remember what they$_j$ did three years ago.'

As discussed in Chapter 3, the availability of the inverse scope in (8b) and the grammaticality of (9b) on the bound variable interpretation indicate that covert extraction is allowed out of Japanese null arguments.

    The extraction pattern noted above can be explained in a principled way under the LF-copy analysis of argument ellipsis. First, the impossibility of overt extraction in (6b′) and (7b′) leads us to conclude that Japanese null arguments do not include internal structure in overt syntax. This is exactly what the LF-copy analysis predicts since it does not provide the ellipsis domain with internal structure in overt syntax, cf. (5a). Specifically, (6b′) and (7b′) are analyzed as in (10) and (11) respectively.

(10) *Long-distance Scrambling: Overt Syntax*

Long-distance Scrambling out of [$_{CP}$ e]

(11)   *RtO: Overt Syntax*

```
                    TP
                  /    \
                DP      T′
                /\     /  \
              Ziro   VP    T
                    /  \
                  DP    V′
                 /\    /  \
              Ayaka  CP     V
                      |      |
                      e    claim
```

Raising-to-Object out of [$_{CP}$ e]
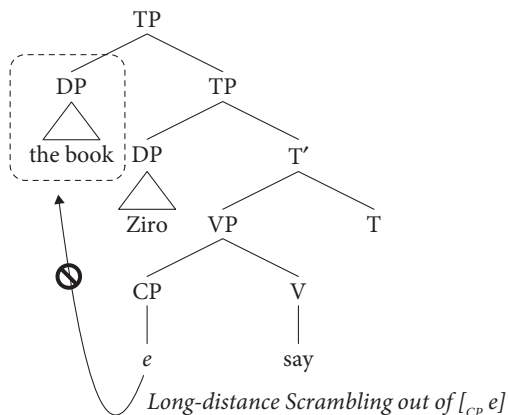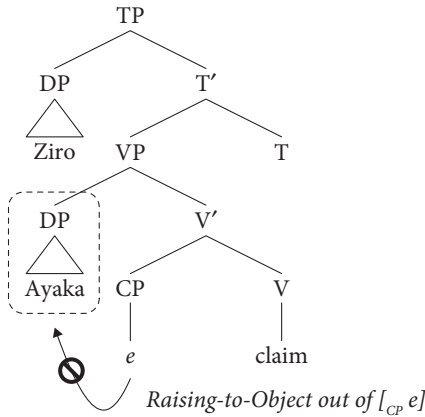
The null CPs do not include internal structure in overt syntax, so we cannot implement long-distance scrambling of *sono hon* 'the book' and RtO of *Ayaka* out of the relevant null CPs, which is the reason for the ungrammaticality of (6b′) and (7b′): there can be no extraction since there is nothing to extract from. The fact that overt extraction is uniformly disallowed out of null arguments in the argument ellipsis languages thus straightforwardly follows if argument ellipsis is implemented by LF-copying.

Recall, however, that covert extraction is possible out of an argument ellipsis site. This indicates that this ellipsis domain has internal structure in LF, which is in fact exactly what the LF-copy analysis predicts. Consider the possibility of QR and covert possessor raising out of Japanese null arguments in (8b) and (9b). They can be easily accommodated under the LF-copy analysis. (12) illustrates how the inverse scope in (8b) can be accounted for under the current proposal.

(12)   *QR:*
       a.   *Overt Syntax*

```
                       TP
                     /    \
                   DP      T′
                  /\      /  \
           Prof. Tanaka         T
                      /
                   VP    Neg
                  /  \
                CP     V
                 |      |
                 e     say
```

b.   *Covert Syntax/LF*

As illustrated in (12a), the embedded null CP does not include internal structure in overt syntax. However, it does in covert syntax after copying of its antecedent, as in (12b). Given the presence of the relevant structure in covert syntax, covert syntactic operations such as QR can successfully apply, which explains the possibility of inverse scope in (8b). A similar explanation also applies for the covert possessor raising case in (9b), as illustrated in (13).

(13)   *Covert Possessor Raising*:
    a.   *Overt Syntax*

b.   *Covert Syntax/LF*
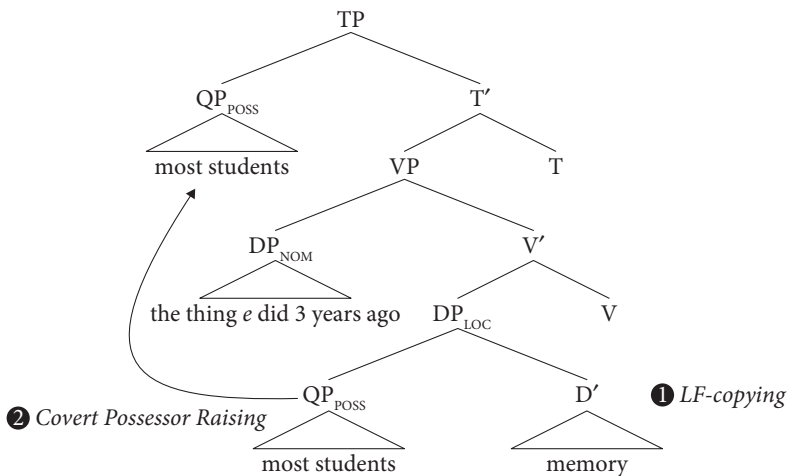
Although the null locative argument does not involve internal structure in overt syntax, as in (13a), it does in covert syntax via LF-copying of its antecedent, as in (13b). After the relevant copying operation, covert possessor raising can apply into the null locative argument, moving the QP possessor to [Spec, TP], which in turn licenses the bound variable inside of the nominative theme argument. Thus, the grammaticality of (9b) can be captured under the LF-copy analysis of argument ellipsis.

Recall now that null arguments in the other argument ellipsis languages discussed in this book also disallow extraction in overt syntax out of them, while allowing extraction in covert syntax. The above analysis of Japanese can then be extended to these languages as well. Therefore, the claim that argument ellipsis involves LF-copying is cross-linguistically supported.

To sum up, under the LF-copy analysis of argument ellipsis, LF operations like QR and covert possessor raising can successfully apply out of null arguments, as in (12) and (13), which explains the possibility of inverse scope in (8b) and the grammaticality of (9b), respectively.[4] The LF-copy analysis can also capture the fact

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4.   If we assume that LF-copying and operations like QR and covert possessor raising are in principle freely ordered, nothing prohibits covert operations such as QR and covert possessor raising from applying before LF-copying of antecedents (within the antecedents). If that order is chosen, copied material includes a variable which would not be bound by anything, giving rise to an instance of a free variable. This is illustrated for the covert possessor raising case from (9) in (i).

(i)   a.   *LF ❶: Covert Possessor Raising*
      Antecedent: most students'$_x$ [[last.year e_x did] thing]-NOM [x memory]-LOC remain

that null arguments in the relevant languages uniformly disallow overt extraction out of them, attributing this ban to the absence of internal structure in the relevant ellipsis domains in overt syntax.

5.3 Theoretical implications

5.3.1 Null operator movement = LF-movement

5.3.1.1 *Chomsky (1995): Strong feature versus weak feature*
Consider now the possibility of null operator extraction out of null arguments in the relevant languages. As discussed in Chapter 3 and 4, null operator extraction is possible out of argument ellipsis sites. For example, consider the following Japanese data (I will only discuss the comparative deletion case for expository purposes).

(14) *Comparative Deletion*
    a. *[[Op$_1$ [$_{CP}$ Taroo-ga ___$_1$ yon-da   to] Kanako-ni iw-are-te-iru]*
                 Taro-NOM   read-PST C Kanako-by say-PASS-PROG-PRES
        yori(mo)] Hanako$_i$-wa takusan hon-o   yon-de-ita
        than   Hanako-TOP many   book-ACC have-PROG-PRES
        (Lit.) 'Hanako$_i$ read more books [than [Op$_1$ it is said by Kanako [$_{CP}$ that Taro read ___$_1$]]].'
    b. *Sarani,   [[Op$_2$ [$_{CP}$ Taroo-ga ___$_2$ yon-da   to] Ayaka-ni*
        furthermore   Taro-NOM   read-PST C Ayaka-by
        iw-are-te-iru]   yori(mo)] kanozyo$_i$-wa takusan hon-o
        say-PASS-PROG-PRES than   she-TOP   many   book-ACC
        yon-de-ita.
        have-PROG-PRES
        (Lit.) 'Furthermore, she$_i$ read more books [than [Op$_2$ it is said by Ayaka [$_{CP}$ that Taro read ___$_2$]]].'

---

    b. *LF* ❷: *LF-copying*
        Antecedent: most students'$_x$ [[last.year e_x did] thing]-NOM [x memory]-LOC remain
        Target: * [[3.years.ago e_y did] thing]-also [x memory]-LOC remain

Therefore, if covert syntactic operations precede LF-copying, as in (i), the derivation would not converge. However, what is important is that nothing prohibits LF-copying from applying before other covert syntactic operations, which allows us to explain the covert extraction possibility out of null arguments on the basis of the LF-copy analysis of argument ellipsis.

b′. *Sarani,*   *[[Op$_2$ [$_{CP}$ △] Ayaka-ni iw-are-te-iru]*   *yori(mo)]*
     furthermore   *Ayaka-by say-*PASS*-*PROG*-*PRES *than*
     kanozyo$_i$-wa takusan hon-o   *yon-de-ita.*
     *she-*TOP   *many*   *book-*ACC *have-*PROG*-*PRES
     (Lit.) 'Furthermore, she$_i$ read more books [than [Op$_2$ it is said by Ayaka
     [$_{CP}$ △]]].'

In (14b′), comparative operator is extracted out of the null CP within the *than*-clause, and the sentence is grammatical: (14b′) receives the same interpretation as (14b), where the embedded CP is overtly realized. Given the grammaticality of (14b′), the current analysis provides evidence that null operator movement is implemented in LF, not in overt syntax. The issue itself is somewhat controversial (both views can be found in the literature). Thus, Kennedy (2002) and Cecchetto & Percus (2006) argue for the former possibility, which is also confirmed by the current discussion. Chomsky's (1995, Chapter 4) view on movement is also worth noting here. Chomsky claims that there are two types of features that drive movement: strong features, which drive movement in overt syntax and can only be "satisfied" by overt movement, i.e. movement that affects word order, and weak features, which drive movement in LF and can be "satisfied" by covert movement, i.e. movement that does not affect word order. For Chomsky (Chomsky 1995, Chapter 4), overt movement is driven by strong features but strong features can be present in the numeration only if their presence causes a change in word order. More generally, α can be present in the numeration only if its presence results in affecting either the PF or the LF output. Chomsky argues that strength never affects the latter: hence, strength, and overt syntax movement in general, must affect word order in his system (see also here Bošković 2000). Under this system, null operator movement cannot in principle be driven by strong features since null operator does not involve phonological features, hence its movement does not affect word order: null operator movement then must be LF-movement in Chomsky's (1995) system.[5]

     In the following, I will discuss two potential arguments against the covert syntax movement approach to null operator movement found in the literature, i.e. subjacency effects and the licensing of parasitic gaps, showing that these arguments do not refute the view of null operator movement as an instance of LF-movement.

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5. Holmberg's (2000) approach to strong features/overt movement in terms of a P-feature which can only be deleted by elements with phonological features may also be implementable here. Null operators do not involve any phonological features, so they cannot satisfy a P-feature which is the trigger for overt movement in Holmberg's analysis. This also entails that null operator movement must be implemented covertly. Under the current analysis, it may be expected that other phonologically empty elements such as *pro* and PRO should not move in overt syntax, and this is exactly what Takahashi (1996c, 1997, 2000, 2001) argues for (see also Ochi 2005 for relevant discussion).

5.3.1.2 *Subjacency*

One potential argument against taking null operator movement as an instance of movement in covert syntax is related to subjacency effects. Developing ideas from Chomsky (1976), Huang (1982), Lasnik and Saito (1984, 1992), among many others, claim that constructions or languages that do not move *wh*-words overtly move them to [Spec, CP] covertly, i.e. in LF. They further claim that movement in LF is not subject to subjacency effects, unlike movement in overt syntax, on the basis of the following paradigm.[6]

(15) a. *What$_1$ did Mary meet [the man [$_{relative\ clause}$ who gave ___$_1$ to John]]?
      b. *What$_1$ did Mary leave [$_{adjunct}$ before John read ___$_1$]?

(16) a. *Mary-wa [[$_{relative\ clause}$ John-ni   nani-o   age-ta] hito]-ni*
          Mary-TOP   John-DAT what-ACC give-PST man-DAT
          at-ta   no?
          meet-PST Q
          (Lit.) 'Mary met [the person [$_{relative\ clause}$ who gave what to John]]?'

      b. *Mary-wa [$_{adjunct}$ John-ga   nani-o   yom-u   mae-ni]*
          Mary-TOP   John-NOM what-ACC read-PRES before
          dekake-ta no?
          leave-PST Q
          (Lit.) 'Mary left [$_{adjunct}$ before John read what]?'

(15) shows that overt *wh*-movement is subject to subjacency effects. Interesting for the current discussion is (16). In (16a), the *wh*-phrase *nani* 'what' is located inside of a relative clause island, and in (16b), it is embedded within an adjunct island, but both sentences are grammatical. If *wh*-in-situ in (16) undergoes movement to the matrix [Spec, CP], it must cross the relevant islands, causing a violation of subjacency. Thus, Huang (1982), Lasnik and Saito (1984, 1992), among others, conclude that covert movement is not subject to subjacency, unlike overt movement. In light of this, the following data could be taken to indicate that null operator movement takes place in overt syntax, not in covert syntax/LF.

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6. *Wh*-in-situ in English does not exhibit subjacency effects either, as in (i) (cf. Baker 1970).

    (i) a. Who wonders [$_{wh-island}$ whether John saw what]?
         b. Who read [$_{complex\ NP}$ a report [that John bought what]]?
         c. Who went to class [$_{adjunct}$ after he read which book]?   (Lasnik & Saito 1992: 12)

In the above examples, the *wh*-phrases inside of the islands can take scope in the matrix [Spec, CP]. For example, (ia) can be answered with "Bill wonders whether John saw the accident".

(17) a. *This is the book [Op$_1$ that Bill knows [the person [$_{relative\ clause}$ who bought
___$_1$]]].
   b. *This is the book [Op$_1$ that Bill left [$_{adjunct}$ before Mary read ___$_1$]].

(18) a. *John read more books [than Op$_1$ Bill criticized [the person [$_{relative\ clause}$ who
read ___$_1$]]].
   b. *John read more books [than Op$_1$ Bill left [$_{adjunct}$ before Mary read ___$_1$]].

In (17), the relative operator is extracted out of an island, and the sentences are ungrammatical; in (18), comparative operator has undergone movement out of an island, and the sentences are unacceptable. This indicates that null operator movement is subject to subjacency effects (also recall that null operator constructions in Chinese, Japanese, Korean, Mongolian, and Turkish are subject to subjacency effects, as extensively discussed in Chapter 3 and 4). Under the assumption that only movement in overt syntax exhibits subjacency effects, (17) and (18) suggest that null operator movement is an instance of overt syntax movement.

However, the status of the presence of subjacency effects as a hallmark of overt syntax movement is far from clear in the current theories. There are also alternative analyses for *wh*-in-situ in Japanese (as well as English). For example, Shimoyama (2001) argues that *wh*-in-situ does not undergo movement, and in-situ *wh*-phrases are appropriately interpreted via unselective binding (see also Cheng 1991; Tsai 1994 1997; Reinhart 1997; among others for non-movement approaches to *wh*-in-situ). Under this analysis, *wh*-in-situ is just a variable unselectively bound by Q. If *wh*-in-situ does not move and can be interpreted in-situ via unselective binding, the fact that *wh*-in-situ in (16) does not exhibit subjacency effects trivially follows without making recourse to the assumption that covert movement is not subject to subjacency effects.[7] This makes the LF-movement approach to null operator movement compatible with the presence of subjacency effects in (17) and (18) under the assumption that subjacency holds not only in overt syntax but also in covert syntax/ LF (cf. Nishigauchi 1986, 1990; Pesetsky 1987; Kishimoto 2005a; among others). In fact, not all *wh*-in-situ languages behave like Japanese in the relevant respect. Thus, as shown in Bošković (1998, 2000), argumental *wh*-in-situ in French, which Bošković analyzes in terms of LF-movement, is locality-sensitive, i.e. it is subject to subjacency effects. It should also be noted that Hagstrom (1998) proposes an alternative analysis of *wh*-in-situ in languages like Japanese where *wh*-in-situ in

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7.   It is well-known that adjunct *wh*-in-situ is subject to island effects. Under the unselective binding analysis, this is accounted for by assuming that adjuncts cannot be unselectively bound, hence they undergo movement in covert syntax/LF, their movement being island-sensitive. It should also be noted here that traditional subjacency/ECP effects are essentially treated in the same way in the current theory (see e.g. Chomsky & Lasnik 1991), which means that the island-hood effect with adjunct *wh*-in-situ indicates that LF movement is locality-sensitive.

Japanese involves movement of Q-particles (see also Miyagawa 2001; Kishimoto 2005a; Cable 2007, 2010). Under the Q-particle movement analysis, a simple *wh*-in-situ construction (19a) is analyzed as in (19b).

(19)   a.   *Taroo-wa nani-o   tabe-ta no?*
             Taro-TOP what-ACC eat-PST Q
             (Lit.) 'Taro ate what?'

   b.

```
                        CP
                      /    \
                    TP      C
                  /    \      \
                DP     T'     C+Q
                /\    /   \
             Taro  VP      T
                  /   \
                DP     V          Q-particle Movement
                /\     |
            what-     eat
                 Q
```
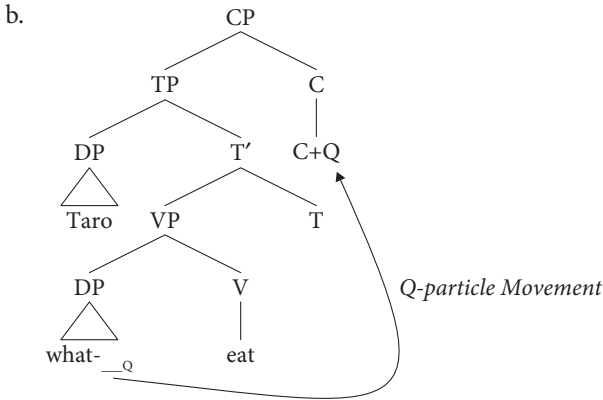
In (19b), the *wh*-phrase and the Q-particle are base-generated together, and the latter undergoes movement to C, yielding the surface string in (19a). Hagstrom claims that the *wh*-in-situ in (16) does not induce a violation of subjacency because the Q-particles can be base-generated in the 'edge' position of the relevant islands.[8] Specifically, under Hagstrom's analysis, (16a) and (16b), repeated here as (20a) and (20b), are analyzed as in (21a) and (21b), respectively.

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8. The analysis here is supported by the fact that base-generation of Q-particles outside of an island in fact obviates a violation of subjacency in Sinhala, as in (i).

(i)   a.   **Oyaa [[kau də liyəpu] potə] kieuwe?*
             you   who Q wrote   book read-E
             'You read [the book [that who wrote]]?'
       b.   *Oyaa [[kauru liyəpu] potə] də kieuwe?*
             you   who   wrote   book Q   read-E
             'You read [the book [that who wrote]]?'   (Kishimoto 1992: 56)

In (ia), the Q-particle *də* is inside of a complex NP, and the sentence is unacceptable. On the other hand, in (ib), the relevant Q-particle occupies a position outside of the complex NP, more precisely an 'edge' position of the island, and the sentence is grammatical. Therefore, the grammaticality of (16a) and (16b) can be treated in the same way as that of (ib) under Hagstrom's analysis.

(20) a. *Mary-wa [[$_{relative\ clause}$ John-ni   nani-o   age-ta] hito]-ni*
           Mary-TOP   John-DAT what-ACC give-PST man-DAT
           at-ta   no?
           meet-PST Q
           (Lit.) 'Mary met [the person [$_{relative\ clause}$ who gave what to John]]?'

      b. *Mary-wa [$_{adjunct}$ John-ga   nani-o   yom-u   mae-ni]*
           Mary-TOP   John-NOM what-ACC read-PRES before
           dekake-ta no?
           leave-PST Q
           (Lit.) 'Mary left [$_{adjunct}$ before John read what]?'

