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MOUTON

Peter W. Smith

MORPHOLOGY-SEMANTICS MISMATCHES AND THE NATURE OF GRAMMATICAL FEATURES

INTERFACE EXPLORATIONS

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Interface Explorations

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Editors
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This is for Beata, Kian and Nieve.

"I would rather share one lifetime with you, than face all the ages of this world alone."

Acknowledgements

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Abbreviations

ABS	absolutive	INF	infinitive
ACC	accusative	INV	inverse
ADJ	adjective	IO	indirect object
AGR	agreement	LOC	locative
APPL	applicative	MASC	masculine
AUX	auxiliary	N	neuter
CL	class marker	NEG	negative
COMP	comparative	NM	non-masculine
COP	copula	NMZ	nomininaliser
DAT	dative	NOM	nominative
DET	determiner	NUM	number
DFLT	default	OBJ	obj
DIM	diminutive	PART	participle
DO	direct object	PERF	perfective
END	clause ending particle	PL	plural
ERG	ergative	PPRT	past participle
FEM	feminine	PRES	present
FUT	future	PRO	pronominal
FV	final vowel	PROG	progressive
GEN	genitive	PROX	proximal
GEND	gender	PRT	particle
IDENT	identificational participle	SG	singular
IMPF	imperfective	SUBJ/S	subject
IND	indicative	TRANS	transitive

Part I: **A formal model of feature mismatches**

1 Concerning hybrids

The broad topic of this book is the internal structure of morphosyntactic features, and how different components of the grammar interact with them. In the Minimalist Programme, whose general assumptions I will adhere to in this book, features are the workhorses of the syntactic component, as, since the genesis of the Minimalist Programme (the work collected in Chomsky 1995), the satisfaction of the various needs of grammatical features are assumed to drive movement of heads and phrases. For a derivation to converge — be syntactically well formed — all features need to be licitly licensed (using the term deliberately broadly), otherwise the derivation is said to 'crash', in which case, ungrammaticality arises. Thus, features are of central importance, given that they are the ultimate arbiters of whether a construction will be grammatical or not.

The centrality of features to the syntax is therefore well known and broadly accepted, and whilst Merge takes a lot of the glory these days in Minimalist work, it is hard to overstate the importance of a thorough understanding of the nature of syntactic features. Given this, there has been a generous amount of attention that has been paid to features in the literature, on a range of separate issues such as how operations interact with them; what is the typology of different morphosyntactic features; what is their internal decomposition; how are they converted into other types of features at the interfaces *etc*. This work is not intended to offer a complete historical overview on the theory of features and all of these issues. Much as I deem such a piece of work desirable, this is not the venue — and I do not have the space to do it anyway — therefore I will necessarily leave many issues unaddressed. My attention will be focussed on the issue of how the realisation of a feature matches its interpretation; that is, the connection between form and meaning, how features mediate this, and most of all, how this works at the level of individual features. Thus most-prominently, this book will be about the question of how the form that is expressed by a feature is related to its meaning. I will look at this issue through the lens of *hybrid nouns* — nouns whose morphological shape fails to match up with their semantic interpretation. Such nouns will allow us an insight into the internal makeup of features precisely because they are odd. Along the way, we will investigate a number of ancillary issues, including the syntax of agreement, the mass–count distinction, and the distribution of features along the nominal spine.

At the outset I should point out that although this book is couched very much within the Minimalist Programme, the fundamental structure that I will attribute to grammatical features that will be presented is very much inspired by and modified from work in Head-driven Phrase Structure Grammar (HPSG henceforth).

Specifically, hybrid nouns and their kin have been instrumental in motivating the CONCORD and INDEX model of features in HPSG, see in particular Pollard and Sag (1994), Wechsler and Zlatić (2000), and Wechsler and Zlatić (2003). Though I will modify this proposal in different ways and point out crucial points of difference as we proceed, it is only right to pay tribute to this body of work up front.

Given that the concept of 'hybrid' nouns will play a central role throughout this work, it is important to lay out what I mean by the concept early on and outline precisely the issues that will be at stake in the rest of the work. I turn to this in the remainder of this chapter.

1.1 Regular correspondences between form and meaning

I will start the investigation of hybrid nouns by looking at non-hybrid nouns. In the normal case, the meaning that is expressed by a morpheme matches up with its content. Taking a simple case: a regular noun in English that is not marked for plural is interpreted as referring to just one entity.[1]

(1) a. Only one duck can be best in show.

  b. * Only one ducks can be best in show.

On the other hand, with the addition of the plural morpheme, *ducks* refers to the interpretation of more than one duck.[2] When the plural interpretation is enforced, such as with the addition of a numeral, then this plural marking becomes obligatory.

(2) a. I saw three ducks in the park.

  b. * I saw three duck in the park.

Thus, there is a regular correspondence between the presence of the plural morpheme -*s*, and the interpretation 'more than one'.[3] In English, there is usually a

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1 This puts aside various difficult cases such as nouns like *sheep* which have no overt marking of plurality, *pluralia tantum* like *scissors* which are plural whether they refer to singular entities or not, and mass nouns. The latter two cases will be discussed in much greater detail in later chapters of this book. The former, I will assume do have a singular∼plural distinction, only with a zero-morpheme that 'expresses' plurality.

2 In practical terms. The meaning of plural may well in fact be 'not one', as can be seen in *I'll have 0.5 kilogrammes of cheese, thanks*. I put aside such discussions for now.

3 This is not strictly always the case, but works in the default, simple environments that are our concern for now. For instance, it has been noted that plural nouns are also compatible with a singular meaning in some contexts:

bidirectional relationship between the appearance of plural morphology and a plural interpretation, and there is therefore a consistent relationship between the plural morpheme and the meaning 'more than one':

1.2 A deeper level of abstraction

Whilst there is a fairly consistent relationship between the plural morpheme and the meaning 'more than one' in English, it is not, in fact, true to see it as being a direct relation between these two forms. Rather, it is clear that there should be some intermediate layer between the actual forms and the meaning. Keeping attention on the number morphology for now, we can see some motivation for there being an abstract feature underlying number. The English plural morpheme has a number of different allomorphs:

(3) a. [z], [s], [ɪz]
    b. [ən] - oxen
    c. [aɪ] - alumni, cacti
    d. ...

All of these allomorphs consistently have the same meaning: 'more than one', and thus they will show up in contexts where a plural interpretation is enforced, such as with numerals.

(4) a. I see three cats/dogs/buses.
    b. * I see three cat/dog/bus.
    c. I bought three oxen at the auction.
    d. * I bought three ox at the auction.
    e. We have three alumni coming as guests.
    f. * We have three alumnus coming as guests.

Furthermore, the choice of allomorph on the noun has no effect on syntactic processes that are sensitive to plural. For instance, all nouns with the above suffixes control the same agreement morphology on the verb. It is not the case that only

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(1) Parents with young children can park closer to the store.

The above sentence does not mean that only parents with two or more children qualify for closer parking, but rather, a parent with at least one child qualifies. For simplicity's sake, I will ignore them for the time being.

one of the plural allomorphs conditions plural agreement on the verb, but rather they all act as a natural class for agreement.

(5) a. The owls are/*is looking expectantly.

   b. The oxen are/*is walking towards the barn.

   c. The cacti are/*is growing well.

Thus, for the purposes of the syntax nouns that end in -*s* act the same way as those that end in [-ən], and they act the same way for those with the latinate suffix [-aɪ]. It is therefore sensible to conclude that something relates them all at a deeper level of abstraction. The elements that work at the deeper level of abstraction — at least working within minimalist assumptions — are the syntactic features. These features are the ones that are used by the syntactic derivation and are sufficiently abstract such that they can cover on the form side all of the different allomorphs.

For instance, *cat* can be represented in the following way:

(6)
$$\sqrt{\text{CAT}}$$

/kæt/   *feline mammal*
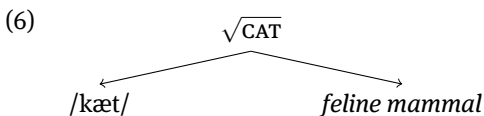
Thus, for the purposes of the syntax, then all that is seen is the abstract root $\sqrt{\text{CAT}}$, but not the phonological information. $\sqrt{\text{CAT}}$ is a relatively uninteresting example for our purposes, as there is no allomorphy of the root to speak of. If we return to number, where there was allomorphy, then *plural* can be represented in the following way:

(7)
PLURAL

{/z/,/ən/.../aɪ/ }   *more than one*
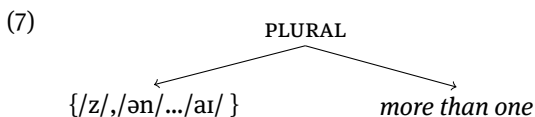
Now, if we suppose that the syntax sees only the abstract level, then the choice of allomorph of plurality will not matter to syntactic operations such as agreement: whether PLURAL is eventually realised as [-z], [-ən] *etc.* does not matter, as for the syntax they are all PLURAL.

It is therefore important to recognise at least these three strands of information for a lexical item. How then are these strands of information structured? That is, do the three strands exist in parallel across all components, or is there a system that will translate them from one another according to the relevant component of the grammar.

In early Minimalism, it was assumed that all of these strands of information were coded on features, and all carried together throughout the derivation. However, only certain types of features were able to factor into the relevant syntactic

component. So, a feature like [PLURAL] as above, would in fact consist of a bundle of three features, phonological, semantic and syntactic. Only the relevant feature was interpreted in the relevant component, indicated here in boldface to show that the syntactic value is relevant, assuming that we're attending to the syntactic component.[4]

(8) PLURAL

    a. Syntax: [Plural]

    b. Phonology: {/z,s,ɪz,aɪ,.../}

    c. Semantics: $\lambda x.\neg atom(x) \wedge (\lambda.P(x).\exists y[P(y) \wedge y \sqsubset x])$

Given the correspondence between the three levels, a more parsimonious approach would be that the syntactic feature exists only in the syntax, before it is converted into the relevant phonological and semantic values on transfer of the structure to the interfaces. In effect, rather than each feature hosting three sets of information at each component, where at most one is used at each time, a single variant of a feature is converted at the interface between the two levels, such that only what is needed for a given component is found in that component. The information would look like the following, where the conversion arrows are intended as one-way changes from the input to the output:

(9) Syntax: [PL]

Phonology: {/z,s,ɪz,aɪ,.../}   Semantics: $\lambda x.\neg atom(x) \wedge (\lambda.P(x).\exists y[P(y) \wedge y \sqsubset x])$
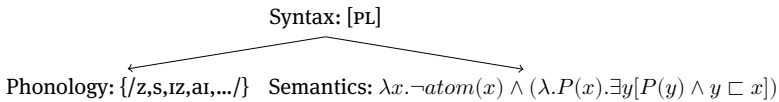
For the remainder of this book, I will assume a model of feature conversion in this way. That is, the syntax consists of abstract features that are later converted into variants that are legible to the components of phonology and semantics. This is in fact, the model that is assumed in Distributed Morphology (DM, henceforth, Halle and Marantz 1993), whose assumptions I will adhere to here. I will outline the relevant mode here before discussing hybrids in more detail.

DM is a theory of morphology that fits closely with the model of the grammar that is generally assumed in Minimalism. Specifically, it is assumed in both theories that the syntactic derivation proceeds, and feeds into the phonological and semantic components. Thus, it is traditionally assumed that the grammar can be

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4 The semantic definition of plural is taken from work by Daniel Harbour (Harbour, 2007; Harbour, 2011; Harbour, 2014). I will assume that this is how 'plural' should be represented semantically throughout this book, and though I will write it as [Plural], it is important for the reader to bear in mind that number features are made up of smaller features, such as [±Atomic] and [±Augmented].

represented as an inverted Y: an assumption that has descended from the ancestor theories of Minimalism such as the Government and Binding Theory (see, eg. Chomsky 1981). For reasons that will become clearer in Chapter 5, I will rather assume the inverted T variant of the grammar (see Bobaljik 1995; Bobaljik 2002), but for right now, the differences do not matter too much.

Thus, the grammar is represented in the following way. The syntactic component begins at the top, and ends at the interface to phonology (PF, or Phonological Form) and semantics (LF, or Logical Form). The structure is 'spelled out' along the way, which is to say that the phonological information and the semantic information diverge along separate paths to the relevant interfaces. Operations that happen along the point of spell-out will only affect one of the components, without being reflected in the other. For instance, an operation on the PF-branch will have only an effect of form, without there being an associated meaning effect. Conversely, if an operation happens on the LF branch, it will not affect the form of the sentence, but will affect the meaning.

(10)

Morphology

PF ⟵——————— Spell-out ———————⟶ LF
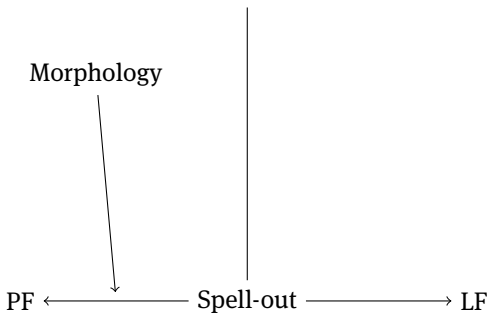
For DM, the features in the syntactic derivation are the abstract syntactic features as described above. There are then two points at which the abstract features are converted. Most relevant for our purposes, for aspects relating to 'form', this is Vocabulary Insertion: the point at which the relevant matching phonological exponent is inserted to replace the syntactic feature. This takes place within the morphological component. DM is a late-insertion theory of morphology, and so assumes that the morphological operations happen on the PF-branch, after spell-out, as indicated in the diagramme in (10). Vocabulary Insertion (VI) is the operation that associates, effectively translating, an abstract feature to a phonological exponent. This takes the form of VI rules, such as in (11).[5]

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5 For convenience, where it is not necessary, I will write the exponents using standard orthography, rather than phonological representation.

(11) a. $\sqrt{\text{OTTER}} \Leftrightarrow$ otter

  b. $\sqrt{\text{FOX}} \Leftrightarrow$ fox

  c. $\sqrt{\text{BEAR}} \Leftrightarrow$ bear

  d. [PL] $\Leftrightarrow$ -z

  e. [PL] $\Leftrightarrow$ -en / oxen

  f. [PL] $\Leftrightarrow$ -i / $\{\sqrt{\text{CACTUS}}, \sqrt{\text{ALMUNUS}} ...\}$

  g. [PAST] $\Leftrightarrow$ -ed

The abstract features on the left are translated to the exponents on the right, effectively replacing the syntactic features with the phonological features. Where a single feature (set) is compatible with multiple rules, as would be the case in (11d–11f), the Elsewhere Principle (Kiparsky, 1973) picks the most specific compatible rule.

Thus, we end up with a model of the grammar where the syntax manipulates abstract features, which are then turned into phonological features at a later stage. With few exceptions syntactic operations will then be able to see *only* the abstract features, and therefore, the choice of exponent does not matter for syntactic operations, as discussed above. On the semantic side, there is a less-discussed relative to Vocabulary Insertion in the other side of the grammar which converts the feature into semantic meaning, named the 'encyclopedia', with similar effects. These introductory remarks to the model of the grammar that I will assume paint a picture that is probably too coarse, and lacking appropriate nuance as to the effect of phonology and semantics on the grammar. There are well known effects of s-selection, where the meaning of an item restricts its syntactic distribution e.g. Grimshaw (1979). Similarly, there are a number of claims that prosody will affect the syntactic derivation, see Kentner and Franz (2019) and references therein for discussion. It remains an open-question to what extent phonological and semantic information can affect the syntax, and whether this is truly a direct impact, or something that is in turn reducible to syntactic processes, therefore I will, gladly, ignore these issues for the remainder of the book.

1.3 Hybrid nouns

Up to this point, I have not said anything beyond what are very commonly held assumptions in Minimalism, DM, and other syntactic frameworks (though not all, by any stretch) about how the information on features is stored, and changes throughout the derivation. This background, however, is important in order to understand the challenge posed by hybrid nouns. A hybrid noun, as mentioned

earlier, is where the morphology of a form does not match its semantic interpretation, with the effect that there is a disconnect between what is expressed, and what is meant. It should be noted that when I talk about hybrid nouns, this disconnect is often *partial* — it is not necessarily the case that every part of the form of an item does not correspond with its semantic interpretation. Rather, it can be, and almost always is, a subpart of it. To give a concrete example that we can use for the rest of the section, we will use an example of an Imposter construction. Imposters, as defined by Collins and Postal (2012) are items whereby the person form does not match the person interpretation. Collins and Postal base their investigation of Imposters in large part on English, but they are found in a variety of languages. A common example would be:

(12)   Papa is coming!

When the above is spoken to a child, the sentence is ambiguous. On the 'regular' reading, it means that the child's father, who is not the speaker of the utterance, is coming to the child. The second reading, which is the imposter — and so 'hybrid' — reading, is where it is uttered by the child's father to indicate that they themself, i.e. the speaker of the utterance, is coming. Effectively, the speaker is referring to themself in the third person. In this case, the form of *Papa* is very clearly third person: it is not any of the 1st or 2nd person pronouns, and controls the third person singular agreement *is* on the auxiliary. However, given that the speaker is referring to themself, the speaker of the utterance, them meaning is first person. We then clearly have a discrepancy along the person feature of the noun: *Papa* here is morphologically third person, but semantically first person. Given that the form of the item does not fully match its interpretation, we have a hybrid noun. Very coarsely, we can assume that the person information of *Papa* (on the hybrid reading) is composed of the following:

(13)   Papa
       Phonology: Third Person
       Semantics: First Person

Though there are a number of these examples in English, with more examples given below, they are not unique to English, as noted above. The following from Dutch illustrates, where the speaker of the utterance is the child's mother:

(14)   Mama gaat   een boekje   voorlezen.
       Mama go.3.SG.PRES a   book.DIM read
       'Mama is going to read a book (to you).'

Given the disconnect between the phonology and the semantics, we clearly face a problem for the feature conversion model outlined in the preceding subsection.

That is, how do we represent the person information in the syntax? According to the model above, there should be an abstract feature in the syntax that is converted to phonological information and semantic information. However, how should we treat the value of person for Imposters such as *Mama* and *Papa* in the above examples from Dutch and English? The problem is, that we cannot assign the syntactic feature a unique value given that it ought to be both.

(15)   Syntax: [???]

Phonology: /pæpæ/   Semantics: [+Speaker]
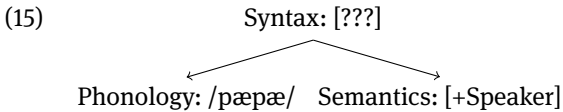
To save such an approach, one could assume that hybrid nouns are specially marked in the lexicon, such that they are in some sense overinformative of their information of the relevant value. For Imposters, this could mean that rather than having a unique value for person in the syntax, they overinform and have two person features:

(16)   Syntax: [3$_{Morph.}$, 1$_{Sem.}$]

Phonology: /pæpæ/   Semantics: [+Speaker]
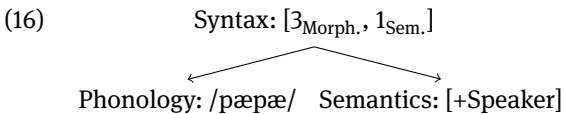
We can generalise this beyond Imposters and say that this is the general schema for hybridity: hybrids arise when they explicitly mark both values in the syntax. That is, hybrids would carry *two* values one marked as being relevant for the semantics and another marked as being for the phonology. Note that this step is important, because it prevents a situation where *I* in English could be used for a third person reference, which to my knowledge does not exist, at least not standardly. Thus, the diacritics on the features are important to ensure that the relevant feature is interpreted at the relevant interface: features marked specifically as semantic will be read with the semantics, and those marked as morphological will play into the morphophonology.

A second option is that hybrid nouns have a uniform syntactic feature, but they are marked as being hybrids, and there is a system of default overrides such that the feature is converted in a special way once the hybrid reaches the semantics. This could take the form of a diacritic.[6] The diacritic could indicate that the default rules that translate the syntactic feature to the phonological and semantic ones are overridden, so that in the case of, say, an Imposter, the person feature 3rd person feature is converted to a 1st person feature.

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6 Diacritics are never pretty, and as I will not attempt to defend this viewpoint any further, I refrain from attempting to make this viewpoint follow from anything deeper.

There are, however, a couple of issues that arise from this. Firstly, such a viewpoint merely encodes that hybrids are special, in the sense that they carry two features. This is true to a large extent: hybrids are not the regular case of nouns, given that the overwhelming majority of nouns have a predictable correspondence between form and meaning. Yet, as is, it says nothing about how nouns come to have two sets of features, whether there is any interaction between the two, nor whether either of the types is treated as special by the syntax or not. It will become clear that the syntax *does* care about whether a feature is of a given type or not, as we will see that semantic features are treated specially by the syntactic derivation. It will also become clear that there is an interaction, albeit indirect, between semantic and phonological features, as we will explore in detail in chapters 4 and 5 . I hope to show that hybrids are not special in the sense of having two features, but that it is the divergence itself that is special.

These issues will be discussed in greater detail in the chapters to come, but in order to give a brief example of how the syntax cares what type a feature is, consider agreement. Imposter constructions do not allow the semantic shape of the Imposter to control agreement on the verb:

(17)   a.   Papa is coming!

        b.   * Papa am coming!

Taken in isolation, this pattern would be quite unremarkable: one only need to say that for the syntax only the morphological shape of the Imposter is relevant. However, other syntactic elements *can* show agreement with the imposter, such as an anaphor Collins and Postal (2012). This is limited in English to plural imposters, but it remains true that the semantic information here has an effect on an apparently syntactic process.

(18)   Collins and Postal (2012, p. 17)
       In this reply, the present authors$_i$ (=the writers of the reply) attempt to defend ourselves$_i$/themselves$_i$ against the scurrilous charges which have been made.

What this shows us is that the phonological and semantic information should be in part accessible in the syntax, however, it is important that the syntax is appropriately constrained concerning what it can and cannot access. Clearly, what is needed is a theory that is flexible enough to handle the fact that hybrids exist, and that at least certain nouns should be able to carry two sets of features, but it should be restricted enough to not allow every feature to affect the syntactic computation.

Providing default overrides in the grammar misses this point, given that the values would only be introduced late on.[7] At this point it should be clear what the challenge is for the style of approach that postulates that syntactic features are abstract. In the next chapter, I will outline how we can rescue such an approach by splitting phi-features into two halves, one syntactic and one semantic, which retain abstract values, but the phonological and semantic information can differ from one another.

1.4 Back to coexisting sets of features?

Note however that some of the problems disappear were we to assume the viewpoint mentioned above, common in early Minimalist work, where there were three coexisting sets of features on each lexical item. The conversion issue no longer seems to arise. The reason being is that there is no 'syntactic' feature that must be later translated into a morphological and a semantic value. Rather these values *already* exist in the featural information of the noun. Hybrids like Imposters, are simply only exceptional than the fact that the value of a morphological feature does not match the corresponding semantic feature.

(19) *Papa*
  a. Syntax: [−Speaker,+Hearer]
  b. Phonology: /pæpæ/
  c. Semantics: [+Speaker,−Hearer]

However, although the conversion problem does not arise, in the sense addressed above, a problem still arises is that from the examples of (18) we know that sometimes the semantic information must be accessible to the syntax. This is easy enough to handle: all that one then needs is an appropriate way to allow the semantic feature to be accessed by the syntactic component when necessary, such as in (18) above. In principle, it is possible to take the existence of hybrid nouns as an argument in favour of this feature model: there are fewer problems to solve and so it seems simpler, so therefore more desirable.

However, it is to some degree a surprising observation about language that the syntax doesn't pay too much attention to phonological elements, as discussed

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7 Bobaljik (2008) argues that agreement is postsyntactic, which, if true, would negate the point being made here. I am quite sympathetic to Bobaljik's conclusion in a way that will be made clear later on, however, we will also see reasons to believe that it's not entirely correct in chapters 4 and 5, so for right now we will not worry about this claim.

above, and it is not so very clear that there are that many semantic effects in the same way. This is up for debate of course, but there seem to be so few phenomena that lead us to the conclusion that the phonological and semantic features are syntactically active, that allowing them to be so is an overreaction to the challenges thrown up by hybrids. Put simply, phonological and semantic features are there in the syntax and they in principle can be accessed, then why do we not see more of these effects?

A further issue is that, given that the vast majority of nouns are *not* hybrid nouns, then the model is massively redundant, compared to the conversion model. For the overwhelming majority of nouns, the syntactic information is consistent, and perfectly suited for the conversion model as expressed above. Thus, there simply is no need for the phonological and semantic features to be part of the syntactic derivation. It is also redundant for an acquisition sense: when learning the lexical information of a particular noun, the learner must for each feature fill out the information for the syntactic information, the semantic information and the phonological information. That being said, this may well just be the way that language works; there are doubtless ways to smooth the acquisition process by providing a system of defaults. Redundancy in and of itself does not show that something is wrong with a particular theory, but rather should be a condition on evaluation, only counting against an approach when compared to a competing approach assuming all else to be equal. To the extent then that the conversion approach can be made compatible with hybrids, then the redundancy should count against assuming the three sets of features.

1.5 Structure of the book

This book is divided into three main parts. This chapter and the next discuss hybrid nouns generally, and builds a theory of features in the Minimalist Programme that can account for the existence of hybrid nouns, and their hybrid nature. In the next chapter I will discuss in more detail the HPSG CONCORD and INDEX model, and how the key insights of this model can be — and to some extent have been — incorporated into Minimalist work. The remaining two parts of the book will focus on how this model of features interacts firstly with the mechanism of agreement (Part II) and what insights we can glean from this model to other phenomena of language (Part III).

Part II looks in detail at the nature of semantic agreement, where agreement is sensitive to the interpretation of the agreement controller, rather than its morphological form. In chapter 4 also discuss effects in intra-clausal agreement that are reminiscent of The Agreement Hierarchy, a generalisation about the distribu-

tion of semantic vs. morphological agreement within a given language, that has long been documented in work by Greville Corbett (Corbett, 1979, et. seq). What becomes clear from this discussion is that the link between agreement and target is done very early in the derivation. Chapter 5.4 will show that semantic features are accessed for agreement in a different manner to morphological features. This observation will be used to argue that AGREE-COPY, the feature copying operation, is one that happens relatively late in the derivation. Putting the observations in these chapters together, throughout Part II I will be formulating a novel argument that the minimalist operation of Agree is decomposed into two distinct suboperations, AGREE-LINK and AGREE-COPY, which respectively are the operations that link target and controller, and copy the values from the controller to the target. Such a model of agreement has become more and more in vogue in recent years, in particular thanks to studies on conjunct agreement (Benmamoun, Bhatia, and Polinsky, 2009; Bhatt and Walkow, 2013; Marušič, Nevins, and Badecker, 2015; Willer Gold et al., 2017; Marušič and Nevins, Forthcoming), and interactions of agreement with morphological operations (Arregi and Nevins, 2012; Kalin, 2020). Coming at this model from a third perspective lends further support to the model as a whole.

Finally part III will look beyond nouns that can obviously be classed as hybrid nouns in order to explore whether the proposed way of looking at features can offer new insights into other types of nouns. The major case study here will be nouns that seem to straddle the mass–count distinction, such as nouns like *furniture* in English, which are morphosyntactically mass, but have a semantics that are closer to count nouns. We will look at these nouns in English, Telugu Smith (2016) and Purépecha (Maldonado, 2012), and show that they can be fruitfully, and to degree favourably analysed as involving a discrepancy between their morphological and semantic specification for number.

2 Theoretical preliminaries: A feature model for hybrid nouns?

After the introductory discussion in the previous chapter, this chapter looks in more depth at the concept of hybrid nouns and introduces a number of them from different languages. Section 2.1 discusses properties of hybrid nouns that will be used throughout this book. In section 2.2 I give an overview of features within Minimalism, showing how they have come to hold a central role within the theory. In section 2.3 I will discuss how hybrid nouns have been approached in HPSG, where the discussion of such nouns has been much more developed than in Minimalism. Section 2.4 outlines how hybrids can be incorporated into Minimalism using and modifying existing views of the build up of features currently within the framework. In this section I will discuss in more detail the theoretical assumptions that will be used throughout the remainder of the book.

2.1 Hybrid Nouns

I will begin this chapter by looking in more detail at several classes of hybrid nouns, in order to both set the scene for the discussions in the next two chapters, but also to familiarise the reader with general properties of hybrid nouns. This will also allow us to build a model of features later on in the chapter that will be able to account for the existence of hybrids. In principle, a hybrid noun comes from any mismatch between the phonology and the semantics, thus any number of features can mismatch on the noun. In practice, however, we generally observe hybridity arising when one feature on the noun has a mismatch, though this is by no means a rule. In chapter 1 I spent some time looking at Imposter constructions, where the mismatch is on the person feature of the noun. Thus, the following Imposter constructions all match for number, but the person feature has the mismatch:

(20)   a.   Papa is making his coffee, he'll be there in a minute.
        b.   Did that make your highness happy?

There are also imposter constructions that do not match for either the person *or* the number feature. Collins and Postal (2012, ch 18) discuss the *nurse we* construction in English, used for instance, when a nurse is speaking to a patient. Here, the form is 1PL, but the meaning is 2SG.

(21)   How are we doing this morning (*to a single patient*)?

Tab. 2.1: Hybrid nouns for different phi-features

Hybrid	Language	Hybrid Feature	Discussed in …
Imposters	English	Person	Section 1.3
Collective Nouns	English	Number	Section 2.1.1
Profession Nouns	Russian	Gender	Section 2.1.3
Be'alim 'owner'	Hebrew	Number	Section 2.1.4
ngwazi 'hero'	Chichewa	Gender	Section 2.1.5

Here, the pronoun is first person plural, but the referent is second person singular. Thus, both the person feature and the number feature mismatch. In actual fact, as we will show below, one can see hybrid nouns for all the traditional phi-features of number, person and gender. A summary is given in Table 2.1.

2.1.1 Collective Nouns in English

2.1.1.1 CNPS

'Collective nouns' (CNPs henceforth) such as *government, committee, team* and *faculty* are nouns that refer to collections of individual entities. Their meaning is complicated, given that they are at once both singular and plural, in that the collection of individual members comprises an abstract whole, but there are distinct from one another. In terms of the morphology of the CNPs, they are clearly regular nouns in the sense that they have both a singular form and a plural form: *committee ~ committees, government ~ governments, team ~ teams*. That is, whilst they form a natural class in terms of their meaning, they do not constitute a grammatically irregular class as they are regular count nouns of English that have a singular–plural alternation. Relevant for this work, is that for some dialects of English, the nouns are allowed to determine plural agreement on the verb, even when remaining morphologically singular.

(22)   The committee are meeting in the corridor.

There is some dialectal variation as to how prevalent this ability is in English. Levin (2001) studies agreement patterns with these nouns across British English, Australian English, and American English and shows that the former dialect most easily allows plural agreement with CNPs, with the latter the most resistant.

Levin's study allows us to highlight an aspect relating to hybrid nouns. Given that these nouns seemingly have dual properties, one might wonder whether if they can show only one property at a time. They can be singular *or* plural, but they are not true hybrids. However, CNPs in English are able to show both singular and plural agreement on verbs, but what determines whether singular or

Tab. 2.2: Lexical variation in CNP semantic agreement (Levin, 2001)

	NYT	Ind	SMH
81-100%	army	association	army
	audience	commission	audience
	commission	company	club
	committee	department	council
	family	party	government
41-80%	majority	band	crew
		crew	majority
		family	press
		minority	public
<40%	clergy	couple	couple
	couple	majority	staff
		staff	

plural agreement is chosen, would be idiosyncratic depending on the item. As it happens, there is a great deal of lexical variation per item (Table 2.2). It could be that then we are simply dealing with two homophonous lexical items. Where plural agreement is found, it could be that the semantics is plural, but that this lexical item has no singular∼plural distinction. On the other hand, there is a separate lexical item which has the regular singular∼plural contrast.[8] What this would mean is that there is no hybrid CNP. We can rule out this possibility by looking at predicates such as *gather* and *meet*. These predicates require that their subject is non-singular:

(23) a. The owls gather on a branch for a conversation.
      b. * The owl gathers on a branch for a conversation.

The morphological shape of the subject is by and large irrelevant to these predicates. Thus, (23b) is not ungrammatical because the subject is morphologically singular but because the subject is semantically singular. Evidence in favour of this comes from certain mass nouns:

(24) The fog gathered over the moor in the morning.

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8 I'm not saying this is a *good* theory, just that it's possible.

Predicates like *gather* and *meet* combine quite happily with CNPs, irrespective of whether the CNP controls singular or plural agreement on the verb:

(25) a. The committee are gathering now.

b. The committee is gathering now.

c. The government are meeting now.

d. The government is meeting now.

From this, we can conclude that even when the CNP controls singular agreement on the verb, the semantics of the noun must be non-singular, and thus must be hybrid nouns.[9]

2.1.2 Making a success of Brexit

An interesting point about CNPs in English is that the ability to trigger plural agreement is not restricted to a closed class of items, but can arise in new nouns with the right semantics that are added to the vocabulary. That is, the list above is not an exhaustive list of items that show this behaviour, but rather anything which fits into the natural class of CNPs tends to acquire the ability to control either plural or singular agreement. An example of this can be seen below with the term *EU27*. For readers unfamiliar with this term, *EU27* has taken on a couple of primary meanings. The first was used to refer to the expansion of the European Union (EU), when a number of countries from central and eastern Europe joined the bloc in the mid-2000s, culminating in Bulgaria and Romania joining in 2007, bringing the number of member states to 27.[10] In 2016 the United Kingdom voted to leave the European Union. It's fair to say that at the time of writing (2019–2020), this process has not gone smoothly, and it is hard to see that anything useful has come from all this nonsense. Probably the most useful thing to have emerged from the last few years, is that the term *EU27* began to take on a different usage, thus allowing me to nicely illustrate the dynamism of collective noun semantic agreement in English.

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9 Note as well, that the CNP is not a mass noun like in (24), because they license *each other*, which mass nouns do not:

(1) The committee are touching each other.

(2) * The stone is touching each other.

10 Croatia joined in 2013, to increase the tally to 28.

Post-2016, *EU27* has been commonly used to refer to the remaining group of 27 member states that exists within the group of 28 actual member states before the UK left. In the examples below, I focus on this latter usage of the term. Given its reference, it is an understandably modern coinage into the English lexicon, but is a frequently attested term in political journalism. It is a prototypical CNP, at once referring to 27 distinct members of a group, as well as the group as a whole. As can be seen in the examples below, taken from recent news articles about the UK leaving the EU, when *EU27* controls agreement on the verb, both singular and plural agreement are attested. Strikingly, (26a), showing singular agreement and (27a) showing plural agreement, come from the same article.

(26)   a. French Minister for European Affairs Nathalie Loiseau said Britain's relationship with the bloc post Brexit has to strike a "balance between rights and obligations," and insisted **the EU27 has** not set out to punish the U.K. (Politico, 31st August 2018)[11]

        b. **The EU27 have** proved remarkably disciplined on the main Withdrawal Agreement issues of the Brexit bill, Ireland and citizens' rights. (Politico, 13th November 2018)[12]

        c. **The EU27 has** said there must be unique "all-weather" insurance protections to avoid any hard border on the island of Ireland, and points to the wording of the December joint agreement that the backstop must operate "unless and until" alternative arrangements to prevent such a border have been put in place. (The Guardian, 17.10.2018)[13]

        d. Therefore, EU member states need to realise that their interests are best served by Brexit working as well as possible [...] and that **the EU27 have** a large economic skin in the game. (Brexit Central, July 22nd 2018)[14]

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11 https://www.politico.eu/article/nathalie-loiseau-french-eu-minister-no-brexit-punishment-from-eu27/, accessed 13.11.2018, 05:14.