(21) a. [$_{CP}$ [$_{TP}$ Mary [$_{VP}$ [$_{DP}$ [$_{relative\ clause}$ John-to what gave] person] __$_Q$ V$_{meet}$] T] C+Q]?
                                                        Q-particle Movement └─────────────────┘↑

      b. [$_{CP}$ [$_{TP}$ Mary [$_{VP}$ [$_{adjunct}$ John what read before] __$_Q$ V$_{leave}$] T] C+Q]?
                                          Q-particle Movement └─────────────┘↑

In (21a) and (21b), the Q-particle is base-generated in the 'edge' of the relative
clause island and the adjunct island, respectively, undergoing overt movement to
C. Importantly, movement of the Q-particle does not cross any island boundaries,
so the lack of subjacency effects in (16a) and (16b) can be accounted for.[9]

To sum up, there are several analyses where *wh*-in-situ does not undergo move-
ment in covert syntax/LF, which also indicates that *wh*-in-situ and null operator
movement can be handled in a different way even if the latter is implemented in
covert syntax/LF. Once we follow one of the relevant alternative analyses, we can
implement null operator movement in covert syntax/LF, also explaining the pres-
ence of subjacency effects under the assumption that subjacency holds in LF as well
as in overt syntax, which is also theoretically more appealing (see also footnote 7)
(although the choice of the relevant analysis is not crucial at this point, I will argue
for Hagstrom's (1998) Q-particle movement analysis on the basis of interactions of
wh-in-situ and null arguments in Section 5.4.4). Thus, that null operator movement
shows subjacency effects does not undermine the LF-movement approach to null
operator movement.

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9.   In contrast to relative clause and adjunct islands, *wh*-in-situ in Japanese has sometimes been
claimed to exhibit *wh*-island effects, as in (i) (the judgment here is taken from Watanabe 1992).

(i) [(?)]*John-wa   [$_{CP}$ Mary-ga   nani-o   kat-ta   kadooka]*
       John-TOP   Mary-NOM what-ACC buy-PST whether
       siritagat-te-iru   no?
       want.to.know-PROG-PRES   Q
       (Lit.) 'Q John wants to know [$_{CP}$ whether Mary bought what]?' (Watanabe 1992: 257)

For the (potential) contrast in (i) and (20a)–(b), see Nishigauchi (1986, 1990), Pesetsky (1987),
Watanabe (1992), Ochi (1999), Bošković (2000), Shimoyama (2001), among many others.

5.3.1.3   *Parasitic gap*

The second potential argument against implementing null operator movement in covert syntax comes from the licensing of parasitic gaps. Traditionally, the contrast in (22a) and (22b) is taken to indicate that parasitic gaps (represented as __$_{PG}$) can be licensed only by overt movement: they cannot be licensed by movement in covert syntax.

(22) a.   Which articles$_1$ did John file ___$_1$ without reading ___$_{PG1}$?

   (Engdahl 1983: 5)

   b.   *John filed which articles$_1$ without reading ___$_{PG1}$?   (Engdahl 1983: 12)

In (22a), the *wh*-phrase *which articles* has undergone overt movement to [Spec, CP], licensing the parasitic gap within the adjunct clause. In (22b), the *wh*-phrase stays in-situ, and it cannot license the relevant parasitic gap. Under the assumption that *wh*-in-situ undergoes covert movement to [Spec, CP], the ungrammaticality of (22b) suggests that covert movement does not have the ability to license parasitic gaps.[10]

   Given the above discussion, consider the following data.

(23) a.   This is [the kind of food [Op$_1$ you must cook ___$_1$ before you eat ___$_{PG1}$].

   (Engdahl 1983: 5)

   b.   I threw away more books [than Op$_1$ I kept ___$_1$ without reading ___$_{PG1}$].

   (Kennedy 2002: 561)

In (23a), relative operator moves within the relative clause, licensing a parasitic gap; in (23b), comparative operator has undergone movement within the *than* clause, licensing a parasitic gap. Given the contrast in (22a) and (22b), the grammaticality of (23a) and (23b) suggests that null operator movement exhibits similar behavior to overt *wh*-movement, not *wh*-in-situ, in that it can license parasitic gaps.

   However, the above discussion does not necessarily mean that null operator movement must be an instance of movement in overt syntax, since, as discussed above, there are a number of approaches to *wh*-in-situ where *wh*-in-situ does not undergo movement (cf. Hagstrom 1998; Shimoyama 2001). Also, the assumption that *wh*-in-situ cannot license parasitic gaps in English is in fact quite controversial

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10. In addition to the *wh*-in-situ data discussed above, the following QR example has also been claimed to argue for the 'S-structure' licensing of parasitic gaps.

   (i) *John filed every article$_i$ without reading ___$_{PGi}$.

Assuming that *every article* undergoes QR, the ungrammaticality of (i) may be interpreted as indicating that covert movement cannot license parasitic gaps. See, however, Kim & Lyle (1996) for the claim that (i) is independently excluded by the chain uniformity condition holding in LF.

in the literature. For example, Nissenbaum (2000) observes that *wh*-in-situ does license parasitic gaps in certain contexts, as the following examples show.[11]

(24)   a.   ˀWhich senator$_1$ did you persuade ___$_1$ to borrow which car$_2$ [after getting an opponent of ___$_{PG1}$ to put a bomb in ___$_{PG2}$]?
       b.   ˀWhich kid$_1$ did you give which candy bar$_2$ to ___$_1$ [without first telling a parent of ___$_{PG1}$ about the ingredients in ___$_{PG2}$]?

(Nissenbaum 2000: 12)

In (24a), the *wh*-in-situ phrase *which car* licenses the parasitic gap within the *after* clause, and in (24b), the *wh*-in-situ phrase *which candy bar* licenses the parasitic gap within the *without* clause. Therefore, the status of *wh*-in-situ with respect to parasitic gap licensing (and what is involved in such licensing) is far from clear.[12] In light of the above discussion, I conclude that the ability of null operator movement to license parasitic gaps does not undermine the LF-movement analysis of null operator movement.

In sum, the fact that null operator movement is subject to subjacency effects and that null operator movement can license parasitic gaps does not exclude the possibility that null operator movement is an instance of movement in covert syntax/LF in the current theoretical framework. Therefore, on the basis of the possibility of null operator movement out of null arguments in Chinese, Japanese, Korean, Mongolian, and Turkish, I claim that null operator movement is best analyzed as an instance of LF-movement (as in fact it would be in Chomsky's (1995) system as well as Holmberg's (2000) system), which can straightforwardly explain the relevant extraction possibility.

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11. Another relevant case concerns Bošković's (2002) observation that *wh*-in-situ in Romanian can license parasitic gaps, as shown in (ia).

(i)   a.   *Cine a   citit CE   fără   să   claseze* ___$_{PG}$?
           who has read what without SUB.PART files
           'Who read what without filing ___$_{PG}$?'
      b.   **Cine a   citit cartea   fără   să   claseze* ___$_{PG}$?
           who has read the.book without SUB.PART files
           (Int.) 'Who read the book without filing ___$_{PG}$?'   (Bošković 2002: 374–375)

That (ib) is ungrammatical indicates that non-*wh*-phrases such as *cartea* 'the book' cannot license parasitic gaps. Given this, the grammaticality of (ia) can be taken to indicate that *wh*-in-situ in Romanian can license parasitic gaps.

12. Nunes (2004) claims that parasitic gaps are derived via sideward movement, attributing the 'S-structure' effect on parasitic gap licensing to PF considerations. This analysis may also be compatible with the claim that null operator movement licenses parasitic gaps and involves covert movement.

5.3.2 Against base-generation + merger

5.3.2.1 *Chung, Ladusaw and McCloskey (1995) and related issues*

In Section 5.2, I argued for the LF-copy analysis of argument ellipsis on the basis of the fact that although overt extraction is disallowed out of an argument ellipsis site, covert extraction is allowed. It is now worth noting Chung et al.'s (1995) LF-copy-based approach to English sluicing (cf. Ross 1969; Merchant 2001; among many others). Consider the following example.

(25)   [$_{TP}$ John met someone], but I don't know [$_{CP}$ who [$_{TP}$ △]].

In (25), the *wh*-phrase *what* which corresponds to its correlate *someone* in the antecedent clause occupies [Spec, CP], the TP complement being elided. Chung et al. (1995) argue that sluicing involves LF-copying.[13] Specifically, they analyze (25) as involving base-generation of the *wh*-remnant in [Spec, CP] and LF-copying of the antecedent TP. (26) illustrates the derivation of the target clause of (25) under their LF-copy-based analysis.

(26)   a.   *Overt Syntax*

_____
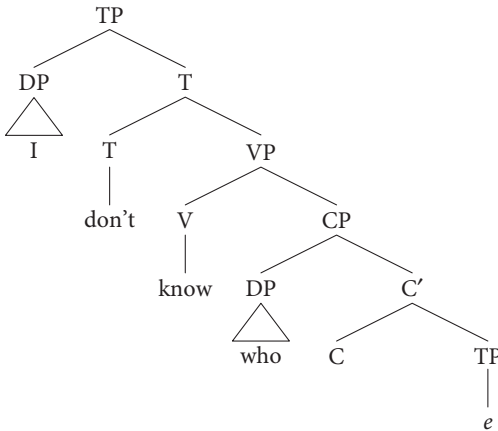
13. I will actually argue for a very different analysis of sluicing in Section 5.3.3.

b. *Covert Syntax/LF*
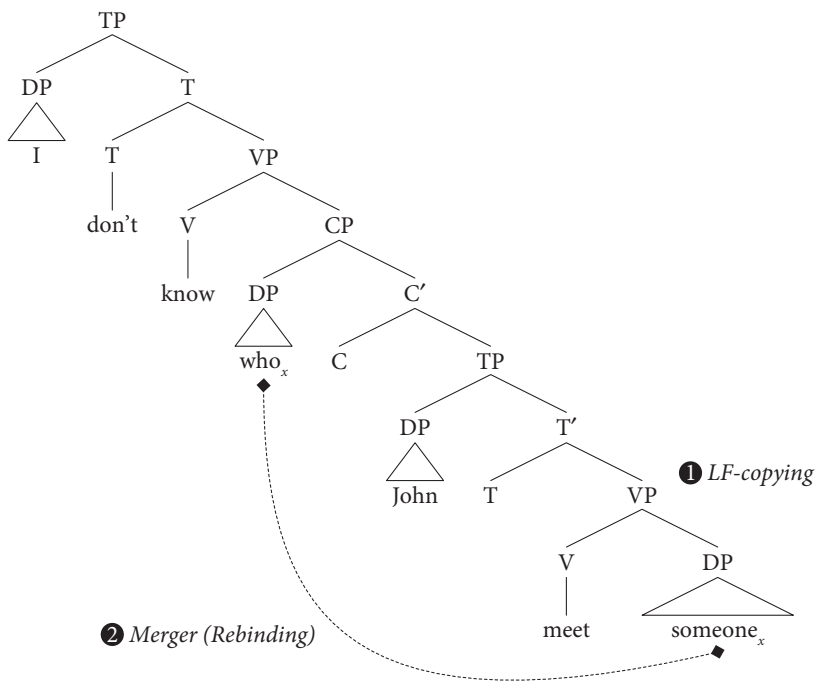
The *wh*-remnant *who* is base-generated in [Spec, CP] in overt syntax. In covert syntax/LF, the antecedent TP is copied onto the relevant ellipsis site, and then the base-generated *wh*-phrase *who* and the indefinite pronoun *someone* within the copied TP form a chain via what Chung et al. (1995) call Merger, a rebinding operation which 'mimics' movement (they assume with Heim 1982, among others, that indefinites such as *someone* are treated as variables in LF). As a result, the second clause of (25) receives the interpretation "I don't know, for x, x is a person, John met x". Importantly, Chung et al.'s (1995) base-generation + Merger approach to sluicing, which "mimics" movement, makes the possibility of overt extraction, e.g. *wh*-movement, compatible with the LF-copy analysis of ellipsis, which would in turn pose an issue for the current claim that the possibility of overt extraction signals the presence of internal strtucture in overt syntax (see Section 5.1 and 5.2).

However, as Chung et al. (1995) themselves note, their analysis would incorrectly predict sentences like (27) to be ruled in.

(27) *Who did they see someone?   (Chung et al. 1995: 280)
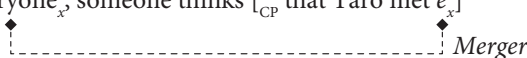
The Merger process should make it possible to make *someone* a variable bound by *who*, which may result in a grammatical sentence (see also e.g. Merchant 2001 for arguments against the Merger approach to sluicing).

Also, the base-generation + Merger analysis makes a wrong prediction regarding interactions of scrambling and scope interpretations. Oka (1989) and Tada (1993) observe that long-distance scrambling does not create a new scope relation, as in (28) (see also Saito 1992; Bošković & Takahashi 1998).

(28) a. *Dare-ka-ga* [$_{CP}$ *Taroo-ga dare-mo-ni at-ta to]*
   who-KA$_\exists$-NOM   Taro-NOM who-MO$_\forall$-DAT meet-PST C
   omot-te-iru. $\exists»\forall;*\forall»\exists$
   think-PROG-PRES
   'Someone thinks [$_{CP}$ that Taro met everyone].'

   b. *Dare-mo$_1$-ni dare-ka-ga* [$_{CP}$ *Taroo-ga ___$_1$ at-ta to]*
   who-MO$_\forall$-DAT who-KA$_\exists$-NOM   Taro-NOM   meet-PST C
   omot-te-iru. $\exists»\forall;*\forall»\exists$
   think-PROG-PRES
   (Lit.) 'Everyone$_1$, someone thinks [$_{CP}$ that Taro met ___$_1$].'

(28a) only allows the surface scope reading. The inverse scope reading is still absent in (28b), in spite of the embedded object QP undergoing long-distance scrambling over the matrix subject QP. If we assume the base-generation + Merger process, (28b) could involve the derivation illustrated in (29).

(29) a. *Overt Syntax: Base-generation of everyone*
   everyone$_x$, someone thinks [$_{CP}$ that Taro met e_y]
   b. *Covert Syntax/LF: Merger*
   everyone$_x$, someone thinks [$_{CP}$ that Taro met e_x]
   ◆--------------------------------◆ *Merger*

In overt syntax, *daremo* 'everyone' is base-generated in the 'scrambled' position, as in (29a). In covert syntax/LF, Merger would apply, making the base-generated QP and a free variable within the embedded CP form a chain. If this derivation were available, (28b) should be able to yield the inverse scope interpretation, contrary to the fact. Therefore, the absence of inverse scope in (28b) raises a problem for the base-generation + Merger process, unless there is a principled way of blocking this option completely if there is no ellipsis.

More importantly, if we were to apply Chung et al.'s (1995) base-generation + Merger process to extraction out of argument ellipsis sites, we would not be able to account for the impossibility of what is standardly considered to be overt movement

out of argument ellipsis sites. Thus, we would have the derivation in (31) for the long-distance scrambling case.[14]

(30)   *Long-distance Scrambling*
a.   *Sono hon$_x$-o   Taroo-wa [$_{CP}$ Hanako-ga   ____$_x$ kat-ta   to] it-ta.*
     that   book-ACC Taro-TOP   Hanako-NOM   buy-PST C   say-PST
     (Lit.) 'That book$_x$, Taro said [$_{CP}$ that Hanako bought ____$_x$].'
b.   **Sono hon$_y$-o   Ziroo-wa [$_{CP}$ △] it-ta.*
     that   book-ACC Ziro-TOP   say-PST
     (Lit.) 'That book$_y$, Ziro said [$_{CP}$ △].'

(31) a.   *Overt Syntax*

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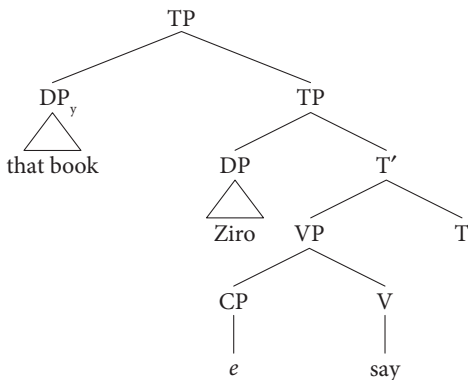
14. Replacing the definite object *sono hon* 'that book' in (30) by an indefinite object *nanika* 'something' does not improve the sentence, as in (ib′).

(i) a.   *Nani-ka$_x$-o   Taroo-wa [$_{CP}$ Hanako-ga   ____$_x$ kat-ta   to] it-ta.*
     what-KA$_∃$-ACC Taro-TOP   Hanako-NOM   buy-PST C   say-PST
     (Lit.) 'Something$_x$, Taro said [$_{CP}$ that Hanako bought ____$_x$].'
b.   *Nani-ka$_y$-o   Ziroo-mo [$_{CP}$ Hanako-ga   ____$_y$ kat-ta   to] it-ta.*
     what-KA$_∃$-ACC Ziro-also   Hanako-NOM   buy-PST C   say-PST
     (Lit.) 'Something$_y$, Ziro also said [$_{CP}$ that Hanako bought ____$_y$].'
b′.   **Nani-ka$_y$-o   Ziroo-mo [$_{CP}$ △] it-ta.*
      what-KA$_∃$-ACC Ziro-also   say-PST
      (Lit.) 'Something$_y$, Ziro also said [$_{CP}$ △].'

With (ia) as its antecedent, (ib) is grammatical, whereas (ib′), which involves extraction of the indefinite object *nanika* 'something' out of the null CP, is ungrammatical with the intended interpretation (the sentence is grammatical with the interpretation, "Ziro also said something").

b.   *Covert Syntax/LF*

```
                              TP
                         ╱         ╲
                    ▪ DP_y              TP
                    ╱△╲             ╱      ╲
                 that book       DP        T′
                               ╱△╲      ╱    ╲
                              Ziro  VP        T
                                  ╱    ╲
                                CP       V
                             ╱     ╲     │
                          TP        C    say
                        ╱    ╲
                      DP       T′
                    ╱△╲      ╱    ╲
                 Hanako  VP        T
                        ╱    ╲
                      ▪          V
                    ___x→y       │
                                buy
```

❷ *Merger (Rebinding)*

❶ *LF-copying*
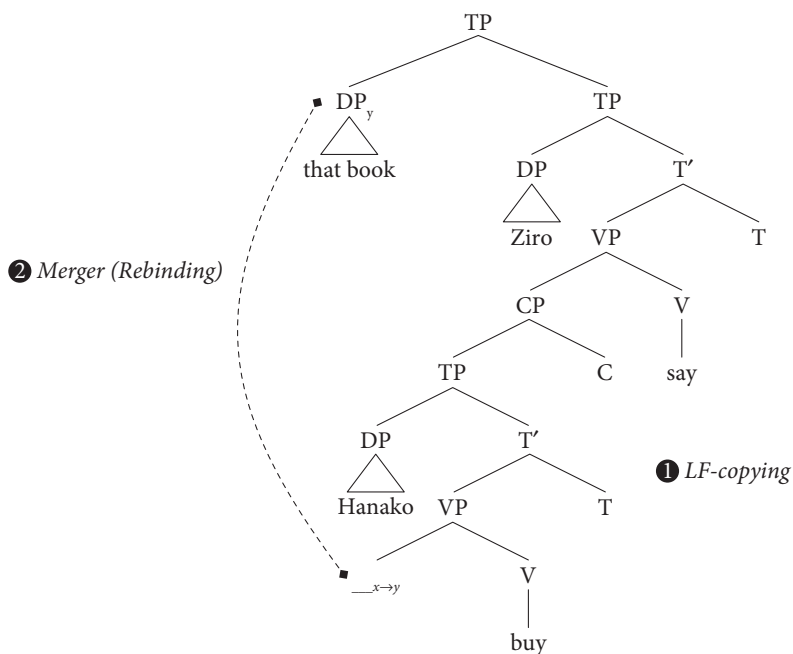
In overt syntax, the object *sono hon* 'that book' would be base-generated outside of the null CP, as illustrated in (31a). In covert syntax/LF, the antecedent CP would be copied onto the null CP site, as in (31b). Crucially, the copied TP includes the 'trace' of the scrambled object, ___$_x$, created in the antecedent sentence. Then, Merger applies to the base-generated object and the 'trace' in question, having them form a chain (the original index x is 'replaced' by y). Therefore, if LF-copying involved in argument ellipsis could involve Chung et al.'s (1995) base-generation + Merger combination, we would not be able to explain why overt extraction out of argument ellipsis sites is impossible. In other words, the analysis fails to account for one of the defining properties of argument ellipsis. This indicates that the relevant combination is not available in LF-copying involved in argument ellipsis (a possibility not at all).[15]

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15. The claim here is also supported by the ungrammaticality of (i-A[2]), which involves *wh*-movement out of a null CP (cf. Section 3.2.1).

(i)   A[1]:   *Nani_1-o   John-wa   [_CP Mary-ga   ___1 tabe-ta ka]*
            what-ACC John-TOP   Mary-NOM   eat-PST Q
            siritagat-te-iru   no?
            want.to.know-PROG-PRES Q
            (Lit.) 'What_1 Q John wants to know [_CP Q Mary ate ___1]?'
            = What does John want to know Mary ate?

5.3.2.2 *Argument ellipsis and locality*

Applying Chung et al.'s (1995) analysis to argument ellipsis would also prevent us from capturing locality effects observed in the argument ellipsis construction. Crucial to Chung et al.'s LF-copy analysis is that a chain consisting of a base-generated element and a variable inside of ellipsis domains is formed via binding, not movement: movement is not involved in the relevant LF-copy process. Chung et al. claim that this chain-formation process can capture the amelioration effect of island violations that sluicing exhibits (cf. Ross 1969; Merchant 2001).[16] Consider the following examples.

(32) a. They want to hire someone who speaks a Balkan language, but I don't
remember [$_{CP}$ which [$_{TP}$ △]].
b. *They want to hire someone who speaks a Balkan language, but I don't
remember [$_{CP}$ which (Balkan language)$_1$ [$_{TP}$ they want to hire [someone
[$_{relative\ clause}$ who speaks ___$_1$]]]].   (Merchant 2001: 114)

(32a) is a sluicing case where the *wh*-phrase *which* occupies [Spec, CP], the TP complement domain being elided. (32b) is a non-sluiced counterpart of (32a). Crucially, (32b) is ungrammatical due to a subjacency effect. Chung et al. (1995) argue that their LF-copy analysis can capture the contrast in (32a) and (32b) since the sluicing case (32a) does not involve movement. Specifically, (32a) is analyzed as in (33).

B: *Pan   da   yo.*
bread COP.PRES SFP
'Bread.'

A[2]: *Zyaa, nani$_2$-o   Peter-wa   [$_{CP}$ △] siritagat-te-iru   no?*
then what-ACC Peter-TOP   want.to.know-PROG-PRES Q
(Lit.) 'Then, what$_2$ Q does Peter want to know [$_{CP}$ △]?'
(Int.) 'Then, what does Peter want to know Mary ate?'

With (i-A[1]) as its antecedent, (i-A[2]) with the intended interpretation is unacceptable (the sentence is acceptable only with the interpretation, 'What does Peter want to know?'). If LF-copying involved in argument ellipsis could make use of the base-generation + Merger combination, we would not be able to account for the ungrammaticality of (i-A[2]).

It may also be worth noting here that it is not quite clear how Bošković & Takahashi's (1998) base-generation analysis of scrambling can capture the impossibility of overt extraction out of argument ellipsis sites, so I will simply assume that Bošković & Takahashi's approach to scrambling is not an option (see also Shinohara 2006 for relevant discussion).

16. There are other ways of capturing the amelioration effect in light of rescue by PF-deletion (cf. Chomsky 1972; Merchant 2001, 2008; Bošković 2011b; among many others), as discussed below. The ameriolation effect is actually controversial: several authors have argued against its existence (see Abels 2011; Barros et al. 2014).

(33)   They want to hire someone who speaks a Balkan language, but I don't remember

[$_{CP}$ which$_y$ [$_{TP}$ they want to hire [someone [$_{relative\ clause}$ who speaks y]]]].

Merger (Rebinding)

Here, the *wh*-remnant *which* is base-generated in [Spec, CP] in overt syntax. In covert syntax/LF, the antecedent TP is copied. Then, Merger applies, as a result of which the *wh*-phrase in question and the variable within the copied TP (recall that Chung et al. assume that indefinites (here, *a Balkan language*) are interpreted as variables, following Heim 1982) form a chain, yielding the appropriate configuration. This derivation does not involve any movement, which accounts for the absence of the island effect in (32a). In other words, the chain-formation process is implemented by 'binding' not movement so an island can intervene between a base-generated element and its corresponding variable.

Now let us turn to the argument ellipsis case again. Given the above discussion, it is expected that if LF-copying involved in argument ellipsis can make use of the combination of base-generation and Merger, an island should be able to intervene between a 'moved' element and a variable inside of argument ellipsis sites.

We can test this prediction by using null operator movement out of argument ellipsis sites.[17] Let us first consider the following examples.

(34)   a.   *Ooku-no   hito-ga   orokanimo [$_{CP}$ Hanako-ga   tensai da*
            many-GEN person-NOM stupidly   Hanako-NOM genius COP.PRES
            to] shutyoosi-ta.
            C   claim-PST
            'Many people stupidly claimed [$_{CP}$ that Hanako is genius].'

       b.   *Dakara, boku-wa [[$_{relative\ clause}$ [$_{CP}$ △] shutyoo-sita] hito]-ni*
            therefore I-TOP   claim-PST   person-DAT
            tyuui-o   yobikake-te-iru.
            caution-ACC call-PROG-PRES
            (Lit.) 'Therefore, I give a warning to [the people [$_{relative\ clause}$ who claimed [$_{CP}$ △]]].'

With (34a) as its antecedent, (34b), where the null CP inside of a relative clause is anaphoric on the embedded CP in (34a), is grammatical. This shows that a CP which is not embedded within a relative clause can serve as an antecedent for a null CP which is embedded inside of a relative clause. Keeping this in mind, consider the following comparative deletion examples.

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17.   We can test the above prediction only by using covert movement since overt movement is never possible out of argument ellipsis sites, as discussed in Chapter 3 and 4.

(35) a. *[[Op$_x$ Kanako-ga   [$_{CP}$ Taroo-ga ___$_x$ yon-da   to] shutyoosi-ta]*
                Kanako-NOM   Taro-NOM   read-PST C claim-PST
yori(mo)] Hanako-wa ronbun-o   takusan yon-de-ita.
than   Hanako-TOP paper-ACC many   read-PROG-PST
(Lit.) 'Hanako read more books [than [Op$_x$ Kanako claimed [$_{CP}$ that Taro
read ___$_x$]]]'.

   b. **Sarani,*   *[[Op$_y$ Ayaka-ga   [[$_{relative\ clause}$ [$_{CP}$ Taroo-ga ___$_y$*
furthermore   Ayaka-NOM   Taro-NOM
yon-da   to] shutyoosi-ta] hito]-o   hihansi-ta] yori(mo)]
read-PST C claim-PST   person-ACC criticize-PST than
Hanako-wa   ronbun-o   takusan yon-de-ita.
Hanako-TOP paper-ACC many   read-PROG-PST
(Lit.) 'Hanako read more books [than [Op$_y$ Ayaka criticized [the person
[$_{relative\ clause}$ who claimed [$_{CP}$ that Taro read ___$_y$]]]]]'.

   b'. **Sarani,*   *[[Op$_y$ Ayaka-ga   [[$_{relative\ clause}$ [$_{CP}$ △] shutyoosi-ta]*
furthermore   Ayaka-NOM   claim-PST
hito]-o   hihansi-ta] yori(mo)] Hanako-wa ronbun-o   takusan
person-ACC criticize-PST than   Hanako-TOP paper-ACC many
yon-de-ita.
read-PROG-PST
(Lit.) 'Hanako read more books [than [Op$_2$ Ayaka criticized [the person
[$_{relative\ clause}$ who claimed [$_{CP}$ △]]]]]'.

In (35a), comparative operator is extracted out of the embedded CP within the
than clause. With (35a) as its antecedent, (35b), which involves movement of com-
parative operator out of the relative clause island, is ungrammatical. Crucial for
the current discussion is the ungrammaticality of (35b'), which involves 'extrac-
tion' of comparative operator out of the null CP anaphoric on the embedded CP
within the *than* clause in the antecedent sentence (35a). Under the base-generation
+ Merger-based LF-copy analysis, the ungrammaticality of (35b') is problematic
because in covert syntax/LF, the *than* clause in (35b') should be able to involve the
following derivations.[18]

(36) a. *Overt Syntax*
          … [than [Op$_y$ Ayaka criticized [the person [who claimed [$_{CP}$ *e*]]]]]

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18. Given that null operator movement is an instance of movement in covert syntax/LF, the
derivation here presupposes that null operator movement had taken place before LF-copying
applied in the antecedent sentence. As mentioned in footnote 4, the relevant LF-operations can
be taken to be freely ordered, so the derivational steps here which would incorrectly rule in (35b')
should in principle be allowed under the LF-copy analysis of ellipsis.

    b.   *Covert Syntax/LF* ❶: *LF-copying*

… [than [Op$_y$ Ayaka criticized [the person [who claimed [$_{CP}$ that Taro read __$_x$]]]]]

    c.   *Covert Syntax/LF* ❷: *Merger*

… [than [Op$_y$ Ayaka criticized [the person [who claimed [$_{CP}$ that Taro read __$_y$]]]]]

In overt syntax (36a), the comparative operator is base-generated outside of the null CP. In covert syntax/LF, the antecedent CP including the variable x is first copied onto the null CP, and then the base-generated comparative operator and the variable in question form a chain via Merger/rebinding. Although there is a relative clause island boundary between them, the configuration should be well-formed given that binding does not respect islands. Therefore, if LF-copying involved in argument ellipsis can involve base-generation and Merger, (35b′) would be incorrectly ruled in: the relevant LF-copy analysis of argument ellipsis under consideration faces an overgeneration issue regarding cases like (35b′).

By contrast, if LF-copying involved in argument ellipsis does not involve the combination of base-generation and Merger but covert movement, which takes place after LF-copying, as has been argued for in the preceding sections, the ungrammaticality of (35b′) can be captured, as in (37).

(37) a. *Overt Syntax*

      … [than [Ayaka criticized [the person [who claimed [$_{CP}$ *e*]]]]]

    b. *Covert Syntax/LF* ❶: *LF-copying*

      … [than [Ayaka criticized [the person [who claimed [$_{CP}$ that Taro read Op]]]]]

    c. *Covert Syntax/LF* ❷: *Covert Op-movement*

      … [than [Op$_2$ Ayaka criticized [the person [who claimed [$_{CP}$ that Taro read __$_2$]]]]]

In covert syntax/LF, the antecedent CP, including comparative operator, is copied, as in (37b). Then, comparative operator within the copied CP undergoes covert movement to the relevant [Spec, CP] as in (37c). Crucially, this movement crosses the relative clause island boundary. Therefore, the ungrammaticality of (35b′) straightforwardly follows under the current LF-copy analysis of argument ellipsis, which in turn supports the idea that covert movement takes place after LF-copying.

The above discussion can also be 'replicated' for the other argument ellipsis languages discussed in this book. Consider the following examples.[19]

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19. My consultants for Turkish and Chinese prefer to have an overt proform in the null CP site in the (b′) examples of (40) and (41). In fact, it is better to have an overt proform *soo* 'so' in the Japanese case (34b) as well. It is not clear what extent Japanese and Turkish/Chinese differ

(38) Korean

    a. *Manhun salam-i   papokathi [$_{CP}$ Mia-ka   chenkayla-ko]*
       many   person-NOM stupidly   Mia-NOM genius-C
       cwucangha-n-ta.
       claim-PRES-DECL
       'Many people stupidly claim [$_{CP}$ that Mia is a genius].'

    b. *Kulemuro, cho-nun [[$_{relative\ clause}$ [$_{CP}$ △] cwucangha-n] salem]-ekey*
       therefore I-TOP   claim-REL   person-DAT
       cwuuy-lul   cwu-ta.
       warning-ACC give-DECL
       (Lit.) 'Therefore, I give a warning to [the people [$_{relative\ clause}$ who claimed [$_{CP}$ △]]].'

(39) Mongolian

    a. *Olangqi kümüs teneg-iyer [$_{CP}$ Ulaɣan-Ø   qurča bai-na   gejü]*
       many   people stupidly   Ulagan-NOM genius COP-PRES C
       medere-ju bai-na.
       claim-CVB COP-PRES
       'Many people stupidly claim [$_{CP}$ that Ulagan is a genius].'

    b. *Teimü bolqor, bi-Ø   [[$_{relative\ clause}$ [$_{CP}$ △] medere-ju bai-ɣa]*
       therefore   I-NOM   claim-CVB COP-PRES.ADN
       kümüs]-eče kičiye-jü bai-na.
       people-from warn-CVB COP-PRES
       (Lit.) 'Therefore, I pay attention to [the people [$_{relative\ clause}$ who claimed [$_{CP}$ △]]].'

(40) Turkish

    a. *Bi-çok   kişi-Ø   aptalca [$_{CP}$ Ahmet-in   bi   dahi*
       one-many person-NOM stupidly   Ahmet-GEN one genius
       oldu-ğu-n]-u   iddia etti.
       be-NML.3SG-ACC claim do.PST.3SG
       'Many people stupidly claimed [$_{CP}$ Ahmet is a genius].'

    b. *Bu yüzden pro [[$_{relative\ clause}$ [$_{CP}$ Ahmet-in   bi dahi oldu-ğu-n]-u*
       therefore I   Ahmet-GEN one genius be-NML.3SG-ACC
       iddia ed-en] kişi-ler]-i   uyar-dı-m.
       claim do-REL person-PL-ACC warn-PST-1SG
       (Lit.) 'Therefore, I give a warning to [the people [$_{relative\ clause}$ who claimed [$_{CP}$ Ahmet is a genius]]].'

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regarding the acceptability of the relevant (b′) examples, but what is important for the current discussion is that my Turkish and Chinese consultants do not see any amelioration effect in (44b′) and (45b′).

b′. ?? *Bu yüzden pro [[$_{relative\ clause}$ [$_{CP}$ △] iddia ed-en] kişi-ler]-i*
therefore   I   claim do-REL person-PL-ACC
uyar-dı-m.
warn-PST-1SG
(Lit.) 'Therefore, I give a warning to [the people [$_{relative\ clause}$ who claimed [$_{CP}$ △]]].'

(41) Chinese

a. *Xuduo ren   dou yuchunde juede [$_{CP}$ Mali shi ge tiancai].*
many people DOU stupidly   feel   Mali COP CL genius.
'Many people stupidly feel [$_{CP}$ Mali is a genius].'

b. *Suoyi,   wo jinggao [naxie [$_{relative\ clause}$ juede [$_{CP}$ Mali shi ge tiancai]*
therefore I   warn   those   feel   Mali COP CL genius
de] ren].
DE people
'Therefore I warn [those [$_{relative\ clause}$ who feel [$_{CP}$ Mali is genius]]].'

b′. ?? *Suoyi,   wo jinggao [naxie [$_{relative\ clause}$ juede [$_{CP}$ △] de] ren].*
therefore I   warn   those   feel   DE people.
(Lit.) 'Therefore I warn [those [$_{relative\ clause}$ who feel [$_{CP}$ △]]].'

The above data indicate that an embedded CP that is not inside of a relative clause can be an antecedent for a null CP that is located within a relative clause in the relevant languages, just as in Japanese. For example, with (38a) as its antecedent, the Korean Example (38b) can mean that I give a warning to the people who claimed that Mia is a genius. Given this, the following examples demonstrate that there cannot be an intervening island boundary between a 'moved' null operator and its 'trace' within the copied elements (I use comparative deletion for Korean, Mongolian, and Turkish, and relative clauses for Chinese for purposes of exposition).

(42) Korean

a. *[[Op$_1$ Yenghui-ka   [$_{CP}$ Mia-ka   ____$_1$ pel-ess-ko] cwucangha-ess-ten]*
Yenghui-NOM   Mia-NOM   earn-PST-C claim-PST-TEN
kes-pota] John-un   manhun ton-ul   pel-ess-ta.
KES-than John-TOP much   money-ACC earn-PST-DECL
(Lit.) 'John earned more money [than [Op$_1$ Yenghui claimed [$_{CP}$ that Mia earned ____$_1$]]].'

b. **Tougi,   [[Op$_2$ Chelswu-ka   [[$_{relative\ clause}$ [$_{CP}$ Mia-ka   ____$_2$*
furthermore   Chelswu-NOM   Mia-NOM
pel-ess-ko] cwucangha-n] salam]-ul piphanha-yesse-n] kes-pota]
earn-PST-C claim-REL   person-ACC criticize-PST-REL KES-than
John-un   ton-ul   manhun pel-ess-ta.
John-TOP money-ACC much   earn-PST-DECL
(Lit.) 'John earned more money [than [Op$_2$ Chelswu criticized [the person [$_{relative\ clause}$ who claimed [$_{CP}$ that Mia earned ____$_2$]]]]].'

b′. **Tougi,*   *[[Op$_2$ Chelswu-ka   [[$_{relative\ clause}$ [$_{CP}$ △] cwucangha-n]*
furthermore   Chelswu-NOM   claim-REL
salam]-ul   piphanha-yesse-n] kes-pota] John-un   ton-ul
person-ACC criticize-PST-REL KES-than John-TOP   money-ACC
manhun pel-ess-ta.
much   earn-PST-DECL
(Lit.) 'John earned more money [than [Op$_2$ Chelswu criticized [the person
[$_{relative\ clause}$ who claimed [$_{CP}$ △]]]]].'

(43) Mongolian
a. *John-Ø   [Op$_1$ Ulaɣan-Ø   [$_{CP}$ Baɣatur-Ø   ___$_1$ ungsi-ɣsan*
John-NOM   Ulagan-NOM   Bagatur-NOM   read-PST.ADN
gejü] bodu-ɣsan-eče]   olan nom-Ø   ungsi-jai.
C   think-PST.ADN-than many book-ACC read-PST.CON
(Lit.) 'John read more books [than Op$_1$ Ulagan thought [$_{CP}$ that Bagatur
read ___$_1$]].'

b. **Bill-Ø   bol [Op$_2$ [[$_{relative\ clause}$ [$_{CP}$ Baɣatur-Ø   ___$_2$ ungsi-ɣsan*
Bill-NOM TOP   Bagatur-NOM   read-PST.ADN
gejü] medere-ju bai-ɣa]   kümün]-i   Ulaɣan-Ø
C   claim-CVB COP-PRES.ADN person-ACC Ulagan-NOM
sigümjile-gsen-eče]   olan nom-Ø   ungsi-jai.
criticize-PST.ADN-than many book-ACC read-PST.CON
(Lit.) 'Bill read more books [than Op$_2$ Ulagan criticized [the person
[$_{relative\ clause}$ who claimed [$_{CP}$ that Bagatur read ___$_2$]]]].'

b′. **Bill-Ø   bol [Op$_2$ [[$_{relative\ clause}$ [$_{CP}$ △] medere-ju bai-ɣa]*
Bill-NOM TOP   claim-CVB COP-PRES.ADN
kümün]-i   Ulaɣan-Ø sigümjile-gsen-eče]   olan nom-Ø
person-ACC Ulagan-NOM criticize-PST.ADN-than many book-ACC
ungsi-jai.
read-PST.CON
(Lit.) 'Bill read more books [than Op$_2$ Ulagan criticized [the person
[$_{relative\ clause}$ who claimed [$_{CP}$ △]]]].'

(44) Turkish
a. *Can-Ø   [Op$_1$ Ali-nin [$_{CP}$ Mete-nin   ___$_1$ oku-duǧ-un]-u*
Can-NOM   Ali-GEN   Mete-GEN   read-NML-POSS.3SG-ACC
san-dıǧ-ın-dan]   daha-çok kitap-Ø   oku-yor.
think-NML-POSS.3SG-ABL more   book-ACC read-PROG.PRE.3SG
(Lit.) 'Can reads more books [than Op$_1$ Ali thinks [$_{CP}$ that Mete read ___$_1$]].'

b. *Hasan-Ø   da   [Op$_2$ Ahmet-in   [[$_{relative\ clause}$ [$_{CP}$ Mete-nin ___$_1$
   Hasan-NOM TOP   Ahmet-GEN   Mete-GEN
   oku-duğ-un]-u   iddia ed-en] kişi]-yi
   read-NML-POSS.3SG-ACC claim do-REL person-ACC
   eleştir-diğ-in-den]   daha-çok kitap-Ø   oku-yor.
   criticize-NML-3SG-ABL more   book-ACC read-PROG.PRES.3SG
   (Lit.) 'Hasan reads more books [than Op$_2$ Ahmet criticized [the person
   [$_{relative\ clause}$ who claimed [$_{CP}$ that Mete read ___$_2$]]]].'

b'. *Hasan-Ø   da   [Op$_2$ Ahmet-in   [[$_{relative\ clause}$ [$_{CP}$ △] iddia ed-en]
   Hasan-NOM TOP   Ahmet-GEN   claim do-REL
   kişi]-yi   eleştir-diğ-in-den]   daha-çok kitap-Ø
   person-ACC criticize-NML-3SG-ABL more   book-ACC
   oku-yor.
   read-PROG.PRES.3SG
   (Lit.) 'Hasan read more books [than Op$_2$ Ahmet criticized [the person
   [$_{relative\ clause}$ who claimed [$_{CP}$ △]]]].'