12 https://www.politico.eu/article/brexit-playbook-11-eu-countries-that-will-shape-deal/, accessed 13.11.2018 05:12.

13 https://www.theguardian.com/politics/2018/oct/17/eu-willing-to-extend-brexit-transition-says-irish-foreign-minister, accessed 13.11.2018 05:21.

14 https://brexitcentral.com/searching-questions-eu27-failing-ask-wake-brexit/, accessed 13.11.2018, 05:40.

(27) a. **The EU27 are** in a "positive mood" about the negotiations, the minister also said [...] (Politico, 31st August 2018)[15]

b. The leaders will gather at a summit in Salzburg later this month where **the EU27 are** planning a "carrot and stick" approach to Brexit, offering Theresa May warm words on the Chequers proposals to take to the Conservative conference alongside a sharp warning that they need a plan for Northern Ireland within weeks. (The Guardian, 4th September 2018)[16]

c. Some Leave supporters may believe that **the EU27 is** bluffing on this, or that it would at least agree to sign a series of smaller deals [...] (The Independent, 12th December 2017)[17]

d. **The EU27 is** expected to insist on a resolution over the issue of avoiding a hard border on the island of Ireland is achieved by the time of a leaders' summit in October in order for a deal to be possible. (The Guardian, 11th September 2018)[18]

2.1.3 Profession Nouns in Russian

English is far from the only language which shows hybrid nouns. Russian has a set of hybrid nouns that form nouns of profession, which are hybrid according to their gender feature. Corbett (1983) discusses these, and we will use the form *vrač* 'doctor' as an example. These nouns are grammatically masculine, as their default form is consistent with other masculine words. Similarly, they can control as a default masculine agreement:

(28) (Corbett, 1983, p. 31)

vrač   prišel
doctor came.MASC

'the doctor (male or female) came'

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15 https://www.politico.eu/article/nathalie-loiseau-french-eu-minister-no-brexit-punishment-from-eu27/, accessed 13.11.2018, 05:14.
16 https://www.theguardian.com/politics/2018/sep/04/eu27-to-offer-theresa-may-a-carrot-and-stick-approach-to-brexit-chequers-plan-irish-border, accessed 13.11.2018, 05:27
17 https://www.independent.co.uk/voices/brexit-deal-european-union-eu27-withdrawal-bill-8-december-is-it-binding-a8105936.html, accessed 13.11.2018, 05:30
18 https://www.theguardian.com/politics/2018/sep/10/eu-leaders-november-brexit-summit-salzburg-meeting-michel-barnier, accessed 13.11.2018

However, given that the referent is a human, then there are two potential natural genders, male and female. Nouns like *vrač* can also control feminine agreement when they refer to females:

(29) Corbett (1983, p. 31)

vrač   prišla
doctor came.FEM

'the (female) doctor came'

The example in (29) can only refer to a female doctor. This example fits the definition of hybridity that I am using: the form is grammatically masculine, but the semantics is feminine. Thus, I assume that the gender feature can be represented as follows:

(30)

$$\phi_{\text{gender}}$$

Morphology:Feminine   Semantics:Masculine

As with the English CNP cases discussed above, the familiar gradation in agreement arises with these nouns. Corbett (1983, pp. 31–32) discussed the results of a survey carried out by M.V. Panov into the agreement possibilities with such nouns, which shows the gradation very clearly. Specifically, in the following contexts, where the profession noun is taken to refer to a female in each case. (31a) and (31b) show verbal agreement and (31c) and (31d) show attributive adjective agreement.

(31) What would you say, referring to a woman:

a. Vrăc prišel   ili vrač prišla
doctor came(MASC) or doctor came(FEM)

b. Upravdom   vydal   spravku ili upravdom
house.manager issued(MASC) certificate or house.manager
vydala   spravku
issued(FEM) certificate

c. U nas xorošij   buxgalter ili u nas xorošaja   buxgalter
at us good(MASC) accountant or at is   good(FEM) accountant

d. Ivanova — xorošij   vrač ili Ivanova — xorošaja   vrač
Ivanova (is) good(MASC) doctor or Ivanova (is) good(FEM) doctor

Corbett shows that respondents picked feminine agreement at a rate of 51.7% for the verb in (31a) compared to 60.7% for the verb in (31b), showing not only that both feminine and masculine agreement are possible here, but that nouns differ

according to how easily they control the semantically motivated agreement. Similarly, respondents would use feminine agreement for the modifier at a rate of 25.5% in (31c), compared to (31d). Corbett further shows that the rate of semantic agreement is sensitive to various factors of the respondent, such as geographic background, education level, age, profession and gender.

2.1.4 Hebrew *be'alim*

A hybrid noun from Modern Hebrew is discussed in Landau (2016). Specifically, Landau shows that the noun *be'al-im* is (potentially) hybrid for number and gender. The noun is grammatically masculine.plural, but it can refer to either females or males, as well as refer to singular or plural owners, as shown in (32).

(32) Landau (2016, p. 984)

    a. hem/hen   hayu   ha-be'al-im   šel ha-dira
       they.MASC/they.FEM were.3.PL the-owner-M.PL of the-apartment
       'They were the owners of the apartment.'

    b. hu/hi haya/hayta   ha-be'al-im   šel
       he/she was.3.SG.MASC/was.3.SG.FEM the-owner-MASC.PL of
       ha-dira
       the-apartment
       'He/she was the owner of the apartment.'

The semantically motivated morphology is not limited to pronouns and verbs, but rather adjectives can also show semantic agreement:

(33) Landau (2016, p. 984)

    ha-be'al-im ha-kodem   maxar   et   ha-makom lifney šana
    the-owner-PL the-previous.SG sold.3.SG ACC the-place   before year

    'The previous owner sold the place a year ago.'

In contrast to verbs, where singular or plural agreement is consistent with an intended singular meaning, Landau shows that when the adjective shows singular agreement, only the singular reading of *be'alim* is possible. This is shown by the infelicity of (34b), where *be'alim* combines with a predicate that requires a plural subject.

(34)   Landau (2016, p. 986)

  a. ha-be'al-im ha-kodm-im šel ha-binyan hitkansu
    the-owner-PL the-previous-PL of the-building gathered.PL

    in.the-lobby
    'The previous owners of the building gathered in the lobby.'

  b. # ha-be'al-im ha-kodem   šel ha-binyan hitkansu
    the-owner-PL the-previous.SG of the-building gathered.PL

    in.the-lobby
    'The previous owners of the building gathered in the lobby.'

Overall then, whilst there is a use of the noun where the morphology lines up with the semantics (i.e. the referent of *be'alim* would be masculine plural), it can also be a hybrid, when the referent is either singular, female, or both.

(35)

$$\phi_{\text{number,gender}}$$

Morphology: masculine,plural Semantics: feminine,singular

2.1.5 Chichewa Heroes

Finally, Corbett (1991) discusses a case of hybridity in Chichewa. The noun in question is *ngwazi*, which is gender class 9 in Chichewa. That this noun is morphologically class 9/10 is indicated in two ways. Firstly, it has morphophonology that is familiar to this class, in that it starts with a nasal onset cluster (Sam Mchombo, p.c.). Furthermore, it determines class 9 agreement on other elements in the sentence:

(36) ngwazi y-athu y-oyamba
   hero 9-our 9-first
   'Our first hero.'

However, Chichewa normally puts animate nouns in class 1/2, so there is a semantic basis to this noun class. Given that heroes are usually animate we then have the conditions for hybridity in that *ngwazi* is morphologically class 9/10, but its semantics is more coherent with class 1/2. It will not surprise the reader that *ngwazi* can also then determine class 1 agreement as well:

(37) ngwazi w-athu w-oyamba
      hero   1-our   1-first
      'Our first hero.'

The hybridity of *ngwazi* can be represented as follows:

(38) ϕ_{gender}

      Morphology: Class 9/10   Semantics: Class 1/2

2.2 Features within the Minimalist Programme

Features play a central role within the Minimalist Programme, both in terms of the information that they carry, but they are also widely assumed to be the drivers of the syntactic computation. Before coming to a discussion of how hybrid features can be incorporated in within the Minimalist Programme, it is important to lay out a couple of key concepts related to them. In the following subsections, I will discuss (i) the role of features within the Minimalist Programme; and (ii) how features have changed in different iterations of the Minimalist Programme.

I will illustrate these issues by discussing how features drive movement, specifically, subject movement to Spec,TP. Though this book has pretty much nothing to do with this issue — and as such the discussion will be quite cursory and not intended as an in depth overview — this is a good issue to discuss for the purposes of introducing these, as the various parts involved have been much discussed and worked out. Overall, it should become clear how features are viewed within MP, as well as the basic architecture of features that is assumed.

2.2.1 The Minimalist Programme and the role of features within

The Minimalist Programme developed out of the Government and Binding Theory (GB) (Chomsky, 1981) that was prevalent in the 1980s, when it was recognised that the limits of that framework had been reached. GB assumed the following model of the grammatical component, where the syntax was the central branch of the grammar, and at the end of syntax the structure was delivered towards the semantic component, and separately towards the phonological component. It assumed four levels, Deep Structure, Surface Structure, Logical Form and Phonological Form, all of which had their own conditions that needed to be fulfilled. Furthermore, there were some all-purpose operations that help, such as Move-α,

which applied throughout the derivation and served to help satisfy said conditions.

(39)

        Deep Structure

            Surface Structure

     PF   LF
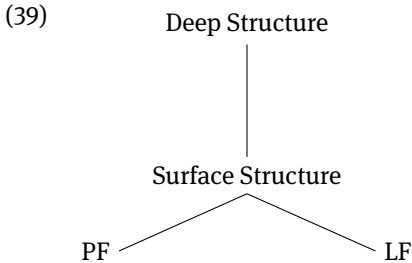
Minimalism takes this set-up of the grammar as a basis, however strives to develop a theory along only what is fundamentally necessary, either conceptually or empirically. Given that the syntactic structure needs to be interpreted and realised, then the levels of LF and PF are necessary. However, it is questionable whether there needs to be internal levels in the syntactic derivation, and so the levels of Deep Structure and Surface Structure have been removed from the theory, yielding the model of the grammar in (40).

(40)

     PF   LF
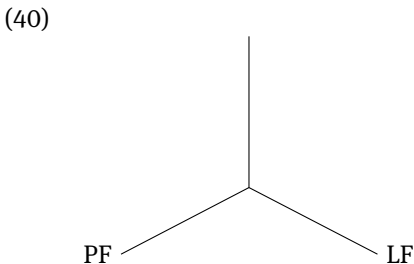
Whilst the old positions of Deep Structure and Surface Structure still technically remain in the theory in the sense that one can identify a point in the syntactic derivation that correlates to them, they no longer have the status of levels of representation, as nothing is assumed to hold there. That is, the syntax cannot refer to them in the sense of saying that a particular process happens there, or operation X must be complete by the level of SS. For instance, whilst the UTAH was thought to hold at the level of Deep Structure in GB (Baker, 1988), this is no longer possible within the assumptions of MP given that Deep Structure no longer has a formal status. Thematic role assignment is now thought (like many, many things) to be something which holds configurationally (Hale and Keyser, 1993) For instance, arguments that bear the Θ-role of AGENT are assumed to assume that interpretation by virtue of having their position of merge in the specifier of vP (Marantz, 1984; Kratzer, 1996; Adger, 2003).

The reason for this shift into having what is only absolutely necessary was in order to formulate a theory that was less bloated than the one that existed by the end of GB. However, as was with the case of UTAH, it meant that explanations within GB for processes that relied on Deep Structure or Surface Structure needed to be reanalysed. It is not the place here to give a full list (overviews exist already, for instance Hornstein, Nunes, and Grohmann 2005), but one that is relevant for us is how movement is handled, as it allows us to see the importance of features.

In GB, there was assumed to be an operation Move-α that applied, and would move an element from one position to another. There were constraints on *how* the movement could apply, for instance locality requirements of the type formulated in, e.g., Chomsky (1986), as well as filters on output, but in principle, the operation was free to apply to any element, as long as the output of that operation was fine. Minimalism has recast this question as that the operation had to be triggered by some requirement, that is, movement cannot happen freely but only happens for a given reason. This way, the theory is thought to be more constrained, because it is no longer the case that a potentially infinite number of derivations are possible from a given numeration (that is, the set of items present in the derivation), and that bad ones are filtered out, but rather, derivations happen programmatically, such that there is only one possible way a given derivation can progress. This has the benefit of avoiding the problem of infinite computation, however, it is then incumbent on the theory to identify what are the triggers of operations.

Keeping with the theme of movement, Minimalism assumes that elements move in order to satisfy a dependency of requirement of features. There is a well-known, and apparently extremely pervasive (though likely not universal), requirement in natural language such that subjects move to a higher position from where they start. This is known in Minimalism as the EPP-requirement, and looked at in rather English-centric terms, it is the requirement that the subject appear in Spec,TP.[19] Since Marantz (1984) and Kratzer (1996), it is widely assumed that subjects are first merged into Spec,vP. In English however, they appear higher in the structure, to the left of tense. Thus, some movement operation has moved the subject from Spec,vP to Spec,TP. One way that this can be shown is through quantifier float, where a subject like *all the ducks* can move to the higher position either with the quantifier *all*, as in (41a), or it can 'float' *all* in the lower position, as in (41b).

(41)   a.   *All the ducks* are swimming in the water.
       b.   *The ducks* are *all* swimming in the water.

---

[19] I am not trying to claim here that all languages move the subject to Spec,TP, but merely using this as an example, see Wurmbrand (2006) for more discussion.

Not possible is that the entire subject DP stays low:[20]

   (42)   # Are all the ducks swimming in the water.

This observation can be seen, and in fact has been seen, as a requirement that Spec,TP must be filled. In the spirit of Minimalism then, we can assume that there is a requirement that Spec,TP be filled, and this triggers the operation of movement such that the subject is moved to Spec,TP. Given that there is the need to identify the trigger of the movement, (some) work in Minimalism has proposed that there is a D-Feature carried by T, which is effectively an instruction that its specifier position be filled (Chomsky, 2008). It is assumed that when this movement is triggered, and something has moved to Spec,TP, the D-feature on T is satisfied, and is then licit. Without this movement, the D-feature survives to the interfaces, where it is not able to be properly interpreted by the morphophonology or semantics, and so the derivation is assumed to crash, and ungrammaticality arises. Using this type of approach, one can not simply model, but begin to explain the difference between languages that have the EPP requirement on T (like English), and those that do not (like German, see Wurmbrand 2006). Put simply, English T is of the type in (43a), whereas German T is of the type in (43b).

   (43)   a. T_D
             b. T

Whilst there is a lot of work that has been done to try to explain the EPP, not all of it in accordance with this, this simplification of the discussion suffices for our purposes here. Specifically, we can see that in this approach, it is a feature on T that causes some element to move to its specifier. Thus, the operation has a reason to apply, must apply, and does so. Furthermore, it satisfies Borer's (1984) conjecture that the differences in languages arise because of properties of functional heads. Since heads are the loci of features, then a movement triggered to satisfy the requirement of a feature is clearly in line with this. I do not outline this approach here to say that it is correct, but rather to highlight the general attitude within Minimalism, that features are fundamentally responsible for the triggering of most if not all syntactic operations and processes.

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20 The sentence here is grammatical on a *yes/no* question reading, but not on the intended declarative reading, hence the # marking.

2.2.2 Features in Minimalism: the checking years

Initially, it was assumed that there was widespread feature matching between functional heads and arguments. For example, Chomsky (1995) proposed that features needed to be 'checked' by other features in the tree, and this checking mechanism would make them licit at the interfaces. For example, he provides an early account within Minimalism to attempt to derive the EPP by assuming that the features on subjects needed to be checked against those on a functional head AgrSP. That is, supposing that the subject had the feature bundle 3,SG,NOM, it would need to match the same features on AgrSP. A mechanism of Spec–Head agreement was assumed to be the way that this would happen, effectively meaning that a subject 3,SG,NOM subject would need to raise to Spec,AgrSP, where AgrS also hosted 3,SG,NOM. The arrow in the following tree indicates the checking relation between the subject and AgrS.

(44)

```
                    AgrSP
                   /      \
             Subj_i        AgrS′
          [3, SG, NOM]     /     \
              ↑       AgrS        TP
              |___→  [3, SG, NOM] /  \
                             t_i    T′
                                   /  \
                                  T    vP
                                      /  \
                                    t_i   ...
```
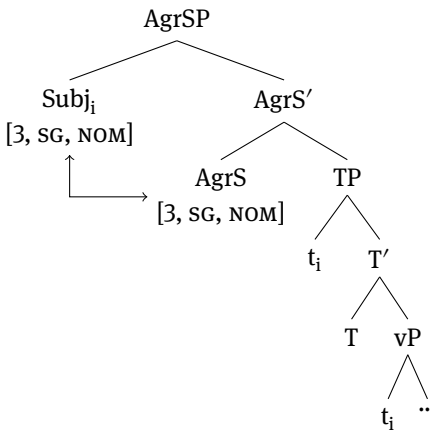
The major benefit of this idea was that one could derive the differences between languages that had the EPP and those that did not, by varying the point at which the checking of features happened. In a language like English, where the subject overtly raises to Spec,TP, it was assumed that these features needed to be checked at both the PF and the LF-interfaces. On the other hand, a language like German, where Spec,TP does not need to be overtly filled, can be analysed as a language where the features need only be checked at the LF-interface. The difference between these two language types was postulated to be a difference in feature strength. The features on the subject were *strong* in English, but *weak* in German. Strong features, if left unchecked at PF, would crash the derivation, but their weak counterparts would not. It was also assumed that operations would not happen

until they *had to*, with the idea that covert operations were preferred as they were less costly (see Lasnik 1995 for an overview).

A further benefit of this idea is that it obviates the need for an extra operation of agreement in the syntax. Given that the general thrust of Minimalism has been that the syntactic component comprised of only absolutely necessary operations, a generalised form of feature checking obviates the need for anything extra to be said about agreement. The reason why a third person singular subject appears with third person singular verb in the following of English, is because the checking operation does not allow it to be any other way; features must match in order to be checked, and so a verb which does not match the features of its subject will leave features unchecked.

2.2.3 Features in Minimalism: valuation

Though there were some positive points to the model first proposed in Chomsky (1995), it was eventually abandoned in favour of a model of feature valuation, where some features began life as not having a value before acquiring one throughout the course of the derivation. The major instigator of abandoning this model was that it became clear that it was not sustainable to assume that all features are licensed by moving to a Spec–Head configuration, and there was thus a need for 'feature licensing at a distance.' One of the clearest examples of this comes from where properties that are associated with T show up on elements where there is no evidence for (covert) movement to Spec,TP.

With such problems in mind, the feature model was revised such that according to Chomsky, features came in two types, those that were interpretable and those that were uninterpretable. To some degree, this distinction was reminiscent of checked versus unchecked features. Features that had not been made licit, such as D-feature which had not raised an element to its specifier were assumed to *crash* the derivation, causing ungrammaticality. Chomsky (1995), Chomsky (2000), and Chomsky (2001) divided features into two types: those that were *uninterpretable* and those that were *interpretable*. The valuation of features was what drove syntactic operations, and so features remained the driving force of movement.

Features that are *uninterpretable* were unvalued, and so could not be properly licensed at the interfaces. These licit features, were *interpretable*, which meant that they were valued. The idea in brief was that every structure that got to the interface needed to be fully interpretable, and if not, the derivation can be assumed to 'crash', which resulted in ungrammaticality of the derivation. Thus, features effectively came in two types:

(45) a. F:___ → *uninterpretable*
      b. F:val → *interpretable*

In more recent work within Minimalism, the idea that there was a bicorrelation between valuation and interpretability was questioned, and in many places rejected. Pesetsky and Torrego (2007) propose that features can be either interpretable or uninterpretable, and either valued or unvalued, and there is no dependency between the two. Under such a model, we can make a more natural distinction between features that the morphosyntax uses (the uninterpretable ones), and those that the semantics makes use of (interpretable features). Thus, all of the following were possible:

(46) a. *u*F:___
      b. *u*F:valued
      c. *i*F:___
      d. *i*F:valued

This is broadly what I will assume to be the case in what follows. Specifically, I will assume that both *u*Fs and *i*Fs coexist together within the syntactic component, before they are divided at the point of transfer such that the *i*Fs are sent along the LF branch, and *u*Fs are sent along the PF branch. This reflects the fact that the *i*Fs are the ones that will eventually be interpreted by the semantic component, and *u*Fs are the ones that will be interpreted by the morphological component where they are converted into phonological information. Viewed in the traditional inverted-Y model of the grammar, the features that exist at each point is as follows:[21]

(47)

---
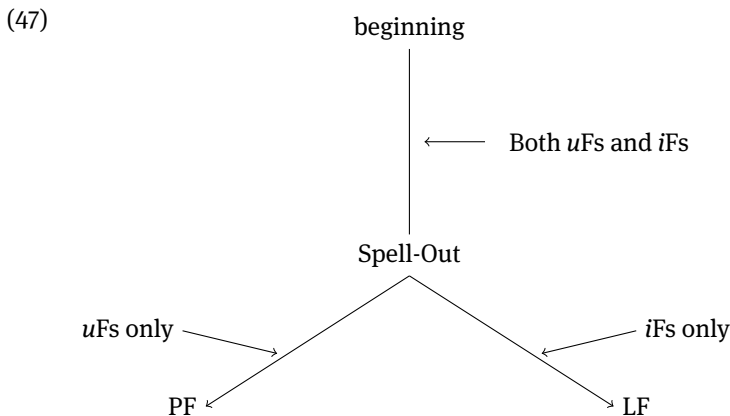
21 This will be slightly revised in Chapter 5.4.

What became to be important in this framework is not that features are checked in order to be made interpretable, but rather features would attempt to obtain a value. Thus, *valuation*, rather than checking came in many ways to be the driving force behind movement. Consider the following example. The subject has an unvalued case feature. Following the traditional approach, Minimalism assumed that the case feature on the subject came from T.

(48)

```
                TP
              /    \
                    T′
                  /    \
               T          vP
          [uCase:Nom]    /  \
                      Subj    v′
                   [uCase:__] /  \
                            v     VP
                                  /\
                                /    \
                              ... V ...
```
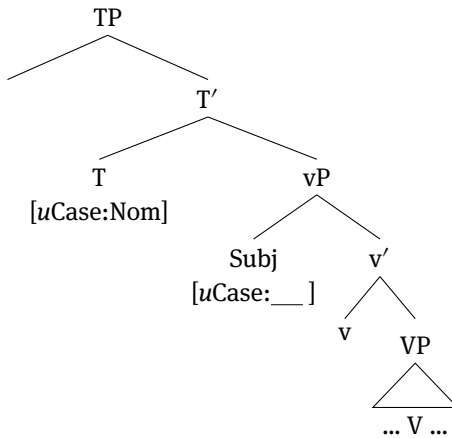
The uF:__ needs to get a value in order for the feature to be legible at the (PF) interface. Thus, what is needed is for there to be a method of feature transmission that takes the value Nom from T and transfers it to the uF on the subject DP. This operation was called Agree. We will discuss issues with the formulation of Agree in chapter 2, but for now, this simple example will suffice. We can derive the same effects of checking if we assume that the valuation of the uF can only happen in a Spec–Head configuration. If this is the case, then the DP must move to a position that c-commands the corresponding iF, where it can then look downwards in the structure in order to receive a value.

(49)

```
                        TP
                ┌───────┴───────┐
              Subj             T′
           [uCase:Nom]    ┌────┴────┐
                          T         vP
                      [uCase:Nom]    │
                                     v′
                                  ┌──┴──┐
                                  v    VP
                                      ╱──╲
                                    ... V ...
```
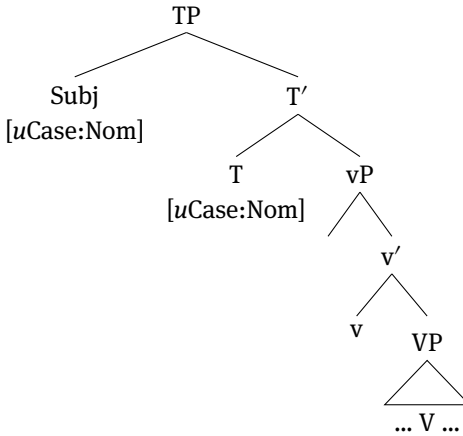
For now, the specifics of Agree are not so important: what the reader should take away from this is two things.[22] Firstly, that features, and specifically, the attempt to obtain a value, drives movement within Minimalism in much the same way that *checking* used to, albeit in a less incongruous way. The second thing is that there exists a system whereby feature values can be transferred from one feature to another, namely, the operation of Agree. We will discuss Agree in a lot more detail in chapter 3, but this suffices for now.

2.3 HPSG

It is fair to say that hybrid nouns have not been investigated in a systematic manner in the Minimalist Programme, other than the cited works which by and large deal with individual cases in isolation. However, in HPSG, they have received quite some attention.

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22 This derivation simplifies a great many issues with respect to the cause of movement, case theory as well as the direction of feature valuation. For discussion on the cause of movement, see for instance Bošković (2007) and Abels (2012) and references therein. Case theory has been discussed in extensive detail in Minimalism, and whilst I offer the above derivation as an illustration of how features are employed as the workhorses of the syntactic derivation, I do not offer this derivation as support of that view of case. For a thorough discussion of case theory and an alternative perspective within Minimalism, see Marantz (1991) and Baker (2015). Finally, for discussion on the direction of valuation, see the discussion in Chapter 5.4, as well as Zeijlstra (2012), Wurmbrand (2012c), Preminger (2011), Preminger (2013), Preminger (2014), and Smith (2017).

Pollard and Sag (1994) discuss cases of *reference transfer*, whereby the referent of a DP is not the same as what the lexical item would lead you to believe. For instance, they give the examples (Pollard and Sag, 1994, p. 68):

(50) a. **The ham sandwich** at table six is getting restless (said one waitress to another).

b. **The dean's office** approved the proposal.

c. Hurtling along a "cycle highway" by the River Scheldt in Antwerp recently, **Charlemagne** only noticed the electric scooter when it was too late.[23]

As they point out, (50a) does not mean that a ham sandwich is getting restless, but rather it is a customer who ordered one is, and the one who approved the proposal is not the structure 'the dean's office', but rather someone who works as part of the dean's staff with the authority to do so. Such structures are frequently used in The Economist, and *Charlemagne* in (50c) does not refer to a third person named Charlemagne, but rather the author is using it to refer to themselves, the writer of the *Charlemagne* column. These nouns are obviously extreme versions of hybrids of the sort that we are concerned with in this book, given that their morphological shape differs from their semantic interpretation. The only difference between these, and the hybrids that we discussed earlier on, is that it is not just a single feature that has the mismatch between the semantics and the morphology, but rather the DP itself.

Pollard and Sag go on to point out that in such cases agreement is often determined by the notional meaning, rather than the morphological shape. Consider the following:

(51) a. The hash browns at table nine are/*is getting cold.

b. The hash browns at table nice is/*are getting angry.

(52) a. The ham sandwich at table six just made a fool of himself/*itself.

b. The hash browns at table nine said he/*they can't find the men's room.

Pollard and Sag then go on to discuss other instances of agreement tracking notional properties of a noun, rather than the morphological shape:

(53) a. The volcano who just left the room was Bill's kid.

b. Eggs is my favourite breakfast.

---

23 Charlemagne, The Economist, August 1st 2019.

(53a) uses the relative pronoun that one would expect if the head of the relative clause were [+human], whereas *volcano* is morphologically [−human]. In this instance, *volcano* refers to a child who has behaved noisily and disruptively. In (53b) the referent of *eggs* is abstractly eggs, a singular meal, but the DP is morphologically plural. Whilst one would expect plural morphology, as the author is talking about the meal in the abstract, the singular agreement can be used.

Pollard and Sag (1994) propose that the information carried by nouns is organised as follows, shown here for the English pronoun *she*:

(54)
$$
\text{sign}\begin{bmatrix}
\text{PHONOLOGY} \left\langle \text{she} \right\rangle \\
\text{SYNSEM} \quad \text{synsem}\begin{bmatrix}
\text{LOCAL} \quad \text{local}\begin{bmatrix}
\text{CATEGORY} \quad \text{cat}\begin{bmatrix}
\text{HEAD} \quad \text{noun}\begin{bmatrix} \text{CASE} \ \text{NOM} \end{bmatrix} \\
\text{SUBCAT} \left\langle \ldots \right\rangle
\end{bmatrix} \\
\text{CONTENT} \quad \text{ppro}\begin{bmatrix}
\text{INDEX} \ \boxed{1} \ \text{ref}\begin{bmatrix} \text{PER} \ \text{3rd} \\ \text{NUM} \ \text{sing} \\ \text{GEND} \ \text{fem} \end{bmatrix} \\
\text{RESTR} \{ \quad \}
\end{bmatrix} \\
\text{CONTEXT} \quad \text{context}\begin{bmatrix}
\text{BACKGR} \left\{ \ \text{psoa}\begin{bmatrix} \text{RELN} \ \text{female} \\ \text{INST} \ \boxed{1} \end{bmatrix} \right\}
\end{bmatrix}
\end{bmatrix}
\end{bmatrix}
\end{bmatrix}
$$
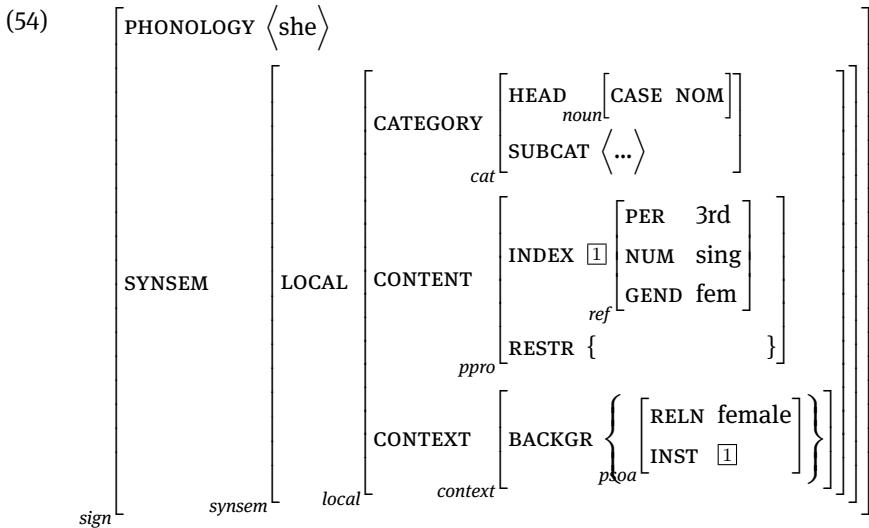
This is a little more complicated than what we have been assuming above. For Pollard and Sag (1994), the relevant grammatical information for agreement is stored on the INDEX path. For instance, when the speaker perceives a noun such as *the hash browns* as actual hash browns, then the INDEX values will be as follows:

(55)
$$
\begin{bmatrix}
\text{CONTENT}\begin{bmatrix}
\text{INDEX} \ \boxed{1} \begin{bmatrix} \text{PER} \ \text{3rd} \\ \text{NUM} \ \text{pl} \\ \text{GEND} \ - \end{bmatrix} \\
\text{RESTRICTION} \left\{ \begin{bmatrix} \text{RELATION} \ \text{FOOD} \\ \text{INSTANCE} \ \boxed{1} \end{bmatrix} \right\}
\end{bmatrix}
\end{bmatrix}
$$
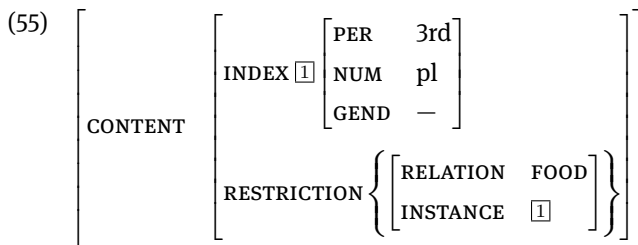
However, in case the author is using *the hash browns* to refer to a customer, then the INDEX values are as follows. The difference can be seen in the NUM value of the INDEX path is different, but also that the instance is different as well. Agreement is mediated through the INDEX.

(56)
$$\begin{bmatrix} \text{CONTENT} & \begin{bmatrix} \text{INDEX} \; \boxed{1} \begin{bmatrix} \text{PER} & \text{3rd} \\ \text{NUM} & \text{sg} \\ \text{GEND} & — \end{bmatrix} \\ \\ \text{RESTRICTION} \left\{ \begin{bmatrix} \text{RELATION} & \text{HUMAN} \\ \text{INSTANCE} & \boxed{1} \end{bmatrix} \right\} \end{bmatrix} \end{bmatrix}$$

In such a model, hybrid nouns arise when the values that are carried on the INDEX features do not match those that would usually give rise to the phonology.

Though this model works in allowing for hybrids to arise, the model has been refined by Wechsler and Zlatić (2000) and Wechsler and Zlatić (2003). The reasons why this model was refined in such a way will become more relevant in section 4.4.2 and discussed briefly there. Relevant however is that according to Wechsler and Zlatić (2000) and Wechsler and Zlatić (2003), there are two types of features used in agreement. There are INDEX features and CONCORD features. Importantly, the values are not assigned directly to the CONCORD and INDEX features, but rather there is a flow of information to these from other features that are present on the noun. Basing their proposal on (amongst other things) a study of hybrids and agreement in Serbo-Croatian, they propose a further two bits of information that are present on a noun, MORPHOLOGY and SEMANTICS. Whilst these values (rarely) figure into agreement directly — that is the purview of CONCORD and INDEX — they determine the information that come from these. Specifically, they propose that the morphology information is closely connected to CONCORD, whilst INDEX is closely related to the semantics. The CONCORD and INDEX features can relate to each other as well. Relevant for our purposes now is that in the normal case, the values on each of the categories will match for the noun. However, hybrid nouns arise when the flow of information in the noun is disrupted, and the value of the INDEX feature differs from CONCORD. This can arise, for instance, if the semantics is different to that of the morphology:

(57)　morphology — CONCORD | INDEX — semantics

For instance, in the following, from Serbo-Croatian, the noun *deca* 'children' controls neuter plural agreement on the verb and participle, but feminine singular agreement on the DP-internal elements.

(58)　Wechsler and Zlatić (2003, p. 51)

Ta　　　　dobra　　　deca　　su　　doš-l-a
that.FEM.SG good.FEM.SG children AUX.3PL come-PPRT-N.PL

'Those good children came.'

Considering that verbal elements in Serbo-Croatian are sensitive to the INDEX feature and DP-internal elements are sensitive to CONCORD, then *deca* has the following (partial) feature specification:

(59)
$$
\begin{bmatrix}
\text{CONCORD} & \begin{bmatrix} \text{NUM} & \text{sing} \\ \text{GEND} & \text{fem} \end{bmatrix} \\
\text{INDEX} & \begin{bmatrix} \text{NUM} & \text{pl} \\ \text{GEND} & \text{neuter} \end{bmatrix}
\end{bmatrix}
$$

It will become relevant in chapter 4 that this theory is more constrained than one where values are assigned freely to CONCORD and INDEX. Given that constraints hold between contiguous regions in (57), it is not possible for the semantic information of a noun to be directly assigned to the CONCORD feature and the morphological information to be assigned to the INDEX feature. With a defined theory of what targets can agree with which feature, it is then possible for Wechsler and Zlatić (2003) to predict mismatches between agreement targets. For example, if a hybrid noun controls agreement on an adjective and a verb, and verbs in a language agree with the INDEX value and adjectives agree with the CONCORD value, then the *only* mismatch which can arise is if the verb more closely reflects the semantics of the controller and the adjective the morphology. I will discuss the issue of mismatches between targets in details in Chapter 4, and postpone this further until then.

The model of features as presented in HPSG is very well suited to the demands of capturing hybrid nouns. The fact that the information that is carried regarding a particular feature is divided into CONCORD and INDEX, which are allowed to diverge, means that it is easily able to handle the divergent nature of the information that is borne by hybrids. By and large, I have little concrete issues with the model presented by Wechsler and Zlatić (2003) — save for some issues that are discussed in the following chapters. However, there are clear architectural differences between Minimalism and HPSG, making it difficult to directly port insights from one framework into another. Whilst I do not intend to argue in favour of one framework over the other, this book is intended to explore some of the issues that have been well discussed in HPSG with regard to hybrids and see how they can be handled within the set of assumptions of Minimalism.

2.4 Monkey see, monkey do

Based on the discussion of the last chapter, and what we have seen in this one, it should be clear to the reader that the *u*Fs and *i*Fs provides the necessary building

blocks for modelling hybridity within Minimalism. There is an obvious, and useful parallel between INDEX and CONCORD and *i*Fs and *u*Fs, particularly once one has given up on linking interpretability to having a value (Pesetsky and Torrego, 2007). Thus, the tools needed to handle hybrids are to some degree already present in the theory. However, simply recognising that features can come in two types is not sufficient: as we will see one also needs a way to ensure that the *i*Fs and the *u*Fs are connected. Thus, I will assume the following amendments, some of which are implicitly held throughout the literature.

1. Features are internally complex, divided into a morphologically relevant *u*F half and a semantically relevant *i*F.
2. There is *no* requirement that a single feature have both a *u*F and an *i*F.
3. The default case is that the value of the *i*F and the *u*F match, however, this is not obligatory.

As discussed above, the concept of having morphologically relevant features and semantically relevant features already exists within the Minimalist Programme, however, we need to make clear some assumptions about the internal structure of features and structures. I will assume that there is a greater connection between the *i*Fs and the *u*Fs than has often been made explicit in MP. That is, I propose that *u*Fs and *i*Fs that are part of the same feature are usually two halves of the same feature. Thus, a *u*F is not a separate feature to its corresponding *i*F, but rather they are part of the same feature. A 'normal' feature then, i.e. non-hybrid, will have the following structure, where the value of the *i*F is the same as the *u*F.

(60)
$$\phi_{\text{number}}$$

*u*F:singular   *i*F:singular
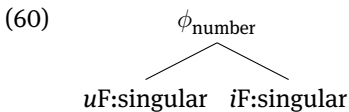
On the other hand, a hybrid feature will have the structure as follows, where the value of the *u*F and the *i*F differ.

(61)
$$\phi_{\text{number}}$$

*u*F:singular   *i*F:plural
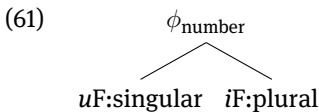
To some degree this discussion is a little trivial, but it does go to the fundamental nature of features. An alternative would see *u*F and *i*F values as being disconnected. The above structures could then be replaced by the following, where the *u*# and *i*# features are simply part of a larger feature bundle, with no connection between them other than they both happen to be features for number.

(62) Non-hybrid

$$\begin{bmatrix} ... \\ u\#\text{:singular} \\ i\#\text{:singular} \\ ... \end{bmatrix}$$

(63) Hybrid

$$\begin{bmatrix} ... \\ u\#\text{:singular} \\ i\#\text{:plural} \\ ... \end{bmatrix}$$

Though there are few qualitative differences between this model and one where feature bundles are collections of independent uFs and iFs, there are a few reasons to prefer the view whereby the uF and the iF are gathered under a single node. The first is that it is intuitively more economical: in the sense that if an element is going to carry, say, number information, it makes some sense that all this information would be grouped together in the same place, rather than having disparate sources of information. This makes it easier to place conditions on features so that the values on the uF and the iF match one another. For instance one can define a requirement that will by default ensure that if possible all values under the same feature will have the same value. Therefore, in the diagrammes, uF and iF share the same value. The constraint can be overwritten of course, in which case hybrids will arise, but if it applies at the level of the entire feature, then matching values will be preserved. This is a less trivial operation to define in a model that assumes the array diagrammes because there are no easy means of communication between the two feature types.

The second, arguably better, reason is that this is more restrictive, given that it naturally accounts for the fact that items are generally not multiply ambiguous. What I mean by this is that having both of the values grouped under a feature ensures that an item will not be multiply specified for various values of a particular uF. That is, we avoid the following situations from arising:[24]

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24 I'm not claiming that it is impossible to rule out structures like in (64) from arising in a model where uFs and iFs are disconnected. It is relatively trivial to formulate a constraint that restricts a particular feature type to maximally one per bundle. The point is that nothing more needs to be said if we adopt a model whereby features are composed of a uF and a iF half.

(64)   a.   Multiple *u*Fs
$$\begin{bmatrix} u\#:\text{singular} \\ u\#:\text{plural} \\ i\#:\text{plural} \end{bmatrix}$$
       b.   Multiple *i*Fs
$$\begin{bmatrix} u\#:\text{singular} \\ i\#:\text{plural} \\ i\#:\text{singular} \end{bmatrix}$$

A final reason to prefer this model is that it becomes easier and more natural for the two halves of a feature to interact with one another. The discussion in chapter 4 deals specifically with instances like this: whereby if an *i*F of a particular feature is able to enter into an agreement relation, then it must do so, and it bleeds agreement with the corresponding *u*F. In a model where the *u*F and the *i*F are connected together, then this becomes intuitively easier to model, than in a model where the *u*F and the *i*F exist independently of one another.

Again, none of this is obligatory, but it seems to be the null hypothesis for features to be split into two halves, one carrying the morphological information and one half carrying the semantic information.

In the preceding discussion I proposed that features are decomposed further into two halves that operate together in the syntax, before being split apart at the point of transfer. Up until now, I have been focussing attention on cases where a particular feature clearly carries both a semantic and a morphological form. Phi-features of nouns are a great example of this, because features like number and person do have this effect. However, it also seems clear that not all features will always carry both a semantic and a morphological half.

Consider for instance case. The morphological effect of case is clear: a noun will change its shape depending on what role it plays in the sentence. For instance, it is well known that in English, as a language with a nominative-accusative alignment, the subject of the sentence will bear nominative case, and objects will bear accusative case:[25]

(65)   a.   He saw a monkey in the tree.
       b.   A monkey saw him in the tree.

Whilst it is clear that case has a morphological effect, and so, a *u*F on the assumptions here, it is not clear that we want there to be an *i*F that bears the same value of

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25 Framing the discussion in terms of 'subjects' and 'objects' is fantastically misleading, and I refer the reader in the strongest possible way to Marantz (1991) and Baker (2015) for better and more in depth discussions of case theory than what I can go into here.

the uF, or indeed any value for case. It is doubtful that case has any interpretation on nouns, at least in the basic cases.

Thus, we need to allow for features to not automatically transfer values between the uF and iF, so that case can be represented in the following way: [26]

(66)   Case

uF:Nominative iF:___

Or, more likely:

(67)   Case

uF:Nominative
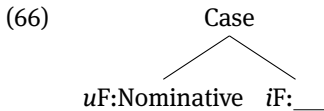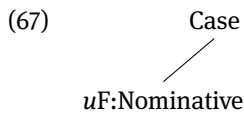
We will adopt the latter, such that features can have only a uF or an iF if necessary.

This also helps us out with verbal morphology. Under agreement, it is relatively redundant to suppose that a verb will be both inflected for plural, and that this value is also semantically interpretable. I may be wrong about this, but let's assume this to be the case (though see Dowty and Jacobson 1988 for a dissenting view). Thus, we can assume that with verbs, they only carry iFs for categories such as tense, aspect and mood, but they do not have any iFs for the phi-features traditionally seen on DPs, such as number, person and gender. Missing feature values in this way will play a central part of the discussion of mass-count hybrids in III, and we'll return to the issue there.

Before finishing this chapter, a brief discussion is due about how features are introduced, and how how hybrids come about. For most hybrids that we have seen, it seems to be the case that one of the feature values is inherently specified on the noun. Recall the profession nouns in Russian: as with most cases of grammatical gender, it is fairly arbitrary in terms of why these nouns are specified as being masculine, rather than feminine, or neuter. I assume, following Kihm (2005), Kramer (2014), and Kramer (2015) amongst others, that features that are inherent to a particular DP are introduced in a different location to features that are not inherent. For a long time within the GB/Minimalism tradition, it has been assumed that the features on verbs are introduced in different loci along the clausal spine, and since at least Ritter (1991), this has been fairly standardly assumed for

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26 It is likely that 'nominative, accusative' etc. do not exist as primitive values for a feature, but that case features are internally complex and distinguished from one another in terms of this complexity, see Caha (2009) and Smith, Moskal, et al. (2019). As is the case for number, this is not relevant for our purposes, and for ease of exposition I refer to case using the traditional names.

nominals as well. Furthermore, within Distributed Morphology, it is assumed that roots are acategorial, i.e. they are not assumed to be inherently nominal or verbal etc. but rather this distinction is derived. In order to make a root act as a nominal or a verb, Distributed Morphology assumes that the roots combine with category defining nodes: *n, v, a, p* etc. and these nodes carry the features of the major lexical categories, however these are to be ultimately represented.[27] The category defining nodes merge low in the structure, and serve as the window for the heads that carry category specific heads to merge later on. That is, heads such as Num, Person, Gender all merge on top of the structure containing the category defining node and the features of these categories are carried on these heads. Thus, to take a simple example, the English nominal *foxes* will have something like the following structure:[28]

(68)
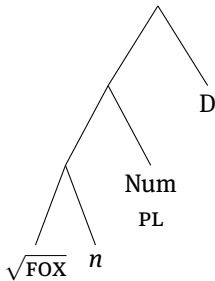
Number features are introduced in Num, D features are introduced in D. However, what will be important, particularly in chapter 8 will be the question of where *inherent* features are introduced. I will assume that features that are inherent to a particular root are not introduced on the roots themselves, but rather are hosted on the category defining nodes that combine with those roots. A discussion on this issue will be held in much more detail in chapter 8, and so I hold this issue in abeyance until then, but for the sake of concreteness, I will then assume the following structure for a noun with an inherent feature, such as *vrač*:

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27 Category defining nodes are responsible for more than simply assigning a lexical category to a root: in much recent work they have been shown to be (potential) delimiters of sub-lexical locality domains, see Embick (2010), Bobaljik (2012), Moskal (2015a), Moskal (2015b), and Moskal and Smith (2019) for further discussion.

28 The structure below is that after head movement has applied.

(69)

$$
\begin{array}{c}
\sqrt{\text{DOCTOR}} \qquad \underset{u\text{F:\scriptsize MASC}}{n} \qquad \text{Num} \qquad \underset{i\text{F:\scriptsize FEM/MASC}}{\text{Gen}}
\end{array}
$$
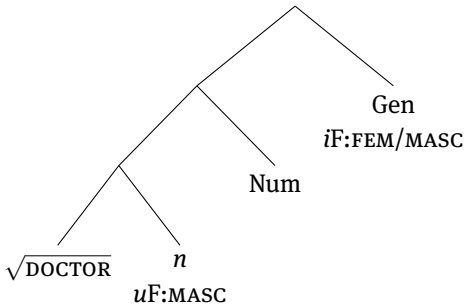
2.5 Summary

In this chapter, I have discussed various issues to do with features, both histori-cally in the development of Minimalism and how it came from GB. Furthermore, we looked at how hybrid nouns are analysed within HPSG, and saw that HPSG has developed an easy way to capture at least the basic properties of hybrid nouns, by splitting feature information into CONCORD and INDEX values, that are influenced by the morphology and semantic information of the noun respectively. Such a sys-tem allows for analysing hybrid nouns, as it naturally accounts for the fact that nouns carry both morphological and semantic information, as well as a worked out way of explaining how these values can mismatch for a given feature.

Finally, I outlined some fundamental assumptions regarding the nature of features that I will adopt in this book in the spirit of the HPSG model, so that we can investigate hybrids from the point of view of Minimalism and Distributed Mor-phology. Most of these assumptions are to a certain degree part of the framework already: there already are interpretable and uninterpretable features, as well as there being a proposed distinction between inherent and non-inherent features and where they are introduced. However, hybrids, as we will see, are more inter-esting than simply being a mismatch between the phonology of a noun and the semantics of it. We will see in Part II that the behaviour of hybrids with regard to agreement shed important insights on the mechanics of agreement, pushing us in favour of a model of agreement that is spread over different components of the grammar. Furthermore, in Part III we will see that looking at the nature of hybrids lends a new way to look at old topics, in this case the mass–count distinction.

Part II: **Hybrid nouns and the syntax of agreement**

3 Agreement in the Minimalist Programme

3.1 Agreement

In the previous chapter, I discussed how features are employed within Minimalism, and how they have become the driving force of various syntactic operations. In large part, this has been through the need to license, or value features, either by a system of checking of by valuation. During the discussion, it was mentioned how, originally, this licensing was proposed to be carried out by Spec–Head agreement, and so elements bearing features that needed to be licensed needed to be in the specifier of the head that licensed them. However, whilst this view, whilst maintained in some quarters (for instance Koopman 2006), it has largely been abandoned, and the predominant view now is that the valuation of features can be done at a distance. The mechanism that transfers values from unvalued features to another is Agree, certain aspects of which will be the discussion of this chapter.

The goal of the next two chapters is to formulate an argument from semantic agreement — agreement with the iF rather than the uF — that agreement is an operation that is partially syntactic and partially postsyntactic, that is, Agree is (partially) interleaved with morphological operations. I am not the first to claim this, and in this sense I am following in particular Franck, Lassi, et al. (2006), Franck, Vigliocco, et al. (2008), Benmamoun, Bhatia, and Polinsky (2009), Arregi and Nevins (2012), Bhatt and Walkow (2013), Marušič, Nevins, and Badecker (2015), Willer Gold et al. (2017), and Kalin (2020). As will be outlined below, these papers have proposed that part of the operation of agreement, namely the actual copying of the feature value from one element to another, can be seen to interact with other operations that are (likely) morphological in nature, often (but not exclusively) from studies of closest conjunct agreement. I will come at this issue from the perspective of semantic agreement, and show that the part of Agree that connects the two elements (Agree-Link) should happen as soon as possible in the syntactic derivation, whereas the copying operation (Agree-Copy) happens at the earliest at the end of the syntactic derivation, and mostly in the post-syntax. I will argue this on the basis of differences in how iFs and uFs are copied from element to element. In brief, iFs can only be copied in one direction, whereas uFs can be copied in both directions, a difference that I will attribute to a difference in timing: iFs have only one place where they can be copied, whereas uFs can (but not must) be copied later.

Thus, in this chapter I will discuss the operation of Agree and in particular discuss a couple of controversies that persist in the formulation of the operation.

I will be concerned with two particular aspects: firstly the timing of the operation, and secondly the direction of valuation. This will set the scene for the key issues in the next two chapters. At the outset I should note that I am not aiming for a complete history of agreement and Agree, but rather will focus on the latter two issues. More general overviews of agreement within Minimalism already exist — see for instance Baker (2008), Preminger (2011), and Preminger (2014) and collections such as Boeckx (2006) and Costa and Silva (2006) and Smith, Mursell, and Hartmann (2020) — and I will not attempt to replicate their discussions here, but rather will focus on the issues key to the following chapters.

As mentioned in the previous chapter, Agree became was introduced into the theory within Minimalism once it became apparent that Spec–Head agreement relations were not sufficient for feature licensing and for transferring values from one feature to another. Agree is the operation that moves feature values around within the derivation. At its most simple, it ensures that given the correct configuration, a feature F:___ , where '___ ' signifies unvalued, will take its value from G:α, such that F comes to be valued as F:α.

Agree was originally introduced in Chomsky (2000) and Chomsky (2001) with the following definition (from Zeijlstra 2012):

(70) Agree

α can agree with β iff:

    a. α carries at least one unvalued and uninterpretable feature and β carries a matching interpretable and valued feature.

    b. α c-commands β.

    c. β is the closest goal to α.

    d. β bears an unvalued uninterpretable feature.

The exact details are not of direct concern here. There is controversy over how most of the operation of Agree should be formulated, see Baker (2008), Zeijlstra (2012), and Smith, Mursell, and Hartmann (2020) for discussion on various points. However, a brief outline will suffice for the discussion ahead. As noted, Agree is a way to ensure that features do not have a value can take a value from other elements in the structure. Two things are fundamentally necessary. Firstly, there needs to be an operation of linking the two elements that are to enter into an Agree operation together. This is done by the element looking for a value searching the structure for elements that share a matching feature. Thus, if an element needs to undergo agreement for number, then only elements bearing number features will be possible goals (what I refer to as the controller of agreement elsewhere here). It is not the case that *any* matching feature will suffice — there are various other factors that factor in, such as locality — but matching features is a prerequisite for

an Agree operation to take place. Thus, in the following, A, which has an unvalued feature of type F searches for another element carrying F. In this structure, C also carries a feature F, and so the two features can be linked.

(71)

A
F:___

B   C
F:α
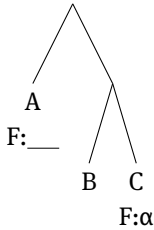
After the features are linked, then the second part of the operation of Agree is to copy the value of the feature from the goal onto the probe (what I elsewhere refer to as the target of agreement). In our example, the value α will then be copied (or shared, Pesetsky and Torrego 2007) onto A after A has been linked to C.

(72)

A
F:α

B   C
F:α
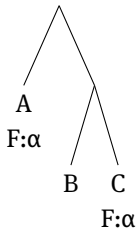
Whilst these two steps are necessary for Agree to suffice, there are a number of open issues. For instance: what type of relationship is sufficient for A and C to be able to be linked? It is not the case that probes can see any matching feature: in the definition given above Chomsky (2000) argued that the probe must c-command the goal. It is also reasonable to ask whether the same relationships for linking and copying must hold. Another question concerns how soon after linking the operation of copying happens. It is possible to conceive of Agree as a single operation, at once linking the elements and then immediately copying the value. However, another option is that elements that are linked undergo copying at a later stage, crucially allowing for other operations to intervene after linking and affect the later stage of copying. In the remainder of this chapter, I will discuss these two issues, starting with the derivational timing of Agree.

3.2 The timing of Agree

The first issue concerns the timing of Agree. Originally Agree was conceived of as a syntactic operation, and that it took place in the syntactic part of the derivation. In more recent work, it has been proposed that Agree is an operation that happens at least in part in the morphological component. There are two key arguments for this, which I will review in turn. The first, espoused by Benmamoun, Bhatia, and Polinsky (2009), Bhatt and Walkow (2013), and Marušič, Nevins, and Badecker (2015) comes from the phenomenon of closest conjunct agreement. The second argument comes from the interaction of agreement with other operations that have been argued to be morphological in nature (Arregi and Nevins, 2012; Kalin, 2020). The final, from Bobaljik (2008) argues that agreement is sensitive to morphological case, and argues that since morphological case is a post-syntactic process (Marantz, 1991), then it follows that agreement should be morphological.

The first and the third arguments in particular have attracted a lot of discussion in recent literature, and we are far from a consensus about whether these arguments show that agreement should be considered part of the postsyntax or not. Some papers, such as Bošković (2009) and Puškar and Murphy (2015) have used closest conjunct agreement to argue for a syntactic treatment of Agree. Likewise, Preminger (2011) and Preminger (2014) has argued the same on the basis of case-sensitivity of agreement However, to my knowledge there is no work arguing on the basis of these facts that Agree *must* be syntactic, but rather the facts are consistent with a syntactic view of Agree. Thus, the debate is still ongoing, and it is my hope that the discussion in the following two chapters can add to this debate, providing another argument in favour of a partially postsyntactic Agree.

3.2.1 Closest conjunct agreement

Probably the strongest argument, and most widely discussed in this realm, comes from agreement with conjoined subjects. Conjunctions are known to join two elements of the same syntactic category together:

(73)   a.   You set my soul on fire and I really had my fun.

b.   Over hill and under hill.

c.   A clear and present meanace.

Relevant for our purposes are instances of nominal conjunction when the conjunction is the controller of agreement. In such cases, the conjoined DPs will act as a single unit with regards to agreement, with the features of the conjunction

coming from the combination of the two DPs. In English, it can be seen that generally, this will result in plural agreement on the verb, irrespective of the featural makeup of the conjuncts themselves:

(74) a. A bear and a fox are/*is coming to tea.

  b. Two bears and a fox are/*is coming to tea.

  c. A bear and two foxes are/*is coming to tea.

On occasion however, the verb will fail to agree with the unification of the conjuncts and instead agree with only one of them. It has been observed that this happens in English, when the conjoined subject is postverbal, such as with existential *there*-constructions (Sobin, 1997; Alexiadou, Anagnostopoulou, and Wurmbrand, 2014):

(75) a. There is a bear and a fox in the garden.

  b. * There are a bear and a fox in the garden.

In English, such 'failures' of agreement are a relatively peripheral occurrence. For some languages however, other patterns seem to be more part of the core patterns, specifically where the verb will show agreement with only one of the conjunctions. For instance, in the following, from Slovenian, agreement on the participle can reflect the gender of the conjunct which is linearly closest to the participle or which is further away, neuter and feminine respectively in (76a) and feminine and neuter respectively in (76b)[29]

(76) Marušič and Nevins (Forthcoming, p. 179)

  a. Krave   in teleta   so   odšla/odšle   na pašo
    cow.FEM.PL and calf.N.PL aux.PL went.N.PL/went.FEM.PL on graze
    'Calves and cows went grazing.'

  b. Teleta   in krave   so   odšla/odšle   na pašo
    calf.N.PL and cow.FEM.PL aux.PL went.N.PL/went.FEM.PL on graze
    'Calves and cows went grazing.'

Here there are two patterns to consider. Firstly, assuming an asymmetrical structure of conjunctions akin to (77) (Munn, 1993), agreement could target the higher of the two conjuncts, in which case we see *highest conjunct agreement*. This would be agreement with Conjunct 2 in (77). Secondly, agreement could target the linearly closest conjunct, irrespective of the hierarchical relation in the syntactic

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29 In both of these examples, the verb can show feminine plural, neuter plural or masculine plural agreement. According to Marušič and Nevins (Forthcoming) masculine agreement represents the default agreement, see also Marušič, Nevins, and Badecker (2015).

structure, in which case we see *closest conjunct agreement*. Unlike highest conjunct agreement, which conjunct will be the closest one to the target of agreement is dependent on whether the target precedes of follows the target. In case the target follows the conjunction, then Conjunct 1 will be the highest and closest conjunct. In case the target precedes the conjunction, then Conjunct 1 will be the highest conjunct and Conjunct 2 the closest.

(77)

```
                    &P
                   /  \
                 DP    &P
                / \    / \
               /   \  ...  &′
          Conjunct 1       / \
                          &   DP
                             / \
                        Conjunct 2
```
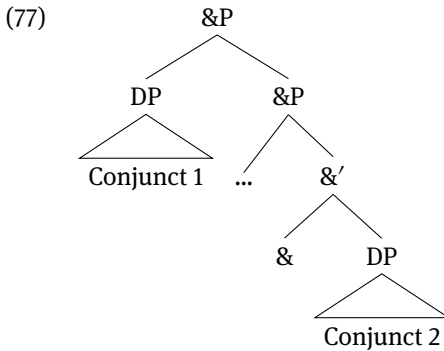
Closest conjunct agreement is relevant here. One of the major arguments for treating agreement as a syntactic operation, is that it seems to be overwhelmingly sensitive to hierarchical structures, and by and large ignores linear order. There are known to be some linear effects, such as agreement attraction (Bock et al., 2006; den Dikken, 2001), whereby a noun embedded within the subject noun appears to control agreement, such as in (78), but it is not clear that these form part of the core grammatical knowledge or arise from outside effects.

(78)   The key to the closets **are** on the table.

However, closest conjunct agreement is interesting in this regard precisely because it allows for a testing ground between linear order and hierarchy. Assuming that the structure in (77) is the structure of conjunctions and cannot be reversed, such that DP2 would c-command DP1 (*pace* Johannessen 1996), to be discussed below, then whether the subject is pre- or post-verbal DP1 will always be structurally highest. On the other hand, the conjunct that is linearly closer to the verb will change depending on whether the conjunction is pre- or post-verbal: when post-verbal, DP1 will be linearly closest, but DP2 will be when the conjunction is preverbal. Thus, if it can be shown that the verb will agree with DP2 when the conjunction is preverbal, but DP1 when postverbal, then it seems as though there is evidence for an effect of linear order. I demonstrate this using data Hindi and Tsez, taking the data from Benmamoun, Bhatia, and Polinsky (2009). In each of the following, in the (a) example the verb agrees with the first conjunct, and in the (b) examples, the verb agrees with the second of the conjuncts.

(79) Hindi Benmamoun, Bhatia, and Polinsky (2009, p. 77)

    a. us-ne   khariid-ii   kursii   aur sofa

       he-ERG buy-PERF.FSG chair.ABS.FSG and sofa.ABS.MSG

       'He bought the chair and sofa.'

    b. maiN-ne ek chaataa   aur ek saaRii

       I-ERG   an umbrella.ABS.MSG and a   saaree.ABS.FSG

       khariid-ii

       buy-PERF.FSG

       'I bought an umbrella and a saree.'

(80) Tsez, Benmamoun, Bhatia, and Polinsky (2009, p. 77)

    a. y-ik'i-s kid-no   uži-n

       II-went girl.ABS.II-and boy.ABS.I-and

       'A girl and a boy went.'

    b. kid-no   uži-n   ∅-ik'i-s

       girl.ABS.II-and boy.ABS.I-and I-went

       'A girl and a boy went.'

With these data, it is important to be sure that we are dealing with a consistent structure for conjunction. That is, it is important that in cases of closest conjunct agreement, the hierarchical relation between Conjunct 1 and Conjunct 2 is not reversed, such that we have the following structure:

(81)
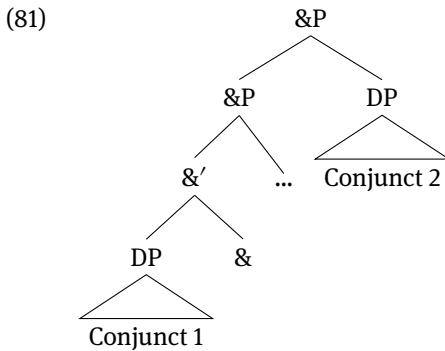
Were this a possible structure, then closest conjunct agreement could simply be reanalysed as highest conjunct agreement as since Conjunct 2 is now the higher of the two conjuncts. There is in fact data that argues for a consistent structure for conjunctions. Munn (1993) argues for an asymmetrical structure of conjunctions based in part on examples like the following in English, where the first conjunct is allowed to bind a pronoun in the second one. Given that binding of variables

is standardly assumed to require the binder to c-command the bindee, then it follows that Conjunct 1 must c-command Conjunct 2.

(82)   Every man$_i$ and his$_i$ dog showed up.

The same facts arise in Hindi and Tsez, but, crucially, even though agreement with the second conjunct is allowed in these languages, the second conjunct never binds the first, illustrated below with Hindi:

(83)   Hind, Benmamoun, Bhatia, and Polinsky (2009, p. 73)

    a.   har   aadmii   aur us-kaa kuttaa   bazaar ga-yaa
        every man.M.SG and he-of   dog.M.SG market go-PERF.MSG
        'Every man and his dog went to the market.'

    b.   * us-kaa kuttaa   aur har   aadmii   bazaar ga-yaa
        he-of   dog.M.SG and every man.M.SG market go-PERF.MSG

There is therefore no evidence to suggest that the structure of conjunctions can be reversed in languages that allow closest conjunct agreement (*pace* Johannessen 1996). Thus, closest conjunct agreement then represents agreement that has not agreed with the structurally highest of two potential targets. There are accounts of this pattern that do not reference linear agreement at all, for instance Bošković (2009) and Puškar and Murphy (2015), yet the proposal that this type of agreement is sensitive to linear relations is reinforced by observations that there are effects of intervening elements. For instance, Benmamoun, Bhatia, and Polinsky (2009) show that for Tsez, if any element intervenes between the verb and the conjuncts, then closest conjunct agreement does not arise:[30]

(84)   Benmamoun, Bhatia, and Polinsky (2009, p. 78)

    a.   y-ik'i-s kid-no   uži-n
        II-went girl.ABS.II-and boy.ABS.I-and
        'A girl and a boy went.'

    b.   * y-ik'i-s iduɣor kid-no   uži-n
        II-went home   girl.ABS.II-and boy.ABS.I-and
        'A girl and a boy went.'

(85)   Benmamoun, Bhatia, and Polinsky (2009, p. 79)

    a.   uži-n   kid-no   y-ik'is
        boy.ABS.I-and girl.ABS.II-and II-went
        'A boy and a girl went.'

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30 Similar, but less sensitive effects are reported for Hindi, but the conditions in this language are a lot less clear.

b. * uži-n   kid-no   iduɣor y-ik'is
   boy.ABS.I-and girl.ABS.II-and home II-went
   'A boy and a girl went home.'

These data are interesting for us in the following way. One of the clearest findings of generative syntax since its inception has been that the relations that matter are hierarchical, and not linear. Operations consistently rely on notions such as c-command, rather than being formulated in terms of closest elements — see the discussion of the *Poverty of the Stimulus* in Chomsky (1957). Whilst there have been attempts to incorporate linear relations into the theory of syntax (Kayne 1994 being a very prominent example of this), at least within Minimalism it seems to be well-accepted that linear relations are introduced *after* the syntactic operation has applied (see, for instance Fox and Pesetsky 2005). Thus, linearisation of syntactic structure is a post-syntactic operation, and belongs as part of the suite of morphological operations (Arregi and Nevins, 2012; Bhatt and Walkow, 2013; Smith, Accepted).

It should be noted that closest conjunct agreement does not mean that the entirety of the agreement operation should be post-syntactic. In fact, the work that has argued for a morphological treatment of CCA argues that Agree is partly postsyntactic. Specifically, Agree has proposed to be split into two operations:

(86) AGREE in Arregi and Nevins (2012)
Agreement by Probe with Goal proceeds in two steps:
a. AGREE-LINK: in the syntax, a probe has unvalued φ-features that trigger Agree with a goal (possibly more than one). Th e result is a link between probe and goal.

b. AGREE-COPY: In the Exponence Conversion module (= a subpart of the post-syntactic PF branch, PWS), the values of the φ-features of the goal are copied onto the probe linked to it by AGREE-LINK.

There are slightly different formulations of this model in Benmamoun, Bhatia, and Polinsky (2009) and Bhatt and Walkow (2013) but the fundamental makeup is the same: namely that there is an operation of linking the probe and the goal, and a separate operation of copying the features from goal to probe, and that these operations do not happen at the same derivational point.[31] The first of these operations, AGREE-LINK takes place in the syntax and can only apply on hierarchical

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31 It is not just closest conjunct agreement phenomena that has motivated this type of model of Agree. Kalin (2020) shows, on the basis of different patterns of agreement in Senaya that there must be a postsyntactic mechanism of feature copying, that is distinct from a syntactic matching operation.

structures. AGREE-COPY on the other hand happens in the postsyntax, and so it can, but not need to, happen *after* the point of linearisation. Thus, the copying of features can be sensitive to both linear and hierarchical structures, depending on the point at which the operation applies. It is important that there remains a syntactic aspect to agreement, even in the face of languages where closest conjunct agreement is possible, given that the ability to undergo agreement is possible only if the usual syntactic rules of agreement are satisfied. To see this, consider the following from Hindi:

(87) a. raam-ne sofe   aur kursii   khariid-ii
          Ram-ERG sofa.ABS.MPL and chair.ABS.FSG but-PERF.FSG
          'Ram bought sofas and a chair.'

      b. * raam sofe   aur kursii   khariid-egii
          Ram sofa.ABS.MPL and chair.ABS.FSG but-FUT.FSG
          'Ram bought sofas and a chair.'

In Hindi (as is common in such cases, Bobaljik 2008), if there are multiple absolutive arguments then agreement will be with the highest one. In (87a), the subject is in ergative, and so the only absolutive argument is the conjunction. However, as Benmamoun, Bhatia, and Polinsky (2009, p. 77) note, ergative subjects show up only in the perfective. In other aspects, subjects are unmarked, i.e. absolutive. This is the situation in the future tense of (87b), and in this case, agreement with the closest conjunct is no longer possible. This shows then that a purely linear account is not sufficient, given that the closest conjunct agreement can only arise in case there is no other, higher absolutive argument in the structure. Thus, even closest conjunct agreement is sensitive to a mixture of hierarchical and linear relations, which is then captured by (86).

3.2.2 Alliterative concord and very late AGREE-COPY

Another argument that agreement takes place in part postsyntactically comes from the interaction of Agree with operations of the morphology. In the previous section we saw that AGREE-COPY has been argued to take place after the point of linearisation, an operation which is frequently taken to be one of the postsyntax. Linearisation however has been argued to be something that is also predictable in the syntax (Kayne, 1994; Cinque, 2005, and much other work in the cartographic tradition). The argument would be stronger if it could be shown that AGREE-COPY follows other obviously morphological operations. An argument can be made here from alliterative concord.

Alliterative concord is a comparatively rare phenomenon whereby the targets of an agreement process all show a consistent phonological shape. This can be seen in Frɔ̀ʔɔ̀ (Traoré, 2018; Féry and Moskal, 2018; Traoré and Féry, 2018). In the following, there is agreement on various elements within the noun phrase. As can be seen, each of the agreeing elements share a consistent phonological shape, in (88a) a dorsal plosive (/g,k/) and in (88b) a coronal plosive (/d,t/).

(88) a. ɟī-ō   kì   gíʔí   gī   gā   gè
            house-CL5 PRO5 which5 IDENT.PRT5 DEM5 CL.END.PRT5
            'Which house is this?'

      b. jēː-rē   tì   díʔí   dī   dā   dè
            month/moon-CL6 PRO6 which6 IDENT.PRT6 DEM6 CL.END.PRT6
            'Which months/moons are these?'

As can be seen in the examples, the elements that undergo agreement with the head noun (effectively, everything to the right of the head noun in the above examples) share a consistent phonology. In (88a) all the elements begin with a dorsal plosive, whereas in (88b) they all begin with a coronal plosive. One possible analysis of this pattern is that this is regular class agreement and the exponents are phonological features, see Traoré (2018) and Traoré and Féry (2018) for details. The vowels of the pronominals are consistent in Frɔ̀ʔɔ̀, as well as the fact that they begin with a voiceless consonant, suggesting that the underlying form of the pronominals in Frɔ̀ʔɔ̀ is a mix of partially and fully specified phonological segments, as shown in (89a). Similarly, the demonstratives have a fully specified vowel and are voiced. Class marker agreement fills in the missing phonological information, and so the exponent of class agreement is a specification for place of articulation and value for [±continuant]. The combination of (89c) with (89a) will give the form *kì* for the pronoun in (88a), and the combination of (89b) with (89d) will give *dā*.

(89) a. [PRO] ⇔ [[−voice],ɪ]

      b. [DEM] ⇔ [[+voice],ā]

      c. [Class 5] ⇔ [dorsal,−continuant]

      d. [Class 6] ⇔ [coronal,−continuant]

There is not much here to suggest any dramatic consequences for AGREE-COPY. The consistent phonology is intriguing but not necessarily all that surprising, given the possibility of formulating VI-rules as in (89). However, in other languages, there is a far more direct interaction between the phonology and the agreement. In Abuq it can be seen that the exponent of (some) agreement in the language is a part of the phonology of the head noun (Nekitel, 1986). Thus, in

(90a) the exponent of agreement on the verb and adjectives is *l*, which is the final consonant in the noun phrase, and in (90b) the exponent is *h*, again the final consonant in the noun phrase.