(45) Chinese

a. [[Op$_1$ Lisi juede [$_{CP}$ nimen dou xihuan ___$_1$] de] ren]   lai-le.
        Lisi feel   you   all like   DE people come-ASP
   (Lit.) '[The people [Op$_1$ Lisi feels [$_{CP}$ you all like ___$_1$]]] came.'

b. *Dan, [[Op$_2$ Zhangsan piping-guo   [[$_{relative\ clause}$ juede [$_{CP}$ nimen dou
   but   Zhangsan criticize-ASP   feel   you   all
   xihuan ___$_2$] de] ren]   de] laoshi] mei lai.
   like   DE people DE teacher NEG come
   (Lit.) 'But, [the teacher [Op$_2$ that Zhangsan criticized [the person
   [$_{relative\ clause}$ who feel [$_{CP}$ you all will like ___$_2$]]]]] did not come.'

b'. *Dan, [[Op$_2$ Zhangsan piping-guo   [[$_{relative\ clause}$ juede [$_{CP}$ △] de] ren]
   but   Zhangsan criticize-ASP   feel   DE people
   de] laoshi] mei lai.
   DE teacher NEG come
   (Lit.) 'But, [the teacher [Op$_2$ that Zhangsan criticized [the person
   [$_{relative\ clause}$ who feel [$_{CP}$ △]]]]] did not come.'

In the (a) sentences, null operator is extracted out of the embedded CPs. With the (a) sentences as their antecedents, the (b) sentences that involve null operator movement out of the relative clauses are ungrammatical due to a violation of subjacency, and the (b') sentences where a relative clause island boundary intervenes between the relevant operators and the null CPs that include the relevant variables are still unacceptable. Therefore, the ungrammaticality of the (b') examples in (42)–(45) provides us with cross-linguistic evidence that LF-copying involved

in argument ellipsis does not involve the base-generation + Merger combination, also supporting the idea that covert movement takes place out of copied elements in covert syntax/LF.

   In contrast to Chung et al.'s (1995) analysis of LF-copying, the LF-copy analysis of argument ellipsis defended in this book can correctly capture the facts regarding extraction possibilities out of argument ellipsis sites without facing any overgeneration issues with respect to island effects, and it does not need any of rebinding and chain formation via Merger, possibly making these mechanisms dispensable.

5.3.2.3 *Argument ellipsis and absence of island-repair*

Above, I have argued against applying Chung et al.'s (1995) LF-copy analysis of ellipsis to argument ellipsis, also supporting the claim that covert movement takes place after LF-copying. This has consequences for the absence of island-repair effects with argument ellipsis. Inoue (1976) and Takahashi (1993, 1994) note that a phenomenon similar to English sluicing is observed in Japanese, as in (46).

(46) a. *Mary-ga   nani-ka-o   kat-ta   rasii-ga,*
          Mary-NOM what-KA₃-ACC buy-PST likely-but
          'Although it is likely that Mary bought something, …'

      b. *Boku-wa [CP Mary-ga   nani-o   kat-ta   ka] wakara-na-i.*
          I-TOP   Mary-NOM what-ACC buy-PST Q   know-NEG-PRES
          (Lit.) 'I don't know [CP Q Mary bought what].'

      b'. *Boku-wa [CP nani-o   ka] wakara-na-i.*
           I-TOP   what-ACC Q   know-NEG-PRES
           (Lit.) 'I don't know [CP Q what].'   (Takahashi 1994: 266)

(46b') contains an incomplete embedded clause which consists of a remnant *wh*-phrase and a Q-particle, but we can interpret (46b') in the same way as (46b), which contains a full indirect question. Takahashi (1993, 1994) treats (46b') as an instance of genuine sluicing, analyzing it as involving (46b) as its underlying source, with syntactic *wh*-movement followed by TP-deletion, as illustrated in (47).

(47) *Boku-wa [CP nani₁-o   [TP Mary-ga   ___₁ tabe-ta] ka] wakara-na-i*
      I-TOP   what-ACC   Mary-NOM   eat-PST Q   know-NEG-PRES
      'I don't know [CP what₁ [TP Mary ate ___₁]].'

However, there are two problems that have been reported for the sluicing analysis in (47): the optional presence of the copula *da* and the possibility of non-*wh*-remnants.

   First, as Takahashi (1994) himself notes, the copula *da* can optionally appear in the Japanese sluicing-like construction, as shown in (48).

(48)   a.   *Mary-ga   nani-ka-o   kat-ta   rasii-ga,*
           Mary-NOM   what-KA$_\exists$-ACC buy-PST likely-but
           'Although it is likely that Mary bought something, …'
    b.   *Boku-wa [$_{CP}$ nani-o   (da)   ka] wakara-na-i.*
         I-TOP   what-ACC COP.PRES Q   know-NEG-PRES
         (Lit.) 'I don't know [$_{CP}$ Q what].'

However, the underlying source of the Japanese sluicing-like construction under the sluicing analysis, cf. (47), cannot accommodate the copula in question, as the following example shows.

(49)   *Boku-wa [$_{CP}$ nani$_1$-o   [$_{TP}$ Mary-ga   ___$_1$ tabe-ta] (*da)   ka]*
       I-TOP   what-ACC   Mary-NOM   eat-PST COP.PRES Q
       wakara-na-i
       know-NEG-PRES
       'I don't know [$_{CP}$ what$_1$ [$_{TP}$ Mary ate ___$_1$]].'

Therefore, the sluicing analysis cannot account for the fact that the copula *da* can optionally appear in Japanese sluicing-like constructions, as in (48b).

     Second, the sluicing-like construction in Japanese can involve non-*wh*-remnants, as the following examples demonstrate (cf. Nishiyama et al. 1996).

(50)   a.   *Mary-ga   dare-ka-ni   at-ta   rasii-kedo,*
           Mary-NOM   who-KA$_\exists$-DAT meet-PST likely-but
           'Although it is likely that Mary met someone, …'
    b.   *Boku-wa [$_{CP}$ John-ni   (da)   kadooka] wakara-na-i.*
         I-TOP   John-DAT COP.PRES Q   know-NEG-PRES
         'I don't know [$_{CP}$ whether it was John].'

(50b), where the remnant is a non-*wh*-phrase *John*, can be interpreted as "I don't know whether Mary met John". Given that sluicing presupposes *wh*-movement (cf. Ross 1969; Lobeck 1990, 1995), the fact that Japanese sluicing-like constructions can accommodate non-*wh*-remnants raises an issue for the sluicing analysis.

     Based on the above problems for the sluicing analysis, it is now widely assumed that sentences like (46b′) involve a different structure from sluicing (see Shimoyama 1995; Nishiyama et al. 1996; Kuwabara 1996, 1997; Kizu 1997, 2005; Merchant 1998, 2001; Fukaya & Hoji 1999; Fukaya 2003; Saito 2004a; Nakao & Yoshida 2005; Hasegawa 2006, 2008; Sugawa 2008; Takita 2010; Hiraiwa & Ishihara 2002, 2012; among many others). More precisely, sluicing-like constructions in Japanese are assumed to be derived from cleft sentences by 'omitting' a presupposed CP and a copula. For example, (46b′) is derived with the following cleft structure as its underlying source.

(51) *Boku-wa* [$_{CP}$ ([$_{CP}$ *Op$_1$* [$_{TP}$ *Mary-ga* ____$_1$ *kat-ta*   *no]-ga) nani-o*
      I-TOP   Mary-NOM   buy-PST C-NOM what-ACC
      (da)   *ka] wakara-na-i*
      COP.PRES Q   know-NEG-PRES
      (Lit.) 'I don't know [$_{CP}$ what it is [$_{CP}$ Op$_1$ that [$_{TP}$ Mary bought ____$_1$]]].'

The cleft analysis can straightforwardly capture the optional presence of the copula *da* in (48b) because the copula in question is in fact optional, as we can see in (51). The possibility of non-*wh*-remnants in (50b) can also be captured because the cleft source for (50b) is grammatical, as in (52).

(52) *Boku-wa* [$_{CP}$ ([$_{CP}$ *Op$_1$* [$_{TP}$ *Mary-ga* ____$_1$ *at-ta*   *no]-ga) John-ni*
      I-TOP   Mary-NOM   meet-PST C-NOM John-DAT
      (da)   *kadooka] wakara-na-i*
      COP.PRES whether   know-NEG-PRES
      'I don't know whether it was John'

Here, the non-*wh*-phrase *John* occupies the pivot of the embedded cleft clause. Therefore, the cleft analysis is empirically favored over the sluicing analysis.

There are two approaches that have been proposed to the omission of the presupposed CP, which is needed to derive the surface string of Japanese sluicing-like constructions: replacing the presupposed CP with an empty pronoun (cf. Nishiyama et al. 1996) or eliding the relevant CP via argument ellipsis (cf. Saito 2004a; Sugawa 2008; Takita 2010). The empty pronoun approach and the argument ellipsis approach analyze (46b′) as in (53a) and (53b), respectively.

(53) a. *Replacement by* pro
          Boku-wa [$_{CP}$ *sore-ga/pro nani-o*   *(da)*   *ka] wakara-na-i*
          I-TOP   it-NOM   what-ACC COP.PRES Q   know-NEG-PRES
          'I don't know [$_{CP}$ what it is].'
      b. *Argument Ellipsis*
          Boku-wa [$_{CP}$ [~~$_{CP}$~~ ~~Op$_1$~~[~~$_{TP}$~~ ~~Mary-ga~~   ____$_1$ ~~kat-ta]~~   ~~no]~~-ga nani-o*
          I-TOP   Mary-NOM   buy-PST C-NOM what-ACC
          (da)   *ka] wakara-na-i.*
          COP.PRES Q   know-NEG-PRES
          (Lit.) 'I don't know [$_{CP}$ what it is [~~$_{CP}$~~ ~~Op$_1$~~ ~~that~~ [~~$_{TP}$~~ ~~Mary bought~~ ____$_1$]]].'

The option of omitting the presupposed CP via argument ellipsis is motivated by the fact that Japanese sluicing-like constructions can yield the sloppy reading. Consider the following example.

(54) a. *John-wa [_{CP} zibun-ga naze sikar-are-ta   ka]*
John-TOP   self-NOM why scold-PASS-PST Q
wakat-te-na-i-ga,
know-PROG-NEG-PRES-but
(Lit.) 'Although John does not know [_{CP} Q self was scolded why], …'

  b. *Mary-wa [_{CP} naze ka] wakat-te-iru.*   strict; sloppy
Mary-TOP   why Q   know-PROG-PRES
(Lit.) 'Mary knows [_{CP} Q why].'   (Takahashi 1994: 268)

With (54a) as its antecedent, (54b) is ambiguous in that it can mean either that
Mary knows why John was scolded (strict) or that Mary knows why she was scolded
(sloppy). Importantly, the cleft base for (54b) with the overt pronoun *sore* 'it' cannot
yield the sloppy reading, as in (55).

(55) [With (54a) as its antecedent]
    …, Mary-wa [_{CP} sore-ga naze (da)   ka] wakat-te-iru.   strict;*sloppy
    Mary-TOP   it-NOM why COP.PRES Q   know-PROG-PRES
    (Lit.) 'Mary knows [_{CP} Q why it is].'   (cf. Takahashi 1994: 272)

In light of the above discussion, the possibility of the sloppy reading in (54b) in-
dicates that it involves ellipsis, not *pro*. (54b) can then be analyzed as involving
argument ellipsis of the presupposed CP, as illustrated in (56).

(56) [With (54a) as its antecedent]
    …, Mary-wa [_{CP} [_{CP}Op₁[_{TP} zibun-ga ——₁ sikar-are-ta] no]-ga naze
    Mary-TOP   self-NOM   scold-PASS-PST C-NOM why
    (da)   ka] wakat-te-iru.
    COP.PRES Q   know-PROG-PRES
    (Lit.) 'Mary knows [_{CP} Q why it is [_{CP}Op₁ that [_{TP} self was scolded ——₁]]].'

Here, the presupposed CP containing a *self* anaphor is elided via argument ellipsis,
so the availability of the sloppy reading follows.

Interestingly, Saito (2004a) observes that argument ellipsis involved in Japanese
sluicing-like constructions does not ameliorate subjacency effects on the basis of
the following example.

(57) a. [_{DP} [_{relative clause} *Dare-ka-ga   dare-ka-ni   kai-ta] tegami]-ga*
                who-KA∃-NOM who-KA∃-to buy-PST letter-NOM
    mitukat-ta   sooda.
    be.found-PST I.heard
    'I heard that they found a letter that someone wrote to someone.'

b. #*Demo, boku-wa [*CP* *(sore-ga) Tanaka san-ga*
but   I-TOP   it-NOM   Tanaka Mr./Ms.-NOM
Nakasone san-ni   kadooka] sira-na-i.
Nakasone Mr./Ms.-to whether know-NEG-PRES
(Lit.) 'But, I don't know [*CP* whether it was Mr./Ms. Tanaka to Mr./Ms.
Nakasone].'   (Saito 2004a: 47)

With (57a) as its antecedent, (57b) is incompatible with a pronominal subject. This leaves us with the argument ellipsis option, cf. (53b). (57b) is structurally represented under the argument ellipsis analysis as in (58).

(58)   *Demo, boku-wa [*CP* ~~[*CP* Op₁ Op₂ [*TP* [*DP* [*relative clause* ——₁ ——₂~~ *kai-ta]*
but   I-TOP   buy-PST
~~*tegami] ga mitukat-ta]   no] ga*~~   *Tanaka san-ga*
letter-NOM be.found-PST that-NOM Tanaka Mr./Ms.-NOM
Nakasone san-ni   kadooka] sira-na-i.
Nakasone Mr./Ms.-to whether know-NEG-PRES
(Lit.) 'But, I don't know [*CP* whether it was Mr./Ms. Tanaka to Mr./Ms. Nakasone
~~[*CP* Op₁ Op₂ that [*TP* [*DP* the letter [*relative clause* that ——₁ wrote ——₂]] was found]]~~].'

Here, the moved operators and the relative clause island are all included within the argument ellipsis domain. The unacceptability of (57b) then indicates that argument ellipsis does not exhibit island-repair effects, unlike sluicing, cf. (32). The absence of island-repair effects with argument ellipsis is far from clear if argument ellipsis involves PF-deletion because PF-deletion is generally claimed to rescue subjacency violations through the well-known *-marking mechanism (cf. Chomsky 1972; Lasnik 2001; Merchant 2001, 2008; Bošković 2011b; among many others).[20] Furthermore, the base-generation + Merger analysis would not account for the ungrammaticality of (57b): the null operators would be base-generated outside of the relative clause, and Merger would have the operators in question and the variable within the relative clause form a chain without movement. On the other hand, under the LF-copy analysis of argument ellipsis developed in this book, the ungrammaticality of (57b) can be straightforwardly captured: the analysis in question provides the presupposed CP of (57b) with the following derivation.

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20. Putting aside the technical details, the *-marking-based rescue-by-PF-deletion analysis of the ameriolation effect should work in cases like (58) (if such cases were to be treated in terms of PF-deletion), where both the moved element, i.e. null operator, and the island are included within the ellipsis domain.

(59) a. *Overt Syntax*

… (whether it was Mr./Ms. Tanaka$_1$ to Mr./Ms. Nakasone$_2$) [$_{CP}$ *e*]

b. *Covert Syntax/LF* ❶: *LF-copying*

… [$_{CP}$ that [$_{TP}$ [$_{DP}$ the letter [$_{relative\ clause}$ that Op$_1$ wrote Op$_2$]] was found]]

c. *Covert Syntax/LF* ❷: *Covert Op-movement*

… [$_{CP}$ Op$_1$ Op$_2$ that [$_{TP}$ [$_{DP}$ the letter [$_{relative\ clause}$ that ___$_1$ wrote ___$_2$]] was found]]

In overt syntax, the presupposed CP is not present, as in (59a). In covert syntax/LF, the CP in question is copied, and then the null operators undergo covert movement out of the relative clause island, causing a subjacency violation.[21] The fact that argument ellipsis does not exhibit island-repair effects thus provides us with further evidence that argument ellipsis involves LF-copying, not PF-deletion, and also that it does not involve base-generation + Merger.

5.3.3 PF-deletion versus LF-copying revisited: A view from phases

There has been a great deal of debate in the literature regarding whether ellipsis should be treated in terms of PF-deletion or LF-copying. Observing that the dichotomy between PF-deletion and LF-copying concerns the presence/absence of internal structure in overt syntax, I have argued that argument ellipsis should be implemented by LF-copying rather than PF-deletion since null arguments in Chinese, Japanese, Korean, Mongolian, and Turkish do not allow extraction out of them in overt syntax, but they do in LF. There are, however, cases where overt extraction is possible out of an ellipsis domain, as has already been noted in the previous discussion. For example, consider the following examples.

(60) a. John met someone, but I don't know [$_{CP}$ who$_1$ [$_{TP}$ ~~he met ___$_1$~~]].
      b. I know which book$_1$ Mary [$_{vP}$ [$_{VP}$ read ___$_1$]], and which book$_2$ Bill didn't [$_{vP}$ [$_{VP}$ ~~read ___$_2$~~]].

(60a) is a sluicing construction, and (60b) is a VP-ellipsis construction. Importantly, these cases involve overt extraction out of the ellipsis domain. Given that these cases involve overt extraction out of the ellipsis domain, the reasoning employed above leads us to the conclusion that the above constructions involve PF-deletion: since sluicing in (60a) and VP-ellipsis in (60b) involve internal structure in overt

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21. See Saito (2004a) for the claim that indefinites can be turned into null operators via a process inspired by Fiengo & May's (1994) vehicle change.

syntax, overt extraction out of the relevant domains is possible. This conclusion, taken together with the preceding discussion, which focused on extraction possibilities out of argument ellipsis sites, then leads us to the further conclusion that both PF-deletion and LF-copying are available as strategies for deriving ellipsis.

A question then arises whether we can predict for any particular instance of ellipsis whether it involves PF-deletion or LF-copying. I suggest that we can. What is shared by (60a) and (60b) is that they are instances of phasal complement ellipsis, not phasal ellipsis. Consider in this respect sluicing, which involves ellipsis of the TP complement of C, and argument ellipsis, which involves ellipsis of the entire DP/CP. Interestingly, Bošković (2014) argues that ellipsis is phase-constrained and that both phases and phasal complements can undergo ellipsis. In fact, sluicing and argument ellipsis are two of the cases Bošković considers in this respect. Bošković proposes that the difference between argument ellipsis and sluicing is the phasal status of the ellipsis domain. Specifically, sluicing is an instance of phasal complement ellipsis: CP is a phase and the sluicing site, TP, is a phasal complement (note also that VP-ellipsis involves ellipsis of the complement domain of the vP phase). By contrast, argument ellipsis is an instance of phasal ellipsis given that DPs as well as CPs are phases (cf. Bošković 2014).[22] All things being considered, the following generalization can be deduced regarding ellipsis.

(61)   Phasal ellipsis is implemented by LF-copying, while phasal complement ellipsis is implemented by PF-deletion.

This generalization can be considered to be a by-product of the phase theory. The claim that a PF-deletion site corresponds to a phasal complement, i.e. what is sent to spell-out, is not novel; it has been argued for in the literature. Specifically, PF-deletion can be considered a flipside of spell-out: if a spell-out domain is not pronounced, that is considered as an instance of PF-deletion. By contrast, LF-copying should target phases since phasal complements do not have any theoretical status on their own in the phase theory: only phases do, which makes phases a natural domain for operations like LF-copying (where considerations of spell-out do not apply).[23] Therefore, the implementation of argument ellipsis via LF-copying is not

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22. Bošković (2014, 2015) actually argues that highest clausal projection is a phase (if the highest clausal projection is a TP, then TP is a phase for Bošković). Regarding nominal arguments, Bošković argues that Japanese lacks DP but that the highest projection in the nominal domain, which is KP in the case of Japanese for Bošković, is a phase. I ignore this point here, simply assuming DP for Japanese. However, see Chapter 6 for relevant discussion.

23. As noted in Bošković (2016a), a great deal of effort has gone into coming up with a proper unified definition of what counts as a phase; by contrast, there has been nothing like that for phasal complements. The reason is simple: only phases have a theoretical status.

only supported by the empirical data discussed in the preceding sections, where null arguments in the relevant languages only allow covert extraction out of them, but also quite naturally follows from the phase-based theory of ellipsis.

5.4   Consequences for other syntactic phenomena

Before concluding this chapter, I will discuss the consequences of the current analysis for the proper analysis of clefts and split QP phenomena in Japanese, as well as approaches to control constructions and *wh*-in-situ constructions. The goal of this section is modest: simply to show that the current analysis of null arguments can provide us with a tool for teasing apart different analyses of these phenomena proposed in the literature, not to discuss the phenomena in any detail or the potential shortcomings of the analyses discussed below.

5.4.1 Case-marked cleft

I will first discuss the consequence of the current analysis of Japanese null arguments regarding cleft constructions (cf. Hoji 1987, 1990; Kuroda 1992, 1999a, b; Koizumi 1995; Kuwabara 1996, 2000; Matsuda 1997; Takano 2002; Hiraiwa & Ishihara 2002, 2012; Kizu 2005; Cho et al. 2008; Miura 2011; among many others), in particular Case-Marked Clefts (CMCs), where a focused element is followed by a case particle. (62) exemplifies a typical case of the construction in question.

(62) *[Taroo-ga e_i kai-ta   no]-wa kono ronbun$_i$-o da.*
      Taro-NOM   write-PST C-TOP this   paper-ACC COP.PRES
      (Lit.) 'It is this paper$_i$ [that Taro wrote e_i].'

Here, the presupposed part is headed by the complementizer *no*, and the focused element *kono ronbun-o* 'this paper' is followed by the copula *da*. Hoji (1990) proposes that CMCs in Japanese involve null operator movement: (62) is analyzed as in (63), under Hoji's analysis.[24]

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24. Hoji (1990) claims that not only CMCs but also PP clefts such as (i) involve null operator movement.

(i) *[Op$_{1/i}$ Taroo-ga   ___$_{1/i}$ okane-o   kari-ta-no]-wa   kono*
      Taro-NOM   money-ACC borrow-PST-NML-TOP this
      ginkoo-kara$_i$ da.
      bank-from   COP.PRES
      'It is from this bank$_i$ [Op$_{1/i}$ that Taro borrowed money ___$_{1/i}$].'

In this book, I will only discuss the CMCs for expository purposes. The observations regarding CMCs in the following discussion also hold for PP clefts.

(63)   [Op$_{1/i}$ *Taroo-ga* ___$_{1/i}$ *kai-ta-no]-wa*   *kono ronbun$_i$-o da.*
　　　 Taro-NOM　　　 write-PST-C-TOP this   paper-ACC COP.PRES
　　 'It is this paper$_i$ [Op$_{1/i}$ that Taro wrote ___$_{1/i}$].'

Here, the gap within the presupposed part is treated as a trace of null operator movement, and the relevant chain is co-indexed with the focused element. Hoji bases the postulation of null operator movement on the fact that CMCs exhibit subjacency effects as in (64b), though unbounded dependencies are in principle possible as in (64a).

(64)   a.   *[John-ga*   [$_{CP}$ *Mary-ga*   *e$_i$ kai-ta*   *to] omot-te-iru*   *no]-wa*
　　　　　 John-NOM   Mary-NOM   write-PST c   think-PROG-PRES C-TOP
　　　　 kono ronbun$_i$-o da.
　　　　 this   paper-ACC COP.PRES
　　　　 'It is this paper$_i$ [that John thinks [$_{CP}$ that Mary wrote e$_i$]].'
　　 b.   *[John-ga*   [[$_{relative clause}$ *e$_i$ kai-ta]*   *hito]-o*   *sit-te-iru*
　　　　 John-NOM   write-PST person-ACC know-PROG-PRES
　　　　 no]-wa kono ronbun$_i$-o da.
　　　　 C-TOP   this   paper-ACC COP.PRES
　　　　 'It is this paper$_i$ [that John knows [the person [$_{relative clause}$ who wrote e$_i$]]].'

In (64a), the gap is embedded, and the sentence is grammatical. On the other hand, in (64b), the gap is inside of a relative clause, and the sentence is unacceptable. If null operator movement is involved in CMCs, the ungrammaticality of (64b) follows since the movement in question crosses the relative clause island boundary. Therefore, the contrast in (64a) and (64b) can be taken to support Hoji's claim that CMCs in Japanese involve null operator movement.[25]

　　 However, Hiraiwa & Ishihara (2002, 2012) propose an alternative focus movement analysis of CMCs in Japanese. Specifically, they argue that CMCs involve what is referred to as the *no-da* in-situ focus construction (cf. Kuno 1973; Noda 1997; Tanomura 2002) as their base structure. (65) exemplifies a typical case of the construction in question.

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25. In contrast to CMCs, non-case-marked cleft sentences in Japanese do not exhibit subjacency effects, as in (i).

(i)   *[John-ga*   [[$_{relative clause}$ *e$_i$ kai-ta]*   *hito]-o*   *sit-te-iru*   *no]-wa kono*
　　 John-NOM   write-PST person-ACC know-PROG-PRES C-TOP   this
　　 ronbun$_i$ da.
　　 paper   COP.PRES
　　 (Lit.) 'It is this paper$_i$ [that John knows [the person [$_{relative clause}$ who wrote e$_i$]]]'

Based on the absence of subjacency effects, Hoji (1987, 1990) concludes that non-case-marked clefts need not involve null operator movement, unlike CMCs.

(65)   *[Taroo-ga kono ronbun-o   kai-ta   no] da.*
      Taro-NOM this   paper-ACC write-PST C   COP.PRES
      (Lit.) 'It was [that Taro wrote this paper].'

The *no-da* in-situ focus construction is generally analyzed as involving a simplex sentence headed by the complementizer *no* followed by the copula *da*. Assuming Rizzi's (1997) cartographic approach to the left periphery, Hiraiwa & Ishihara analyze the *no-da* in-situ focus construction as follows: the complementizer *no* occupies the head of FinP and the copula *da* is the head of FocP, as illustrated in (66).

(66)   [$_{TopP}$ [$_{FocP}$ [$_{FinP}$ [$_{TP}$ *Taroo-ga   kono ronbun-o   kai-ta]   no] da]].*
                     Taro-NOM this   paper-ACC write-PST C   COP.PRES
      (Lit.) 'It was that Taro wrote this paper.'

Then, Hiraiwa & Ishihara argue that the *no-da* in-situ focus construction underlies CMCs with two particular instances of movement: movement of a focused element to [Spec, FocP] and remnant movement of FinP, which includes the trace of the focused element, to [Spec, TopP]. (67) illustrates the derivation of CMCs under Hiraiwa & Ishihara's proposal.

(67)   a.
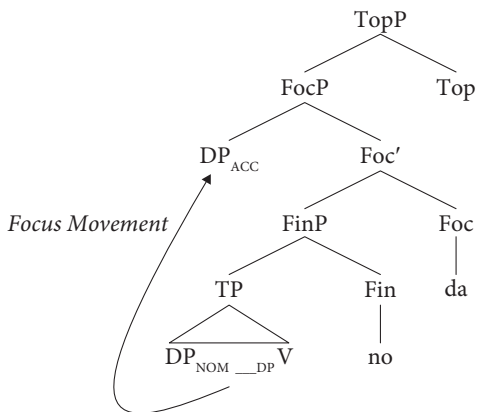
    b.
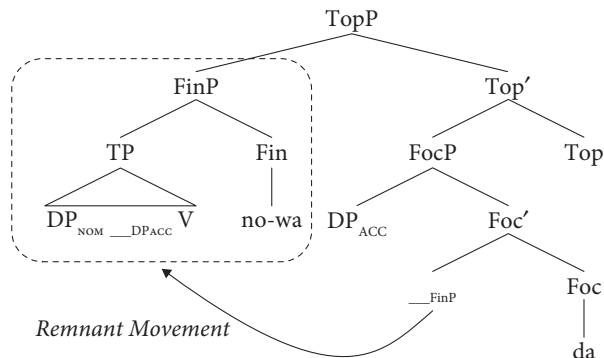
Let us consider the derivations in (67), using the Example (66) for illustration. In (67a), *kono ronbun* 'this paper' undergoes focus movement to [Spec, FocP]. In (67b), FinP, which contains the trace of focus movement, undergoes remnant movement to [Spec, TopP], yielding the word order in (62). The fact that CMCs exhibit subjacency effects also follows under this analysis because of the movement of the focused phrase. For example, in (64b), *kono ronbun-o* 'this paper' undergoes focus movement out of the relative clause island, yielding a violation of subjacency.

Although it has been controversial which analysis should be preferred and not much attention has been paid to teasing apart the two analyses summarized above, the current perspective on Japanese null arguments provides us with a tool to tease apart the null operator movement analysis (63) and the focus movement + remnant movement analysis (67) of CMCs. Importantly, Takahashi (2013b) observes that the gap involved in CMCs can exist inside of null arguments, as in (68b′).

(68) a. *[Taroo-ga [$_{CP}$ Hanako-ga e$_i$ kai-ta to] omot-te-iru no]-wa*
          Taro-NOM Hanako-NOM write-PST C think-PROG-PRES C-TOP
          kono ronbun$_i$-o da.
          this paper-ACC COP.PRES
          (Lit.) 'It is this paper$_i$ [that Taro thinks [$_{CP}$ that Hanako wrote e$_i$]].'

      b. *[Ziroo-ga [$_{CP}$ Hanako-ga e$_j$ kai-ta to] omot-te-iru no]-wa*
          Ziro-NOM Hanako-NOM write-PST C think-PROG-PRES C-TOP
          kono ronbun$_j$-o da.
          this paper-ACC COP.PRES
          (Lit.) 'It is this paper$_j$ [that Ziro thinks [$_{CP}$ that Hanako wrote e$_j$]].'

      b′. *[Ziroo-ga [$_{CP}$ △] omot-te-iru no]-wa kono ronbun$_j$-o da.*
          Ziro-NOM think-PROG-PRES C-TOP this paper-ACC COP.PRES
          (Lit.) 'It is this paper$_j$ [that Ziro thinks [$_{CP}$ △]].'

With (68a) as its antecedent, (68b′), where the gap in question is embedded within a null argument, is grammatical. Given that Japanese null arguments can involve internal structure only in covert syntax, the grammaticality of (68b′) suggests that movement that creates the gap in CMCs in Japanese is an instance of covert movement, not overt movement. Specifically, (68b′) is analyzed as in (69) and (70) under the null operator movement analysis and the focus movement + remnant movement analysis respectively.

(69) *Null Operator Movement*

      [Op Ziro-NOM [$_{CP}$ Δ] think C]-TOP this paper-ACC COP
          |_____| *Op-movement out of [$_{CP}$ Δ]*

(70)   *Focus Movement + Remnant Movement*

   a.   [$_{\text{TopP}}$ [$_{\text{FocP}}$ this paper-ACC [$_{\text{FinP}}$ [$_{\text{TP}}$ Ziro-NOM [$_{\text{CP}}$ Δ] think] c] COP]]

   Focus Movement out of [$_{\text{CP}}$ Δ]

   b.   [$_{\text{TopP}}$[$_{\text{FinP}}$ [$_{\text{TP}}$ Ziro-NOM [$_{\text{CP}}$ Δ] think [C-TOP]$_1$][$_{\text{FocP}}$ this paper-ACC ___$_1$ COP]]

   Remnant Movement of FinP

Under the null operator movement analysis, what is extracted out of the null CP in (68b′) is a null operator. As discussed above, silent extraction out of Japanese null arguments, including null operator movement, is possible. This analysis is thus compatible with (68b′). By contrast, under the focus movement + remnant movement analysis, (68b′) involves overt extraction, i.e. overt focus movement of *this paper*, out of a null CP. As discussed above, overt extraction out of Japanese null arguments is otherwise impossible, which raises a problem for the focus movement + remnant movement analysis of CMCs. The proposed analysis of Japanese null arguments thus provides us with a tool to tease apart the null operator movement and the focus movement + remnant movement analyses of CMCs in Japanese, favoring the former.

5.4.2 Split QP

Wh-phrases in Japanese such as *dare* 'who' and *nani* 'what' are widely referred to as indeterminate pronouns (cf. Kuroda 1965) because they do not always function as *wh*-words: they are interpreted as quantificational phrases (QPs) when they are associated with quantificational 'particles', as in (71) and (72).[26]

(71)   a. *dare-ka*   b. *dare-mo*   c. *dare-mo*

   who-KA$_\exists$ who-MO$_{\text{ANY}}$ who-MO$_\forall$

   'someone'   'anyone'   'everyone'

(72)   a. *nani-ka*   b. *nani-mo*

   what-KA$_\exists$ what-MO$_{\text{ANY}}$

   'something'   'anything'

One of the distinctive properties of Japanese QPs is that, despite their intimate relation, indeterminate pronouns and quantificational particles associated with them can be split, as noted by Kuroda (1965), Hoji (1985), Nishigauchi (1990), Watanabe (1991), Takahashi (2002), among many others. Consider the following examples.

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26. Interestingly, the sequence *nani-mo* cannot mean 'everything': *nani* and *mo*$_\forall$ cannot be combined. See Hiraiwa (2017) for relevant discussion.

(73) a.   *Dare-mo-ga   kai-ta   hon-ga   omosiro-i.*
          who-MO$_\forall$-NOM write-PST book-NOM interesting-PRES.
          (Lit.) 'The book that who-MO$_\forall$ wrote is interesting.'
          ≈ 'The book that everyone wrote is interesting.'
      b.   *Dare-ga   kai-ta   hon-mo   omosiro-i.*
          who-NOM write-PST book-MO$_\forall$ interesting-PRES.
          (Lit.) 'The book-MO$_\forall$ that who wrote is interesting.'
          ≈ 'The book that everyone wrote is interesting.'   (Takahashi 2002: 577)

In (73a), the indeterminate pronoun *dare* and the quantificational particle *mo* are
adjacent. By contrast, in (73b), they are split: the relevant indeterminate pronoun
is located within the relative clause, but the particle associated with it is attached to
the head noun of the relativized DP *hon* 'book'. Following Takahashi (2002), I will
refer to cases such as (73b) as the split QP construction in the following discussion.

Nishigauchi (1990) and Watanabe (1991) propose an analysis of the split QP
phenomenon in terms of unselective binding (cf. Heim 1982). Under their analysis,
indeterminate pronouns are treated as variables bound by the relevant quantifica-
tional 'particles'.[27] Specifically, (73b) is analyzed, as in (74).

(74)
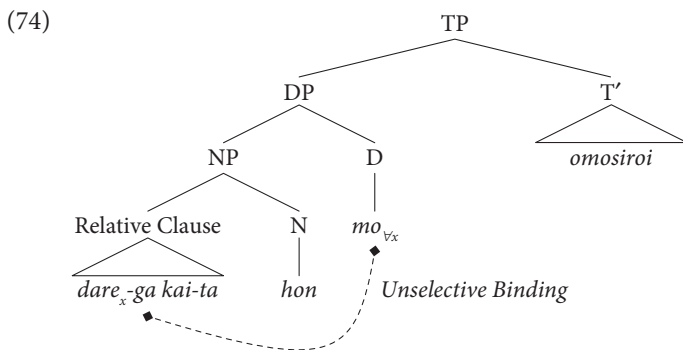
Here, the quantificational 'particle' *mo* is base-generated as a D head, and is taken
to be associated with the indeterminate pronoun *dare* within the relative clause
via unselective binding (to be more precise, the particle in question is also associ-
ated with the N head *hon* 'book'). Because of the relevant binding association, the
indeterminate pronoun *dare* receives the universal quantificational force, being
interpreted as 'everyone'.

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27. Nishigauchi (1990) in fact proposes an additional requirement that indeterminate pronouns
must move to a specifier position of the relevant particles in covert syntax/LF. I will continue to
refer to Nishigauchi (1990) as an unselective binding analysis because whether indeterminate
pronouns undergo covert movement does not affect the following discussion.

However, Takahashi (2002) proposes an alternative account for the split QP construction in light of what he dubs determiner raising. Specifically, he analyzes (73b) as follows.

(75)

```
                              TP
                      ┌────────┴────────┐
                     DP                 T′
                 ┌────┴────┐         ┌───┴───┐
                NP         D        omosiroi
            ┌────┴────┐    |
    Relative Clause   N   mo_∀1
    ┌─────┴─────┐     |      ↖
 dare-__1-ga kai-ta  hon    Q-particle Movement
```
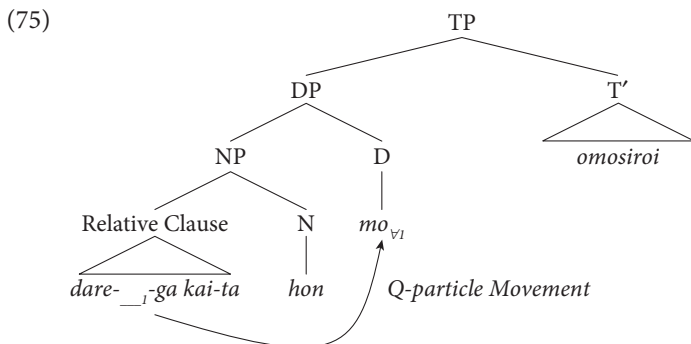
Here, the quantificational 'particle' *mo* is base-generated with the indeterminate pronoun *dare*, undergoing overt movement to the D head. Therefore, under Takahashi's analysis, the non-split QP sentence (73a) and its split QP counterpart (73b) differ only in the presence/absence of overt movement of the relevant quantificational particle to D.

Now let us consider how the split QP phenomenon interacts with the current analysis of Japanese null arguments. What has gone unnoticed in the literature is that non-split QPs can be phonologically dropped, whereas split QPs cannot be, as shown in (76) and (77), respectively.

(76) a. *Taroo-wa [[[[_DP dare-mo]-ga   kaikosa-re-ru toyuu] uwasa]-ga*
          Taro-TOP   who-MO_∀-NOM fire-PASS-PRES that   rumor-NOM
          hontoo da   to] omot-te-iru.
          true   COP.PRES C   think-PROG-PRES
          (Lit.) 'Taro thinks [that [the rumor [that [_DP who-MO_∀] will be fired]] is true].'
          ≈ 'Taro thinks that the rumor that everyone will be fired is true.'
      b. *Ziroo-wa [[[[_DP dare-mo]-ga   shoosinsu-ru   toyuu] uwasa]-ga*
          Ziro-TOP   who-MO_∀-NOM promote-PRES that   rumor-NOM
          hontoo da   to] omot-te-iru.
          true   COP.PRES C   think-PROG-PRES
          (Lit.) 'Ziro thinks [that [the rumor [that [_DP who-MO_∀] will be promoted]] is true].'
          ≈ 'Ziro thinks that the rumor that everyone will be promoted is true.'

b′. *Ziroo-wa [[[[_DP_ △] shoosinsu-ru   toyuu] uwasa]-ga   hontoo da*
Ziro-TOP   promote-PRES that   rumor-NOM true   COP.PRES
to] omot-te-iru.
C   think-PROG-PRES
(Lit.) 'Ziro thinks [that [the rumor [that [_DP_ △] will be promoted]] is true].'
≈ 'Ziro thinks that the rumor that everyone will be promoted is true.'