(90)   a.   almil afu-l-i   l-aheʔ
           bird   good-AGR-ADJ AGR-went
           'A good bird went.'

       b.   ihiaburuh afu-h-i   h-aheʔ
           butterfly   good-AGR-ADJ AGR-went
           'A good butterfly went.'

Even more interestingly, this process happens with non-native phonemes. Contact with surrounding languages like Tok Pisin has introduced non-native phonemes in borrowed words, and these behave the same. For instance, in Abuq there is no native [p], but the word *paip* 'pipe' has been borrowed from Tok Pisin. Agreement behaves the same way: the final *p* is the exponent in agreement (91a). The same situation happens with [r] in (91b).

(91)   a.   paip apa
           pipe this
           'this pipe'

       b.   pater ara
           priest this
           'this priest'

Some nouns in Baïnuk similarly show a sensitivity to the phonology of the head noun (Sauvageot, 1967; Sauvageot, 1987). In Baïnuk nouns generally take a class marker but not all nouns. Amongst the nouns that do not, the agreement will copy a default agreement marker for some nouns, whereas for other nouns the exponent of agreement will be the first syllable of the head noun:

(92)   a.   kata:ma-ŋo in-ka
           river-PROX   this-AGR
           'this river'

       b.   dapɔn da-wuri
           grass   AGR-long
           'long grass'

These data are interesting for our purposes because the agreement process clearly copies phonological information, especially in the last two cases. Above, we saw that it was possible to analyse the pattern in Frɔ̀ʔɔ̀ as having an agreement process that copies abstract features, only later to be exponed as phonological information later on. Yet, such an analysis is quite redundant with Abuq and Baïnuk

given that the target seems to be copying phonological information directly from the root.

A more parsimonious account would be that in the syntax AGREE-LINK links the controller and target, but that AGREE-COPY does not happen until after VI has taken place (at least on the controller). Thus, whilst usually AGREE-COPY takes place before VI and copies the abstract syntactic features, in Abuq and Baïnuk, AGREE-COPY takes place after VI has happened and copies the phonological information. The consequence of this is that AGREE-COPY *must* be able to happen within the postsyntactic morphological component, given that VI is unambiguously an operation of the morphology.[32] This appears to show us that AGREE-COPY does not copy the abstract features onto the target of agreement, where they later undergo VI.

3.2.3 The case sensitivity of Agree

A final argument for treating agreement as a postsyntactic operation comes from Bobaljik (2008). Bobaljik (2008) does not assume a two-step operation of agreement, but rather simply proposes that agreement happens after the syntax has ended. On my reading of his paper, the implicit view is that it is not just the copying operation that is post-syntactic, but rather the whole operation. This will not matter much to us, but it is good for the reader to bear in mind.

Bobaljik's argument centres around the observation that agreement is case discriminating, in the sense that what elements can control verbal agreement is determined by the morphological case that they show. This observation is very robust, and confirmed across a large sample of unrelated languages. Given that agreement is sensitive to case, then it follows that the process of agreement — Agree for our purposes — must come *after* case has been assigned. If case assignment is therefore argued to be a post-syntactic process, as has been claimed by Marantz (1991), then it follows that agreement must also be.

The proposal that case is postsyntactic comes famously from Marantz (1991), who, contra the prevailing consensus in GB syntax at the time, proposed that case is not assigned by functional heads to their complements or specifiers, but rather is an algorithm that pays attention to the complete syntactic structure (or at least localised domains of syntactic structure). Marantz argues this on two grounds. Firstly, he shows that attempts to link case assignment to licensing of subjects are insufficient, as they fail to account for various instances where case was suppos-

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32 If one adopts Distributed Morphology, rather than a model of morphology with pre-syntactic insertion of phonological features.

edly the driver of movement of a particular element, yet, case can still be assigned in that position. Specifically, he argues that Burzio's generalisation (Burzio, 1986), does not hold, and that there is no all-encompassing link between not assigning an external theta-role and a lack of accusative case.

The second argument comes from ergative–absolutive case alignments, which, as is well known, form the second major case assignment pattern in the world's languages (Comrie, 2013a; Comrie, 2013b) amongst languages that show morphological cases. The difference between the nominative–accusative alignment, which is more commonly attested and the ergative–absolutive alignment is to do with the groupings of transitive and intransitive subjects and the direct object. As is commonly done, we can refer to the subject of a transitive clause as being the A-argument, the subject of an intransitive clause as the S-argument, and the direct object of a transitive clause the P-argument. In a nominative–accusative language, the case marking of the A-argument and the S-argument is the same, and this is different to the case marking on the P-argument, as shown in Sakha in (93) below. By way of contrast, in an ergative–absolutive language, the S-argument gets the same marking as the P-argument, whilst the A-argument is different to the other two. This is shown in Shipibo (94)

(93) Baker (2015, p. 1)

    a. Min   kel-li-m
       I.NOM come-PAST-1SGS
       'I came.'

    b. min   oloppoh-u aldjat-ty-m
       I.NOM chair.ACC break-PAST-1SGS
       'I broke the chair.'

(94) Shipibo, Baker (2015, p. 8)

    a. Maria-nin-ra   ochiti noko-ke
       Maria-ERG-PRT dog   find-PERF
       'Maria found the dog.'

    b. Maria-ra   ka-ke
       Maria-PRT go-PERF
       'Maria went.'

This is the basic difference between the two alignment types, and can be represented as follows, with the ellipses represented arguments that share a common case marking.

(95) Groupings of case marking
      Nominative–Accusative   Ergative–Absolutive

      A   O   A   O

                    S   S
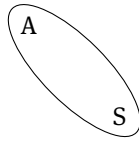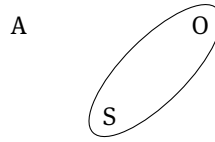
Ergative–absolutive languages are known to cause a problem for the traditional view of case assignment, namely where nominative is assigned by T to Spec,TP, because, the traditional view relies on a consistent assignment of nominative: if there is a subject, then it gets assigned there.[33] Yet, this is not possible for ergative–absolutive languages because absolutive case is assigned to some (intransitive), but not all (not transitive) subjects. In case there is a transitive subject, then it receives ergative case, and the transitive object is in absolutive.

Marantz's solution to this problem was to argue that if we look at case more abstractly, as something that is assigned according to nominals according to the structural relations they hold to other nominals, then it is possible to understand ergative and accusative case as both being 'dependent cases', with the difference between the two being the difference in direction of assignment. Briefly, the idea is that dependent case can be assigned when two nominals stand in a relation of c-command to one another. In such a configuration, and assuming that neither of them bears a lexical case (which would render them invisible to this part of the algorithm), then, according to Marantz, one of the nominals will receive a dependent case, and the other will receive unmarked case. The difference between ergative and accusative is that ergative is dependent case assigned to the *higher* of the two nominals, whereas accusative is dependent case assigned to the *lower* of the two nominals. The result, then, is that in transitive clauses, if dependent case is assigned upwards for a language, this will then only show up on A-arguments, whereas if the dependent case of a language is assigned downwards, then it will show up on P-arguments.

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33 This is a rather large oversimplification of the true picture, given the existence of lexical case marking on subjects and nominative objects, see for instance Zaenen, Maling, and Thráinsson (1985).

(96)   Dependent case assigned to higher nominal

Dependent case = Ergative

XP

...

Unmarked case = Absolutive

... YP
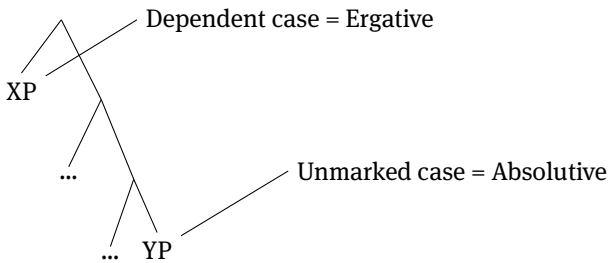
(97)   Dependent case assigned to lower nominal

Unmarked case = Nominative

XP

...

Dependent case = Accusative

... YP
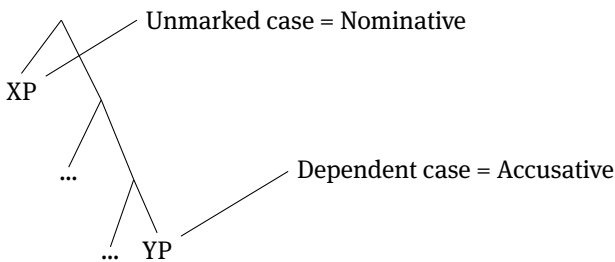
What is important for our purposes here is that case is assigned *after* the syntactic derivation, given that it needs access to the output of syntax to judge whether the DPs stand in a relation that could foster dependent case. Therefore, processes which can be shown to follow case assignment, i.e. are sensitive to morphological case, must also be postsyntactic.

Bobaljik shows that one can formulate hierarchies of case regarding which elements can control agreement. Bobaljik draws on Moravcsik (1974), who shows the distribution of possible agreement controllers in Table 3.1. Specifically, what is shown is that amongst the languages of the world that show verbal agreement, it is possible that only the subject controls agreement, or the subject and direct object can control agreement, or the subject, direct object and indirect object can all control agreement. None of the other combinations are possible. That is, there is no language where only subjects and indirect objects control agreement, but not direct objects.[34]

We can view this as a scale of grammatical roles and their ability to control subject agreement, and formulate implications on the basis of that. For a particular position X on the scale in (98), if that role can control verbal agreement then all elements to the left also can in the language. The implication is unidirectional: no implication holds for elements to the right of X.

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34 There are of course many languages in the world with no attested agreement.

Tab. 3.1: Grammatical roles and agreement controllers

Controllers	Attested?
No agreement	Attested
S only	Attested
S and DO	Attested
S, DO and IO	Attested
IO only	Not attested
DO only	Not attested
IO, DO only	Not attested
S and IO, not DO	Not attested

Tab. 3.2: Case and agreement controllers (Table 3.1 restated)

Controllers	Attested?
No agreement	Attested
Nominative only	Attested
Nominative and accusative, not dative	Attested
Nominative, accusative and dative	Attested
Dative only	Not attested
Accusative only	Not attested
Accusative and Dative only	Not attested
Nominative and Dative only	Not attested

(98) Subject — Direct Object — Indirect Object

Bobaljik however shows that for languages with nominative–accusative align-ments, given that all subjects are in nominative and objects in accusative (ignor-ing lexically case marked arguments), the scale can be reformulated regarding case as follows:

(99) Revised Moravcsik hierarchy (nominative–accusative alignment):
Nominative — Accusative — Dative

Table (3.1) can then be restated as in Table (3.2). There are two arguments to favour Bobajik's reformulated scale, rather than Moravcsik's. Firstly, in nominative–accusative alignments, when the subject is in a lexical case and the object in nominative, agreement will track the nominative object rather than the dative subject, as is the following with Icelandic.

Tab. 3.3: Case and agreement controllers: ergative–absolutive alignment.

Controllers	Attested?
no agreement	attested
ABS only	attested
ABS, ERG, not DAT	attested
ABS, ERG, DAT	attested
ERG only, no ABS, DAT	not attested
ERG, DAT only, not ABS	not attested
DAT only, not ABS, ERG	not attested
ABS, DAT, not ERG	not attested

(100) Zaenen, Maling, and Thráinsson (1985, p. 461)

　　　Um veturinn　voru　　konunginum gefnar ambáttir.
　　　In　the.winter were.PL the.king.DAT given　slaves.NOM

　　　'In the winter, the king was given (female) slaves.'

Thus, for these instances, case is a better predictor of agreement controller than grammatical function. Secondly, Bobaljik's reformulation works better for ergative–absolutive alignments. Different predictions are made here between grammatical function and morphological case: given that in this alignment subjects alternate between being absolutive and ergative depending on the transitivity of the verb, if agreement is determined by grammatical function there ought to be no distinction between absolutive and ergative and both should be potential controllers of verbal agreement. On the other hand, if agreement is sensitive to case, then it is possible that absolutive and ergative behave differently within a language. Table 3.3 shows the distribution of agreement controllers according to case given in Bobaljik (2008):

　　　Thus, for some languages (Tsez and Hindi are given as examples by Bobaljik), it is possible for absolutives to control agreement without ergatives being able to. Therefore, the scale for these languages should be as follows:

(101)　Revised Moravcsik hierarhcy (absolutive–ergative alignment)
　　　Absolutive — Ergative — Dative

Finally, it is possible to conflate (99) and (101) under the terminology of Marantz:

(102)　Revised Moravcsik hierarhcy (Marantz's terminology):
　　　Unmarked Case — Dependent Case — Lexical Case

Agreement patterns thus are shown to be not only sensitive to case, but they appear to show support for Marantz's view of a postsyntactic case algorithm. Bobaljik's conclusion then is that agreement must be postsyntactic.

It should be pointed out that there is not universal support for the configurational view of case espoused by Marantz. Marantz's proposal has been much discussed in recent years, with Baker (2015) notably developing the algorithm further. There are counter-arguments to Marantz's view: Woolford (2006) proposes that ergative is not a dependent case as Marantz argues, but rather belongs in the group of lexical cases — cases assigned to a particular theta role, though Woolford's argument has been challenged in recent work by Smith, Moskal, et al. (2019) and Zompì (2019). Similarly, Legate (2008) for instance argues that grouping nominative and absolutive together under 'unmarked case' ignores differences between the two cases (Legate, 2008). Finally, as Preminger (2011) and Preminger (2014) points out, simply showing that agreement is case sensitive does not prove it is post-syntactic, merely that it applies after case has been assigned. Thus, agreement can still be case sensitive even if case is assigned in the syntax, and consequently, we are told nothing about where agreement happens. Yet, the issue is far from settled, and Bobaljik's discussion of agreement being postsyntactic because it depends on a postsyntactic view of case is indeed compelling.

3.2.4 Interim Summary

In this section we have seen three arguments for agreement being at least in part postsyntactic. Whilst Bobaljik (2008) argues for a completely postsyntactic treatment of agreement, the other phenomena have been used to motivate a two-step approach to agreement, where part of the agreement operation is syntactic (AGREE-LINK) and another part is post-syntactic (AGREE-COPY). This is the model that I will advocate for in the next couple of chapters. Specifically, I will argue that semantic agreement shows evidence for a very early application of AGREE-LINK but a late application of AGREE-COPY. In fact, in contrast to the above cited work on a two-step agreement model, I will argue that AGREE-COPY is not purely an operation of the morphology, but mostly, as I will propose that it needs to be able to happen at the point of transfer, just before the iFs and the uFs are split and sent to the interfaces.

3.3 The direction of valuation

The second major argument concerning agreement that I will engage with in the following chapters regards the direction of agreement. Recall from above that Agree was originally formulated as follows.

(103) Agree
 α can agree with β iff:

 a. α carries at least one unvalued and uninterpretable feature and β carries a matching interpretable and valued feature.

 b. α c-commands β.

 c. β is the closest goal to α.

 d. β bears an unvalued uninterpretable feature.

This model requires the controller of agreement to be beneath the target, given that the probe needs to c-command the goal. That is, in order for Agree to successfully transfer a value from the goal B to probe A, the following configuration needs to hold (remaining agnostic here about whether a is in the specifier or higher than B). If D is the probe, it will not be able to get a value from A from this position.

(104)

```
        /\
       /  \
      /    \
     A     /\
          /  \
         B   /\
            /  \
           C    D
```
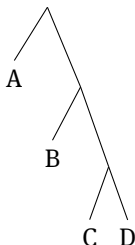
The major benefit of this approach is that it allowed Chomsky (2000) and Chomsky (2001) to link agreement to the EPP. However, as some authors have pointed out, this is not always the case. Numerous formulations of Agree have in fact allowed c-command to go at least either way, with some authors — notably Zeijlstra (2012), Wurmbrand (2012b), and Wurmbrand (2011) — arguing that Agree should be formulated exclusively with the target of agreement above the probe. The evidence for agreement going upwards comes from a variety of places, and I will not attempt to summarise them all here. However, a few choice examples suffice for the major point that I am trying to make.

3.3.1 Niger-Congo verbal agreement: Baker (2008)

As Baker (2015) points out, it is hard to find convincing evidence that verbal agreement looks upwards in the structure, given that verbal agreement is generally assumed to reflect agreement with the T head, and it has long been assumed that all arguments initially enter the structure lower than T, in the v+V domain. Yet, there

are arguments that can be made. Firstly, Baker (2008) shows that in Kinande, verbal agreement will target whichever element is in Spec,TP:

(105)   Baker (2008, p. 158)

    a.   **Abakali ba**-a-gul-a amatunda
        woman.2 2s-T-buy-FV fruit.6
        'The woman bought fruits.'

    b.   **Omo-mulongo mw**-a-hik-a   mukali
        LOC.18-village.3 18s-T-arrive-FV woman.1
        'At the village arrived a woman.'

    c.   **Olukwi** si-**lu**-li-seny-a   bakali   (omo-mbasa)
        wood-11 NEG-11s-PRES-chop-FV women.2 LOC.18-axe.9
        'WOMEN do not chop wood (with an axe).'

Baker's argument here is that agreement appears to be controlled by whatever ends up in Spec,TP, and is fairly indiscriminate in the choice of controller. That is, all types of arguments are possible controllers. It seems unlikely (though of course not impossible) that a pre-existing downwards agreement relation has happened prior to movement, given that there would have to be conditions on what can be ignored. It then seems not to be case that determines the controller of T-agreement, but rather positioning. Baker's aim is not to argue that Agree should solely be stated in upward terms: he in fact argues for a parameterisation of Agree, such that for some languages it looks upwards and for some it looks downwards in the structure (and for more, both), He is far from alone in arguing that agreement looks both ways, a point that I will adopt below. The point here is to show arguments that agreement *can* look upwards in the structure, *contra* the original formulation in (103).

3.3.2 Cyclic Agree: Béjar and Rezac (2009)

A second argument comes from Béjar and Rezac (2009), who also argue for a bidirectional mechanism of Agree. Their argument again comes from verbal morphology, but this time for languages where it is assumed that the agreement morpheme lies not on T, but rather on v. To the extent that this is true, then verbal agreement with the external argument must necessarily look upwards, given that if it merges in Spec,vP, then at no point in the derivation will v c-command the external argument. The focus of their paper is on languages with person sensitive agreement,

whereby the choice of agreement controller is determined by apparently extrinsic person hierarchies. Nishnaabemwin is one such example:[35]

(106) a. g-waabm-in
           2-see-1.INV
           'I see you' $1 \rightarrow 2 = 2$

       b. g-waabm-i
           2-see-DFLT.1
           'You see me.' $2 \rightarrow 1 = 2$

       c. n-waabm-ig 3
           1-see-3.INV
           'He sees me' $3 \rightarrow 1 = 1$

       d. g-waabm-ig
           2-see-3.INV
           'He sees you' $3 \rightarrow 2 = 2$

As one can see from (106), agreement in Nishnaabemwin prefers to agree with second person when there is one, otherwise 1st person.

(107) Agreement preferences in Nishnaabemwin
       Addressee (2) > Speaker (1) > Other (3)

This pattern can be reversed with a preference for 1 > 2 > 3, seen in Nocte:

(108) a. nga-ma ate hetho-ang
           I-ERG   he teach-1
           'I will teach him.' $1 \rightarrow 3 = 1$

       b. ate-ma nga-nang hetho-h-ang
           he-ERG I-ACC   teach-INV-1
           'He will teach me.' $3 \rightarrow 1 = 1$

       c. nga-ma nang hetho-e
           I-ERG   you teach-1PL
           'I will teach you.' $1 \rightarrow 2 = 1$

       d. nang-ma nga hetho-h-ang
           you-ERG I   teach-INV-1
           'You will teach me.' $2 \rightarrow 1 = 1$

---

35 In the examples, within the formulation $X \rightarrow Y = Z$, X = person value of the subject, Y = person value of the object, and Z = the person value chosen for verbal agreement.

These are not the only patterns, but Basque Ergative Displacement favours agreement with the internal argument over the external one:

(109) a. ikusi z-in-t-u-da-n
            seen 2-x-pl-have-1-past

            'I saw you.' $1 \to 2 = 2$

       b. ikusi n-ind-u-en
            seen 1-x-have-past

            'He saw me.' $3 \to 1 = 1$

       c. ikusi n-ind-u-zu-n
            seen 1-x-have-2-past

            'You saw me.' $2 \to 1 = 1$

       d. ikusi n-un-en
            seen 1-have-past

            'I saw him.' $1 \to 3 = 1$

The crucial contrast here is between (109a) and (109c). It shows that all else equal, the internal argument will control agreement.

In order to derive patterns such as these, Béjar and Rezac argue that the probe for agreement lies on v, not T as is usually assumed for (subject) agreement and that v undergoes agreement as soon as possible. The probe on v is specified to look for certain features, and there are entailment relations amongst the person features such that some categories are more highly specified for person features than others. First the probe looks downwards in its c-command domain and looks for the internal argument, and the person features that are on the internal argument check those on v. If all the features on v are checked, then no further probing takes place. However, if only a subset of the features on the probe are matched, then v will probe upwards to its specifier to the external argument. That is, for Béjar and Rezac Agree is preferentially downwards, but if it does not fully satisfy the probe, Agree can then look upwards in the structure.

To illustrate with an example, consider once more the data from Nocte where 1st person agreement is preferred. The features for person are assumed to be internally complex, and can be represented as follows:[36]

---

[36] In order to account for Nishnaabemwin, which I will not discuss in more detail here, Béjar and Rezac propose that there is variability in languages according to whether SPEAKER or ADDRESSEE is chosen as the most specified feature amongst the participants. This allows for languages to look for 2nd person over 1st person. For more discussion on the internal makeup of person features, see Bobaljik (2008), Nevins (2007), Harbour (2016), and Moskal (2018).

(110) a. 1 = [SPEAKER, PARTICIPANT, PERSON]

b. 2 = [PARTICIPANT, PERSON]

c. 3 = [PERSON]

The probe on *v* in Nocte is prespecified to look for first person, and so the probe on *v* is specified as in (111).

 (111) Probe = [*u*F: SPEAKER, PARTICIPANT, PERSON]

The probe first looks in its c-command domain, and if it does not find a complete match, it probes again, this time looking upwards. If no complete match is found, then the verb is satisfied with what features it has already matched. Thus, in Nocte, in a configuration where the 1st person argument is the internal argument of the verb, the initial probing will fully match the probe, and the verb will agree with the object. In the diagramme below, the external argument DP1 is second person and the internal argument is DP2. The features of the verb in the second step are struck through, to indicate that they have been matched, and marked with a subscript to indicate which element has matched them. When the internal argument is first person, then all the features on *v* have been matched and checked by the internal DP argument, and the verb has no need to further probe upwards to DP1.

(112)
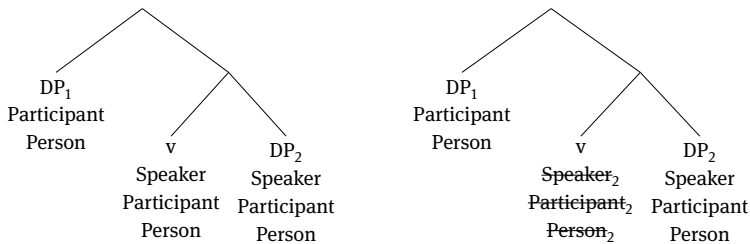
On the other hand, if the internal argument is 2nd person and the external argument 1st person, then the goal will not fully match the features on the probe, and so v can reprobe upwards in order to fully satisfy the probe. Since all of the features are checked on the verb, then 1st person agreement is realised.[37]

---

37 If there is no first person argument in the clause, then the morphology of the verb will reflect the features that have been checked. That is, if only PARTICIPANT and PERSON have been checked, then 2nd person agreement will be shown. Similarly, if there are only third person arguments, then only PERSON will be checked, and thus third person morphology realised on the verb.

(113)

```
        DP₁                                    DP₁
      Speaker                                Speaker
     Participant                            Participant
       Person                                Person
              v          DP₂                        v            DP₂
           Speaker    Participant                Speaker₁     Participant
          Participant   Person                  Participant₂    Person
            Person                               Person₂
```
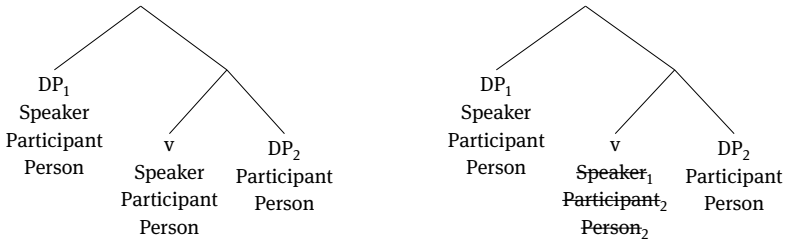
3.3.3 Reverse Agree: Wurmbrand (2012c)

Thirdly, Wurmbrand (2012c) argues for agreement looking upwards on the basis of parasitic participle constructions in Germanic. These constructions are like the following:

(114)   a. Norweigian, Wiklund (2001, p. 201)

         Jeg hadde villet   lest/lese   boka
         I   had   want.PART read.PART/read.INF book.DEF

         'I would have liked to read the book.'

     b. Frisian, den Dikken and Hoekstra (1997, p. 1058)

         hy soe   it dien/dwaan   wollen   ha
         he would it do.PART/do.INF want.PART have.INF

         'He would have liked to do it.'

In such constructions, the participle form can be used when one would otherwise expect an infinitive. In fact, the semantics of such constructions is that of an infinitive — that is, there is no semantic important of the perfective morphology on the participle — and infinitives can always alternate with an infinitive here, as shown in the examples. The question is then how to account for the vacuous perfect morphology on the embedded verb. Wurmbrand (2012b) argues that the lower verb carries an uninterpretable, unvalued T feature that needs to receive a value from T. Where the embedded verb is spelt out as an infinitive, Wurmbrand assumes that the lower clause has a T head that carries an interpretable T feature valued for INFINITIVE.

(115)

```
                          ╱╲
                         ╱  ╲
                        ╱    ╲
                   Aux ╱      ╲
                  iT:perf      ╲
                        ╲       ╲
                         V_mod   ╲
                         uT:perf  ╲
                              ╲    ╲
                               Inf  ╲
                               iT:inf╲
                               ↑  ╲   ╲
                               │   V    ···
                               │  uT:inf
                               └──*uF:perf
```
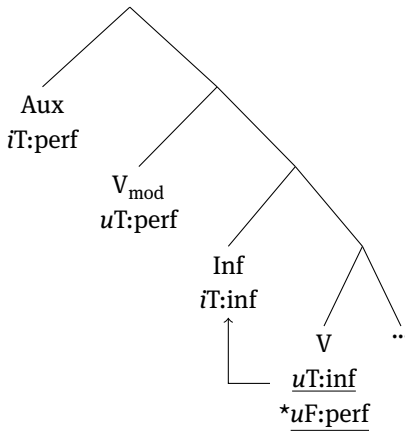
There is also the option that lower clause is truncated and the lower clause lacks a T head. In this case, the embedded verb gets a value from the higher T head, and so the T head is valued as perfect. Importantly, as there is no semantic effect of this, then this argues against a hidden perfect head in the lower clause.

(116)

```
                          ╱╲
                         ╱  ╲
                        ╱    ╲
                   Aux ╱      ╲
                  iT:perf      ╲
                  ↑     ╲       ╲
                  │      V_mod   ╲
                  │      uT:perf  ╲
                  │          ╲    ╲
                  │           V    ···
                  │          uT:perf
                  └──────────
```
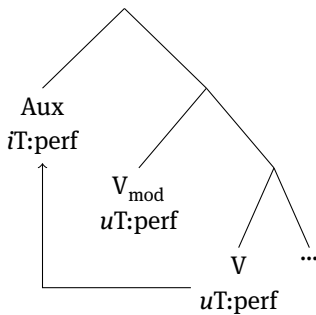
As Wurmbrand notes, if one were to assume a traditional downwards Agree mechanism, then it must be the case that the embedded verb has moved above the matrix T. Whilst this is a possible analysis of Frisian, due to the head final nature, the Norwegian data argue against this, given that the language is not head final. Thus, the direction of valuation is such that the head carrying the valued feature must be able to transmit this downwards in the structure. That is, the unvalued features in effect 'looks upwards' in the structure for a value.

3.3.4 Semantically Oriented Agreement: Zeijlstra (2012)

The final argument comes from Zeijlstra (2012), on the basis of more semantically oriented phenomena like negative concord and sequence of tense. This approach is related to Wurmbrand's Reverse Agree approach, but differs in crucial ways and is often known as Upward Agree. Zeijlstra (2012) points out a number of problems for the standard model of Agree (i.e. that espoused by Chomsky 2000; Chomsky 2001), both conceptual and empirical, but I will focus only on these two here (for further discussion, I refer the reader to Zeijlstra's paper).

Negative concord is the phenomenon whereby a single instance of negation is reflected on numerous elements, such as the following from Czech:

(117) Zeijlstra (2012, p. 501)

    a. Dnes nkido *(ne)volá
       today n-body NEG.calls
       'Today nobody is calling.'

    b. Milan nevidi   nikoho
       Milan NEG.sees n-body
       'Milan doesn't see anybody.'

    c. Dnes nkido *(ne)volá nikomu
       today n-body NEG.calls n-body
       'Today nobody is calling anybody.'

As can be seen from the examples, there is only one instance of negation expressed in the sentences. For instance (117b) does not express that *Milan sees someone*, as would be expected if both of the negative elements were interpreted (cf. English *Milan doesn't see nobody*). Thus, there seems to be only one instance of semantic negation in the clause. However, given that many elements show the marking of negation, then it seems as though there is some process of agreement whereby the different elements that are showing negation are getting a NEG feature from the negative head. Zeijlstra further argues, based on work in Zeijlstra (2004), that the head that carries negation in such languages is a negative operator that is high in the clause, something akin to the following structure (Zeijlstra, 2012, p. 501):

(118) [*Dnes Op$_{neg}$* [$_{TP}$ *nkido nevola nikoho*]]

If this structure is accurate, then it implies that agreement must be able to look upwards in the structure.[38]

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[38] The underlining in the tree indicate probes/targets of agreement.

(119)
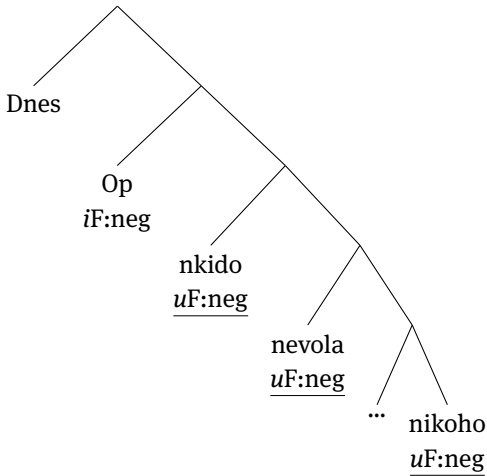
The high position of negation is motivated, amongst other observations, by the fact that indefinite subjects take scope underneath negation. Were the negation lower in the structure, then it would require reconstruction of the subject underneath this position, which Zeijlstra claims is not attested for any other indefinite subjects.

Another argument for Agree to be able to take a value from a higher element comes from Sequence of Tense, whereby in the following Dutch and English examples, the value of tense on the lower verb is determined by the tense of the higher clause. That is, the past tense in the following examples does *not* mean that the event of being sick was in the past at the time of the utterance. Rather, it is compatible with Mary being sick at the time of the utterance.

(120)   a.   John said that Mary was ill.

   b.   Jan   zei   dat   Mary ziek was
        John said that Mary sick was
        'John said that Mary was ill.'

Given the redundancy of tense in the lower clause, then it seems as though the tense value is taken from the higher clause. If so, then again, agreement must be able to look upwards in the structure, as there seems no plausible analysis where the verb of the lower clause at any points c-commands T in the higher clause.

(121)

```
           ╱╲
          ╱  ╲
    T:past    ╲
         ╱╲    ╲
        ╱  ╲    ╲
    V:___   ╲    ╲
         ╱╲  ╲    ╲
       subj ╲  ╲    ╲
            ╱╲  ╲
           ╱  ╲
       V:___   x
```

Based partially on the above, Zeijlstra proposes to define Agree as follows:

(122)   Agree: α can Agree with β iff:

   a.   α carries at least one uninterpretable feature and β carries a matching
        interpretable feature.

   b.   β c-commands α

   c.   β is the closest goal to α

The crucial part of th definition for our purposes is the clause in (122b), which requires the goal to c-command the probe. This ensures that the agreement relation looks upwards in the structure.

   As with the arguments presented above for the timing of agreement, these arguments are not without controversy. In an exchange of papers, Preminger (2013), Bjorkman and Zeijlstra (2018), and Preminger and Polinsky (2015), the issue of upwards only Agree was discussed in a number of cases, with Preminger (2013) and Preminger and Polinsky (2015) arguing that an upwards only model is not tenable, in part because of data like the following, where an embedded topic controls agreement on the matrix verb:

(123)   Tsez, Polinsky and Potsdam (2001, p. 606)

   a.   eni-r   ŭzi   ∅-āy-ru-łi   ∅-iy-xo
        mother-DAT boy.I-arrive-PAST.PART-NMZ I-know-PRES
        'The mother knows that as for the boy, he arrived.'

   b.   eni-r   už-ā   magalu   b-āc'-ru-łi
        mother-DAT boy-ERG bread.III.ABS III-eat-PAST.PART-NMZ
        b-iy-xo
        III-know-PRES
        'The mother knows that as for the bread, the boy ate it.'

In both examples, the gender agreement on the matrix verb has come from the absolutive argument in the lower clause. Given the word order, there is no good

argument to be made that the object has raised into the higher clause (at least overtly), and Polinsky and Potsdam (2001) present a range of arguments showing that there is no proleptic object in the matrix clause either. Rather, their analysis is that the absolutive topic covertly raises to the left periphery of the matrix clause, where it is accessible to (downward) Agree. The ins and outs of the analysis of Polinsky and Potsdam (2001) are not relevant, but what is important to take away here is that examples such as these paint a strong argument against agreement being upwards only. Bjorkman and Zeijlstra (2018) answer this argument, showing that such cases of information structure agreement *can* be handled in a model of agreement that relies on upwards Agree. They argue for a model of Agree that mixes feature checking and valuation, such that the initial linking of elements must be done in an upward fashion, but then copying of features can be transmitted downwards, potentially piggybacking on a chain of established relations.

3.3.5 Interim Summary

In this section I have discussed four arguments that show that agreement must in part be able to look upwards in the structure. The first two of these arguments, from Baker (2008) and Béjar and Rezac (2009) argue for a hybrid model of Agree where both directions are possible. For Baker (2008) this is subject to parametric variation: languages can choose whether agreement looks only upwards, downwards, or both. For Béjar and Rezac, upwards agreement is only resorted to if downwards agreement fails to fully satisfy the requirements of the probe.

The latter two arguments came from work which advocated for a unidirectional model of Agree, and it is clear that there are clear arguments for Agree to operate in a manner whereby the probe needs to get a value from a higher element. In this respect, the arguments from binding, negative concord and sequence of tense are particularly strong to my mind.[39] With instances of purely phi-agreement, the picture however seems to be more mixed; the participle agreement facts of Wurmbrand (2012c) favour strongly the ability of elements to take a value from a higher goal, however, it is difficult to account for data like Tsez in (123) without allowing for the ability to take a value from an element lower in the structure. In the model of Agree that I will argue for in the next two chapters, I will therefore assume that agreement can look both upwards and downwards in the structure.

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39 Yet, it should be noted that there are plenty of alternative accounts. Work such as Kratzer (2009) and Rooryck and Wyngaerd (2011) have also argued for a downwards looking model of Agree on the basis of binding.