(77) a.   *Taroo-wa [[[[_DP_ dare]-ga   kaikosa-re-ru toyuu] uwasa]-mo hontoo*
Taro-TOP   who-NOM fire-PASS-PRES that   rumor-MO$_\forall$ true
da   to] omot-te-iru.
COP.PRES C   think-PROG-PRES
(Lit.) 'Taro thinks [that [the rumor-MO$_\forall$ [that [_DP_ who] will be fired]] is
true].'   (Takahashi 2002: 603)
≈ 'Taro thinks that the rumor that everyone will be fired is true.'

b.   *Ziroo-wa [[[[_DP_ dare]-ga   shoosinsu-ru   toyuu] uwasa]-mo hontoo*
Ziro-TOP   who-NOM promote-PRES that   rumor-MO$_\forall$ true
da   to] omot-te-iru.
COP.PRES C   think-PROG-PRES
(Lit.) 'Ziro thinks [that [the rumor-MO$_\forall$ [that [_DP_ who] will be promoted]]
is true].'
≈ 'Ziro thinks that the rumor that everyone will be promoted is true.'

b′. **Ziroo-wa [[[[_DP_ △] shoosinsu-ru   toyuu] uwasa]-mo   hontoo da*
Ziro-TOP   promote-PRES that   rumor-MO$_\forall$ true   COP.PRES
to] omot-te-iru.
C   think-PROG-PRES
(Lit.) 'Ziro thinks [that [the rumor-MO$_\forall$ [that [_DP_ △] will be promoted]]
is true].'
≈ (Int.) 'Ziro thinks that the rumor that everyone will be promoted is true.'

In (76a), the indeterminate pronoun *dare* and the quantificational 'particle' *mo* are
adjacent to each other. With (76a) as its antecedent, (76b′), where the non-split QP
is phonologically dropped, is grammatical: (76b′) receives the same interpretation
as (76b). This indicates that the amalgam of the indeterminate pronoun and the
quantificational 'particle' can be phonologically null. Important for the current
discussion is (77). (77a) is a split QP construction in that the indeterminate pro-
noun and the quantificational 'particle' are split from each other. With (77a) as its
antecedent, (77b) is grammatical, while (77b′), where the indeterminate pronoun
is inside of the null argument and the relevant particle is located outside of it, is
ungrammatical. Under the current proposal regarding null arguments, where they
do not involve any internal structure in overt syntax, the contrast in (76b′) and
(77b′) straightforwardly follows under Takahashi's (2002) determiner raising anal-
ysis of the split QP construction. Specifically, the ungrammaticality of (77b′) can

be explained because the relevant null subject within the relative clause does not involve any internal structure in overt syntax, so the quantificational 'particle' *mo* cannot be extracted out of it. By contrast, under the unselective binding approach to the split QP phenomenon, it is not clear why (77b′) is unacceptable. Therefore, the current analysis of null arguments provides us with a tool to tease apart the unselective binding analysis and the determiner raising analysis of the split QP phenomenon in Japanese: the contrast in (76) and (77) argues for the latter.

5.4.3 Control

The current analysis of Japanese-type null arguments also has consequences for control constructions (see also footnote 6 of Chapter 3). It has been highly controversial how control constructions should be analyzed. The traditional approach to such constructions claims that the controllee is PRO, a null pronominal element coindexed with its controler (see Landau 2003; Bobaljik & Landau 2009; among others for recent arguments for the PRO analysis). However, Hornstein (1999, 2001), Boeckx & Hornstein (2003, 2004, 2006), Boeckx et al. (2010), among others, claim that controllees are derived via A-movement. A typical case of the English control construction in (78a) is analyzed as in (78b) under the PRO analysis and as in (78c) under the movement analysis.

(78) a.   John tried [$_{Clause}$ *e* to understand argument ellipsis].
  b.   John$_i$ tried [$_{Clause}$ PRO$_i$ to understand argument ellipsis].
  c.   John$_1$ tried [$_{Clause}$ ——$_1$ to understand argument ellipsis].

In (78b), the gap within the embedded clause is PRO that is coindexed with the matrix subject *John*. In (78c), the gap in question is the trace of A-movement of *John* out of the embedded clause.

Whether the control construction involves PRO or movement has also been an issue in Japanese syntax. Although the PRO analysis has been influential in the literature (cf. Nemoto 1993), Takano (2010) argues for the movement analysis. To illustrate, the control construction in (79a) is analyzed as in (79b) under the PRO analysis and as in (79c) under the movement analysis.

(79) a.   *Taroo-wa Ayaka-ni*   [$_{Clause}$ *e hakaseronbun-o kaku yoo(ni)] meizi-ta.*
      Taro-TOP Ayaka-DAT   dissertation-ACC write C.INF   order-PST
      (Lit.) 'Taro ordered Ayaka [$_{Clause}$ *e* to write her dissertation].'
  b.   Taro Ayaka$_i$ [$_{Clause}$ PRO$_i$ dissertation write C] ordered
  c.   Taro Ayaka$_1$ [$_{Clause}$ ——$_1$ dissertation write C] ordered

The two analyses of the control in question make different predictions with respect to extraction possibilities out of Japanese null argumemts. Specifically, under the

PRO analysis, nothing is overtly extracted out of control clauses, so it is expected that control clauses can be phonologically dropped; on the other hand, under the movement analysis, control constructions like (79a) involve overt movement out of control clauses, so that control clauses should not be phonologically droppable in light of the preceding discussions. The following data indicate that the current perspective favors the PRO analysis over the movement analysis (see Landau 2013 for a similar argument for the PRO analysis of the English control construction).

(80) a.   *Taroo-wa Ayaka-ni   [$_{Clause}$ e hakaseronbun-o kaku yoo(ni)] meizi-ta.*
        Taro-TOP Ayaka-DAT   dissertation-ACC write C.INF   order-PST
        (Lit.) 'Taro ordered Ayaka [$_{Clause}$ e to write her dissertation].'

    b.   *Ziroo-wa Kanako-ni   [$_{Clause}$ e hakaseronbun-o kaku*
        Ziro-TOP Kanako-DAT   dissertation-ACC write
        yoo(ni)] meizi-ta.
        C.INF   order-PST
        (Lit.) 'Ziro ordered Kanako [$_{Clause}$ e to write her dissertation].'

    b'. *Ziroo-wa Kanako-ni   [$_{Clause}$ △] meizi-ta.*
        Ziro-TOP Kanako-DAT   order-PST
        (Lit.) 'Ziro ordered Kanako [$_{Clause}$ △].'

With (80a) as its antecedent, both (80b) and (80b'), the latter of which involves a control clause that undergoes argument ellipsis, are grammatical (control clauses can be elided in other languages as well; see footnote 20 of Chapter 4). Given that overt extraction is impossible out of Japanese-type null arguments, the grammaticality of (80b') entails that overt extraction has not taken place out of the control clause, which in turn provides an argument that favors the PRO analysis over the movement analysis.

5.4.4 *Wh*-in-situ

I will now discuss the consequences of the current analysis for Japanese *wh*-in-situ. Japanese is a well-known *wh*-in-situ language. The scope of *wh*-questions in Japanese is marked by a Q-particle. Consider the following examples.

(81) a.   *Taroo-wa [$_{CP}$ Hanako-ga   nani-o   tabe-ta ka] tazune-ta.*
        Taro-TOP   Hanako-NOM what-ACC eat-PST Q   ask-PST
        (Lit.) 'Taro asked [$_{CP}$ Q Hanako ate what].'

    b.   *Taroo-wa [$_{CP}$ Hanako-ga   nani-o   tabe-ta to] omot-te-iru   no?*
        Taro-TOP   Hanako-NOM what-ACC eat-PST C   think-PROG-PRES Q
        (Lit.) 'Q Taro thinks [$_{CP}$ Hanako ate what]?'

In (81a), the Q-particle *ka* is located within the embedded clause, and the sentence is interpreted as an embedded *wh*-question; in (81b), the Q-particle is located in the matrix clause, and the sentence is interpreted as a matrix *wh*-question. The latter shows that the relation between *wh*-words and Q-particles can be unbounded.

Interestingly, Tanaka (2008) observes that embedded clauses with *wh*-in-situ can be dropped as indirect questions but not as matrix questions, as in (82) and (83).

(82) a. *Taroo-wa [$_{CP}$ Hanako-ga   nani-o   tabe-ta ka] tazune-ta.*
          Taro-TOP   Hanako-NOM what-ACC eat-PST Q   ask-PST
          (Lit.) 'Taro asked [$_{CP}$ Q Hanako ate what].'

   b. *Ziro-mo [$_{CP}$ △] tazune-ta.*
       Ziro-also   ask-PST
       (Lit.) 'Ziro also asked [$_{CP}$ △].'

(83) A[1]: *Taroo-wa [$_{CP}$ Hanako-ga   nani-o   tabe-ta to] omot-te-iru   no?*
             Taro-TOP   Hanako-NOM what-ACC eat-PST C   think-PROG-PRES Q
             (Lit.) 'Q Taro thinks [$_{CP}$ Hanako ate what]?'

   B: *Pan   da   yo.*
       bread COP.PRES SFP
       'Bread.'

   A[2]: i. *Zyaa, Ziroo-wa [$_{CP}$ Hanako-ga   nani-o   tabe-ta to]*
              then Taro-TOP   Hanako-NOM what-ACC eat-PST C
              omot-te-iru   no?
              think-PROG-PRES Q
              (Lit.) 'Then, Q Ziro thinks [$_{CP}$ Hanako ate what]?'

       ii. **Zyaa, Ziroo-wa [$_{CP}$ △] omot-te-iru   no?*
            then Ziro-TOP   think-PROG-PRES Q
            (Lit.) 'Then, Q Ziro thinks [$_{CP}$ △]?'

In (82a), the *wh*-phrase *nani* 'what' takes its scope within the embedded clause. With (82a) as its antecedent, (82b), where the embedded question CP is phonologically null, is grammatical. (83A[1]) involves the embedded *wh*-phrase *nani* 'what' taking its scope in the matrix clause. With (83A[1]) as its antecedent, (83A[2]–ii), which involves a matrix question with a *wh*-phrase in an embedded CP that is phonologically null, is ungrammatical. In the following, it will be shown that the data noted above can also be accommodated under the analysis developed in the preceding sections.

The syntax of *wh*-in-situ has been discussed in some depth in the literature. There are three major approaches: movement in overt syntax (which can be implemented in very different ways; see Watanabe 1992; Hagstrom 1998; Miyagawa 2001; Kishimoto 2005a; Cable 2007, 2010; among others), movement in LF (cf. Huang

1982; Lasnik & Saito 1984, 1992; among others), and no movement, i.e. unselective binding (cf. Cheng 1991; Tsai 1994, 1997; Shimoyama 2001; among others). For example, (81b) can be analyzed as in (84), (85), and (86), respectively.

(84) *Movement in Overt Syntax*

```
                        CP
                   ┌─────┴─────┐
                  TP           C
            ┌──────┴──────┐    │
       Taro … CP … V_think   Q_ka
        ┌───────┴───────┐      ↑
   Hanako [what-__Q] V_ate   └── Q-movement
```

(85) *Movement in LF*

```
                   CP
            ┌───────┴───────┐
         what_1            C′
            ↑         ┌─────┴─────┐
            │        TP           C
            │   ┌─────┴─────┐     │
            │  Taro … CP … V_think  Q_ka
            │   ┌────┴────┐
            │  Hanako __1 V_ate
            └──── Covert Wh-movement
```
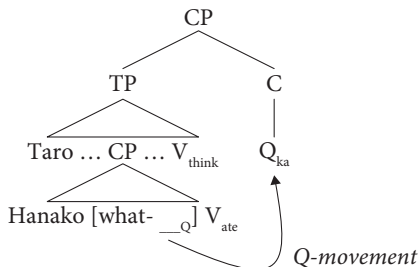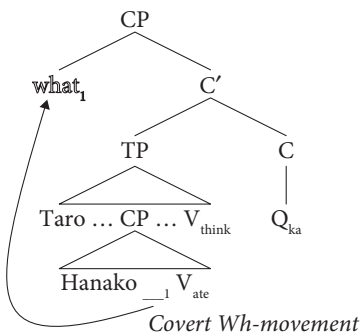
(86) *Non-movement/Unselective Binding*

```
                   CP
            ┌───────┴───────┐
           TP               C
      ┌─────┴─────┐         │
  Taro … CP … V_think      Q_x
   ┌──────┴──────┐          ┆
  Hanako what_x V_ate  ⟍ Unselective Binding
```
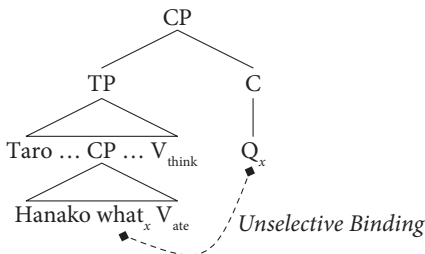
In (84), I take Hagstrom's (1998) Q-movement analysis as a representative of the overt movement approach. Under this analysis, the Q-particle undergoes overt movement. (85) illustrates the LF-movement approach, where the *wh*-phrase undergoes LF-movement. In (86), the relevant licensing is obtained without any movement, i.e. it is obtained through unselective binding, where the *wh*-element is taken to be a variable bound by the Q-particle. Although the choice among these analyses has been controversial, the current discussion provides us with a tool to

tease them apart. In particular, it provides evidence that Japanese *wh*-questions do involve overt movement, in fact of a phonologically realized element, as in the Q-movement analysis (Hagstrom 1998; Miyagawa 2001; Kishimoto 2005a; Cable 2007, 2010), where Q-particles are base-generated with *wh*-phrases and undergo overt movement to the relevant C head, cf. (84). This analysis fits most straightforwardly with the data noted above under the analysis proposed in the previous sections, where null CPs are derived via LF-copying. Specifically, if *wh*-in-situ involves overt movement to the relevant CP-domain, the ungrammaticality of (83A[2]–ii) follows since null CPs do not include any internal structure in overt syntax: hence, overt extraction out of them is not possible.[28]

It should also be noted here that not only matrix *wh*-questions but also *wh*-phrases themselves cannot be dropped, as in (87) (cf. Sugisaki 2012; Ikawa 2013).

(87)   A[1]:   *Taroo-wa nani-o   tabe-ta no?*
              Taro-TOP what-ACC eat-PST Q
              (Lit.) 'Taro ate what?'

       B: *Pan   da   yo.*
              bread COP.PRES SFP
              'Bread.'

       A[2]: i.   *Zyaa, Ziroo-wa nani-o   tabe-ta no?*
                   then   Ziro-TOP what-ACC eat-PST Q
                   (Lit.) 'Then, Ziro ate what?'

              ii. **Zyaa, Ziroo-wa △ tabe-ta no?*
                   then   Ziro-TOP   eat-PST Q
                   (Lit.) 'Then, Ziro ate △?'
                   (Int.) 'Then, what did Ziro eat?'

The null object in (87A[2]–ii) is intended to be anaphoric on *nani* 'what' in (87A[1]), and the sentence is ungrammatical. The ungrammaticality of (87A[2]–ii) also follows given the overt movement analysis of *wh*-in-situ and the current perspective on argument ellipsis, i.e. the LF-copy analysis: the null object in question does not involve any internal structure in overt syntax, so nothing can be extracted out of it in overt syntax. The Q-particle then could not have been extracted out of it, which causes the ungrammaticality here. The proposed analysis of null arguments in Japanese thus sheds new light on the debate regarding the syntax of *wh*-in-situ in Japanese.

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28. As noted above, discussing how the analysis argued for here fares with respect to other aspects of the phenomena discussed in this section is beyond the scope of this book.

5.5   Summary of the chapter

In this chapter, I have claimed that argument ellipsis should be implemented via LF-copying on the basis of extraction possibilities out of argument ellipsis sites. Specifically, in Chapter 3 and 4, it was shown that overt extraction is uniformly disallowed out of argument ellipsis sites, whereas covert extraction, i.e. extraction that does not affect word order, including QR, is uniformly allowed out of the relevant domains. This extraction pattern nicely fits the LF-copy analysis of ellipsis since the analysis in question provides an ellipsis domain with internal structure only in covert syntax/LF so that only movement operations that apply in covert syntax/LF should be able to affect the relevant domain. I have also shown that analyzing argument ellipsis as involving LF-copying has several theoretical consequences. For example, I argued that null operator movement is an instance of LF-movement because such movement is allowed out of argument ellipsis sites on a par with other instances of LF-movement, like QR. Also, I have shown that given the extraction properties of argument ellipsis, argument ellipsis can be used as a diagnostic for determining the proper treatment of several phenomena in (Japanese) syntax. In this respect, I discussed Case-Marked Clefts, *wh*-in-situ, control, and split QP constructions, all of which have been quite controversial regarding what analysis would be the most appropriate for them, in light of their interaction with null arguments. I showed that Case-Marked Clefts are best analyzed as involving covert movement, control is best analyzed as involing PRO, and *wh*-in-situ and split QP are best analyzed as involving overt movement. More importantly, I have argued that both PF-deletion and LF-copying are in principle available as strategies for deriving ellipsis. In particular, I have proposed that whether ellipsis involves PF-deletion or LF-copying is related to phases. Building on Bošković's (2014) phase-based analysis of ellipsis, where both phases and phasal complements can undergo ellipsis, I claimed that ellipsis of phases, e.g. argument ellipsis, involves LF-copying, while ellipsis of phasal complements, e.g. sluicing, involves PF-deletion, also showing that this distribution falls out naturally from the phase theory.

Appendix: Wh-in-situ and null arguments cross-linguistically

In Section 5.4.4, we reached the conclusion that the Q-particle movement approach to *wh*-in-situ is supported by data regarding interaction between null arguments and *wh*-in-situ, including the fact that embedded clauses with a *wh*-in-situ cannot be elided as matrix *wh*-questions, while this can be as embedded (i.e. indirect) *wh*-questions. Other languages that were investigated in Chapter 4, namely Chinese, Korean, Mongolian, and Turkish, are also well-known to be *wh*-in-situ

languages. In the appendix of this chapter, I will then examine whether the relevant observation regarding Japanese *wh*-in-situ is replicated in the other argument ellipsis languages, in the attempt to contribute to our understanding of *wh*-in-situ in these languages.

I will first discuss Korean and Mongolian.[29] The following examples demonstrate that embedded (i.e. indirect) *wh*-questions can be elided in both languages.

(88) Korean
    a. *Chelswu-nun [$_{CP}$ Mia-ka   mwues-lul sa-ss-nunchi] a-n-ta.*
        Chelswu-TOP   Mia-NOM what-ACC buy-PST-Q   know-PRES-DECL
        (Lit.) 'Chelswu knows [$_{CP}$ Q Mia bought what].'
    b. *Yenghi-to   [$_{CP}$ Mia-ka   mwues-lul sa-ss-nunchi] a-n-ta.*
        Yenghi-also   Mia-NOM what-ACC buy-PST-Q   know-PRES-DECL
        (Lit.)'Yenghi also knows [$_{CP}$ Q Mia bought what].'
    b'. *Yenghi-to   [$_{CP}$ △] a-n-ta.*
        Yenghi-also   know-PRES-DECL
        (Lit.)'Yenghi also knows [$_{CP}$ △].'
(89) Mongolian
    a. *Ulaγan-Ø   [$_{CP}$ Baγatur-Ø   yaγu-Ø   qudaldun-abu-ysan]-i*
        Ulagan-NOM   Bagatur-NOM what-ACC buy-take-PST-ACC
        mede-ne.
        know-PRES
        (Lit.) 'Ulagan knows [$_{CP}$ Bagatur bought what].'
    b. *Batu-Ø   basa [$_{CP}$ Baγatur-Ø   yaγu-Ø   qudaldun-abu-ysan]-i*
        Batu-NOM also   Bagatur-NOM what-ACC buy-take-PST-ACC
        mede-ne.
        know-PRES
        (Lit.) 'Batu also knows [$_{CP}$ Bagatur bought what].'
    b'. *Batu-Ø   basa [$_{CP}$ △] mede-ne.*
        Batu-NOM also   know-PRES
        (Lit.) 'Batu also knows [$_{CP}$ △].'

With the (a) examples as their antecedents, both the (b) examples and the (b') examples, where the embedded CP is phonologically null, are grammatical. Then, let us consider whether embedded clauses with *wh*-in-situ taking matrix scope can be phonologically null in Korean and Mongolian. Consider the following examples.

---

29. Note that Korean has an overt Q-particle in both matrix and embedded clauses, while Mongolian has it in matrix but not embedded clauses.

(90) Korean

A^1: *Chelswu-nun [$_{CP}$ Mia-ka   mwues-lul sa-ss-ta-ko]   sayngkakha-ni?*
Chelswu-TOP   Mia-NOM what-ACC buy-PST-DECL-C think-Q
(Lit.) 'Q Chelswu thinks [$_{CP}$ that Mia bought what]?'

B: *I   kulim.*
this picture
'This picture.'