3.4 Discussion and conclusions

Throughout this chapter I have discussed two major current debates on the formulation of Agree, namely the timing of the mechanism and the direction of agreement, and shown that there is good reason to believe that agreement is (i) composed of a two-step operation where the first part of the operation takes place in the syntax, and the second part takes place in the postsyntax; and (ii) feature values should be able to be copied from elements that c-command and are c-commanded by the probe. In the following two chapters, I will argue then for the following model of Agree:

(124) Agreement by Probe with Goal proceeds in two steps:
  a. AGREE-LINK: a probe has unvalued φ-features that trigger Agree with a goal (possibly more than one). The result is a link between probe and goal.
     i. The probe and the goal must be in a relation of c-command.
  b. AGREE-COPY: The values of the φ-features of the goal are copied onto probe linked to it by AGREE-LINK.
     i. if AGREE-COPY happens at the point of transfer, this requires that goal c-command the probe.

Though I will justify this model in more detail in the following two chapters, it is worthwhile noting three points. Firstly, directionality of Agree is *only* enforced for where AGREE-COPY happens at the point of transfer. That is, there is not sense in which AGREE-LINK must look either up or down, but rather is free to look either way. This is not a deliberate exclusion, but rather the phenomena that I will look at do not argue one way or the other, and so I leave it open here.

Secondly, this model, adapted from Arregi and Nevins (2012) is, I believe, unique amongst the proposals for a two-step agreement because it does not restrict AGREE-COPY to the postsyntactic component, but as it *can* apply at the point of transfer, it means that AGREE-COPY in effect can be the last stage of a syntactic derivation. This is important, because the phenomenon of interest, semantic agreement, requires agreement with the *i*Fs of the goal. Given that, by assumption (see chapter 2), *i*Fs are not present in the morphological component, then any agreement that has happened before then which still has some morphological reflex, must have taken place at some point in the syntactic component.[40]

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40 It can't of course be an operation that takes place along the LF-branch of the grammar, as there would then be no morphological spell-out.

Finally, whilst the clause (124.b.i) requires c-command between probe and goal in order for AGREE-LINK to be successful, no such qualification is made for AGREE-COPY. This is not to say that agreement takes place purely without c-command between probe and goal. Rather, this is formulated this way so as to allow for closest conjunct agreement in section 3.2.1. That is, c-command between probe and goal is possible, but not necessary for AGREE-COPY to be successful. With these remarks in mind, I now turn to fleshing out the arguments in favour of (124).

4 Agreement mismatches and the Agreement Hierarchy

In this chapter and the next we will look at semantic agreement, in order to build the argument for the model of agreement just outlined. The focus will be on instances of where semantic agreement is not possible, though one might expect it.

There will be two types of restrictions. In the first, the focus of this chapter, attention will be paid to contrasts like the following:

(125) a.   This government is embarrassing themselves.
       b.   * This government are embarrassing itself.

Specifically, what will be the focus of our attention are the possible and impossible mismatches between targets when agreeing with morphological and semantic agreement. We can see that in (certain dialects of) English, it is possible that a CNP controls semantic agreement on the anaphor whilst morphological agreement is shown on the verb. Yet the converse is not possible.

In the next chapter, we will focus on contrasts like the following:

(126) a. A northern team is likely to be in the final. $\exists >$ likely / likely $> \exists$
       b. A northern are likely to be in the final. $\exists >$ likely / *likely $> \exists$

The difference to the previous example is that here there is only one target of agreement, the verb, but there are restrictions on when it can control semantic agreement. In that chapter, I will look in detail at three main case studies: collective nouns in English, quantified numeral phrases in Slavic, and conjunction agreement.

Before beginning this discussion, it is worth making clear how semantic agreement arises. The answer is fairly easy at this point, based on what was laid out in Chapter 2. Specifically, when a target shows semantic agreement, it means that the target has taken a value from the relevant iF of the controller. Conversely, when a target shows morphological agreement, this means that the value has come from the uF of the controller.

Yet, things are of course not always that simple. Not every language shows hybrid agreement with potential hybrid nouns. In Dutch, for instance, CNPs do not show plural agreement.

(127)   * Mijn ploeg hebben   gewonnen.
          my   team have.PRES.3.PL won.PAST
          intended: 'my team have won.'

There are two ways of looking at this. Firstly, one could say that in Dutch, the CNP does not have *i*#:plural on the CNP, and so plural agreement never has the chance to arise. Yet, this would imply a different semantics for the group reading between Dutch and English. This may be desirable, but further research would be needed, and I will not do that here. On the other hand, one could say that the *i*# for CNPs in English is active for agreement, idiosyncratically in English, but not in Dutch. There isn't much to choose between the two, and given that feature activity will play a role in the analysis in this chapter, I will assume the latter to be the case. Specifically, I will assume the following to be true

(128)   A feature can only enter into an Agree relation if it is active.

At the moment, (128) raises more questions than it answers, such as (i) are features active or inactive by default; (ii) can an inactive feature become active; (iii) can an active feature become inactive; and (iv) does activity just allow the possibility to agree, or are there further consequences of being (in)active? I will answer these questions below. Before we get there, I will outline the scope of the issue to be addressed in this chapter.

4.1 Restrictions on semantic agreement with CNPs

4.1.1 Known limits on semantic agreement

With this in mind, I turn to the restrictions on semantic agreement. There are two important points at the outset. Firstly, the ability to show semantic agreement is not something that is determined at the level of a language, such that all potential hybrid nouns will show the same pattern, but rather, hybrids arise either idiosyncratically on particular nouns (see Hebrew *be'alim* below), or they arise from natural classes, such as CNPs in English, or profession nouns in Russian. I will not attempt to explore the question of how hybrid nouns form, and allow for semantic agreement here.

Secondly, if a language shows different classes of hybrid nouns, then they do not necessarily need to act alike. To see this, consider English. We have established that CNPs in English allow for semantic agreement on the verb, with familiar examples below:

(129)   a.   Our team are winning this year.

b.   The government are extending the measures.

English also has a class of imposter constructions, which we discussed earlier. With these nouns, we can see that semantic agreement is *not* possible on the verb:

(130) a. * Papa am coming!

   b. * Mama am making breakfast for you.

Both of these classes fit the pattern of being hybrid nouns — that their semantics does not line up with their morphology — but they have distinct agreement patterns with regards to verbs. Thus, we cannot say that if a language allows semantic agreement on some target of agreement, say, verbs, then it will allow this for all hybrids.

   Thirdly, not all potential targets of agreement will show semantic agreement with hybrid nouns. For CNPs, we can see this in the following. It is grammatical for both verbs and anaphors to show either semantic or morphological agreement.

(131) a. Our team are advancing to the next round.

   b. The team proved themselves to be strong contenders.

However, although there is a clear morphological difference between singular and plural demonstratives in English (*this~these*, *that~those*) there is never an alternation with hybrid CNPs. Plural agreement is never possible with the singular form (which would be the hybrid agreement), but *only* when the CNP is morphologically plural:

(132) a.   This committee is making a decision.

   b. * These committee are making a decision.

   c.   These committees are making a decision.

As Elbourne (1999) and Sauerland and Elbourne (2002) note, the restriction on plural agreement with demonstratives holds even when the hybrid is showing plural agreement on the verb:

(133) This committee are making a decision.

Therefore, we are to conclude that demonstratives do not show semantic agreement with CNPs in English, as will be discussed below.

   Finally, it should be noted that not all hybrids within the same class will show an entirely consistent pattern with regards to semantic agreement. This is shown especially clearly in Levin (2001, p. 130), who discusses the frequencies of semantic agreement with CNPs in English and shows that *commission, council* and *government* (amongst others) control singular agreement over 80% of the time in written British English, compared to less than 41% for *couple, majority* and *staff*. This is shown in Table 2.2 above.

Tab. 4.1: Logically possible combinations with multiple targets

Target 1	Target 2
Morphological	Morphological
Semantic	Semantic
Morphological	Semantic
Semantic	Morphological

Tab. 4.2: Actually attested combinations with multiple targets

		Target 2	
		Morphological	Semantic
Target 1	Morphological	✓	✓
	Semantic	✗	✓

4.1.2 Restrictions with multiple targets

The focus of this chapter will be on restrictions with multiple targets, specifically, what kinds of matches and mismatches are allowed with a hybrid. Hybrid nouns, as we have seen, bring with them the ability to control two different types of agreement on certain elements within the sentence. If we complicate the picture further, and add in multiple different targets of agreement we then open the possibility of mismatches, where one of the targets takes semantic agreement and the other morphological. Supposing that there are two targets of agreement with a hybrid noun, then in principle four configurations are possible (Table 4.1). However, as we will discuss in this chapter, hybrid nouns consistently show a restricted range of possibilities, where mismatches across targets are allowed, but only in one direction. This produces a 3/4 effect, where matching agreements are allowed, but only one of the mismatches (Table 4.2) is possible. The effect is seen in the lower left cell in Table 4.2. At this point, it is not important how one defines what constitutes Target 1 and Target 2: we will discuss and analyse a range of options as we proceed, but the 3/4 effect itself is at this point crucial. An example that we will discuss at length is seen in English:

(134)   a.   The government has embarrassed itself with this nonsense.

  b.   The government have embarrassed themselves with this nonsense.

  c.   The government has embarrassed themselves with this nonsense.

  d.   * The government have embarrassed itself with this nonsense.

4.2 Agreement Hierarchy

At the beginning of this chapter, I said that semantic agreement arises because the (relevant) *i*F on the hybrid noun is active for agreement. Yet it is not the case that it will show agreement on all targets. Above, it was shown how CNPs show semantic agreement on verbs and anaphors but not attributives. Imposters do not show semantic agreement on verbs. These data also show that once an *i*F is deemed active on a noun, it cannot be considered active for all targets. There is a certain degree of discrimination regarding the probe then.

As it turns out, the discrimination is not a free-for-all, but rather which targets show semantic agreement with a hybrid noun, and which targets do not is to some degree predictable based on the target. In a series of work (Corbett, 1979; Corbett, 1983; Corbett, 1991; Corbett, 2012, a.o.), Greville Corbett has shown that there exists a scale of targets that places them relative to one another in terms of their openness to semantic agreement within a particular language. He terms this scale 'The Agreement Hierarchy', and for a number of reasons it is of particular interest to this book. The Agreement Hierarchy can be visualised below:

(135) attributive — predicate — relative pronoun — personal pronoun
        ← morphological agreement   semantic agreement →

Essentially, what it says is that targets on the right of the scale are more likely targets of semantic agreement than targets on the left. Furthermore, as will be shown, the positioning of the elements on the scale allows for the generation of implicational statements regarding where semantic and morphological agreement will be allowed. However, there are a number of different senses in the Agreement Hierarchy is true, which I will go through in more detail in the following subsections.

4.2.1 Target level

Firstly, it can be seen in terms of which targets show semantic agreement to be possible to begin with. I will refer to this sense as the target-level. Take CNPs once more, we have seen above that CNPs show semantic agreement on both personal pronouns (for this book, I treat anaphors as part of this group) and on predicates (verbs), but not on demonstratives. Thus, English CNPs show the following pattern, with regards to where semantic agreement is allowed, where shading of a cell refers to where semantic agreement is possible. What is *not* possible however, is for attributive elements to show semantic agreement. Demonstratives, as noted above, never show semantic agreement.

Tab. 4.3: Targets that show semantic agreement with CNPs

Attributive	Predicate	Relative Pronoun	Pronoun
	✓	✓	✓

Tab. 4.4: Targets that show semantic agreement with English singular Imposters

Attributive	Predicate	Relative Pronoun	Pronoun
			✓

Thus, the Agreement Hierarchy shows that elements to the right are better targets of semantic agreement than those on the left. For (singular) imposters on the other hand the table would look as in Table 4.4

As Corbett has shown, from The Agreement Hierarchy it is possible to draw implicational statements that describe where semantic agreement will be possible in a particular language. Effectively, as Corbett has pointed out, if semantic agreement is possible on some target, then all targets to the right of that target on the hierarchy will also show semantic agreement, but not necessarily elements to the left. Conversely, if morphological agreement is possible on a particular target, then all elements to the left of that target will also show morphological agreement, but not necessarily targets to the right. Grammatical patterns are shown in Table 4.5, and ungrammatical patterns shown in Table 4.6.

4.2.2 Corpus level

A second sense in which the Agreement Hierarchy holds is at the level of a corpus. What this means is that the rate of semantic agreement across a corpus of data will be higher for those targets on the right of the scale when compared to those on the left. This effect can be very easily shown by CNPs in English, as has been documented carefully by Levin (2001).

Tab. 4.5: Possible Agreement Hierarchy patterns regarding possibility of semantic agreement

Attributive	Predicate	Relative Pronoun	Pronoun
✓	✓	✓	✓
	✓	✓	✓
		✓	✓
			✓

Tab. 4.6: Some impossible Agreement Hierarchy patterns regarding possibility of semantic agreement

Attributive	Predicate	Relative Pronoun	Personal Pronoun
✓			
		✓	
✓		✓	
✓	✓	✓	
✓			✓

Tab. 4.7: Plural versus singular agreement in American, Australian and British English

	AmE				BrE				AusE			
	Singular		Plural		Singular		Plural		Singular		Plural	
	N	%	N	%	N	%	N	%	N	%	N	%
Verbs	3149	97	84	3	2260	77	683	23	1890	90	216	10
Rel Pron.	537	76	165	24	417	59	293	41	367	74	131	26
Per pron.	941	68	442	32	477	44	616	56	457	61	289	39

In Table 4.7, one can see that in every dialect of English the rate of plural (here, semantic) agreement rises with each of target on the hierarchy. That is, the rate of plural agreement with verbs is lower than for relative pronouns, which is in turn lower than that seen with personal pronouns. The data in Table 4.7 come from newspapers in different English speaking countries: The Sydney Morning Herald (Australian English), The New York Times (American English) and The Independent (British English).

Thus, the *frequency* with which one finds semantic agreement follows Corbett's Agreement Hierarchy. Elements to the right show more frequent semantic agreement than those on the right.

It is not just in written sources that the corpus level Agreement Hierarchy effects holds, but rather it is consistently found in spoken language too. In this regard, Levin gives data from spoken British and American English, using data gleaned from the British National Corpus and the Longman Corpus of Spoken American English, which I give in Tables 4.8 and 4.9, compared to written sources of the corresponding dialects.

These data show that although the overall frequencies of plural agreement with CNPs is subject to variation, the Agreement Hierarchy pattern remains constant throughout. In all four sources, is the level of plural agreement highest with personal pronouns, lowest with verbs, with relative pronouns coming in the middle.

Tab. 4.8: Plural versus singular agreement in written and spoken British English

| | Independent | | | | BNC | | | |
| | Singular | | Plural | | Singular | | Plural | |
	N	%	N	%	N	%	N	%
Verbs	2260	77	683	23	1414	68	671	32
Relative Pronouns	417	59	293	41	115	42	162	58
Personal Pronouns	477	44	616	56	170	28	437	72

Tab. 4.9: Plural versus singular agreement in written and spoken American English

| | New York Times | | | | LSAC | | | |
| | Singular | | Plural | | Singular | | Plural | |
	N	%	N	%	N	%	N	%
Verbs	3149	97	84	3	476	91	48	9
Relative Pronouns	537	76	165	24	11	26	32	74
Personal Pronouns	941	68	442	32	14	6	225	94

4.2.3 Sentence level

The final level at which semantic agreement is seen comes from mismatches within a single clause. Here there are three different types depending on where the elements lie in the structure compared to the controller of agreement. In the following I will show mismatches where:
1. Both targets of agreement are *external* to the controller DP.
2. One target of agreement lies *internal*, whilst the other lies *external* to the controller DP.
3. Both targets of agreement lie *internal* to the controller DP.

These three types can be visualised below:

(136)   *Both targets external to the controller*
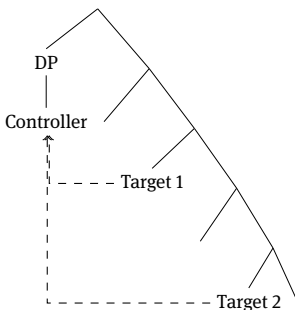
(137) *One target internal to the controller, one target external*
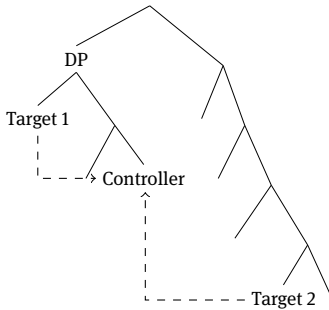
(138) *Both targets internal to the controller*
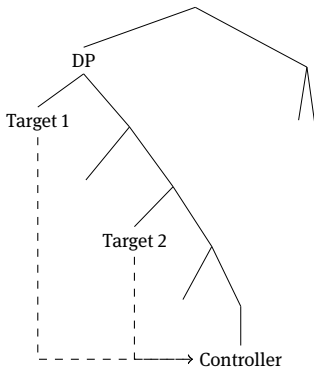
These patterns that will form the basis of the bulk of the remaining discussion in this chapter.

4.2.3.1 DP-External – DP-External

The first type of pattern that we will consider comes from English.

(139) a. The government **has** offered **itself** up for criticism
        (with this economic policy).

   b. The government **have** offered **themselves / each other** up
      for criticism.

   c. The government **has** offered [?]**themselves / each other** up
      for criticism.

   d. ⋆ The government **have** offered **itself** up for criticism.

Both of the targets of agreement are external to the controller, in that neither of them are contained within the controller DP. From the above, we can see that it

is grammatical that both targets show morphological (singular) agreement, and both show semantic (plural) agreement. It is also possible that one of the targets shows morphological whilst the other shows semantic agreement, and so the targets mismatch according to what type of agreement they show. Importantly, this mismatch can only go one way, showing that mismatches between targets are possible, but restricted. The sentence is grammatical if the verb shows morphological agreement and the anaphor semantic (139c), but ungrammatical if this is reversed (139d). Thus, we see the 3/4 pattern from Table 4.2 in that only one of the combinations is ungrammatical.

4.2.3.2 DP-Internal – DP-External

Instances where one of the targets is internal to the controller DP and the other is external to the controller DP come from Russian (Corbett, 1983; Pesetsky, 2012) and Hebrew (Landau, 2016).

Firstly, in Russian, recall that profession nouns are grammatically masculine but can be semantically feminine if the referent is female. They allow for semantic agreement on both verbs and attributive elements. Mismatches are allowed only if the verb shows feminine agreement and the adjective masculine agreement (140c), but not the other way around (140d):

(140) a.   Novyj   vrač skazal.
            new.MASC doctor said.MASC
            'The new doctor said.'

       b.   Novaja   vrač skazala.
            new.FEM doctor said.FEM
            'The new doctor said.'

       c.   Novyj vrač skazala.
            new.MASC doctor said.FEM
            'The new doctor said.'

       d. * Novaja   vrač skazal.
            new.FEM doctor said.MASC
            'The new doctor said.'

Similarly, with the Hebrew hybrid *be'alim*, it is possible to have an adjective that agrees in number with the noun, as well as the verb. Recall for *bealim*, the noun is grammatically plural but can refer to a single owner, in which case it is semantically singular. When this configuration arises, the familiar 3/4 effect emerges. Namely, the verb can show the semantically motivated singular agreement whilst the adjective shows the morphologically motivated plural agreement (141c). The converse however is not possible (141d).

(141) a. ha-be'al-im   ha-kodem   maxar   et ha-makom lifney
          the-owner-PL the-previous.SG sold.3.SG ACC the-place   before
          šana
          year

          'The previous owner sold the place a year ago.'

      b. ha-be'al-im   ha-kodm-im   maxru   et ha-makom lifney
          the-owner-PL the-previous-PL sold.3.PL ACC the-place   before
          šana
          year

          'The previous owners sold the place a year ago.'

      c. ? ha-be'al-im   ha-kodm-im   maxar   et ha-makom lifney
          the-owner-PL the-previous-PL sold.3.SG ACC the-place   before
          šana
          year

          'The previous owner sold the place a year ago.'

      d. * ha-be'al-im   ha-kodem   maxru   et ha-makom lifney
          the-owner-PL the-previous.SG sold.3.PL ACC the-place   before
          šana
          year

          intended: 'The previous owner(s) sold the place a year ago.'

4.2.3.3 DP-Internal – DP-Internal

Finally, we see cases whereby there are multiple targets that undergo agreement with a hybrid controller. Again, here, and perhaps quite surprisingly, a mismatch between sentences arises. In Russian for instance, Pesetsky (2012) shows that with profession nouns like *vrač*, if there are two adjectives, it is possible for there to be a mismatch in the following, where the *nov-* shows morphological agreement, but *interesn-* shows semantic agreement (142a). The converse is not possible (142b).

(142) (Pesetsky, 2012, p. 38)

      a. ? U menja očen' interesn-aja   nov-yj
          by me   very   interesting-FEM.NOM.SG new-MASC.NOM.SG
          vrač
          doctor-NOM.SG

          'I have a very interesting new (female) doctor.'

b. * U menja očen' interesn-yj   nov-aja
    by me   very interesting-MASC.NOM.SG new-FEM.NOM.SG
    vrač
    doctor

    'I have a very interesting new (female) doctor.'

Such patterns are not confined to Russian, but also arise in Hebrew with the noun *be'alim* which was discussed above. Landau (2016) shows that with this noun, construed on the reading where *be'alim* refers to a singular owner, it is possible to have one of the adjectives show singular agreement whilst the other shows morphological agreement, as seen in (143a). The adjective that is closest to *be'alim* is this time the one that shows morphological agreement, whereas the one further away shows semantic agreement. If this order is reversed, then the sentence becomes ungrammatical (143b). Like with the Russian example in (142a) there is a slight degradation of grammaticality reported in the mismatch in (143a), however, Landau reports that the sentence is broadly grammatical, and is in stark contrast to (143b), which is clearly more sharply degraded.

(143)   Landau (2016, p. 1005)

a. ? ha-be'alim ha-pratiyim   ha-axaron šel ha-tmuna   haya
       the-owner the-private.PL the-last.SG of the-painting was.3SG
       ha-psixo'analitika'i Jacques Lacan
       the-psychoanalyst Jacques Lacan

    'The last private owner of the painting was the psychoanalyst Jacques Lacan.'

b. * ha-be'alim ha-prati   ha-axron-im šel ha-tmuna
       the-owner the-private.SG the-last-PL of the-painting
       haya/   hayu ha-psixo'analitika'i Jacques Lacan.
       was.3.SG/ was.PL the-psychoanalyst Jacques Lacan

    intended: 'The last private owner of the painting was the psychoanalyst Jacques Lacan.

Finally, we see an example in Chichewa of two attributive elements agreeing with a hybrid noun where one mismatch is allowed, and another is not. This time, the agreement is for gender, and the morphological agreement is class 9 agreement, whilst recall from the earlier discussion that class 1 agreement is taken to be semantic agreement. The two attributive elements in this paradigm are the possessive *y/w-athu* and the ordinal number *y/w-oyamba*. As can be seen from below, and as should be familiar by now, sentences where both of the attributive elements show matching agreements are grammatical. A mismatch between the two is tolerated when the possessive shows morphological agreement and the posses-

sive shows semantic agreement (173c), whilst a mismatch where the ordinal shows semantic agreement and the possessive semantic is ungrammatical (173d).

(144)   Corbett (1991, p. 239)

   a.   ngwazi y-athu y-oyamba
        hero   9-our   9-first
        'Our first hero.'

   b.   ngwazi w-athu w-oyamba
        hero   1-our   1-first
        'Our first hero.'

   c.   ngwazi y-athu w-oyamba
        hero   9-our   1-first
        'Our first hero.'

   d.   * ngwazi w-athu y-oyamba
        hero   1-our   9-first
        intended: 'Our first hero.'

Before moving on, it is worth noting that in all three cases here, when there is a mismatch the one that is tolerated is where the attributive that is closer to the hybrid noun shows morphological agreement and the one that shows semantic agreement is the one that is further away. It is tempting — and I'm sure possible — to conclude that there should be a linear explanation here. As noted in Chapter 3, whilst agreement has been shown to be mostly sensitive to *structural* relations, rather than *linear* ones, there do seem to be fairly clear instances of agreement being sensitive to linear relations and not hierarchical. As discussed earlier, there remains some controversy over whether to draw this conclusion, but at least to me, it seems clear that in restricted circumstances, agreement can be determined according to linear effects (see in particular Willer Gold et al. 2017). Though such an account should be possible in principle, it is not clear *why* linearity should play a role here. Where linearity based agreement is clearly motivated is with conjuncts, and there it is arguable that it is resorted to because the unique nature of a conjunction does not clearly resolve what the features of the ConjP should be. Thus, agreement can look inside the ConjP if this is not clear (Marušič, Nevins, and Badecker, 2015).

Rather than resorted to a linear explanation, I will show below that we can explain these contrasts using the same tools that will allow us to explain the other sentence level mismatches seen in sections 4.2.3.1 and 4.2.3.2. I will leave it to the reader to judge whether this is preferable to accounting for these based on linear order.

Tab. 4.10: Sentential level mismatches and the Agreement Hierarchy

	Attributive	Verbal	Pronominal	Example
English		Morphological	Semantic	(139c)
Russian	Morphological	Semantic		(140c)
Hebrew	Morphological	Semantic		(141c)
*English		Semantic	Morphological	(139d)
*Russian	Morphological	Semantic		(140d)
*Hebrew	Morphological	Semantic		(141d)

4.2.4 3/4 patterns and the Agreement Hierarchy

With the patterns classified into groups according to whether they involve DP-internal or DP-external elements, we should return to them and see how they fare with regard to the Agreement Hierarchy. In all the examples in section 4.2.3.1 and 4.2.3.2, we can see that, were the Agreement Hierarchy somehow involved in regulating sentence level mismatches, the patterns found are exactly what we would expect to find. This is summarised in Table 4.10, where the top three rows represent grammatical instances of mismatches and the bottom three represent ungrammatical instances of mismatches. The columns of the table are arranged such that, from left to right, they follow the Agreement Hierarchy as given in (135).

It is clearly tempting to try to implicate the Agreement Hierarchy into how 3/4 patterns are derived. For instance, it is possible to formulate a constraint along the lines of (145):

(145) **Condition on Agreement Mismatches**
   If a hybrid noun controls agreement on two or more controllers, agreement values on the targets can diverge as long as:
   – if semantic agreement is on a target of type X, then all targets that lie to the right of X on the Agreement Hierarchy also show semantic agreement; AND
   – if morphological agreement is on a target of type X, then all targets that lie to the left of X on the Agreement Hierarchy also show morphological agreement.

This condition will ensure that mismatches are tolerated in the right way according to the Agreement Hierarchy. To illustrate, consider the English mismatches:

(146) a.   The government **has** offered [?]**themselves / each other** up for criticism.
   b.   * The government **have** offered **itself** up for criticism.

(146a) would be judged as grammatical according to (145), because the pronominal element shows semantic agreement and condition (a) and (b) are trivially satisfied. Similarly, condition (b) is trivially satisfied. Both of these are violated in (146b). However, (145) does nothing beyond restating the generalisation that we are seeking to explain and is clearly not explanatory.

More seriously, it is also not the case that *all* mismatches follow what would be expected from the Agreement Hierarchy. The last category for instance whereby both agreement targets are internal to the DP have both elements coming from the 'attributive' slot on the Hierarchy, with no obvious way to explain why attributive elements should differ from one another. As it is formulated in (145), one might expect that either a 4/4 paradigm or a 2/4 paradigm would emerge: either any mismatch is allowed or no mismatch is allowed internal to the same slot. The 3/4 effect is therefore surprising.

If we restrict our focus to the data from Chichewa, one could be tempted to refine the hierarchy by making a further subdivision within the attributive region such that possessives are further to the left than ordinals, which would bring the data into line with (145). Suppose the following:

(147)   Attributive — Predicate —— Relative Pronoun — Personal Pronoun

                    Possessive — Ordinal
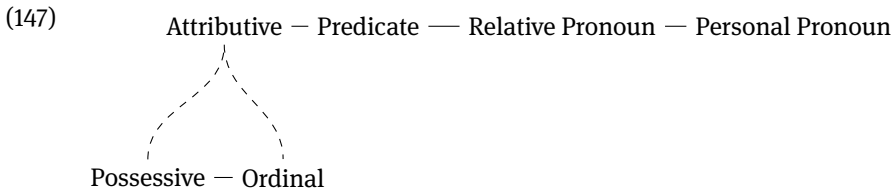
Whilst this indeed is an *ad hoc* solution to the problem, it is notable that Corbett (1983) already divides the 'predicate' region in the hierarchy into a Predicate Hierarchy itself, so it is not without precedent.

(148)   Attibutive — Predicate —— Relative Pronoun — Personal Pronoun

                    Finite verb — Participle —— Adjective —— Noun
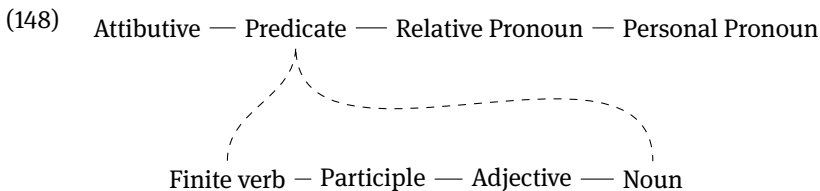
We could simply combine the two, which would superficially give us what we need:

(149)

$$
\begin{array}{c}
\text{Possessive} — \text{Ordinal} \\
\diagdown\qquad\diagup \\
\text{Attibutive} — \text{Predicate} — \text{Relative Pronoun} — \text{Personal Pronoun} \\
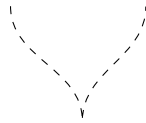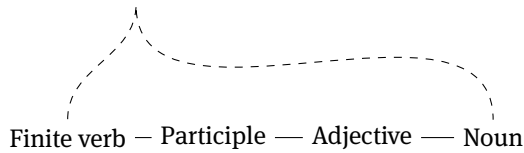\diagup\cdots\cdots\cdots\cdots\cdots \\
\text{Finite verb} — \text{Participle} — \text{Adjective} — \text{Noun}
\end{array}
$$

Yet, it remains the case that we are still not explaining anything here, rather restating the generalisation in different terms. There is a more serious problem however, in that it is not possible to treat all 3/4 patterns this way. Whilst 'ordinal' and 'possessive' do form different classes of attributive items and so the Chichewa cases can be explained away (using the term generously), in the Russian and Hebrew examples the two attributive items come from the *same* class, that is, adjectives. Thus, we cannot resort to further decomposing the attributive slot here, given that the adjectives will fall under the same slot.[41] So, if we are to have a theory that unifies all of the above 3/4 effects, then we need to look beyond formulating a constraint that bears a resemblance to (145). (145) defines what we need to strive to explain, but I won't be assuming it to hold in the grammar.

4.2.5 Not all the same

As a final point of departure before getting to what I propose underlies 3/4 effects, it is important to note at the outset that not all instances of a less-than-4/4 pattern will come from the same place. This point should be stressed, and the reader should bear in mind the scope of what I am trying to account for with the approach

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41 Yes, I know what you're thinking at this point: *what if we further decompose 'adjective' within the further decomposition of 'attributive'?* This seems intuitive, given that there is some evidence that the class of adjectives has an internal hierarchy of some sort (Cinque, 2010). Yes, it could be possible, however, one should bear in mind that the hierarchy of adjectives espoused in Cinque (2010) and other work deals more directly with the structural position of adjectives, and whilst they can be grouped into classes, which could in theory then map to both structural position *and* hierarchy slots, it *still* remains unexplanatory to simply keep lining up elements on a linear scale.

I lay out in section 4.3 and beyond. To see the issue, consider the following two paradigms from English. In the first, repeated from above, there is a 3/4 pattern, because out of the four sentences, there is one ungrammatical, namely the sentence whereby the anaphor shows morphological agreement and the verb shows semantic agreement.

(150)   a.   The government **has** offered **itself** up for criticism (with this economic policy).

   b.   The government **have** offered **themselves / each other** up for criticism.

   c.   The government **has** offered [?]**themselves / each other** up for criticism.

   d.   * The government **have** offered **itself** up for criticism.

Consider the following example, where we see a *prima facie* similarity to (150d), in that (i) the sentence is ungrammatical with two targets of agreement for the CNP; (ii) the element to the right on the Agreement Hierarchy shows morphological agreement; and (iii) the element to the left on the hierarchy shows semantic agreement.

(151)   * These government is incompetent.

Given the similarities between (150d) and (151), it would be tempting to try to apply the same explanation for them. However, it would be erroneous to do so, given that the source of ungrammaticality for (151) is different to the source for (150d). This can be seen if we expand the paradigm of (151). Once we do so, we can see that the entire paradigm is not a 3/4 paradigm, but rather 2/4.[42]

(152)   a.   This government is incompetent.

   b.   * These government are incompetent.

   c.   This government are incompetent.

   d.   * These government is incompetent.

The reason that we are dealing with a 2/4 paradigm is simply because attributive elements do not show semantic agreement with a CNP in English. Thus, the two sentences where the demonstrative is the plural form *these* never had the chance to be grammatical to begin with. This is the key difference to (150). In this paradigm, the ungrammaticality of (150d) is genuinely surprising, given that both of the targets are independently able to show either morphological or semantic agreement.

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42 Or a 1/2 paradigm, if the reader is so inclined.

The ungrammaticality of the sentence arises apparently independently from the possibilities of the two targets: rather than being a problem of either of the two targets, it is the particular configuration of agreements that they show that is the problem. On the other hand, the reason why we have paradigm restrictions in (152) If we are to understand fully why restrictions on mismatches arise, then we must make sure that we pay attention to paradigms of the type in (150), where both targets can show both types of agreement.

4.3 Deriving mismatches through timing

In this section, we will attempt to derive why there is an effect similar to the Agreement Hierarchy taking place in sentences with multiple agreements. Key to the discussion will be that we observe a timing effect. That they look like the Agreement Hierarchy being operative in a sentence is misleading; the Agreement Hierarchy effect is built through timing.

I propose that mismatches happen when an iF that is active for agreement is deactivated in the course of the derivation, such that a target undergoing agreement before deactivation shows semantic agreement, whereas targets afterwards do not. Thus, deactivation of an iF bleeds semantic agreement on later targets that could otherwise have undergone semantic agreement. If the iF is active for Target 1 but is deactivated before the point that Target 2 undergoes agreement, then a mismatch will be created. Target 2 can only get a value from the uF of the controller as the iF is no longer active.

In order for this to give us what we need, we need to make the following assumptions, which we will discuss further below where applicable. Firstly, we need a condition that prevents ignoring an active iF and instead agreeing with the uF value.

(153)   An active iF cannot be ignored by AGREE-LINK.

Secondly, to ensure that semantic agreement is not always necessary, it must be the case that hybrids can either make their iF active or inactive:

(154)   An iF can enter the derivation either active or inactive.

Finally, necessary is a condition that prevents a feature that has been made inactive becoming active for agreement again. That is, the only way for a feature to be active is for it to enter the derivation as active. Re-activation is proposed here not to be possible.

(155)   Once a feature is inactive, it can no longer be made active.

Put together, deactivation of an *i*F and the inability to ignore an active *i*F us exactly the bleeding effect that we need to model 3/4 patterns. If the *i*F on the controller is deactivated before both targets undergo agreement, then the result is matching morphological agreement. If the *i*F remains active throughout, then the result is matching semantic agreement. However, if the *i*F is deactivated after Target 1, but crucially before Target 2, then a mismatch arises such that the first target shows semantic agreement, and the second target morphological agreement. Crucially, it is not possible for Target 2 to show semantic agreement and Target 1 morphological. This would require either Target 1 ignoring an active *i*F (not possible, according to (153)), or an *i*F that is inactive at the point of Target 1 agreement to become active for Target 2 (ruled out by (155)).