A$_2$: i. *Yenghi-nun [$_{CP}$ Mia-ka   mwues-lul sa-ss-ta-ko]   sayngkakha-ni?*
Yenghi-TOP   Mia-NOM what-ACC buy-PST-DECL-C think-Q
(Lit.) 'Q Yenghi thinks [$_{CP}$ that Mia bought what]?'

ii. **Yenghi-nun [$_{CP}$ △] sayngkakha-ni?*
Yenghi-TOP   think-Q
(Lit.) 'Q Yenghi thinks [$_{CP}$ △]?'

(91) Mongolian

A^1: *Batu-Ø   [$_{CP}$ Bayatur-Ø   yayu-Ø   qudaldun-abu-ysan gejü]*
Batu-NOM   Bagatur-NOM what-ACC buy-take-PST.ADN   C
bodoju bai-qu   bui?
think   COP-PRES.ADN Q
(Lit.) 'Q Batu thinks [$_{CP}$ that Bagatur bought what]?'

B: *Almurad.*
apple
'Apple.'

A^2: i. *Ulayan-Ø   bol [$_{CP}$ Bayatur-Ø   yayu-Ø   qudaldun-abu-ysan*
Ulagan-NOM TOP   Bagatur-NOM what-ACC buy-take-PST.ADN
gejü] bodoju bai-qu   bui?
C   think   COP-PRES.ADN Q
(Lit.) 'Q Ulagan thinks [$_{CP}$ that Bagatur bought what]?'

ii. **Ulayan-Ø   bol [$_{CP}$ △] bodoju bai-qu   bui?*
Ulagan-NOM TOP   think   COP-PRES.ADN Q
(Lit.) 'Q Ulagan thinks [$_{CP}$ △]?'

In (90) and (91), the (A^2–ii) sentences include the null CP anaphoric on the embedded CP in the (A^1) sentences, and the sentences are ungrammatical. Korean and Mongolian then behave like Japanese in the relevant respect, which can be interpreted as indicating that the Q-movement analysis should be extended to these languages. Under the Q-particle movement analysis, the Q-particle *ni* in the Korean Example (90A^2–ii) and the Q-particle *bui* in the Mongolian Example (91A^2–ii) are overtly 'moved' out of the relevant null CPs, which is disallowed under the current perspective on null arguments because these null arguments do not involve internal structure in overt syntax: Q-particles cannot be extracted out of the null arguments,

which causes the ungrammaticality here. Therefore, the Q-particle movement analysis of *wh*-in-situ is also supported by the data regarding interaction between null arguments and *wh*-in-situ in Korean and Mongolian.

Let us turn to Turkish. Interestingly, Turkish does not have overt Q-particles either for embedded or matrix *wh*-questions, as in (92a) and (92b), respectively.[30]

(92)   Turkish
  a. *Ali-Ø   [CP Mete-nin kim-i   gör-düğ-ün]-ü dün   sor-du.*
      Ali-NOM   Mete-GEN who-ACC see-NML-ACC yesterday ask-3SG.PST
      (Lit.) 'Yesterday Ali asked [CP Mete saw who].'
  b. *Ali-Ø   dün   [CP Mete-nin kim-i   gör-düğ-ün]-ü soyle-di?*
      Ali-NOM yesterday   Mete-GEN who-ACC see-NML-ACC say-3SG.PST
      (Lit.) 'Yesterday Ali said [CP Mete saw who]?'

(92a) is an embedded *wh*-question, being interpreted as 'Ali asked who Mete saw yesterday'; (92b) is a matrix *wh*-question, being interpreted as 'Who did Ali say that Mete saw yesterday'. Importantly, there is no overt Q-particle in either (92a) or (92b). Despite the absence of Q-particles, *wh*-in-situ in Turkish shows exactly the same distribution regarding where it can be phonologically dropped as in Japanese, Korean, and Mongolian: embedded *wh*-questions can be dropped, whereas matrix *wh*-questions with a *wh*-in-situ in an embedded clause cannot be, as the following examples show.

(93)   Turkish
  a. *Ali-Ø   [CP Mete-nin kim-i   gör-düğ-ün]-ü dün   sor-du.*
      Ali-NOM   Mete-GEN who-ACC see-NML-ACC yesterday ask-3SG.PST
      (Lit.) 'Yesterday Ali asked [CP Mete saw who].'
  b. *Can-Ø   de [CP Mete-nin kim-i   gör-düğ-ün]-ü*
      Can-NOM TOP   Mete-GEN who-ACC see-NML-3SG
      bugün sor-du.
      today ask-3SG.PST
      (Lit.) 'Today Can asked [CP Mete saw who].'
  b′. *Can-Ø   de [CP △] bugün sor-du.*
      Can-NOM TOP   today ask-3SG.PST
      (Lit.) 'Today Can asked [CP △].'

---

30. More precisely, Q-particles are present only in echo-questions in Turkish (see, e.g. Aygen 2007 for relevant discussions).

(94) Turkish

A¹: *Ali-Ø   dün   [$_{CP}$ Mete-nin kim-i   gör-düğ-ün]-ü soyle-di?*
   Ali-NOM yesterday   Mete-GEN who-ACC see-NML-3SG say-3SG.PST
   (Lit.) 'Yesterday Ali said [$_{CP}$ Mete saw who]?'

B: *Ahmet-i.*
   Ahmet-ACC
   'Ahmet.'

A²: i. *Can-Ø   de   bugün [$_{CP}$ Mete-nin kim-i*
      Can-NOM TOP today   Mete-GEN who-ACC
      gör-düğ-ün]-ü soyle-di?
      see-NML-3SG say-3SG.PST
      (Lit.) 'Today Can said [$_{CP}$ Mete saw who]?'

     ii. **Can-Ø   de   bugün [$_{CP}$ △] soyle-di?*
      Can-NOM TOP today   say-3SG.PST
      (Lit.) 'Today Can said [$_{CP}$ △]?'
      (Int.) 'Today, who did Can say Mete saw?'

With (93a) as its antecedent, (93b′), where the embedded CP is phonologically dropped, is grammatical with the same interpretation as (93b). By contrast, with (94A¹) as its antecedent, (94A²–ii) is ungrammatical with the intended matrix *wh*-question interpretation. The grammaticality of (93b′) and the ungrammaticality of (94A²–ii) thus indicate that embedded *wh*-questions can be dropped, while matrix *wh*-questions with an embedded *wh*-phrase cannot be. Under the current perspective on null arguments, the above facts straightforwardly follow if Turkish *wh*-in-situ involves movement of null Q-particles in overt syntax. This is in fact exactly what Aygen (2007) proposes. Aygen shows that a number of syntactic properties of Turkish *wh*-in-situ can be accounted for under the null Q-particle movement analysis. Therefore, the contrast between (93b′) and (94A²–ii) can be taken to support Aygen's analysis.[31]

Finally, let us turn to interactions of null arguments and *wh*-in-situ in Chinese. Consider the following examples.

---

31. That a phonologically null Q-particle undergoes movement in overt syntax seems to be incompatible with Chomsky's (1995) claim that movement in overt syntax must affect word order, as discussed in Section 5.3.1 (where I applied this to null operator movement). I suggest that such movement may be possible only with head movement. In fact, it can be constrained even further. It is possible that this situation arises as a phonologically null head is a PF affix which has to undergo movement to its host (a position where it can be phonologically supported), so there may be an independent driving force for a phonologically null head to move in overt syntax in this case.

(95)   Chinese

A¹: *Zhangsan qing-le [CP *Lisi mai-le   shenme] ma?*
Zhangsan ask-ASP   Lisi buy-ASP what   Q
(Lit.) 'Zhangsan ask [CP Lisi bought what]?'

B: *Dui.*
yes
'Yes.'

A²: i.   *Xu qing-le [CP *Lisi mai-le   shenme] ma?*
Xu ask-ASP   Lisi buy-ASP what   Q
(Lit.) 'Xu ask [CP Lisi bought what]?'

ii.   *Xu qing-le   [CP △] ma?*
Xu ask-ASP   Q
(Lit.) 'Xu ask [CP △]?'

(96)   Chinese

A¹: *Zhangsan juede [CP *Lisi mai-le   shenme] ne?*
Zhangsan feel   Lisi buy-ASP what   Q
(Lit.) 'Zhangsan feel [CP Lisi bought what]?'

B: *Chomsky de shu.*
Chomsky DE book
'Chomsky's book.'

A²: i.   *Na   Mali juede [CP *Lisi mai-le   shenme] ne?*
then Mali feel   Lisi buy-ASP what   Q
(Lit.) 'Mali feel [CP Lisi bought what]?'

ii.   *Na   Mali juede [CP △] ne?*
then Mali feel   Q
(Lit.) 'Mali feel [CP △]?'

On a par with the other languages investigated above, Chinese allows embedded *wh*-questions to be dropped, as in (95A²–ii). Specifically, with (95A¹) as its antecedent, (95A²–ii) is grammatical, receiving the same interpretation as (95A²–i). What is interesting for the current discussion is the grammaticality of (96A²–ii), which indicates that Chinese allows not only embedded *wh*-questions but also matrix *wh*-questions with a *wh*-phrase in an embedded clause to be phonologically null, unlike the other languages discussed above. To be more specific, with (96A¹) as its antecedent, (96A²–ii) can be interpreted as a matrix *wh*-question: it can receive the same interpretation as (96A²–i). The current perspective on null arguments leads us to conclude that the particle *ne* in Chinese, which is assumed to be a Q-particle for *wh*-questions, is not actually an instance of the Q-particle (or at least not the kind of a Q-particle that Hagstrom is concerned with). In fact, Constant (2014)

extensively discusses the particle *ne* in Chinese, reaching the conclusion that it is not a Q-particle; instead, he claims that it is a contrastive topic marker. The fact that matrix *wh*-questions with an embedded *wh*-phrase as well as indirect *wh*-questions can be phonologically empty thus supports Constant's conclusion.

Of course, discussing how the above conclusions regarding *wh*-in-situ in each language discussed here fares with respect to other aspects of the phenomenon in question is beyond the scope of this book. However, I have shown that investigating interactions between null arguments and *wh*-in-situ provides a novel window into the proper analysis of the latter.

CHAPTER 6

Concluding remarks and additional issues

6.1   Summary of the book

In this book, I have examined the nature of null arguments in radical *pro*-drop languages where null arguments have been claimed to be derivable via argument ellipsis (namely, Chinese, Japanese, Korean, Mongolian, and Turkish), paying special attention to extraction possibilities out of them. It has been shown that null arguments in the languages under consideration allow certain types of extraction out of them, which was taken to argue for the ellipsis/surface anaphora view of the null arguments in question on the basis of the hypothesis that proforms/deep anaphora disallow extraction out of them. In other words, the possibility of extraction out of Japanese-type null arguments indicates that they cannot be uniformly empty pronouns/*pro*. Furthermore, I have shown that Japanese-type null arguments exhibit a hitherto unnoticed pattern of extraction out of ellipsis domains, which is not observable with either Hankamer & Sag's (1976) surface anaphora such as VP-ellipsis or deep anaphora such as *do it* and NCA. Specifically, it has been demonstrated that Japanese-type null arguments uniformly disallow overt extraction out of them, while they uniformly allow covert extraction (more precisely, extraction that does not affect word order) out of them. I have claimed that the overt/covert extraction asymmetry out of Japanese-type null arguments not only adds a novel type of ellipsis to the ellipsis typology in the literature but also provides a novel window into the PF-deletion versus LF-copying debate regarding ellipsis. To be more specific, based on the hypothesis that the possibility of overt extraction out of an ellipsis domain indicates the presence of internal structure in overt syntax and that the possibility of covert extraction out of an ellipsis domain signals the presence of internal structure in covert syntax/LF, I have argued that the overt/ covert asymmetry regarding extraction out of Japanese-type null arguments is best analyzed under the LF-copy analysis of ellipsis. Specifically, the LF-copy analysis of ellipsis provides an ellipsis domain with internal structure only in covert syntax/ LF, so overt extraction out of it is impossible because there is nothing to extract out of in overt syntax, while covert extraction out of the site in question is possible because the relevant ellipsis domain involves internal structure in covert syntax/ LF, which makes covert extraction operations applicable to that domain. Although I have argued that the extraction possibility out of Japanese-type null arguments

can be taken as a novel argument for the LF-copy analysis, I have also claimed that PF-deletion is an available strategy for deriving ellipsis on the basis of, e.g. sluicing, where overt extraction such as *wh*-movement is possible. In particular, given that the possibility of overt extraction out of an ellipsis domain indicates the presence of internal structure in overt syntax, sluicing is best analyzed as involving PF-deletion, not LF-copying, since the former provides an ellipsis domain with internal structure in both overt and covert syntax. I have argued that the dichotomy between PF-deletion versus LF-copying can be captured under Bošković's (2014) phase-based analysis of ellipsis, where only phases and phasal complements can undergo ellipsis. To be more specific, under Bošković's theory, the difference between argument ellipsis and sluicing is the phasal status of the ellipsis domain: argument ellipsis is an instance of ellipsis of phases (e.g. DPs, CPs) and sluicing is an instance of ellipsis of phasal complements (i.e. TP). I have generalized the above difference by proposing that ellipsis of phases, e.g. argument ellipsis, is quite generally implemented via LF-copying, whereas ellipsis of phasal complements, e.g. sluicing, is quite generally implemented via PF-deletion, which was shown to be a natural by-product of the phase theory. Finally, I have shown that the LF-copy analysis of argument ellipsis in the languages discussed in this book provides a novel window into the proper treatment of a number of syntactic phenomena (especially in Japanese), including *wh*-in-situ, control, case-marked clefts, and split QP phenomena. Specifically, investigations into interactions between null arguments and these syntactic phenomena provides novel arguments for the Q-movement analysis of *wh*-in-situ (cf. Hagstrom 1998), the PRO analysis for control (as opposed to the movement analysis), the null operator movement analysis of case-marked clefts (cf. Hoji 1987, 1990), and the Q-movement analysis of split QP phenomena (Takahashi 2002).

6.2   When is argument ellipsis available?

The last issue that I would like to address in the remainder of this book is related to what determines the availability of argument ellipsis in a language. Argument ellipsis is obviously not available in every language. Interestingly, the argument ellipsis languages that I investigated in the previous chapters, i.e. Chinese, Japanese, Korean, Mongolian, and Turkish, are all radical *pro*-drop languages, which means that the languages in question have both the *pro* and the argument ellipsis strategy for deriving null arguments (see Chapter 2 and 4 for evidence that the *pro* option is available in addition to the argument ellipsis option in these languages). Also, all other languages that have been claimed to allow argument ellipsis, e.g. American Sign Language (Koulidobrova 2012, 2017), Colloquial Singapore English (Sato

2014), Javanese (Sato 2015), Persian (Sato & Karimi 2016), are radical *pro*-drop languages. At this point, it is worth noting Bošković's (2012) generalization regarding radical *pro*-drop and Cheng's (2013) generalization regarding argument ellipsis. Specifically, in terms of Bošković's (2008, 2009, 2011a, 2012, and *seq*.) DP/NP parameter, where languages without definite articles lack DP, Bošković (2012) reaches the generalization that radical *pro*-drop is possible only in NP languages, i.e. languages without articles, Japanese being one such language. Furthermore, Cheng (2013) reaches the generalization that argument ellipsis is possible only in NP languages (Japanese is again an example of such a language).[1] What these generalizations indicate is that languages which allow radical *pro*-drop and languages that allow argument ellipsis share a property, namely the absence of articles. In light of Bošković's and Cheng's generalizations, we can obtain another generalization which overarches radical *pro*-drop and argument ellipsis.

(1)   Argument ellipsis is possible only in radical *pro*-drop languages.

As far as I can see, there is no language which allows argument ellipsis but disallows radical *pro*-drop.[2] This suggests that radical *pro*-drop and argument ellipsis should not be disconnected. In light of this, I will briefly explore in this section the possibility that Japanese-type null arguments, i.e. radical *pro*-drop, are uniformly *pro* in overt syntax but they can be replaced by an appropriate antecedent in covert syntax/LF via LF-copying. This would mean that given an appropriate context, *pro* in radical *pro*-drop languages can be assigned its interpretation in two ways: co-indexation and LF replacement. If such an approach to Japanese-type null arguments is on the right track, it follows that the presence of argument ellipsis requires the presence of radical *pro*-drop, which captures the generalization in (1). To give an example, the null object in (2b) is interpreted in covert syntax/LF, as in either (3b–i) or (3b–ii) (in the following, I will use NP instead of DP for nominal arguments in Bošković's NP languages, including Japanese).

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1.   Saito (2007) attributes the availability of argument ellipsis in a language to the absence of obligatory φ-agreement. Specifically, it has been a traditional assumption (cf. Fukui 1986, 1988; Kuroda 1988) that Japanese lacks obligatory φ-agreement unlike English, which Saito claims licenses argument ellipsis. I will return to this analysis below.

2.   Whether radical *pro*-drop languages all allow argument ellipsis is not quite clear, but this appears to be the case. (If this is correct, both options for the interpretation of radical *pro*-drop discussed below would have to be available.) A potential counterexample to the generalization (1) is Hebrew, one of the non-radical-*pro*-drop languages. I refer the reader to Landau (2018), who makes a number of interesting observations, arguing for argument ellipsis in Hebrew, leaving this issue for future research.

(2) a. *Taroo-wa [_{NP} zibun-no kuruma]-o arat-ta.*
Taro-TOP   self-GEN car-ACC   wash-PST
(Lit.) 'Taro washed [_{NP} self's car].'

b. *Hanako-wa arawa-nakat-ta.*
Hanako-TOP wash-NEG-PST
(Lit.) 'Hanako did not wash.'

(3) a. *Overt Syntax*
Hanako [_{NP} *pro*] not.washed

b. *Covert Syntax/LF*
i. Co-indexation: Hanako [_{NP} *pro*]$_i$ not.washed
ii. Replacement: Hanako [_{NP} self's car] not.washed

Under the co-indexation option, *pro* is assigned the index, e.g. *i*, being interpreted under the assignment function [$i \rightarrow$ Taro's car] (cf. Heim & Kratzer 1998), which yields the strict reading; under the replacement option, *pro* is a surface anaphor and it is replaced by the antecedent *self's car* in covert syntax/LF, which yields the sloppy reading.[3]

The analysis explored here may connect two otherwise independent generalizations: Bošković's (2012) generalization regarding radical *pro*-drop and Cheng's (2013) generalization regarding argument ellipsis. That is, the availability of radical *pro*-drop underlies the availability of argument ellipsis (i.e. in a sense that it is a pre-requisite for it), which captures the generalization in (1), i.e. argument ellipsis is possible only in radical *pro*-drop languages. Under the analysis explored here, the unavailability of argument ellipsis in e.g. English, a non-radical-*pro*-drop language, is then a trivial matter: there is no *pro* in English. That is, there is no *pro* to be replaced in covert syntax/LF in the first place, so argument ellipsis is not an option in English.

If Japanese-type *pro* can be replaced by an appropriate antecedent in covert syntax/LF, it would then be expected that the distribution of argument ellipsis/LF-replacement corresponds to the distribution of *pro* since the relevant replacement option presupposes the existence of *pro*. Interestingly, Saito (2007) independently claims that the distribution of these two is in fact quite similar, also suggesting that argument ellipsis and radical *pro*-drop should be somehow 'unified'. To illustrate, it has been established in the literature that temporal PPs and locative

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3. Under the analysis explored here, it is expected that agreement-licensed *pro* in languages like Italian and Spanish (see Chapter 2 for relevant discussion) cannot be replaced in covert syntax/LF because, e.g., it cannot yield the ellipsis-indicating readings including the sloppy reading (cf. Oku 1998; Sakamoto 2015a). I will return to this issue below.

PPs in addition to NPs and CPs can be elliptic but manner adverbs and reason adverbs cannot be, as illustrated in (4) and (5) (cf. Saito 2007; Takahashi 2008b; Takita 2010).

(4) a. *Temporal PP Ellipsis*
     Taroo-wa [$_{temporal\ PP}$ zibun-ga nayanda   hi-ni]   biiru-o
     Taro-TOP   self-NOM be.troubled day-on beer-ACC
     no-mu-ga,   Hanako-wa [$_{temporal\ PP}$ △] karaoke-ni i-ku.
     drink-PRES-but Hanako-TOP   karaoke-to go-PRES
     (Lit.) 'Taro drinks beer [$_{temporal\ PP}$ on the day when self is troubled], but Hanako goes to karaoke [$_{temporal\ PP}$ △].'

  b. *Locative PP Ellipsis*
     Taroo-wa [$_{locative\ PP}$ zibun-no oya-no   ie-ni]   sun-de-iru-ga,
     Taroo-TOP   self-GEN parent-GEN house-in live-PROG-PRES-but
     Hanako-wa [$_{locative\ PP}$ △] sun-dei-na-i.
     Hanako-TOP   live-PROG-NEG-PRES
     (Lit.) 'Taro lives [$_{locative\ PP}$ in self's parents' house], but Hanako does not live [$_{locative\ PP}$ △].'