Whilst this gives what is needed, it does beg two questions. Firstly, is activity is something that is relevant for AGREE-LINK or AGREE-COPY. With regards to the second question the issue is as follows. If activity is relevant to AGREE-LINK, then AGREE-LINK will determine which half of the feature AGREE-COPY can agree with, and AGREE-COPY would blindly follow this. On the other hand, if activity is relevant to *only* AGREE-COPY, then AGREE-LINK simply pick out the feature target and then AGREE-COPY is allowed free rein to decide which half of the feature it wants to take its value from? I will propose that the former is the case here: AGREE-LINK sees the difference between active and inactive features, and links to a specific half of the feature.

The second question to answer regards how an active feature becomes deactivated? I propose that the deactivation happens through AGREE-LINK: once an *i*F has entered into an AGREE-LINK operation, then it can become inactive for further operations, and so further iterations of AGREE-LINK will link a target only to the *u*F of the controller. Note the use of *can* in the previous sentence: this *must* be an optional process. If it were obligatory, then we would expect there to be maximally one target showing semantic agreement throughout the derivation, which is clearly wrong, given that it is possible for there to be matching semantic agreement across two (or more targets).

Optional deactivation through AGREE-LINK may come across as an *ad hoc* stipulation, and to some extent this is true. However, it should be noted that I am only proposing that this is the case for *i*Fs, but not as a general property of features. This then makes *i*Fs special in comparison to *u*Fs. Though somewhat undesirable that *i*Fs would display properties different from *u*Fs, I believe that it is a burden worth tolerating, given that it allows us to have a unified account of all the pat-

terns given above.[43] Furthermore, it may well turn out to be the case that *i*Fs are somewhat special in their behaviour. Semantic features are not the canonical features that are used in agreement and the process seems to be a peripheral one in a language; as noted above, it is only CNPs among the group of hybrid nouns that show semantic agreement in English.

That being said, there will doubtless remain readers who are uneasy at the thought of there being optional deactivation of *i*Fs (and only *i*Fs). In section 4.5, I present an alternative that allows us to have a stronger condition on deactivation of *i*Fs, such that it obligatorily applies whenever AGREE-LINK targets an *i*F. This would bring *i*F more in line with the behaviour of other morphosyntactic features. However, as I discuss in detail there, this comes with with its own downsides. I defer this discussion until that point however, and proceed with optional deactivation.

In order to derive what we need, we need a way of determining which elements undergo agreement before others. That is, whilst I have been using the terms Target 1 and Target 2, such an explanation will only work in any interesting way if we can properly determine when an element will be considered as Target 1, and when it will be considered Target 2. The proposal here is that it is derivational timing that determines this. Specifically, elements that enter the derivation first will undergo agreement before others. That is, I propose that probes link to their goals as soon as they can, respecting the ideas of Earliness in Pesetsky (1989) and Chomsky (2001). In other words, as soon as an AGREE-LINK relationship can be formed between two items, it is.

4.3.1 Agreement Hierarchy compatible

As mentioned above, I will first deal with the mismatches that transparently reflect Corbett's Agreement Hierarchy. Key to the above proposal is that *i*F agreement can be bled by deactivation of the *i*F on the hybrid noun. Thus, in order to capture the pattern that we see in English, it needs to be the case that the anaphor will undergo AGREE-LINK before T.

4.3.1.1 English
Consider first English, with the data repeated below:

---

43 It is my hope that further research on the nature of semantic agreement would shed some deeper light on why the different behaviour arises.

(156) a. The government **has** offered **itself** up for criticism (with this eco-
    nomic policy).

   b. The government **have** offered **themselves / each other** up for crit-
    icism.

   c. The government **has** offered $^?$**themselves / each other** up for criti-
    cism.

   d. * The government **have** offered **itself** up for criticism.

The mismatch that is allowed in English is where the anaphor shows semantic
agreement and the verb morphological agreement.

The first derivational point that the anaphor can undergo Agree-Link with
a CNP controller in the above sentences is when the CNP is merged in Spec,vP
(following Sportiche, 1988; Koopman and Sportiche, 1991). Thus, I assume that
Agree-Link happens between anaphor and CNP at that point. Notably, this is be-
fore the first derivational point that T (the locus of verbal agreement features in
English, following standard assumptions) and the CNP share the structure and
are able to undergo Agree-Link.

The result of this is that it gives us exactly what we need to capture why
anaphors are able to undergo semantic agreement and T morphological: the i# is
deactivated at the point that the anaphor undergoes Agree-Link with the CNP. If
the i# is not deactivated at this point, then matching semantic agreement would
arise, and if the i# is never active, then matching morphological agreement would
arise. These are the only three options. Due to a combination of the fact that inac-
tive iFs are not able to become active, and that they cannot be ignored when they
are active, then it is not possible for the anaphor to undergo Agree-Link to the uF
of the controller, and then T undergo Agree-Link to the iF on the CNP.

As the derivation proceeds for (156), the anaphor merges in the object posi-
tion, but no suitable controller is in the derivation until the CNP subject merges in
Spec,vP. When the CNP merges, Agree-Link can take place, and does so. If the i#
entered the derivation as active then the anaphor will undergo Agree-Link with
that. At this point, the i# on the CNP can either be deactivated, or can remain ac-
tive. Once T merges, it will also undergo Agree-Link with the CNP. If the i# was
not deactivated after the initial application of Agree-Link, then T will also be
linked to the i# of the CNP, and matching semantic agreement will arise on the
verb and the anaphor.[44] If the i# was deactivated in the first application of Agree-
Link then T can no longer undergo Agree-Link with the i# and so will be linked

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44 All else being equal with respect to Agree-Copy, see the discussion in Chapter 5.

to $u\#$, in which case a mismatch in agreement will be seen between the verb and the anaphor.

The structure (157) represents the (abbreviated) structure for the English mismatches, with the steps above conflated into one structure.[45]

(157)
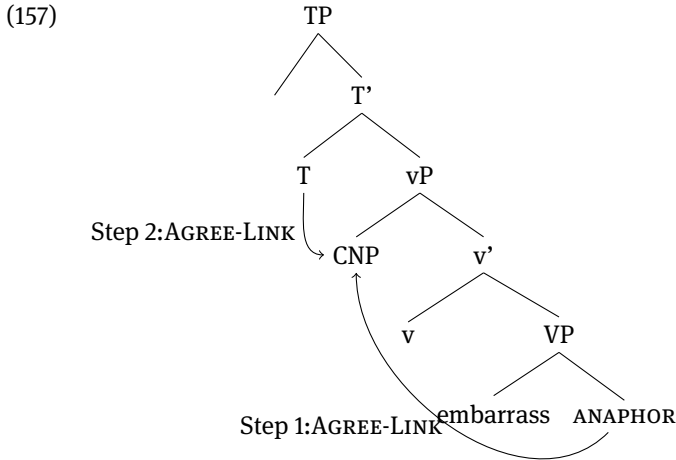
It should be noted that this assumes that binding is a direct process between the antecedent and the anaphor (Hicks, 2009; Wurmbrand, 2012a), rather than one mediated through functional heads, as some prominent accounts have assumed (e.g. Reuland, 2001; Reuland, 2005; Reuland, 2011; Kratzer, 2009). It is crucial here that anaphors establish a binding relationship with their binder directly, since this allows for AGREE-LINK to deactivate the feature on the CNP before the CNP undergoes agreement with T. Mediating the binding relationship through T, or functional heads connected to T would give, if anything, the unattested mismatch. As it happens, the mismatching effects seen with hybrid nouns seem to argue in favour of a direct connection between the anaphor and the antecedent, since the values on T and the anaphor are able to diverge. This is hard to explain if T takes features from the antecedent and passes them onto the anaphor.[46]

---

45 Anaphors canonically merge into the structure before T, since they are canonically objects. It would be interesting to test whether different patterns of agreement are found in languages where anaphors can merge in the 'subject' position. I do not have data from hybrid nouns in languages that allow for subject anaphors, and so I leave this to future research.

46 Note that it is also crucial in this approach that the anaphor undergoes agreement first, before T, and is thus at odds with the approach to binding offered in Rooryck and Wyngaerd, 2011.
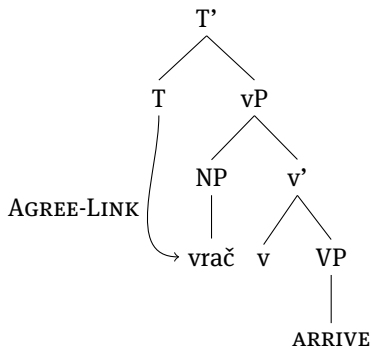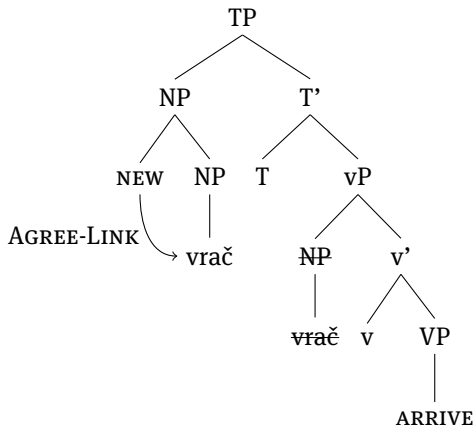
4.3.1.2 Russian and Hebrew

Now consider Russian and Hebrew, and see how this works for the examples where the verb shows semantic agreement and the adjective morphological. Following the above logic, it would seem that adjectives merge into the structure after T. The timing effect was fairly straightforward above, since anaphors canonically appear in object positions. However, the timing is less obvious to derive between attributive adjectives and verbs. In order to answer this, I adopt the proposal of Stepanov (2001), where adjuncts must merge late into the structure. Since attributive adjectives are adjuncts, this means they merge counter-cyclically into the derivation, crucially after both anaphors and T. Late merger, whilst controversial (see Sportiche, 2016 for recent discussion) has also been assumed in various places in the literature (Lebeaux, 1988; Fox and Nissenbaum, 1999; Fox, 2002; Landau, 2007; Takahashi, 2006; Takahashi and Hulsey, 2009; Stanton, 2016), yet Stepanov proposes that it is not just a possibility for adjuncts, rather, it is obligatory. I will further assume that attributive adjectives are always adjuncts, and hence always merge late.[47]

What this means for our purposes is that adjectives in attributive position will merge into the structure countercyclically, crucially after T has done. I illustrate this with discussion of the Russian *vrač* paradigm, paying attention only to the instances of mismatch. The Hebrew data in (141), receive an identical explanation, and for space I leave out discussion.

(158) a. Novyj   vrač   skazala.
           new.MASC doctor said.FEM
           'The new doctor said.'

      b. *Novaja   vrač   skazal.
           new.FEM doctor said.MASC
           The new doctor said.'

In step 1, T has merged into the structure, and undergoes AGREE-LINK with *vrač*. In Step 2, the adjective merges into the derivation late, and at this point will undergo AGREE-LINK with *vrač*.

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47 There is controversy over whether attributive adjectives are adjuncts or not. Cinque (2010) argues that adjectives each head their own projection, which would make them unlikely candidates for being adjuncts, however, Bošković (2013) argues that in many languages adjectives are indeed adjuncts. There is potentially certainly scope for both approaches to be correct, and that languages differ parametrically on this point, but here I take the strong view that all attributive adjectives are adjuncts. Note that, this does not mean that adjectives in a predicate position will merge late. In fact, (Corbett, 1983) explicitly notes that predicative adjectives behave differently than attributive adjectives with regard to the Agreement Hierarchy.

(159) a. Step 1: *Merge of T*

```
                    T'
                 /     \
               T        vP
               |       /   \
     Agree-Link      NP     v'
               |      |    /   \
               └→  vrač   v     VP
                                |
                             ARRIVE
```

  b. Step 2: *Merge of Adjective*

```
                         TP
                      /      \
                    NP        T'
                  /    \     /   \
               NEW     NP   T     vP
     Agree-Link  \      |        /   \
               |   └→ vrač      N̶P̶    v'
                                 |    /  \
                              v̶r̶a̶č̶  v    VP
                                           |
                                        ARRIVE
```

A mismatch is able to be created here, because the *i*Gen that is active at Step 1 can become inactive when Agree-Link takes place. If this is the case, then once the adjective merges into the structure, Agree-Link will only be able to connect it to the *u*Gen feature of the noun. Again, it is important to stress that this will not be able to generate the unattested mismatch, given that the adjective merges *after* T, and so the only way that it can undergo semantic agreement is if T has already undergone semantic agreement. Because of the combination of (153) and (155), then there is no possibility for T to undergo Agree-Link with the noun, before the adjective later undergoes Agree-Link with the *i*Gen.

Throughout the discussion to this point, the crucial aspect of ruling in the attested mismatches, and ruling out the unattested mismatches has been that the *i*F on the goal is deactivated after the first probe has undergone Agree-Link. The fact that the cases to this point have all reflected the Agreement Hierarchy has in fact been epiphenomenal. In the anaphor-verb case of English, the anaphor merges into the structure before the verb does, and in the adjective-verb cases of

Tab. 4.11: Order of adjectives in Hebrew and English, from Shlonsky, 2004.

English	Hebrew
colour > origin	**origin > colour**
a brown Swiss cow	* para xuma švecarit
* a Swiss brown cow	para švecarit xuma
shape > colour	**colour > shape**
the long black table	* ha-šulxan ha-'arox ha-šaxor
* the black long table	ha-šulxan ha-šaxor ha-'arox
age > shape	**shape > age**
the old round hat	* ha-kova ha-yašan ha-'agol
* the round old hat	ha-kova ha-'agol hayašan

Russian and Hebrew, the adjective merges after the verb by virtue of being an adjunct. This is in no way regulated by the Agreement Hierarchy, but rather simply reflect the order at which elements are introduced into the structure. Before moving onto the DP-internal cases of Hebrew and Chichewa, it is worth contrasting this approach with other ones that have given a more direct role to the Agreement Hierarchy.

4.3.2 Agreement Hierarchy incompatible

However, before proceeding with the explanation, it is important to look into more detail at the DP-internal structure of Hebrew and Chichewa. Both languages are N-initial, leading Landau (2016) to treat them as having the same internal structure, that is, left to right linear order is equal to low to high, with elements further from the noun c-commanding elements that are closer, as is the case below.

(160)
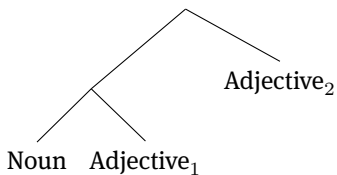
This rightward-is-highest structure is supported for Hebrew by the data in table 4.11 (from Shlonsky, 2004) who shows that the order of Hebrew adjectives is consistently the opposite order than English.

Now, assuming that adjectives merge in a fixed hierarchy into the tree (Cinque, 2010), then this implies that in contrast to the rightest-is-lowest order of English

adjectives, Hebrew has a leftest-is-lowest order.[48] Along with Landau, I assume that this is the correct structure for Hebrew adjectives.

However, the question is whether this is the way that we should treat Chichewa too. Specifically, given that possessive pronouns are linearly closer to the noun than ordinal numerals, does this mean that there are structurally lower than ordinal numerals? Landau assumes without discussion that Hebrew and Chichewa share a rightest-is-highest structure, however, it is notable that Carstens (1991) and Carstens (1993) has argued the opposite for Bantu languages. Specifically, she has argued that the N-initial character of Kiswahili is derived through movement of the Noun to a high head position within the DP. This is supported by the fact that the unmarked order of elements that follows the noun is the same order that is found in English:

(161) picha   hii   yangu nzuri   ya   Busi
       9.picture 9.this 9.my   9.good 9.of Busi

       'this nice picture of mine of Busi   [KiSwahili]

As in Chichewa, the position of postnominal elements is subject to change, however Carstens notes that in Kiswahili, the order Noun-Demonstrative-Adjective-Theme is the *unmarked* order of those elements, suggesting that it is the basic one. Secondly, she notes that the possessive is apparently more limited in where it can appear, and generally appears close to the noun. Assuming once again that languages that have the DP-internal word order of English are representative of the basic functional order (Cinque, 2005), then we can conclude from the fact that they show the same order as English, that the postnominal elements in the unmarked word order in KiSwahili have not moved. All that has moved is raising of the noun to D. As the possessive is closer to the noun, then this suggests that the Bantu noun-internal word order branches in a rightwards-is-downwards fashion, precisely the opposite order of Hebrew.

Chichewa possessive pronouns, like in KiSwahili, generally precede ordinal numerals (Sam Mchombo, p.c.). Assuming a right branching DP structure, they are then structurally higher. I thus assume the structure in (162) for the relevant NPs in Chichewa. There are two points of note. I assume the N to D raising of Carstens (1991) mostly for convenience. There is a debate over whether languages that do not have articles have the category D or not, notably, see Bošković (2005) and Bošković (2013). This debate is orthogonal to the current point, so I do not wish to take a stand here on the status of 'D' in Chichewa, and assume that there is

---

48 Though a fixed hierarchy of adjectives is has been conflated with LCA (Kayne, 1994) compatible structures (e.g. Cinque, 2010), a fixed hierarchy does not entail fixed, cartographic positions in the tree, see among others Bobaljik (1999) and Abels and Neeleman (2012).

a D-layer.[49] The second point is that Carstens (1991) assumes a structure whereby possessive pronouns appear in the specifier of NumP (having moved there from Specifier of NP), however, I assume that they are adjoined to NP.[50]

(162)

```
                    DP
                   /  \
                      D'
                    /   \
                  D       NP
                 / \     /   \
               D  hero Poss    NP
                           /      \
                      Ordinal      NP
                                    |
                                   hero
```
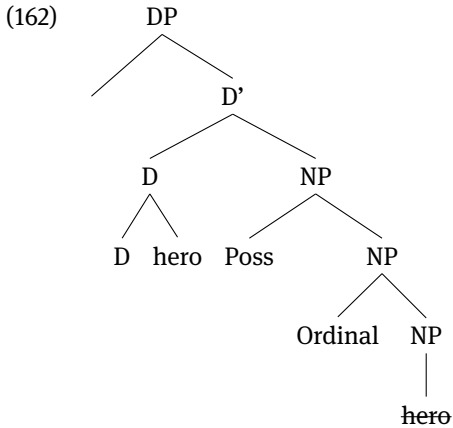
Hebrew and Chichewa then differ in one crucial respect. Assuming that the difference between the two languages is correct in that Hebrew DPs branch leftward whilst Chichewa DPs branch rightward, then it is the structurally higher adjunct that shows semantic agreement in Hebrew, but the structurally lower adjunct that shows semantic agreement in Chichewa. If we are to use the same explanation that I am putting forward above, then it must be the case that the higher ad-

---

49 If D is absent in articleless languages, then there must be some functional projection above NP to host the raised noun in Bantu languages.

50 Whether or not possessive pronouns are adjuncts or not seems to be a point of cross-linguistic variation. Bošković (2005) and Despić (2011) shows that possessives in Serbo-Croatian have the same status of adjectives in the language (see also Bošković and Hsieh (2012) on Chinese, which shows the same). In Serbo-Croatian, possessives are allowed to bind out of the NP (Despić, 2011, p. 31):

i. *Kusturicin$_i$ najnoviji film ga$_i$ je zaista razočarao
    Kusturica's latest   film him is really disappointed
    'Kusturica$_i$'s latest film really disappointed him$_i$.'

Despić takes this to show that possessives do not occupy the same structural position as they do in English. In English, a possessive does not give a binding Principle B violation in the same environment:

ii. John$_i$'s mother loves him$_i$.

Despić argues that this contrast between the two languages shows that possessives in Serbo-Croatian are not buried within a PossP underneath a DP, but rather the DP layer is lacking altogether in this language, and that possessives adjoin to the NP layer along with adjectives.

junct has undergone AGREE-LINK before the lower adjunct in Hebrew. However, in Chichewa, it is the lower adjunct that undergoes AGREE-LINK before the higher one and so it is the lower one that has merged first. We must then be able to account for the difference between these two languages: the higher adjunct must have merged before the lower one in Hebrew, whereas in Chichewa, the lower adjunct must have merged before the higher one.

4.3.3 Accounting for the difference between Hebrew and Chichewa

In order to explain why it is the higher adjunct in Hebrew that shows semantic agreement, but the lower one in Chichewa, I propose that languages differ in the order in which they merge adjuncts. Key to the proposal above is that adjuncts merge counter-cyclically (Stepanov, 2001), as assumed above. Merge, in the sense of Chomsky (1995), works in a cyclic manner because merge takes place at the root and will thus always extend the tree. Yet given that adjuncts merge counter-cyclically, there is no obvious requirement that they do so in a cyclic manner from lowest to highest. That is, we are not obviously led to believe that adjunction mirrors the earlier derivation in going bottom upwards.

I propose here that this is a point of variation across languages as to whether when merging multiple adjuncts at the same site, the adjuncts merge in top-down or bottom-up fashion. We can formalise this with the following statement.

(163)   In case of adjunction, adjoin to the {HIGHEST/LOWEST} segment of the adjunction site.

An anonymous reviewer of an earlier version of this work points out that this is effectively giving 163 a parametric status in language. That is true, and I begs the question of what kind of parameter it is. Given that parameters are usually conceived of being properties of functional heads since Borer (1984), (163) does not fit that characterisation as it is hard to see how it would be related to a functional head. Rather, I propose that (163) is a *grammatical parameter* in the sense of Baker (2008). Baker writes that "[s]omething deserves to be called a grammatical parameter, [...] if it is a relatively general feature of the language, not one that is tied to a particular head or construction (Baker, 2008:155)."

Depending on which option the language takes with respect to where adjunction takes place, we see a difference in whether structurally higher or structurally lower adjectives have merged first in the derivation. Assuming that there is a fixed hierarchy of adjectives in the style of Scott (2002) and Cinque (2010) but that this hierarchy is enforced independently of the timing of merge, for languages that merge at the HIGHEST segment, then adjectives which are higher in the structure

have merged after ones that are lower. On the other hand, for languages which merge adjuncts at the LOWEST segment, adjectives that are higher in the structure must have merged before the ones that are lower.

To illustrate this, take a simple noun phrase like *big red car* in English. According to standard assumptions *big* is structurally higher than *red*. Either the HIGHEST or LOWEST setting of (163) can create this order, but depending on which is chosen will affect which element is introduced first into the structure. Suppose that English is a HIGHEST language, and merges adjectives at the *highest* segment of the adjunction site. It must be then the case that *red* merges first into the structure, before *big*, which later merges above *red*. The first adjunction trivially targets the highest segment of NP, since there is only one segment. In the second adjunction, *big* then merges to the highest segment, and the result is that it is structurally higher than *red*. This gives the observed output of English.

(164)   a. *Build NP*

        NP
        |
        car

    b. *Merge* red *with highest segment of NP*

            NP
          / \
       red NP
             |
            car

    c. *Merge* big *with highest segment of NP*

            NP
         / \
      big   NP
            / \
         red NP
              |
             car
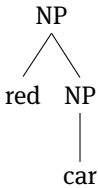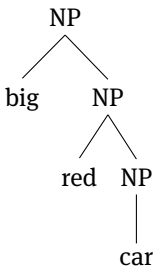
With the HIGHEST option selected, if *big* were to merge first, then a further merge of *red* would lead it to being structurally higher, since it merges at the top segment. This is shown in (165), where *big* would merge into the structure before *red*, we end up with the ungrammatical *red big car.

(165) a. *Build NP*

NP
|
car

  b. *Merge* big *with highest segment*

NP
/ \
big NP
|
car
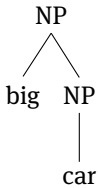
  c. *Merge* red *with highest segment*

NP
/ \
red   NP
/ \
big NP
|
car
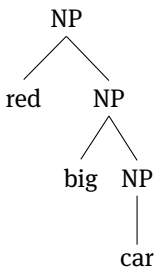
Now consider if English were instead a Lowest language, where adjuncts target the *lowest* segment of the adjunction site.[51] If *red* merges first, the segment attached to is trivially the lowest one. However, when *big* comes to merge into the structure, it targets the lowest segment, and so will attach to the bottom segment of NP. The result is the ungrammatical order of adjectives, **red big car*:

(166) a. *Build NP*

NP
|
car

  b. *Merge* red *with highest segment*

NP
/ \
red NP
|
car

---
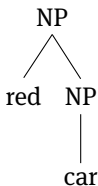
51 I do not commit in this paper to what choice English makes, since it is not important for our purposes. I use English examples solely for expository convenience.

c. *Merge* big *with highest segment*

```
            NP
          /    \
       red      NP
              /    \
           big      NP
                    |
                   car
```
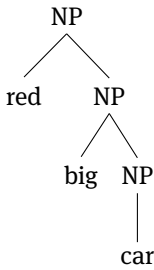
The right result would be obtained in a Lowest language if adjectives that are structurally highest have merged before adjectives are structurally lowest. In this derivation *big* merges before *red*, and the correct output is generated.

(167) a. *Build NP*

```
        NP
        |
       car
```

b. *Merge* big *with lowest segment*

```
          NP
        /    \
     big      NP
              |
             car
```
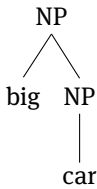
c. *Merge* red *with lowest segment*

```
            NP
          /    \
       big      NP
              /    \
           red      NP
                    |
                   car
```
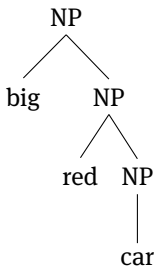
Thus, depending on the choice that a language makes regarding the adjunction site (163), this will have an impact on whether structurally higher adjuncts have merged before or after structurally lower ones. In summary:

(168) a. If a language merges adjuncts at the HIGHEST segment of the adjunction site, adjuncts that are structurally higher have merged *after* adjectives that are structurally lower.

   b. If a language merges adjuncts at the LOWEST segment of the adjunction site, adjectives that are structurally higher have merged *before* adjectives that are structurally lower.

As I will show in the next two subsections, this distinction affords us the flexibility that we need in order to account for the 3/4 patterns in Hebrew and Chichewa even considering their differing DP-internal structure. In order to rule out the unattested patterns, it must be the case that languages make a choice with respect to (163) such that the opposite order of merge is not possible in the language.

4.3.4 Hebrew

The data of interest here are, to repeat, as follows:

(169) a. ? ha-be'alim ha-pratiyim   ha-axaron šel ha-tmuna   haya
         the-owner the-private.PL the-last.SG of the-painting was.3SG
         ha-psixo'analitika'i Jacques Lacan
         the-psychoanalyst Jacques Lacan
         'The last private owner of the painting was the psychoanalyst Jacques Lacan.'

   b. * ha-be'alim ha-prati   ha-axron-im šel ha-tmuna
         the-owner the-private.SG the-last-PL   of the-painting
         haya/   hayu ha-psixo'analitika'i Jacques Lacan.
         was.3.SG/ was.PL the-psychoanalyst Jacques Lacan
         intended: 'The last private owner of the painting was the psychoanalyst Jacques Lacan.

I assume that the NP is structured as follows:

(170)
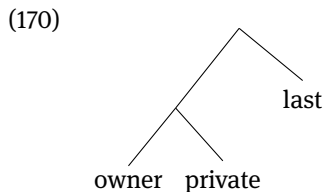
It is the structurally higher adjective in Hebrew that shows semantic agreement. According to the approach laid out above, this must mean that the structurally

higher adjective has undergone AGREE-LINK before the structurally lower one. I assume that Hebrew has the following in effect:

(171)   In case of adjunction, adjoin to the LOWEST segment of the adjunction site.

The attested mismatch is generated in the following way. As adjectives merge at the lowest segment of the adjunction site, this means that more peripheral adjectives merge first. In the following derivation, in Step 1, the peripheral adjective LAST merges and undergoes AGREE-LINK with the head noun. At this point, if the *i*F is active, AGREE-LINK must target it, and then it can be deactivated on the noun, leaving only the *u*F available for further iterations of AGREE-LINK. In Step 2, PRIVATE merges and undergoes AGREE-LINK. Since adjuncts in Hebrew merge at the lowest segment of the adjunction site, then it will adjoin in between the head noun and LAST. The only mismatch that can be generated is where the structurally higher one shows semantic agreement, and the lower one morphological. Because an active *i*F cannot be ignored, nor can an inactive *i*F be activated, then it is not possible for AGREE-LINK to target a *u*F on the first (higher) target, and then an *i*F on the second (lower) target. Matching agreements are derived in the same way as above, where the *i*F remains active for both targets (matching semantic agreement, or is inactive for both (matching morphological agreement). The derivational steps are outlined below:

(172)   a. Step 1
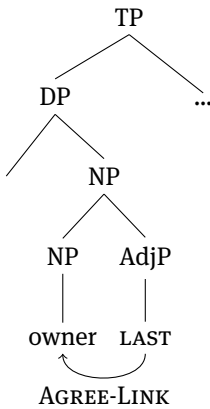
b. Step 2
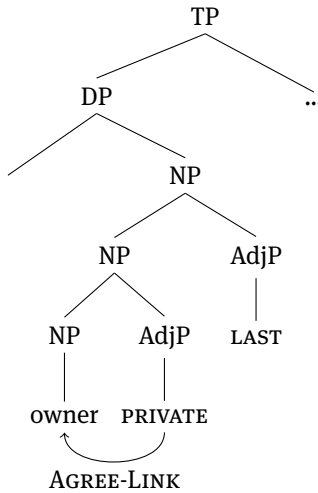
I assume that the same analysis holds for the Russian data in (142) as in Hebrew.[52]

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52 Having the same analysis for Russian is complicated by the fact that there adjectives in Russian that Pesetsky, p. 37 determines are low in the structure that never show semantic agreement.

(i.) Glavn-yj/*Glavn-aja vrač poliklinik-i skazal-a
head-MASC.NOM.SG/*head-FEM.NOM.SG doctor-NOM.SG clinic-GEN.SG say-PAST.FEM.SG
čtoby ...
that.SUBJ
'The (female) head doctor of the clinic ordered that ...'

Pesetsky argues that these adjectives have merged into the derivation before a feminising head is merged into the structure (the adjectives are structurally lower), and they undergo agreement before this head is merged. It is not possible to use Pesetsky's analysis here, since I assume that all attributive adjectives, high or low, would merge into the structure counter-cyclically, which is presumably after the feminising head. In order to account for the non-semantically agreeing adjectives, I must stipulate here that they as a class are simply unable to enter into any kind of agreement relation with *i*Fs. Essentially, they would be somewhat akin to demonstratives in English, which can never show semantic agreement with CNPs. As to why these adjectives show this property, I honestly have no idea and recognise the stipulatory nature of claiming this.

4.3.5 Chichewa

The data from Chichewa are repeated below:

(173) a. ngwazi y-athu y-oyamba
      hero   9-our 9-first
      'Our first hero.'

     b. ngwazi w-athu w-oyamba
      hero   1-our   1-first
      'Our first hero.'

     c. ngwazi y-athu w-oyamba
      hero   9-our 1-first
      'Our first hero.'

     d. * ngwazi w-athu y-oyamba
      hero   1-our   9-first
      intended: 'Our first hero.'

Recall that I assume the following structural relations between the relevant elements:

(174)
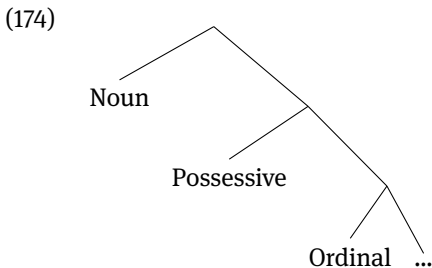
In contrast to Hebrew, I propose that Chichewa adjuncts merge at the highest segment of the adjunction site:

(175) In case of adjunction, adjoin to the HIGHEST segment of the adjunction site.

As Chichewa merges adjuncts at the highest segment and the possessive is structurally higher than the ordinal, it must have merged after the ordinal. The attested mismatch then arises in the following derivation. In Step 1 the ordinal merges first, and undergoes AGREE-LINK with the head noun, before the possessive merges and undergoes AGREE-LINK in Step 2. If the *i*Gen remains active after Step 1, then we will have matching *i*Gen agreement on the two adjuncts. However, a mismatch arises if the *i*Gen is deactivated at Step 1. Matching morphological agreement is found if the *i*Gen is active to begin with.

(176)   a. Step 1

```
                    DP
                   /  \
                      D'
                    /    \
                   N      NP
                   |     /   \
                 hero  NumP    NP
                       /\      |
             AGREE-LINK  Ordinal  hero
```

    b. Step 2

```
                    DP
                   /  \
                      D'
                    /    \
                   N       NP
                   |      /    \
                 hero  PossP    NP
                        /\     /   \
             AGREE-LINK  Poss NumP   NP
                              /\     |
                          Ordinal  hero
```
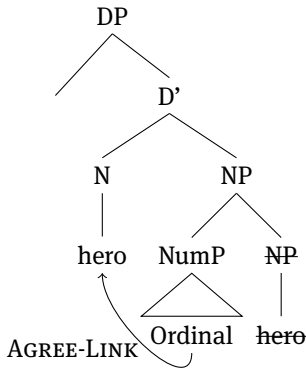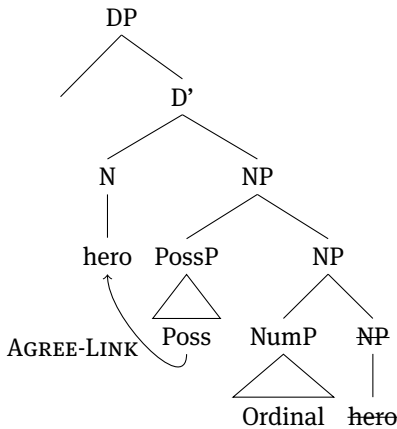
4.4 Prior Approaches

In the above sections I have argued that we can account for which mismatches are possible and which are impossible in a unified way. I have argued that the grammatical mismatches involve first obligatory semantic agreement on the derivationally earlier target, inactivation of the *i*F which makes the *u*F the only possible target of agreement for the derivationally later element. The opposite, where AGREE-LINK first targets the *u*F of the controller before later the *i*F was proposed to be impossible. Other approaches have tackled the same type of data, which I outline below. For reasons that I outline, none of them provide either a unified, or satisfactory explanation for the 3/4 effect.

4.4.1 Structural

Pesetsky (2013) and Landau (2016) both offer a structural explanation for 3/4 effects. I will explicate with the explanation of Landau, but the logic of Pesetsky's analysis runs the same way.

Recall that for Hebrew, a mismatch is allowed where the peripheral adjective can show semantic (singular) agreement and the inner adjective morphological agreement. Adapting the feature model of HPSG (Pollard and Sag, 1994; Wechsler and Zlatić, 2003), Landau proposes that the plural morphology on *be'alim* is the result of an inherent plural CONCORD feature, whereas the INDEX feature is open, and can be either plural or singular depending on the context. Given that [CONCORD:plural] is inherently specified, it should be located on N (see also Acquaviva, 2008b; Kramer, 2014; Moskal, 2015b; Smith, 2015 for proposals where inherent features are located on category defining nodes), whereas the INDEX feature, not being inherent, is introduced in a NumP higher up in the nominal spine.

Mismatches in adjectives come from there being multiple places where adjectives are allowed to merge into the structure. Landau proposes that in the general case, adjectives merge lower than NumP, but that they can optionally merge higher than NumP. If there are then two adjectives that merge in different sites, and agreement happens as soon as elements are merged into the structure, then the lower adjective will show morphological agreement, as it has merged before the semantic information is introduced, and the higher element will show semantic agreement. As discussed above, the structurally higher adjective then shows semantic agreement, and the lower morphological. The unattested mismatch cannot be generated due to intervention; once NumP is in the structure, then it intervenes between higher targets and N, preventing anything from looking past it and taking a value from the CONCORD feature on N. The mismatch case is illustrated below:[53]

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[53] Linear order is ignored in the tree in 177.