(5) a. *Manner Adverb Ellipsis*
     **Taroo-wa [$_{manner\ PP}$ zibun-no hoohoo-de] mondai-o   toi-ta-ga,*
     Taro-TOP   self-GEN way-by   problem-ACC solve-PST-but
     Hanako-wa [$_{manner\ PP}$ △] mondai-o   toka-nakat-ta.
     Hanako-TOP   problem-ACC solve-NEG-PST
     (Lit.) 'Taro solved a problem [$_{manner\ PP}$ by self's method], but Hanako did not solve a problem [$_{manner\ PP}$ △].'

  b. *Reason Adverb Ellipsis*
     **Watasi$_i$-wa [$_{CP}$ Taroo-ga [$_{reason\ PP}$ zibun-no sippai-de]   kubininat-ta*
     I-TOP   Taro-NOM   self-GEN mistake-for be.fired-PST
     to] kii-ta-ga,   pro$_i$ [$_{CP}$ Hanako-ga   [$_{reason\ PP}$ △] kubininat-ta
     C   hear-PST-but   Hanako-NOM be.fired-PST
     to]-wa kii-tei-na-i.
     C-TOP hear-PROG-NEG-PRES
     (Lit.) 'I heard [$_{CP}$ that Taro was fired [$_{reason\ PP}$ for self's mistake]], but I did not hear [$_{CP}$ that Hanako was fired [$_{reason\ PP}$ △]].'

(4) shows that locative/temporal adverbs can undergo ellipsis. Specifically, (4a) can mean that Hanako drinks beer on the day when she is troubled, and (4b) can mean that Hanako does not live in her parents' house.[4] By contrast, (5) demonstrates that manner/reason adjuncts are not elidable. That is, (5a) can only be interpreted as Hanako did not solve a problem at all, and (5b) as I did not hear that Hanako was fired: manner/reason adjuncts cannot be interpreted in the empty site. Saito (2007) observes that the dichotomy between temporal PPs and locative PPs on the one hand and manner adverbs and reason adverbs on the other hand also holds with the distribution of *pro*. He bases his observation on Murasugi's (1991) claim that Japanese *pro* can stand not only for nominals but also for locative/temporal PPs. Assuming that the gap in Japanese relative clauses is *pro* (cf. Perlmutter 1972), Murasugi (1991) examines the following data.[5]

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4. The quantificational reading is also available for null temporal and locative PPs, as the following data show.

(i) a. *Taroo-wa [$_{temporal\ PP}$ mi-ttu-izyoo-no   sigoto-o   oe-ta   hi-ni]*
       Taro-TOP   three-CL-or.more-GEN work-ACC finish-PST day-on
       biiru-o   no-mu-ga,   Hanako-wa [$_{temporal\ PP}$ △] wain-o   no-mu.
       beer-ACC drink-PRES-but Hanako-TOP   wine-ACC drink-PRES
       (Lit.) 'Taro drinks beer [$_{temporal\ PP}$ on the day when he finishes three or more works], but Hanako drinks wine [$_{temporal\ PP}$ △] (= on the day when she finishes three or more works).'

   b. *Taroo-wa [$_{locative\ PP}$ hyakuman-nin-izyoo-no   hito-ga   sun-de-iru*
       Taro-TOP   one.million-CL-or.more-GEN person-NOM live-PROG-PRES
       mati-ni] sun-de-iru.   Hanako-mo [$_{temporal\ PP}$ △] sun-de-iru.
       city-in   live-PROG-PRES Hanako-also   live-PROG-PRES
       (Lit.) 'Taro lives [$_{locative\ PP}$ in a city where more than one million people live]. Hanako also lives [$_{temporal\ PP}$ △] (= in a city where more than one million people live).'

5. The claim that Japanese relative clauses involve *pro* is supported by the observation that they do not exhibit subjacency effects, as the following example demonstrates (cf. Kuno 1973).

(i) *[[[e$_i$ ki-te-iru]   yoohuku]-ga yogore-te-iru]   sinsi$_i$*
       wear-PROG-PRES suit-NOM   dirty-PROG-PRES gentleman
    (Lit.) 'the gentleman$_i$ [such that [the suit [that e$_i$ is wearing]] is dirty]'

The gap *e* is embedded within a relative clause island, and it can be connected to the head nominal of the relative clause *sinsi* 'gentleman'. This entails that the gap in question cannot be treated as a trace of movement, which in turn indicates that it is an instance of *pro*.

(6) a. *Temporal PP Pro*
[[$_{NP}$ [$_{relative\ clause}$ *pro$_i$ pro$_j$ mensetu-o   uke-ta]   gakusei$_i$]-ga*
                    interview-ACC receive-PST student-NOM
minna   uka-ru]   hi$_j$
everyone pass-PRES day
(Lit.) 'the day$_j$ [that [$_{NP}$ all the students$_i$ [$_{relative\ clause}$ that *pro$_i$* received the job interview *pro$_j$*]] passes]'

b. *Locative PP Pro*
[*Taroo-ga* [$_{NP}$ [$_{relative\ clause}$ *pro$_i$ pro$_j$ sun-de-iru]   hito$_i$]-o*
Taro-NOM   live-PROG-PRES person-ACC
sit-te-iru]   mati$_j$
know-PROG-PRES city
(Lit.) 'the town$_j$ [that Taro knows [$_{NP}$ a person$_i$ [$_{relative\ clause}$ that *pro$_i$* lives *pro$_j$*]]]'

(7) a. *Manner Adverb Pro*
*[[$_{NP}$ [$_{relative\ clause}$ *pro$_i$ pro$_j$ mondai-o   toi-ta]   gakusei$_i$]-ga minna*
                    problem-ACC solve-PST student-NOM everyone
siken-ni   oti-ru]   hoohoo$_j$
exam-DAT fail-PRES way
(Lit.) 'the method$_j$ [that [$_{NP}$ all the students$_i$ [$_{relative\ clause}$ that *pro$_i$* solved the problem *pro$_j$*]] fail the examination]'

b. *Reason Adverb Pro*
*[*Taroo-ga* [$_{NP}$ [$_{relative\ clause}$ *pro$_i$ pro$_j$ kubininat-ta] hito$_i$]-o*
Taro-NOM   be.fired-PST   person-ACC
sit-te-iru]   riyuu$_j$
know-PROG-PRES reason
(Lit.) 'the reason$_j$ [that Taro knows [$_{NP}$ a person$_i$ [$_{relative\ clause}$ that *pro$_i$* was fired *pro$_j$*]]]'

The grammaticality of (6a)–(b) indicates that there is no subjacency effect with the relativization of locative/temporal PPs, suggesting that locative/temporal PP *pro* is available in Japanese. On the other hand, (7a)–(b) are both ungrammatical, showing that manner/reason PP *pro* is not an option in Japanese. Thus, if we assume that Japanese null elements are (initially) *pro*, the contrast between locative/temporal adverbs and manner/reason adverbs regarding their elidability then follows: the unavailability of manner/reason adjunct ellipsis can be attributed to the unavailability of manner/reason adjunct *pro*, and the availability of locative/temporal adverb ellipsis to the availability of locative/temporal adverb *pro*. The above discussion then indicates that argument ellipsis/LF-replacement and *pro* should not be disconnected.

Under the analysis explored here, a question arises as to why only discourse-licensed *pro* (radical *pro*-drop), not agreement-licensed *pro* in languages like Italian and Spanish, is replaceable. Oku (1998) observes that, unlike Japanese-type null subjects, Spanish null subjects do not allow the ellipsis-indicating readings, including the sloppy reading, as in (8).

(8) a. *Maria cree*   [$_{CP}$ *que* [$_{DP}$ *su propuesta] será aceptada].*
      Maria believe   c   her proposal will.be accepted
      'Maria believes [$_{CP}$ that [$_{DP}$ her proposal] will be accepted].'

     b. *Juan también cree*   [$_{CP}$ *que* [$_{DP}$ △] *será aceptada].*
      Juan also   believe   c   will.be accepted
      (Lit.) 'Juan believes [$_{CP}$ that [$_{DP}$ △] will be accepted].'   (Oku 1998: 165)

In (8b), the embedded null subject can only be assigned the strict reading: Maria's proposal but not Juan's proposal. Therefore, one might wonder why only Japanese-type *pro* (radical *pro*-drop) allows the sloppy reading unlike Spanish-type *pro* (agreement *pro*-drop). To be more specific, the question to be answered under the analysis explored here is why only radical *pro*-drop can be replaced by an appropriate antecedent in covert syntax/LF.

There is in fact a long-standing tradition where there is no *pro* in Spanish-type languages, with verbal morphology being the argument, presumably in [Spec, TP] (see Saab 2013 and references therein for relevant discussion). Regarding this analysis, it may actually be the case that verbal morphology is an incorporated pronoun (hence not in [Spec, TP], but in T/V) and that such incorporated material cannot be a target for replacement, which can be nicely subsumed under Bošković's (2001) claim that it is not possible to elide part of a complex head. In other words, the unavailability of argument ellipsis, more precisely LF-replacement of null subjects, in Spanish-type languages can then be attributed to the absence of *pro*, on a par with the unavailability of argument ellipsis in languages like English.

Another possibility that I would like to explore to capture the dichotomy between radical *pro*-drop and agreement *pro*-drop with respect to its replacability in covert syntax/LF is related to the structural richness of pronouns. Cardinaletti & Starke (1999) claim that there are at least two types of pronouns: strong pronouns and weak pronouns. One of the differences between strong pronouns and weak pronouns is the richness of internal structure: strong pronouns involve more internal structure than weak pronouns. Suppose then that agreement-licensed *pro* has more internal structure than discourse-licensed *pro* in that the former encodes the information regarding φ-features. More specifically, let us assume that agreement-licensed *pro* is a branching element, while discourse-licensed *pro* is a non-branching element, as e.g. in (9).

(9) a. *Agreement-licensed*   b. *Discourse-licensed*

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        XP                                      YP
       /  \                                      |
      X    YP                                     Y
            |
            Y
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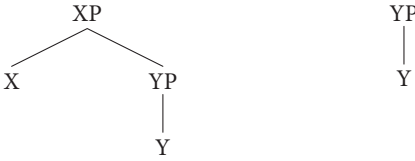
The above assumptions lead us to a generalization with respect to the possibility of LF-replacability of pronouns in (10).

(10) Only non-branching pronouns can be replaced by an appropriate antecedent in LF.

Under (10), it follows that the sloppy reading is not available in (8b) because Spanish subject *pro* is agreement-licensed hence it involves rich internal structure as in (9a) (i.e. a branching structure), which prohibits LF-replacement from applying to the *pro* in question.[6]

Let us consider the branching versus non-branching dichotomy of agreement-licensed *pro* and discourse-licensed *pro*, i.e. (9), in light of a claim made in Section 5.3.3, namely that only ellipsis of phases (which includes argument ellipsis) is implemented by LF-copying/replacement. I assume with Bošković (2014) that the highest projection of a lexical head functions as a phase (as well as the highest clausal projection). This means that XP is a phase in (9a) and YP is a phase in (9b). Since in the radical *pro*-drop case (9b), YP is a phase and a non-branching element, YP is replacable in covert syntax/LF. On the other hand, YP is not a phase in Spanish. XP is a phase in Spanish but it cannot undergo LF-replacement since it is a branching element in light of (10). If (10) is on the right track, we can then capture why discourse-licensed *pro* is different from agreement-licensed *pro* in that only the former can be replaced by an appropriate antecedent in covert syntax/LF.[7]

There are two potential advantages that we may obtain from (10). First, it may account for why overt pronouns in Japanese-type languages are not replaceable on a par with agreement-licensed *pro* (recall that overt pronouns cannot yield the ellipsis-indicating readings in relevant contexts). Camacho (2013) argues that overt

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6. Koulidobrova (2012) argues that what undergoes argument ellipsis in American Sign Language (ASL) must be non-branching, which can be interpreted as indicating that in ASL both what is replaced and what is replacing it must be non-branching.

7. Consider why (10) would hold. I assume that what is in principle replacable is what agreement-licensed *pro* and discourse-licensed *pro* have in common, which is YP (i.e. the "base" pronominal part). Only with discourse-licensed *pro*, YP is a phase, as discussed above, so it is replacable only with this type of *pro* (given that LF replacement must target a phase).

pronouns involve more internal structure than covert pronouns. Overt pronouns would then be branching elements (in particular non-clitic overt pronouns; see below), which makes LF-replacement inapplicable to them, so that overt pronouns even in languages like Japanese cannot yield the ellipsis-indicating readings, including the sloppy reading.

Second, (10) may also be extendable to Runić's (2014) discussion of object clitics in Slavic languages. Specifically, following up on an observation by Franks (2013), Runić observes that object clitics in NP languages, i.e. languages without articles under Bošković's DP/NP parameter, like Serbo-Croatian (SC), can yield the ellipsis-indicating readings under an appropriate context, as illustrated by SC (11).

(11)   a.   *The Context*:
              Nikola and Danilo are brothers and their family celebrates St. Nicholas, the patron saint's feast day in Orthodox tradition that is celebrated annually on December 19. It is a common practice among Serbs to invite a boyfriend/girlfriend to a family celebration. Both Nikola and Danilo have a girlfriend (thus, in this context, there are two girlfriends) and they invited their girlfriends to their family celebration.

   b.   *Nikola   je   pozvao (svoju) djevojku na slavu,*
        Nikola.NOM AUX invited his   girlfriend on slava
        a   pozvao ju   je   i   Danilo.   strict; sloppy
        and   invited her.CC AUX and Danilo
        'Nikola invited his girlfriend to the slava, and Danilo also invited her.'
                                                              (Runić 2014: 98–99)

In (11b), the object clitic *ju* 'her' can yield the sloppy reading: it can mean Danilo's girlfriend. Runić (2014) attributes the availability of the ellipsis-indicating readings in question to the pronominal status of object clitics. Specifically, she claims that object clitics in NP languages are structurally poorer than in DP languages in that they are non-branching Ns (see also Bošković 2016b), which enables them to yield the relevant readings. Under the analysis that I have explored here, the availability of the sloppy reading in (11b) may be treated as follows: object clitics in NP languages are structurally 'poor', i.e. non-branching pronouns (as in fact argued by Runić 2014; Bošković 2016b), so that they can be replaced by appropriate antecedents in covert syntax/LF, yielding the ellipsis-indicating readings.[8]

Interestingly, Runić (2014) also observes that the ellipsis-indicating readings of object clitics are available only in languages without articles, showing that

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8.   If the availability of the ellipsis-indicating readings of object clitics in SC can be derived via LF-replacement, it would be expected that covert extraction is possible out of them. I will leave this issue for future research.

Slovenian, Czech, and Slovak, the Slavic languages without articles, behave like SC in this respect, but Bulgarian and Macedonian, the Slavic languages with articles, disallow the relevant readings in this context. Consider the following example.

(12) Macedonian
    a. *The Context: (11a)*
    b. *Nikola ja   povika devojka si*
        Nikola her.CC.ACC invited girl   him.CC.DAT.REFL
        na slava, a   Daniel ja   povika isto.   strict;*sloppy
        at slava and Daniel her.CC.ACC invited same
        'Nikola invited his girlfriend to the slava, and Danilo also invited her.'
                (Runić 2014: 99–100)

In (12b), the object clitic *ja* 'her' cannot be assigned the sloppy interpretation: it cannot mean Daniel's girlfriend, and it can only mean Nikola's girlfriend. Therefore, the availability of the ellipsis-indicating readings of object clitics is independent of their status as a clitic, and it seems more relevant to the DP/NP status of nominal domains. Furthermore, Runić observes that strong pronouns cannot yield the readings in question even in NP languages like SC, as the following examples demonstrate (see also Bošković 2017, 2018).

(13) Serbo-Croatian
    a. *The Context*:
        Nikola and Danilo are cousins who live in two different cities in Serbia. Specifically, Nikola lives in Belgrade, while Danilo lives in Niš. They are both five years old and their parents take them to circus performances whenever a circus is in town. A circus is in both Belgrade and Niš at the same time. Both Nikola and Danilo saw an interesting clown in the circus, albeit not the same one.
    b. *Nikola je   vidio zanimljivog klovna, a   vidio*
        Nikola AUX saw interesting clown and saw
        ga   je i   Danilo.   strict; sloppy
        it.CC.ACC AUX and Danilo
        (Lit.) 'Nikola saw an interesting clown and Danilo saw him.'
    b′. *Nikola je   vidio zanimljivog klovna, a   njega*
        Nikola AUX saw interesting clown and him.ACC
        je   vidio i   Danilo.   strict;*sloppy
        AUX saw and Danilo
        (Lit.) 'Nikola saw an interesting clown and Danilo saw him.'
                (Runić 2014: 99–100)

The second conjunct of (13b) is ambiguous in that the object clitic *ga* can yield both the strict and the 'sloppy' reading: the clown that Danilo saw can be either identical to the clown that Nikola saw or different from him. By contrast, the second conjunct of (13b′), where the object position is occupied by a strong pronoun *njega* 'him', is unambiguous in that only the strict reading is available: the object in question can only be interpreted as the clown that Nikola saw. The above data suggest that not only the DP/NP status of nominal domains but also the strong versus clitic status of pronouns matters for the availability of the ellipsis-indicating readings of object pronouns in Slavic languages. Given the condition in (10), this may be captured. Specifically, the sloppy reading of object clitics in DP languages like Macedonian should not be available because of the presence of DP. To be more specific, let us assume that the DP layer makes nominal domains branching (in other words, object clitics in DP languages are branching) so that LF-replacement cannot apply to the object clitics in question (recall that object clitics in NP languages are 'poor', i.e. non-branching pronouns, so that they are replaceable by appropriate antecedents in covert syntax/LF, yielding the ellipsis-indicating readings). Furthermore, the fact that in contrast to weak pronouns, strong pronouns in NP languages like SC cannot yield the sloppy reading may also be accounted for under the analysis explored here because of the structural richness of strong pronouns. Recall that strong pronouns are generally assumed to involve more structure than weak pronouns, which in turn means that strong pronouns are branching, making LF-replacement inapplicable to them, so that the sloppy reading should not be available.

If the above approach turns out to be tenable, it may be possible to unify Saito's (2007) generalization in (14) (cf. footnote 1) and Cheng's (2013) generalization with respect to the cross-linguistic availability of argument ellipsis.

(14)   Agreement blocks argument ellipsis.

(15)   Argument ellipsis is available only in NP languages (i.e. languages without articles).

Specifically, if we assume that agreement and DP make arguments branching, which in turn makes them unreplaceable by their antecedents in covert syntax/LF, the condition in (10) may provide a novel window into the unification of the otherwise unrelated generalizations in (14) and (15).

In summary, in this section I have made a suggestion regarding what is responsible for cross-linguistic variations in the availability of argument ellipsis, which captures the generalization that argument ellipsis is possible only in radical *pro*-drop languages and which has consequences for the internal structure of various pronominal elements.

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Author index

Subject index

Theoretical linguistics in the generative tradition has payed much attention to issues related to silence – children know the syntax of silence despite the fact that they do not have direct access to it throughout their language acquisition process. One of the issues that have been hotly discussed regarding silence in natural languages is whether it involves syntactic structure or not. This book is concerned with a particular instance of silence in natural languages, what is called radical pro-drop, showing that it is silently structured on the basis of novel data from Japanese as well as Chinese, Korean, Mongolian, and Turkish. The discussion in this book also has consequences for the dichotomy between PF-deletion vs. LF-copying, shedding a new light on the proper analysis of several syntactic phenomena in Japanese, including wh-in-situ and control.

"This impressive investigation of the nature of null arguments in radical pro-drop languages not only significantly broadens the empirical scope of the phenomenon and establishes new ways to probe into its nature but also draws a host of extremely important conclusions with respect to a number of more general theoretical issues, especially regarding the licensing and nature of ellipsis, with a conclusive resolution of the long-standing debate whether ellipsis should be treated in terms of LF copying or PF deletion."

Željko Bošković, *University of Connecticut*

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