(177)

NumP
Adjective   NumP
Num'
Num_INDEX   NP
Adjective   NP
N_CONCORD

Semantic agreement
Morphological agreement
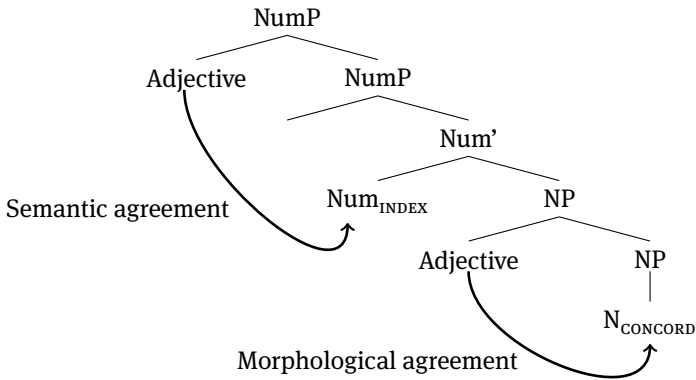
Landau extends this account to the Chichewa data with the same explanation. It is the higher element that shows semantic agreement, and the lower morphological. This relies on the assumption that Chichewa shares the same DP-internal structure as Hebrew, that is, it is leftward branching and elements closer to the noun are structurally lower than elements that are linearly further away. Above, I showed that there is reason to believe that this structure is not the case for the Bantu languages, and it should be pointed out that Landau's account will struggle to succeed if Chichewa has a structure where the ordinal (which shows semantic agreement in the mismatch) is structurally lower than the possessive (which shows morphological in the mismatch case). That is, the ungrammatical mismatch in Hebrew is ruled out because the structurally higher element cannot see past the functional head where non-inherent features are introduced, in order to see the inherent feature on the category defining node. Therefore, intervening heads where non-inherent features are introduced are crucial to rule out unattested mismatches: elements lower than these functional heads *can* agree with the inherent *u*Fs, but elements merging higher cannot. Yet, if the structure in (162) is correct, then it is the higher element that undergoes semantic agreement.

Before moving on I would like to make one final point regarding the configurational approach that Pesetsky (2013) and Landau (2016) offer. Though they offer to some degree elegant solutions to the 3/4 patterns that exist in Russian and Hebrew, it is not immediately clear to me how the proposals can be extended to account for the 3/4 pattern of English. As Landau shows, a configurational account not only works to explain a 3/4 effect with two DP-internal targets of agreement, but it can be extended to instances where one probe is DP-internal and one probe is DP-external. In a 3/4 pattern where the predicate shows semantic agreement, and the attributive element morphological (the Russian case of (158) and the Hebrew case

of (141)), the logic of both Pesetsky's and Landau's is that the DP-internal element has merged into the structure lower than the semantic specification, and thus can only agree with the morphological information inherent to the noun. On the other hand, semantic information is transmitted up to DP and is visible to DP-external agreement. Effectively then, elements that show morphological agreement are in the wrong position to show semantic agreement, as they have merged beneath either the NumP in Hebrew, or beneath Pesetsky's feminising head.

The problem of English is that we have two instances of DP-external agreement, and so it is not clear how a configurational account would rule in favour of the verb showing morphological agreement and the anaphor showing semantic agreement, and not for instance the other way around. The explanation in the other cases relies on DP-internal elements merging close to the inherent feature, but this is not obviously available to two elements that are external to the DP. Landau acknowledges this drawback, and suggests that different 3/4 patterns may have different explanations, though it is my contention in this work that they can all be unified.[54]

4.4.2 HPSG

It is not a new observation that 'hybrid nouns' can induce agreement mismatches on different agreement targets. Nor is the observation that certain mismatches are allowed and others disallowed. Both were noted as early as Corbett (1979) and have been discussed in works since then.

As pointed out in the introduction, the patterns that have been discussed in this paper are reminiscent of Corbett's Agreement Hierarchy (Corbett, 1979; Corbett, 1983; Corbett, 2000; Corbett, 2006; Corbett, 2012). In Corbett's formulation, the Agreement Hierarchy merely controls the frequency of agreement at the level of a corpus. That is, all else being equal, across some corpus of data, personal pronouns will show a greater frequency of semantic agreement than relative pronouns will, which in turn will show a higher frequency than predicates, so on and so forth. Such a statement, whilst descriptively true, is insufficient for our

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54 As will be discussed in the next chapter, a configurational account has been offered by den Dikken (2001) and Sauerland (2004) to a subpart of the English paradigm, notably why demonstratives can only show morphological agreement with a CNP even when the verb shows semantic agreement. Again, however, it is not clear how these accounts can help if the agreements in question are both DP-external (see also Smith, 2017 for independent problems with such accounts in English).

purposes here, since it does not mention what happens at the level of individual clauses.

Hybrid nouns have been prominently discussed within HPSG by Wechsler and Zlatić (2000) and Wechsler and Zlatić (2003), and they offer an account of mismatches that attempts to build in the Agreement Hierarchy into their theory. The approach is similar to the one offered here, however couched in different terms. As mentioned earlier, they follow the HPSG tradition of dividing features into CONCORD and INDEX. INDEX features are more closely related the semantic information of the noun, whilst CONCORD are more closely related to the morphological, or declensional information of the noun. Constraints govern the flow of information throughout the system such that in the general case, the information carried on each feature type matches up with the others. However, in certain instances, these links are broken, and the information does not match across all types of features, which gives rise to hybrid nouns.

Of interest to us here is that these constraints hold among contiguous regions in (178). That means, it is not possible for INDEX to have some value different from the semantics, but for CONCORD to have a value that it gets directly from the semantics.

(178)   a. Regular case:

               Declension   CONCORD   INDEX   semantics

       b. Possible:

             Declension   CONCORD   ‖   INDEX   semantics

       c. Not possible:

             Declension   CONCORD   ‖   INDEX   ‖   semantics
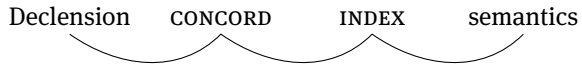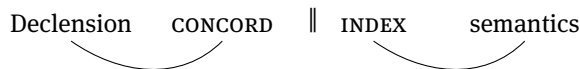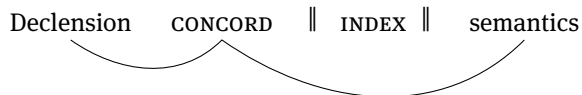
Wechsler & Zlatić discuss the Agreement Hierarchy and how this can be produced at a corpus level by their system. CONCORD and INDEX are on different featural paths. They propose that relative pronouns can differ from personal pronouns, because, whilst relative pronouns always undergo anaphoric binding (agreeing with INDEX), it is possible for personal pronouns to also undergo pragmatic binding (taking an agreement value directly from the semantics in addition to INDEX). Thus, whenever there is a mismatch it will be the personal pronoun that more closely resembles the semantics, rather than the relative pronoun. The same holds for predicate agreement, which can come from the INDEX feature. Because personal pronouns can take an agreement value from the SEMANTIC head, but predi-

cates cannot, then it stands to reason that personal pronouns will show a higher rate of semantic motivated agreement, because they will reflect this in cases when the INDEX or CONCORD value diverges from this.

Though it is successful in accounted for corpus frequency of personal pronouns, and predicates, Wechsler & Zlatić note that their theory does not directly predict that predicates will have a lower frequency of semantic agreement than attributive elements, or that attributive elements will have a higher frequency of morphological agreement. Put in their terms, the question is why should attributive targets more frequently undergo agreement with the CONCORD feature than predicates? The answer that they suggest comes from the diachronic development of predicate agreement. They note that agreement markers historically evolve from incorporated pronouns, thus having a closer link to pronoun agreement (and thus being more likely than attributive elements to agree with the INDEX feature). The second point they note is that attributive elements are more local to the head noun than predicate elements, however, as they note, the notion of syntactic locality would need to be relativised only to the attributive/predicate distinction, since it does not work with relative pronouns. Thus through a mixture of diachronic development, and synchronic locality restrictions they are able to model the relative frequencies per category of semantic and morphological agreement.

As discussed earlier, the Agreement Hierarchy does not simply hold over corpus frequencies, but Corbett shows that it is also a monotonic effect: within a language categories can differ according to whether they show semantic agreement or not. Recall however that if semantic agreement is shown on some element, then all slots to the right on the hierarchy will show semantic agreement as well (see Table 4.5). Wechsler & Zlatić note that this monotonic effect follows from their account, because of the system of contiguous constraints that is built into their system. As pronominals can undergo either agreement directly with the semantics or the INDEX feature, they will always be able to reflect 'semantic' agreement even when INDEX reflects the morphological shape of the work (i.e. where there is a disconnect between INDEX and SEMANTICS). Similarly, where there is a disconnect between INDEX and CONCORD, as predicates can undergo agreement with INDEX or CONCORD, but attributive elements (mostly) only undergo agreement with the CONCORD feature, then if the INDEX and CONCORD value differ, then a only predicates will show semantic agreement.

These are nice explanations, and an impressive amount follows from their proposals. Despite these successes however, there are a couple of problems. Whilst their approach can in principle work for instances where the mismatching targets come from different slots on the Agreement Hierarchy as shown above, it faces a couple of problems with the full range of patterns.

Firstly, though Wechsler & Zlatić's difference between predicates and attributive elements is derived by the development from personal pronoun to predicate marker, it should be noted that this holds only for *diachronic* development. As far as I can tell, there is nothing that prevents a language from developing beyond this stage into one where predicate targets are more likely to go with CONCORD features. Yet, this is unattested. If we ignore the proposal of diachronic development, all that remains for the approach of Wechlser & Zlatić to differentiate between attributive and predicates is the notion of locality. However, as they note, this could only be used to differentiate between attributive elements and predicates, as it is not consistent with relative pronouns. Thus syntactic locality appears unsuitable to be the ultimate arbitrator between targets in how sensitive they are to either CONCORD agreement or INDEX agreement.

Putting these quibbles aside for the time being, let's grant that there is some mechanism that makes pronouns more likely INDEX targets than predicates, whatever that may be. Wechsler & Zlatić's explanation is then suitable for sentences like the following:

(179)   * These committee is going to make a decision.

We know that in English, attributive targets do not undergo agreement for the INDEX feature, and so can only agree with CONCORD, whilst the predicate is able to inflect according to the information on INDEX (or CONCORD). Thus, (179) is not able to be generated. Wechsler & Zlatić's approach works here precisely because attributive elements in English can only undergo agreement with CONCORD features, whereas verbs can agree with either CONCORD or INDEX. Since the feature makeup of CNPs is assumed to be as in (180), then 3/4 patterns of the type in (179) then follow.

(180)   [CONCORD: singular, INDEX: plural]

However, Wechsler & Zlatić's proposal apparently faces difficulties when there are two (or more) targets that can inflect for either INDEX or CONCORD. To see this, consider again Russian *vrač*, which as we have seen above, has the ability to control both masculine and feminine agreement on various targets. Let's assume for the sake of the argument that the featural representation of *vrač* is as follows (simplified from the more elaborate HPSG featural structure):

(181)   [CONCORD:masculine, INDEX:feminine]

Now, since adjectives and verbs can each show both singular and plural agreement, it must be the case that both must have the ability to undergo agreement with either CONCORD or INDEX. If this is true, then it is confusing as to why 3/4 patterns arise in the first place. It is not clear why in (182b) the attributive element is not able to agree with the INDEX value, and the predicate with the CONCORD value.

(182)   a.   Novyj   vrač   skazala.
                new.MASC doctor said.FEM
                'The new doctor said.'

       b. * Novaja vrač   skazal.
                new.FEM doctor said.MASC
                The new doctor said.'

There doesn't seem to be anything in Wechsler & Zlatić's approach to prevent the above situation other than potentially superimposing stipulations into the system, such that when predicates agree with the INDEX feature, then pronouns are preventing from agreeing with the CONCORD feature. Yet this simply rebuilds the Agreement Hierarchy into speaker's grammatical knowledge. On the other hand, sentences like (182b) follow from the present account without further stipulation, in addition to the other patterns that Wechsler & Zlatić can capture.

A second problem however for Wechsler & Zlatić's approach is that it does not provide any explanation for instances where the mismatches arise on elements from the same slot on the hierarchy, as is the case in Chichewa and Hebrew. One could argue that syntactic locality can arbitrate here - in both Hebrew and Chichewa the target with morphological agreement is linearly and closer to the controller. Yet, given that both elements can in principle agree with the semantic information, there is no clear reason why a more peripheral adjective cannot agree morphologically across a less peripheral attributive element.

In truth, it is probably not correct to see the approach offered here as being in opposition to Wechsler and Zlatić (2003). Aside from theoretical orientation (HPSG vs Minimalism), the major point of difference is that in the approach given here there are only two potential agreement values - one from the *i*F and one from the *u*F. Wechsler & Zlatić allow for there being three — INDEX, CONCORD and directly from the semantics. Yet, the need for three different features or two is orthogonal to this paper, and has been recently discussed elsewhere (Alsina and Arsenijević, 2012; Wechsler and Zlatić, 2012). Given the similarities between the two approaches, then depending on the reader's disposition toward merging HPSG and Minimalist approaches, it is possible to see the ideas pursued here and in Wechsler & Zlatić as being complementary to one another and it should be possible to transpose the account here based on derivational timing into HPSG terms.

4.5 The deactivation of an *i*F

The explanation given above rests of 3/4 patterns arising through a bleeding effect, whereby deactivation of an *i*F in the derivation renders further semantic agree-

ment impossible. This allowed for mismatches to be derived through the proposal that elements that merge first into the structure show semantic agreement, and latter ones show morphological agreement. As I have noted, this has allowed for a unified account of all of the 3/4 patterns, and a principled account of why certain mismatches in agreement are allowed and certain others are not. However, as I also noted in section (4.3), this has also been predicated on the optional deactivation of an *i*F through the process of Agree-Link. I noted earlier the controversy over assuming that an *i*F is optionally deleted, arguing that it need not be thought of as a general property of features (and hence smuggling optional operations into Minimalist syntax through the back door) but rather something that is limited to *i*Fs, which may well simply have special behaviour with regard to agreement.

However, it remains true that not all readers will be comfortable with such a scenario; to put it mildly, optional operations are generally frowned upon in Minimalist syntax, a viewpoint that has come about due to the desire for features and satisfaction of their requirements to be the driving force of syntax. Allowing optional operations does not sit well at all with such a model. Thus, in light of this, it would be preferable to remodel my condition on deactivation to something like the following:

(183)   An *i*F targeted by Agree-Link is deactivated.

Before concluding this chapter, I wish to briefly explore this proposal and show that we can hold (183) to be true, whilst capturing the 3/4 patterns in the same manner as I have done above. However, just because we can adopt (183), it's not so clear that we should.

Optionality can be done away with if we assume that Agree-Link can take place whenever it wants to, but does not have to take place immediately when controller and target are in the derivation. Rather, at some point in the derivation, an operation of Agree-Link applies and prompts probes to link to their goals. Effectively, this conceives of Agree-Link (and by proxy, Agree more generally) not as an operation that takes place at the immediate behest of features that need a value, but rather as an operation that has to apply at some point in order to link goals to their probes. The difference between the two is subtle, but the latter perspective frees Agree-Link from applying immediately.[55]

Now, let's suppose that this is the case, assume that when it does apply, every probe that is in the structure will be linked to its goal. *Per* (183), any *i*F on a goal that is targeted by Agree-Link will then become inactive for future iterations of Agree-Link. Now, if we further assume that Agree-Link has the ability to operate

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55 Agree then is an operation that is not driven by features, but rather affects them.

as many times as it needs to so that all goals have had the opportunity to undergo agreement, then this will have the result that elements that merge after the point of (183) will have to show morphological agreement, since the probes can only link to the *u*F of the goal. Thus, the 3/4 patterns are derived in the same way: earlier elements can and must show semantic agreement and all elements merged after 183 can only show morphological agreement.[56]

With these assumptions in mind, let us then revisit the 3/4 patterns that are of interest to us. I will use English as an example for exposition, but will not outline all of 3/4 patterns here for reasons of space. I invite sceptical readers to go through the other derivations themselves and check that the same facts are accounted for.

Using the same, bottom-up derivation assumed above, then the anaphor merges into the derivation before the CNP, which in turn merges before T. There are thus two relevant points of AGREE-LINK to consider.

Firstly, suppose that AGREE-LINK takes place at the point that only the CNP and the anaphor are in the structure. Assuming that the *i*F on the CNP is active, this will mean that the anaphor is linked to the *i*F and will show semantic agreement once AGREE-COPY takes place. The *i*F is then deactivated *per* 183. Now, once T merges into the structure, it will undergo AGREE-LINK (potentially not initially, but at some point before the end of the syntactic derivation). However, due to the earlier inactiviation of the *i*F on the CNP, then this time it can only link to the *u*F of the CNP and will show morphological agreement. Thus, we derive the attested mismatch.

---

56 Note that I am not claiming that AGREE-LINK necessarily links all features to a target, but rather each probe has undergone AGREE-LINK. Preminger (2011) and Preminger (2014) has shown convincingly that agreement can fail. What is relevant for my purposes is that AGREE-LINK happens wherever it can.

(184)

```
                          TP
                         ╱ ╲
                            T'
                          ╱ ╲
                        T      vP
   Step 2:AGREE-LINK    │    ╱ ╲
                        └→ CNP    v'
                                ╱ ╲
                              v      VP
                                    ╱ ╲
   Step 1:AGREE-LINK  embarrass  ANAPHOR
```
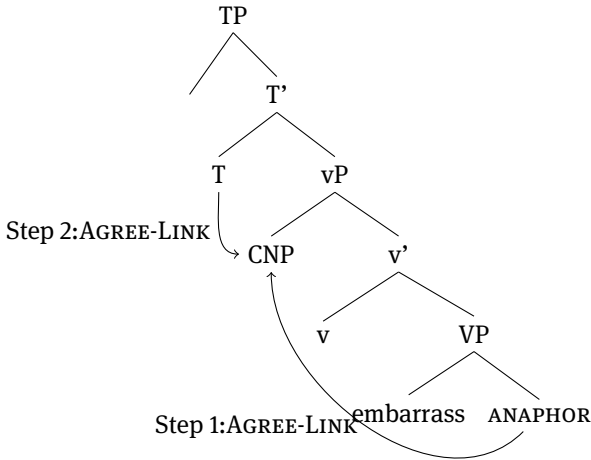
Another option is that the anaphor does not undergo AGREE-LINK before T has merged into the structure. Because AGREE-LINK requires every probe that is in the structure to link to their goal, this means that the anaphor and T will simultaneously link to the CNP. Assuming the iF to be active, this will have the effect that both of these are linked to the iF and will both show semantic agreement once AGREE-COPY applies. Matching morphological agreement will apply in case the CNP enters the derivation without its iF active.[57] This derivation is shown below, and note that there is only one step of AGREE-LINK, reflecting the fact that the anaphor and T undergo AGREE-LINK simultaneously.

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57 Recall from above that it is neither necessary nor desirable for all items that potentially control semantic agreement to make their iFs active at the beginning of the derivation, as this would have the effect that there would necessarily be always one element in the structure that shows semantic agreement.

(185)

```
              TP
             /  \
                T'
               /  \
              T    vP
                  /  \
Step 1:AGREE-LINK
           ⤷ CNP    v'
                   /  \
                  v    VP
                      /  \
Step 1:AGREE-LINK embarrass  ANAPHOR
```
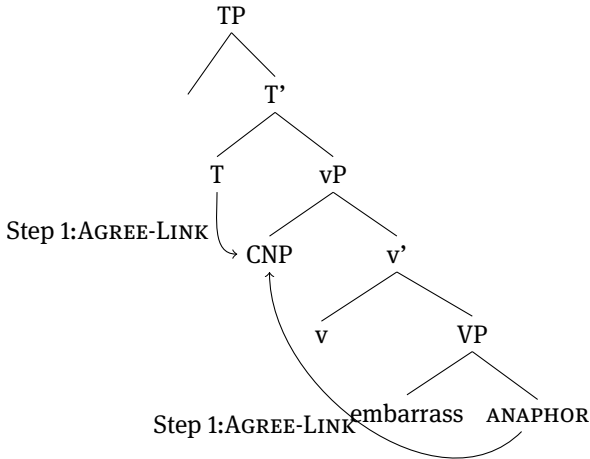
Importantly, such an approach will retain the insight of the rest of the chapter that the fact that the anaphor merges before T allows for the attested mismatch, but rules out the unattested one. Because AGREE-LINK must apply to all probes that are currently in the structure, then it is not possible for elements that have merged after an application of AGREE-LINK to undergo semantic agreement, whilst elements that have merged earlier to undergo morphological agreement. Thus 3/4 patterns, remain derived through the same perspective as we have been exploring throughout the rest of this chapter.

However, despite the fact that we are able to do away with the optional deactivation of an *i*F, we are left with having to assume that AGREE-LINK operates somewhat independently from the immediate needs of probes, and allows them to link to a goal only when it decides to apply, effectively giving up on the idea of Earliness (Pesetsky, 1989; Chomsky, 2001). It has been shown that there is some indeterminacy with respect to Earliness, and that AGREE may not apply directly at the moment that an unvalued feature is inserted into the derivation and there is a body of work emerging that explores the idea that the order of operations is open to some parameterisation, which has produced very interesting results (Müller, 2009; Georgi, 2014; Assmann et al., 2015; Puškar and Murphy, 2015).

What I have suggested in this section is perhaps a more extreme version of what is given in these references however, since these works assume that whilst the order of operations is open to some flexibility, the operations that are triggered are still triggered item by item throughout the derivation. That is, there is a list of operations that apply to a given feature, but the order in which they apply is flexible. Yet, the account considered here treats AGREE as an operation independent

from each individual features and items and runs the risk of being far too permissive. For instance, if there is the potential for Agree to apply to multiple elements all at the same time, it then becomes unclear how to handle instances of opacity that are related to agreement, such as defective intervention effects (Chomsky, 2001). For this worry I do not wish to advocate for the approach considered in this section, but I offer it as a potential way to alleviate worries concerning *i*Fs being optionally deactivated.

4.6 A two-step model of Agree: Interim Summary

Throughout the chapter I have sought to provide a unified explanation of mismatches between semantic and morphological agreement within the same clause. I have argued that we can understand all the 3/4 patterns, including both those that reflect the Agreement Hierarchy and those that do not, by implicating Agree-Link. Specifically, I have argued that Agree-Link brings with it the ability to deactivate an *i*F on an agreement controller, with the effect that each subsequent application of Agree-Link with the same controller will only target its *u*F. This, combined with the assumption that active *i*Fs take precedence over *u*Fs as targets, means that when there is a mismatch between two targets, semantic agreement will be reflected on applications of Agree-Link that happen earlier, and morphological agreement on the later applications of Agree-Link.

This in and of itself however does not suffice to explain the data under discussion. What has been necessary is a way to explain *why* certain elements undergo Agree-Link before others. Key to this issue, has been the suggestion that Agree-Link takes place at the earliest possible moment: that is, at the first derivational step that controller and target share the derivation. This allowed us to explain why wiht English CNPs, a mismatch can arise where the anaphor shows semantic agreement and the verb morphological: the anaphor shares a structure with the CNP before T does, as anaphors merge (in the relevant cases) in object position. Similarly, on the assumption that adjuncts merge counter-cyclically into the derivation, it was able to be explained why in Russian and Hebrew, adjectives could show morphological agreement when the verb shows semantic agreement. Finally, with a point of variation between languages as to whehter adjuncts, when they undergo counter-cyclic merge, do so at the highest or lowest possible site of merging, allowed us to extend this timing account to the mismatches in Hebrew, Russian and Chichewa where a mismatch would arise between different adjuncts.

There are without doubt, as there always are, certain drawbacks to the proposal here. It is not clear for instance why *i*Fs should be privileged for Agree-Link over *u*Fs, and the idea of *i*Fs being able to be deactivated by Agree-Link is, admit-

tedly, a little murky. Yet, I have also shown that tolerating these apparent weaknesses allows for the pleasing situation where we can explain all mismatches in the same way, something that is not possible in previous approaches to this type of data (see section 4.4).

As a final note before finishing this chapter, it should be stated here that nothing in this chapter alone has motivated the model of Agree that I said that I would argue for, repeated below, but rather, it is the combination of this chapter and the next one that makes the argument for the two-step model of Agree. The observant and/or sceptical reader is right in thinking that the patterns given above can equally be explained in a one-step model of Agree, without the division between Agree-Link and Agree-Copy. The same patterns can be explained in the same way if one assumes an operation of Agree that links a probe and a goal and then immediately copies the value that applies as early as possible and can deactivate an active iF.[58] In the next chapter however, I will discuss restrictions on Agree-Copy that point towards this bit of the Agree mechanism as happening later than Agree-Link. That is, whilst we have seen evidence in this chapter that Agree-Link happens as early as possible in the syntax, we will see in the next chapter that Agree-Copy must be assumed to happen as late as possible in the syntax, and also allowed to happen post-syntactically. Combining this observation with the current chapter pushes us towards a two-step model of Agree.

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58 Along with the other assumptions that I have made along the way, of course, such as not ignoring an active iF, variation of highest/lowest site of adjunction merge etc.

5 Semantic agreement

With the discussion of Agree-Link in hand, I now turn to Agree-Copy, and specifically, why I propose that this must happen at a derivational point significantly later than Agree-Link, and not directly at the point when Agree-Link is established. In this chapter, I will discuss two major case studies of semantic agreement restrictions, CNPs in English and quantified numeral phrases in Russian. Along the way, there will also be a brief discussion of agreement with coordinations in English. The major proposal that will be made will be that Agree-Copy can only successfully copy the value of an *i*F if the controller of agreement c-commands the target of agreement. Therefore, the configuration in (186) will allow for a successful copy of the *i*F value, whereas the one in 187 will not. Furthermore, this relation must hold over LF-Structures.

(186)   Value of *i*F *can* be copied by Agree-Copy
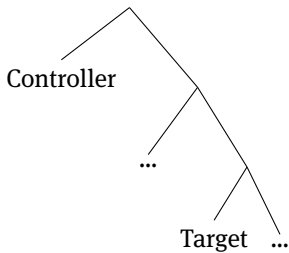
(187)   Value of *i*F *cannot* be copied by Agree-Copy
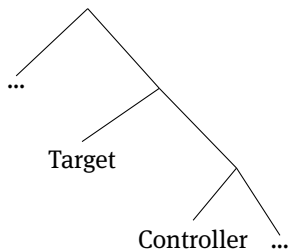
This restriction will be shown to hold only for *i*Fs. For Agree-Copy to successfully copy a value of a *u*F, either of the structures in (186) and (187) will suffice. That semantic agreement is sensitive to LF-representations leads to the conclusion that Agree-Copy happens at a separate step in the derivation to Agree-Link. Put simply, given that I have argued above that Agree-Link happens iteratively throughout the derivation whenever the relevant elements are first merged in the structure together, the LF representations that Agree-Copy is sensitive to are not yet built.

Thus, copying of values from one element to another must happen later than the process of linking the two elements.

In this chapter I will first discuss CNPs in English, followed by agreement with postverbal conjunctions, again in English. In both of these cases it will be shown that semantic agreement, though in principle possible with both controllers if impossible if the above structural conditions are not met. This discussion will be followed by the discussion of quantified numeral phrases in Russian, which show similar effects (Glushan, 2013).

5.1 Not quite equals: where semantic agreement is restricted compared to morphological agreement

5.1.1 Further restrictions on semantic agreement with CNPs

In the previous chapter we saw numerous instances of where semantic agreement is ruled out on a particular item where we would otherwise expect it. As I discussed at length, the cases in Chapter 4 showed that an active *i*F can be deactivated by Agree-Link, so an element that we might expect to show semantic agreement is prevented from doing so by another semantically agreeing element.

Another type of restriction on semantic agreement will be the focus of this chapter, specifically, the cases will involve instances of where semantic agreement is possible on a particular target but fails to arise in particular syntactic environments. Crucially, it is not possible to attribute these instances to another element deactivating the *i*F on the controller; rather it seems that in particular configurations, semantic agreement simply isn't possible.

There are three environments that have been noted where semantic is more restricted than morphological agreement for a particular agreement in English that I will discuss here, the first two from Elbourne (1999) and Sauerland and Elbourne (2002) and the last from den Dikken (2001).

Firstly, semantic agreement is not possible with existential constructions, as noted by Elbourne (1999) and Sauerland and Elbourne (2002):

(188)   a.   There is a committee meeting in the room right now.

       b.   * There are a committee meeting in the room right now.

These data are surprising, given that semantic agreement generally is possible on verbs. It should be familiar to the reader by now that CNPs generally have no issues showing plural agreement on verbs, but apparently this is not possible in an existential construction. It is tempting to think that this is something quirky and restricted to CNPs appearing in existential constructions (such an explana-

tion is given in den Dikken 2001; Sauerland 2004). However, other data suggest a more general restriction with semantically motivated agreement in existentials. In particular when the subject of an existential construction is a conjunction, then the expected plural agreement does not arise (Sobin, 1997; Alexiadou, Anagnostopoulou, and Wurmbrand, 2014):[59]

(189)   Sobin (1997, p. 341)

    a.   ?? A cup and a napkin is on the table.

    b.   A book and a pen are on the desk.

    c.   ⋆ There are a book and a pen on the desk.

    d.   There is a pen and a stamp on the desk.

Given that the plural agreement conceivably reflects the plural nature of the conjunction, it is reasonable to conclude that the reason why semantic agreement fails in (188b) is not because the controller of agreement is a CNP, but is a more general reflection of semantic agreement being ruled out in existential constructions.

Another surprising instance of semantic agreement failing with CNPs discussed by Elbourne (1999) (later discussed at length in Sauerland and Elbourne, 2002) is that when semantic agreement is controlled by a CNP, the CNP cannot reconstruct for scope.

(190)   a.   A northern team is likely to be in the final. $\exists >$ likely / likely $> \exists$

    b.   A northern team are likely to be in the final. $\exists >$ likely / *likely $> \exists$

The examples show that when *a northern team* controls semantic (plural) agreement in the matrix clause, it cannot reconstruct for scope into the lower clause, and thus take scope underneath *likely*. For this reading, the only possible agreement is where the agreement in the higher clause is morphological (singular). Importantly, the fact that this reading is allowed when there is morphological agreement shows that there is nothing inherent about CNPs that prevents them from reconstructing for scope (a point that we will return to later), but rather the restriction seems to be that when the CNP controls semantic agreement, scope reconstruction is not allowed.

The final restriction that has been noted for CNPs comes from den Dikken (2001), who notes that in the following, the sentence with singular agreement is ambiguous between two readings.

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59 In the examples in (189) I have translated numerical averages into traditional judgements for readability. Specifically, according to the results of Sobin's survey, (189a) is judged on average 2.22 out of 5 (189b 3.31/5, (189c) is 0.81/5 and (189d) is 3.58/5.)

(191)   The best committee is theirs.
         ✓ Subject reading
         ✓ Predicate reading

The readings are subtle, but the judgements fairly clear. The first reading, which we can term the *subject reading*, can be paraphrased as follows:

(192)   Subject Reading:
         The best committee belongs to them.

The second reading, which den Dikken terms the *predicate reading* can be paraphrased as below:

(193)   Predicate Reading:
         The committee that they belong to is the best committee.

Interestingly, whilst (191) with singular agreement is ambiguous between the subject reading and the predicate reading, when the verb shows (semantic) plural agreement, the ambiguity is lost and only the subject reading is possible.

(194)   The best committee are theirs.
         ✓ Subject reading
         ✗ Predicate reading

Again, note from the acceptability of both readings being available when the verb is singular in (191) shows that it is not impossible for a CNP to be construed with the predicate reading. The problem is rather that the agreement on the verb seems to limit the readings that the CNP is able to take.

5.1.2 It's all about the structure

If we consider the above environments more closely, a generalisation emerges regarding where semantic agreement is not allowed. Specifically, we can see that in all the environments listed above, if at the level of LF the CNP would occupy a position beneath the target of agreement, then semantic agreement is not permitted. We shall call this generalisation *LF-Visibility* for convenience.

(195)   *LF-Visibility*
         With CNPs, plural agreement requires the controller to c-command the target at LF, but singular agreement does not.

This is merely a descriptive generalisation, and I will turn to an account of why it should hold in section 5.2. For now, it is important only to keep in mind the description as given in (195), as we go through the environments in closer detail.

Firstly let's consider existential constructions. Existential constructions have garnered a large amount of attention in the literature, and there is an impressive range of views as to how they are derived, see Chomsky (1995), Lasnik (1995), Bošković (1997), Bobaljik (2002), Hazout (2004), and Witkós (2004), amongst many others. The precise derivation of most of the structure is not relevant for our purposes: what is important for us is where the associate DP lies (the postverbal DP that is understood as the 'subject' of the sentence). On this point, there are two main views.

The first view is that the associate DP, whilst ostensibly in a position underneath the verb on the surface, covertly raises in the LF branch, such that in the LF-representation, it lied in Spec,TP, along with *there* (which occupies Spec,TP in the surface representation as well). There seems little empirical evidence in favour of this approach, but rather the arguments that have been made are largely conceptual in nature. Chomsky (1995) argues that the raising of the associate is needed to check the case feature on the associate DP, which, in early minimalism, required a Spec-Head configuration. Lasnik (1995) also assumes a similar derivation, only the movement of the associate is not driven by case but rather by the assumption that *there* is an (LF-)affix and needs a host.

The other view regarding the position of the associate is that it remains underneath the verb in the LF-representation. This is supported by observations such as those made in den Dikken (1995, pp. 348–349), who gives the following paradigm:

(196)   a.   Some applicants$_i$ seem to each other$_i$ to be eligible for the job.

   b.   * There seem to each other$_i$ to be some applicants$_i$ eligible for the job.

   c.   Someone$_i$ seems to his$_i$ mother to be eligible for the job.

   d.   * There seems to his$_i$ mother to be someone$_i$ eligible for the job.

The ungrammaticality of the sentences in (196b) and (196d) comes as a surprise if the associate subject raises up to join *there* at the level of LF: were this the case then there ought to be no problem with the binding relations between the associate and the anaphora. As it happens, the sentences are ungrammatical, and the only reason seems to be that the anaphora are not licitly bound. den Dikken (1995) concludes that the associate does not raise to Spec,TP at the level of LF.

This does not of course mean that the associate never raises to Spec,TP, only that it does not occupy that position at LF, if we follow the standard Minimalist approach that binding relations ought to be evaluated at LF. A middle way between the two approaches is offered by Bobaljik (2002) who suggests that the associate does indeed raise to Spec,TP, but that for both the purposes of pronunciation and interpretation, its base position is chosen. The merits and drawbacks of each account of existential constructions aside, I will follow den Dikken (1995) here and

assume that the associate subject does not lie above T at LF. Returning then to LF-Visibility, since the associate stays low, this is our first piece of evidence that the LF-position of the CNP is relevant. For concreteness, I will assume the following LF-structure for existentials.[60]

(197)

```
                    TP
              _____|_____
            DPᵢ          T′
             |       _____|_____
           there    T          VP
                          _____|_____
                        ...          PrP
                                 _____|_____
                          associate DP    Pr′
                                       ____|____
                                      Pr       DP
                                             __/\__
                                          a committee
```
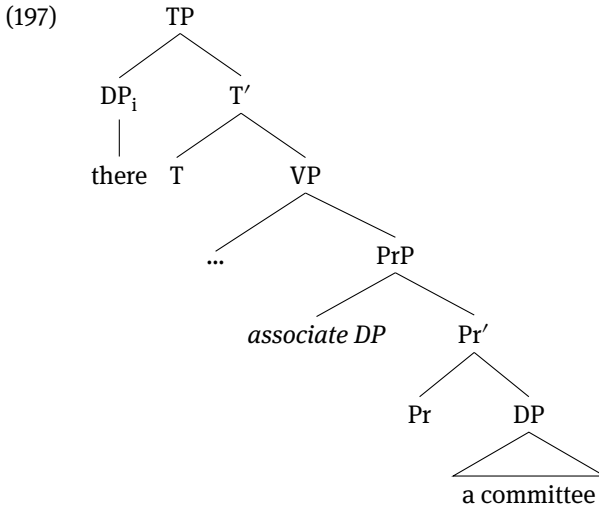
Existential constructions do not provide us with the necessary evidence to conclude that it is the LF position of the CNP which is crucial. They are consistent with this viewpoint, for sure, but do not offer convincing evidence in favour of it. The problem is that there is scant evidence that the associate ever raises to Spec,TP in the first place. One of the motivating factors for Bobaljik (2002) to assume that the existential constructions do involve some movement of the associate to Spec,TP (before subsequent reconstruction) was that they determine agreement on the verb. Yet, this argument only holds if it is the case that the agreement relation can only be established if the associate subject raises to a position above the verb. Whilst early Minimalist approaches Chomsky (eg. 1995) demanded Spec–Head relations be established between controller and target, as discussed above, it seems clear that this was too strong and a consensus has arisen since then that agreement relations can be established without obligatory Spec–Head agreement. Agreement relations therefore do not help us in determining the position of the associate.

In the absence of evidence from agreement relations, then the best piece of evidence we have (see (196)) merely tells us that the associate does not c-command

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60 This structure is based on Hazout (2004), but the details do not matter: all that is important for now is that the CNP lies beneath the verb.

the verb at LF. This does not help us conclude that *LF-Visibility* is correct: it could equally well be the case that semantic agreement fails because the CNP never raises above the verb at any point. To truly see the effect of LF-position, we need cases whereby the CNP has clearly raised above the verb, before reconstructing beneath it at LF. Both the reconstruction cases and the predicate readings give us this evidence, to which I now turn.

The scope reconstruction cases show us the desired evidence. Recall that the generalisation that we need to explain is that when there is semantic agreement, a CNP is not able to reconstruct for scope into a lower position, whilst this is possible when there is morphological agreement. Underlying scope reconstruction is a difference between where the DP in question is pronounced and where it is interpreted Fox (1999). Following standard assumptions, movement relations involve the syntax merging a single element in multiple places in the structure, before 'priveliging' a particular location to be interpreted for the DP at the level of LF, and a (potentially different) position to be interpreted for the level of PF. Whether this multiple merging is the creation of multiple copies of a DP connected in a chain or multiple branches connecting to a single element Bobaljik (1995) is orthoganol to our interest, but for concreteness I adopt the latter position. Thus, in the following, a single object is merged in both the matrix clause and the embedded clause.

(198)
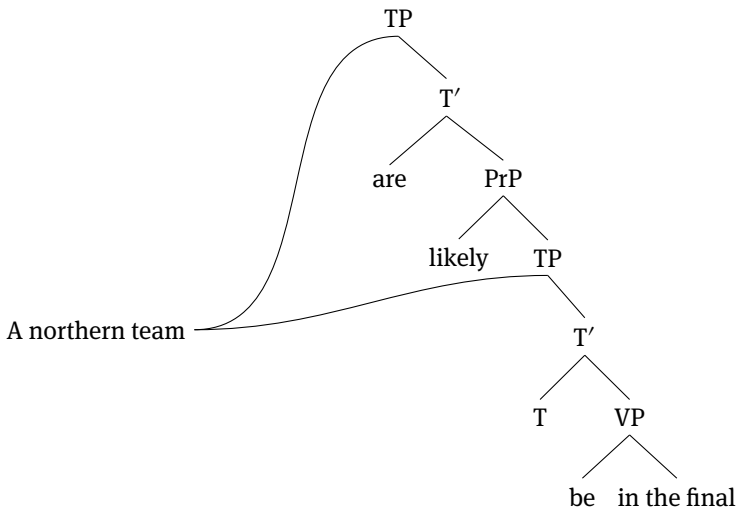
However, a single item that is merged in different places cannot be pronounced in more than one place at once, nor interpreted as such. Thus, Bobaljik (1995) assumes that LF and PF privilege a particular position, and so there is a single location for the DP at PF and one at LF. In case LF and PF pick the same position

to interpret the DP, then the scope and the surface position will be the same. In the diagramme, $_{LF}$ and $_{PF}$ represent the position where the CNP is for each interface. The strikethrough on the lower *a northern team* represents that there is movement from that position, but neither of the interfaces interprets the CNP there.

(199)   A northern team BE likely to be in the final. $\exists >$ likely / *likely $> \exists$
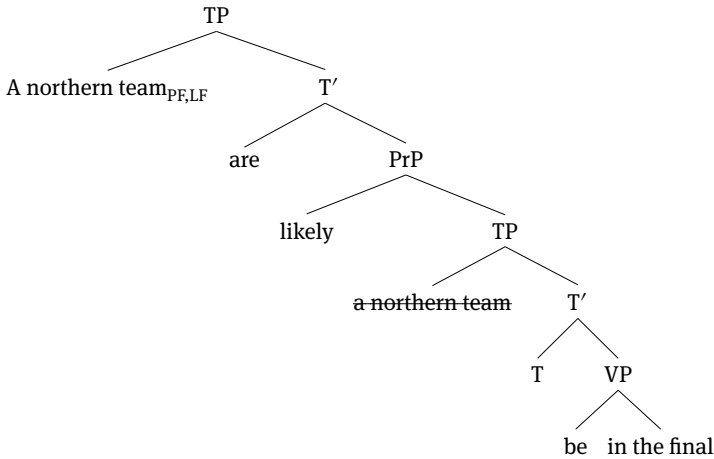
However, if there is a mismatch between the two interfaces, then the scope position will not match the position of pronunciation. In the following, one can see that the position where LF interprets the CNP (marked by $_{LF}$) is different to the position where PF interprets the CNP (marked by $_{PF}$).

(200)   A northern team BE likely to be in the final.   *$\exists >$ likely / likely $> \exists$
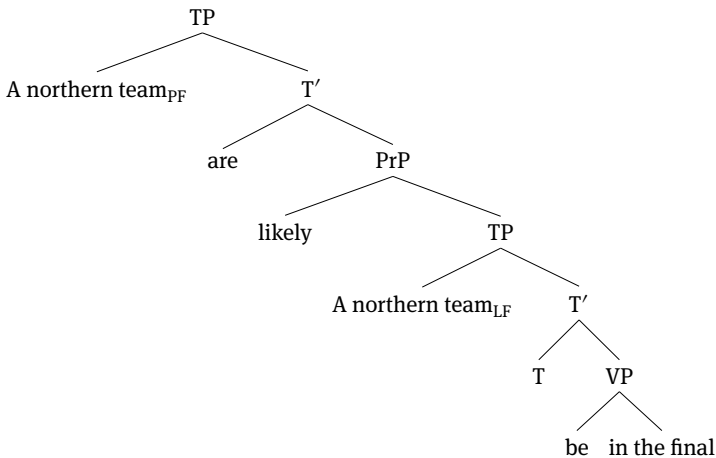
Thus, we can see that for the cases where the CNP reconstructs for scope (the structure in (200)), the LF position of the CNP will lie beneath the target of agreement

(the matrix T), consistent with LF-Visibility in (195). Note here that the CNP has clearly moved into the higher clause in this derivation, unlike as was the case for existentials.[61] For existentials, it was possible to argue that the plural morphology was not allowed as the CNP never moves above the target at any point. Here however, we have this movement, but semantic agreement is still restricted when the CNP reconstructs.

Finally, we are left with the predicate and subject readings. In order to explain the difference between the two readings, I assume that they come from different structures. The subject reading comes from the following structure (den Dikken, 2007), where the subject of the predicative XP moves into Spec,TP. In our case, this means that the CNP in the subject reading is, perhaps unsurprisingly, the subject of the predicate construction.

(201)

```
                    TP
            ┌────────┴────────┐
   the best committee_i      T′
                        ┌─────┴─────┐
                        T          XP
                              ┌─────┴─────┐
                             t_i          X′
                                    ┌──────┴──────┐
                                    X          theirs
```
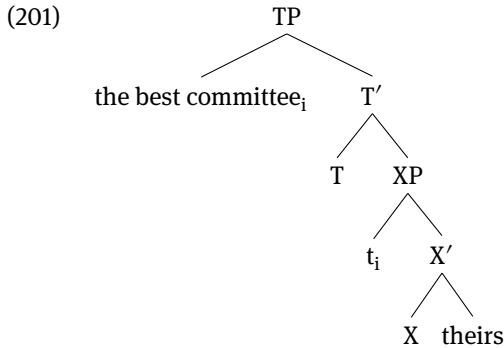
For the predicate reading on the other hand, I assume this time that the CNP is the predicate this time, and has moved from the complement of X to Spec,TP.

(202)

```
                    TP
            ┌────────┴────────┐
   the best committee_i      T′
                        ┌─────┴─────┐
                        T          XP
                              ┌─────┴─────┐
                           theirs         X′
                                    ┌──────┴──────┐
                                    X            t_i
```

---
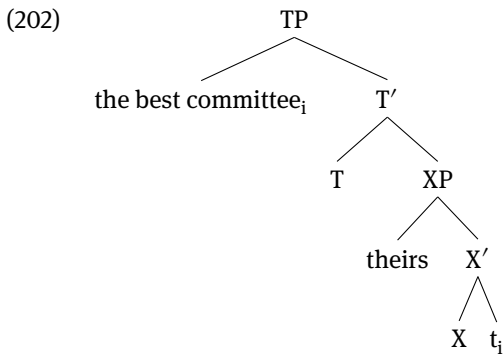
61 Unless one assumes that the high position of the CNP is derived through movement in the PF branch only (Sauerland and Elbourne, 2002)

The two structures will share an identical surface pronunciation, as the string remains *the best committee BE theirs*, but the two structures yield the different meanings. What is important for the purposes here is where the CNP lies at LF. Heycock (1995) shows that predicates obligatorily reconstruct at the level of LF. Therefore, whilst the CNP is pronounced in Spec,TP, it is interpreted in its base position.

(203)

```
                          TP
                  ┌───────┴───────┐
        the best committee_PF      T′
                          ┌────────┴────────┐
                          T                 XP
                                    ┌────────┴────────┐
                                  theirs             X′
                                             ┌────────┴────────┐
                                             X   the best committee_LF
```
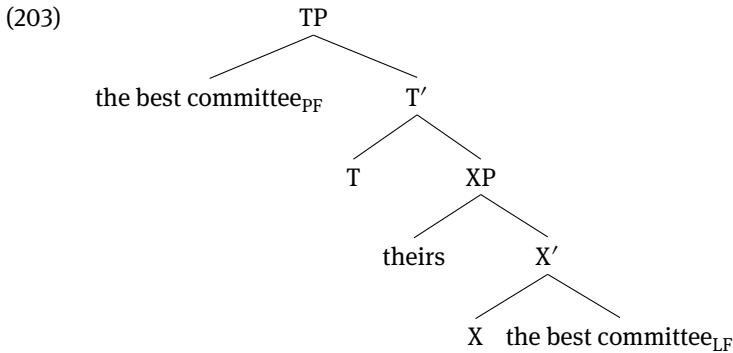
On the other hand, there is no reason to think that this is the case for the subject reading structures: subjects that raise to Spec,TP do not reconstruct like predicates do. Therefore, the LF structure is assumed to be the same in the relevant respects as the surface structure, and there is no difference in position between the two levels.

(204)

```
                            TP
                  ┌─────────┴─────────┐
        the best committee_LF,PF       T′
                            ┌──────────┴──────────┐
                            T          XP
                                   ┌────┴────┐
                                            X′
                                        ┌────┴────┐
                                        X   theirs
```
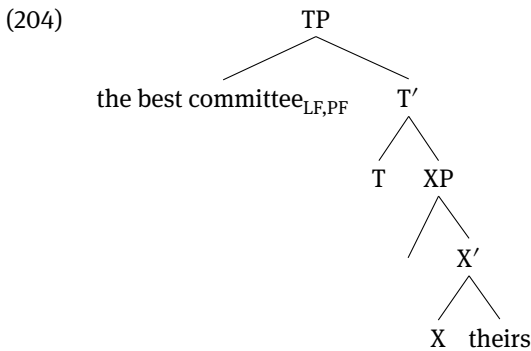
With these structures in mind, we can see that these data are then consistent with LF-Visibility. In the subject readings, the LF position of the CNP is above T, the target of agreement. On the other hand, with the predicate readings, the CNP is beneath T. Given that the CNP is the controller of agreement, as the controller of agreement in English predicate constructions is always the element that is pronounced in Spec,TP (den Dikken, 2007), whether it is a regular predicate structure (as for the subject readings) or an inverted on (as in the predicate readings).

5.1.3 Interim conclusion

Before moving on to an explanation of why these restrictions should hold it is worth stepping back a minute to consider the conclusion that will matter in the discussion ahead. In all of these three environments, the environments where semantic agreement is permitted is a subset of the environments where morphological agreement is permitted. Thus, our explanation of semantic agreement will need to not only account for why semantic agreement is not possible in certain situations, but account for the fact that morphological agreement is possible in all of those contexts. This is important, because we cannot simply explain the lack of plural agreement in certain sentences by disallowing CNPs from appearing in those environments. Specifically, what we need to be able to capture is why semantic agreement is sensitive to the LF position of the controller, and why it has a direction restriction. These two components are crucial to the analysis and what I turn to in the next section.

5.2 Restrictions on AGREE-COPY: why semantic agreement is restricted

In the preceding section, we have established that it is the LF-position of the CNP that matters with respect to whether the CNP will be able to control semantic agreement or not. Up to this point, it is not clear why this is the case, other than it seems to be.

5.2.1 Allowing for semantic agreement in a two-step model

Recall from the discussion earlier on that I am proposing a two step model of Agree and have argued that AGREE-LINK happens iteratively in the syntax at the first point that the controller and target share the structure. It is clear from the discussion above though that there are restrictions on semantic agreement that hold later on, over LF-structures, given that the LF position of the CNP is relevant. The reader should also note that existing models of the two-step agreement model, such as that given by Arregi and Nevins (2012) are insufficient to derive semantic agreement:[62]

---

62 The definition in (205) is adapted slightly for readability.

(205) AGREE in Arregi and Nevins (2012)

Agreement by Probe with Goal proceeds in two steps:

a. AGREE-LINK: in the syntax, a probe has unvalued ϕ-features that trigger Agree with a goal (possibly more than one). The result is a link between probe and goal.

b. AGREE-COPY: In the postsyntax, the values of the ϕ-features of the goal are copied onto the probe linked to it by AGREE-LINK.

Given the topography of features that I have been assuming here (repeated in (206) below), whereby *i*Fs are present in the syntax and on the LF-branch but *not* the PF-branch, then if AGREE-COPY happens solely on the PF-branch, then it comes too late, as the *i*Fs will not be present and so cannot lend a value to the probe.

(206)

Syntax
Both *u*Fs and *i*Fs

PF ←——————————————————————→ LF

←············ TRANSFER ············→
   *u*Fs   *i*Fs

We therefore need to ensure that AGREE-COPY has the opportunity to happen before the post-syntax, in order to ensure that the *i*Fs remain accessible, and that the output of AGREE-COPY can receive a morphophonological realisation.[63] However, we must also ensure that this application of AGREE-COPY happens late enough in the syntax to operate over LF-representations, given that we have seen above evidence that semantic agreement is only possible if the controller c-commands the target at the level of LF. Thus, we need to be careful to rule out a situation whereby a hybrid noun moves above the target of agreement, undergoes AGREE-COPY, before reconstructing back to a position underneath the target for LF.

This cluster of factors can be explained if we assume that LF-representations are created *before* the application of AGREE-COPY. Assuming that once the LF-structure is created it cannot be modified (at least, not open anymore to syntactic

---

63 Even if one were to assume that AGREE-COPY could operate in postsyntax on the LF side of the grammar, it would not feed into the pronunciation, as, under standard minimalist assumptions, the LF-branch does lead onwards towards PF.

operations), then this will ensure that Agree-Copy will always see what the LF sees. To this end, I adopt the single-output-syntax model of Bobaljik (1995) and Bobaljik (2002). Bobaljik proposes that at the end of the syntactic derivation, there is one output of syntax, and that the LF positions and PF-positions of an item are computed as part of that output. This model, which resembles an inverted T, differs from the traditional model of the GB/Minimalism in that there are no syntactic operations that happen along the LF branch (covert movement etc.), but that the syntactic operations (concerning that part of the structure at least) are complete once the structure is transferred to both interfaces.

We are now in a position to explain why semantic agreement is sensitive to LF-representations, yet still be able to have a morphological reflex. I propose that at the point of transfer two things happen: firstly Privilege selects the LF and PF positions of elements; and secondly, there is an iteration of Agree-Copy. Only after these two things have happened is the structure shipped off to the interfaces. Schematically, we can view this model, overlaid with the suboperations of Agree and which features are visible to Agree-Copy.

(207)   The decomposition of Agree
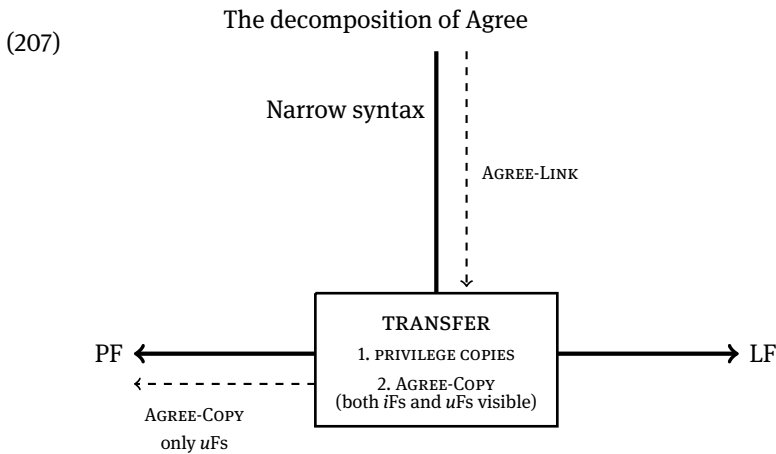
As Agree-Copy happens before the structure is shipped off to the interfaces, the *i*Fs are still visible to the probe, and thus the semantic features can participate in agreement relations. Note however, that this is a one-time deal: after this point, the *i*Fs cannot contribute any information that will be morphologically visible. This is because they will not be present in the PF component, and so any feature that waits for valuation until PF will only be able to see other *u*Fs, and crucially not *i*Fs. Further note that it is not the case that Agree-Copy *must* target *i*Fs if it applies at the point of transfer. It can presumably target *u*Fs as well. The point here is that if Agree-Copy targets *i*Fs, it can only do so when Agree-Copy happens at transfer.

The last step of the puzzle is to constrain AGREE-COPY such that it can only look upwards in the structure if it happens at this point, so that the only controllers of agreement that can be accessed are those that c-command the target. However, it must *also* be the case that it cannot be a general property of AGREE-COPY, given that morphological agreement, that is, agreement with *u*Fs, is not similarly constrained: the reader will recall that the requirement that the target be c-commanded by the probe holds *only* for semantic agreement. Morphological agreement is less restricted, hence the differences between semantic and morphological agreement. Thus, I will add clause (i) to the definition of Agree below.

(208) Agreement by Probe with Goal proceeds in two steps:

    a. AGREE-LINK: a probe has unvalued ϕ-features that trigger Agree with a goal (possibly more than one). The result is a link between probe and goal.

    b. AGREE-COPY: After the syntactic derivation, the values of the ϕ-features of the goal are copied onto probe linked to it by AGREE-LINK.

       i. if AGREE-COPY happens at the point of transfer, this requires that goal c-command the probe.

With this condition, then we ensure that semantic agreement will only be able to target a c-commanding element at LF. It is important to recognise however that the condition in (208b.i) is quite stipulatory. It would of course be nice if this could be derived from something else in the grammar, rather than simply stating it as such a stipulation. Unfortunately, I cannot offer a reason why this should be the case. I have been working on this issue on and off since 2011, and have thought a lot about it throughout the process of writing my dissertation and this book. In all honestly I am no closer to understanding why this is the case than I was in 2015, when I had to leave the issue open in my dissertation for future research, and I will have to do the same here. I hope that brighter minds than mine will be able to shed light on this in the future.

5.2.2 Derivations

With this discussion in mind, I will go through the derivations to see how this model of agreement derives LF-Visibility and allows us to understand why semantic agreement is restricted compared to morphological agreement.

5.2.2.1 Existential Constructions

Firstly, consider existential constructions. Recall that the LF position of the associate is assumed her to lie beneath the position of the verb at the level of LF, in order to capture the binding facts that den Dikken (1995) observes, given in (196) above. The PF position of the associate is also transparently underneath the verb, and so we will assume the null hypothesis that the LF and the PF positions of the associate are the same. Therefore, unlike with scope reconstruction and predicate readings, which we will come to shortly, the derivation before PRIVILEGE takes place is relatively uninteresting for our purposes. All that matters is that the structure after PRIVILEGE has applied is as follows, and at this point, AGREE-LINK has linked T to the associate DP (as discussed in the previous chapter).

(209)

```
              TP
            /    \
        There     T′
                /    \
              is       vP
                     /    \
     a committee_{uF,iF}    v′
                          /    \
                         v      VP
                                /\
                            in the room
```
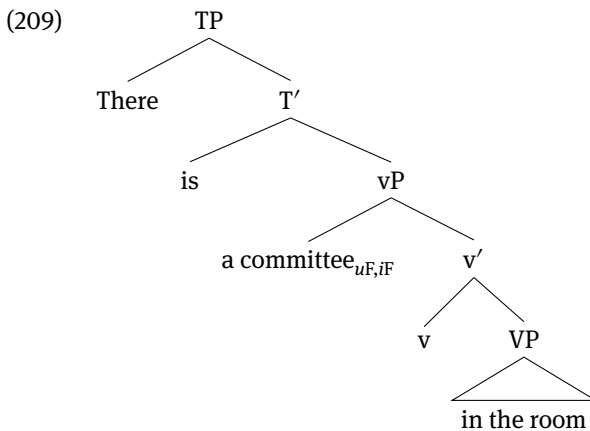
The iFs are of interest for semantic agreement. After the copies have been privileged to give the representation in (209), then AGREE-COPY takes place. However, the iFs of the associate are inaccessible for them, since they are not in a position that c-commands the verb. Note that AGREE-COPY can happen in the post-syntax, in which case it will be able to access the uFs looking downwards in the structure, as AGREE-COPY is not restricted after the application at the point of transfer. Thus, morphological agreement can succeed if AGREE-COPY applies in the post-syntax, but there is no way that AGREE-COPY can see the iF value.

5.2.2.2 Scope reconstruction

As discussed earlier, in the sentences under discussion, the wide scope reading differs from the narrow scope reading in that the former has the iFs semantically realised in the position where the uFs are pronounced, that is in the matrix Spec,TP.

(210)

```
                              TP
                      ┌────────┴────────┐
         A northern team_{uF,iF}        T′
                              ┌─────────┴─────────┐
                             BE                   PrP
                                          ┌────────┴────────┐
                                        likely             TP
                                                    ┌───────┴───────┐
                                                    t              T′
                                                           ┌────────┴────────┐
                                                          to                VP
                                                                     ┌───────┴───────┐
                                                                 be in the final
```
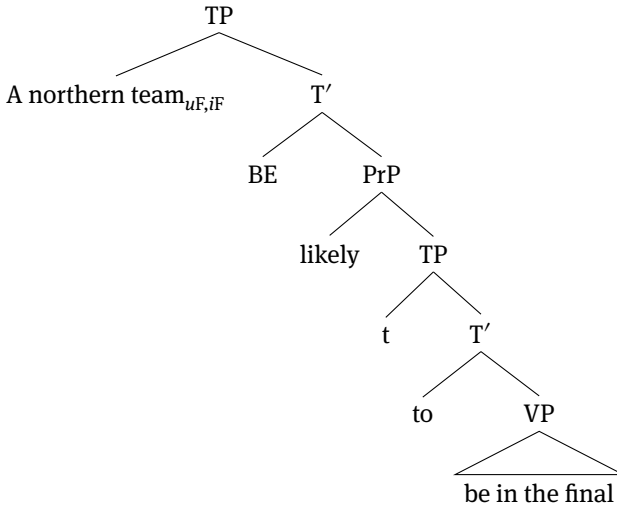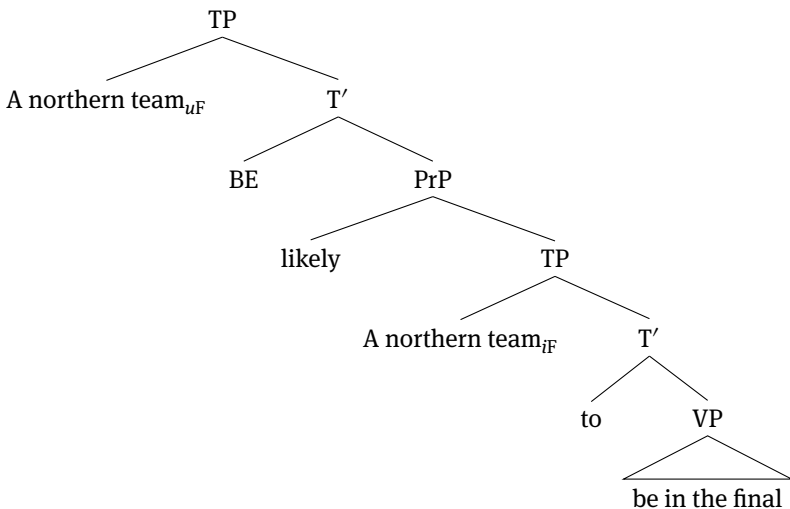
In this structure, the *i*Fs can successfully serve as the goal for the probe, matrix T, and semantic agreement is possible. One can see in the diagramme that the *i*Fs of the CNP are in a position where they c-command the probe, and so according to the definition of Agree given above, AGREE-COPY can succeed.

On the other hand the narrow scope readings involve a situation whereby the *i*Fs are interpreted in the lower Spec,TP, whilst the *u*Fs remain pronounced in the matrix Spec,TP, with the result that the position of pronunciation does not match that of interpretation.

(211)

```
                              TP
                      ┌────────┴────────┐
           A northern team_{uF}         T′
                              ┌─────────┴─────────┐
                             BE                   PrP
                                          ┌────────┴────────┐
                                        likely             TP
                                                    ┌───────┴───────┐
                                      A northern team_{iF}         T′
                                                             ┌──────┴──────┐
                                                            to            VP
                                                                   ┌───────┴───────┐
                                                               be in the final
```

In this structure then, as *i*Fs cannot value the matrix T as they lie within the subordiante TP. The *i*Fs of the CNP, as can be seen in the structure lie beneath matrix T, the probe, and as such, according to our definition of agreement cannot successfully be the goal. Therefore, semantic agreement fails when the CNP reconstructs for scope.
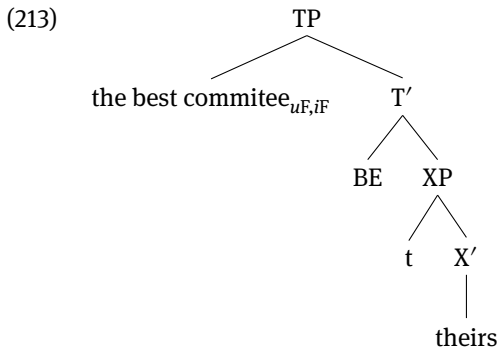
5.2.2.3 Predicate vs subject readings

Finally, I return to the predicate vs. subject readings of the following string (where BE represents the auxiliary, neutral towards its agreement):
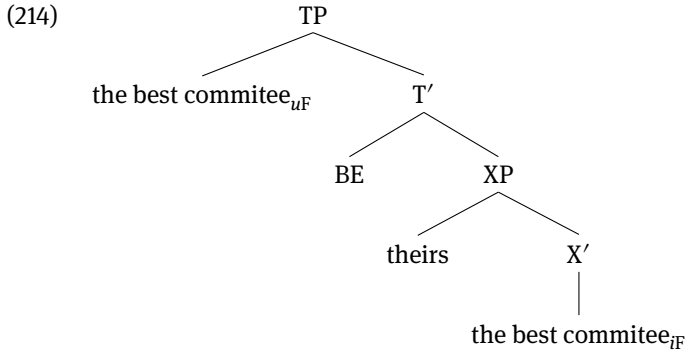
(212)   The best committee BE theirs.

Recall from earlier that when the CNP in these sentences is construed as the predicate of the sentence, then the verb can show either singular or plural agreement. On the other hand, if the CNP is interpreted as the predicate of the sentence, then only singular agreement is allowed. Semantic plural agreement is not allowed in this case.

Above, I proposed that the structure for the subject reading was one where the CNP is both pronounced in Spec,TP and semantically interpreted there, and so the structure after copies are privileged is as follows, with the *i*Fs and the *u*Fs of the CNP being privileged in the same place Given that the *i*Fs c-command the target of agreement, T, then there is no problem with them transferring a value to T under Agree-Copy.

(213)

$$
\begin{array}{c}
\text{TP} \\
\diagup \diagdown \\
\text{the best commitee}_{u\text{F},i\text{F}} \quad \text{T}' \\
\diagup \diagdown \\
\text{BE} \quad \text{XP} \\
\diagup \diagdown \\
\text{t} \quad \text{X}' \\
| \\
\text{theirs}
\end{array}
$$

On the other hand, in the predicate reading the CNP is the predicate. Thus, it has raised from the complement of X′. As it is a predicate, it must reconstruct to this position at LF (Heycock, 1995): Just like in the scope reconstruction cases, we then have a disparity between where the *u*Fs of the CNP are realised and where the *i*Fs are interpreted. Semantic plural agreement is not possible, because the *i*Fs lie beneath the probe at LF, and so Agree-Copy cannot copy their value.

(214)

```
                        TP
              ┌──────────┴──────────┐
    the best commitee_uF            T′
                              ┌──────┴──────┐
                             BE            XP
                                      ┌─────┴─────┐
                                    theirs        X′
                                                  │
                                          the best commitee_iF
```

5.2.3 Against previous approaches

There are three major accounts of these restrictions of CNPs, from Elbourne (1999) and Sauerland and Elbourne (2002), Sauerland (2004) and den Dikken (2001), with all offering a partial account of the facts, which I will briefly discuss here. A more complete discussion of how these accounts compare to what I offer here is given in Smith (2017).

den Dikken (2001) and Sauerland (2004) are similar in that they attempt to account for the inability of CNPs to control semantic agreement in certain environments by proposing that there are two types of CNPs: a version which displays regular singular agreement, and a plural agreeing version. The plural agreeing version is derived from the regular CNP by the addition of an extra element. For den Dikken, the additional element is *pro*, which is specified as plural, and heads the structure (hence making the number value of the CNP as a whole plural). For Sauerland (2004), the additional element is Γ^{-1}, which is a plural operator that turns the CNP into a plural. In both of these accounts, the extra element added to the CNP determines the agreement possibility as only plural (for verbal agreement). If the CNP lacks the added element, then singular agreement will result. Therefore, CNPs are not treated as hybrids in the way that they are here, but rather there are two homophonous CNPs, one that agrees singular and one that agrees plural (through the addition of the extra element).

The extra element also has the effect of reducing the environments in which the CNPs with the element can occur. Sauerland (2004) claims that the plural operator Γ^{-1} makes the entire DP a definite expression. This holds even when it looks like an indefinite (such as *a northern team*), in which case Sauerland terms them *hidden definites*. As with den Dikken's account, this additional element creates added restrictions on the CNP. Sauerland points out that definite expressions do

not in general reconstruct, accounting for the inability of scope reconstruction with plural agreement. Furthermore, there is a well known definiteness effect in existential constructions wihch would then prevent plural agreeing CNPs from them.

In a similar vein, den Dikken (2001) claims that the added plural *pro* that heads the structure makes the CNP a pronoun, and as such, one can explain why plural agreeing CNPs are not able to appear in existential constructions or be predicates, as he claims that these environments in general restrict pronominals. Existentials for instance in general do not permit pronominal associates, and den Dikken claims that pronominals cannot serve as predicates. One problem for this account is that it the veracity of both of these claims are disputable. Whilst clearly not as available as for indefinite DPs, there are instance where pronominals can serve as associates, and predicates:[64]

(215) a. Don't worry about finding someone, there's always us.

   b. There are gods and we are them.

Cases of mixed agreement are handled differently on both accounts. Both den Dikken and Sauerland note that demonstratives can agree in singular, even where there is a plural verb:

(216) This commitee are going to make the recommendation.

On the surface of it, this looks like a major issue: recall that the extra element should render the agreement possibility as plural. Sauerland claims that the operator however merges *above* the demonstrative, which would mean that the demonstrative, looking down in the structure, would only be able to undergo singular agreement, as the plurality of the CNP is at that point not established.[65]

(217)

ϕP
ϕ_{pl} DP
    Γ^{-1} ϕP
          ϕ_{sg} DP
                this   committee

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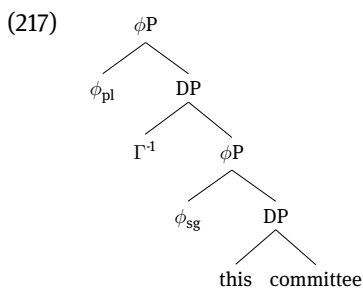
64 Thanks to Jonathan Bobaljik for pointing out examples like (215b) to me, and see Bošković (2002, footnote 35) for discussion on examples like (215a).

65 Assuming either that agreement happens as soon as possible, or that agreement can only look downwards.

However, it is not clear how this account will extend to the mismatch case in the 3/4 pattern discussed in Chapter 4, given that both external agreements should only be able to see plural.

For den Dikken on the other hand, the mixed agreement in (216) is shown because the plural *pro* prevents the plural demonstrative from merging into the structure. Again, however, it is not clear how this would extend to the 3/4 patterns that Sauerland's account similarly struggled with.

The 3/4 problem aside, a bigger issue for both accounts is sentences such as the following:

(218)   There is a team starting to psych themselves up in the dressing room.

Here, the CNP is the associate of an existential construction, and so a plural agreeing CNP should not be allowed. However, the agreement on the anaphor shows that the CNP *can* trigger plural agreement. Thus, sentences such as this show that there is no general prohibition to plural agreeing CNPs being in existential constructions; just that the agreement can't be reflected on the matrix verb.

Elbourne (1999) and Sauerland and Elbourne (2002) take a different tack and argue that there are not two distinct types of CNP, one that agrees plural and one that agrees singular. Rather, like the account offered here, it is claimed that CNPs in general have the ability to trigger both singular and plural agreement, but that plural agreement is restricted independently of the CNP. Specifically, these works claim that CNPs (in the relevant dialects of English) are endowed with a feature called *mereology* that reflects the internal plurality of the collective. The value of *mereology* is plural, and will account for plural agreement when it arises. Singular agreement comes from the regular number feature on the CNP.

What is responsible for the restrictions on plural agreement is the stipulation that *mereology* cannot raise covertly. This work assumes that agreement is licensed in a Spec–Head configuration, but that this requirement can be met through covert movement in the LF branch. Thus, Elbourne (1999) and Sauerland and Elbourne (2002) assume that in existential constructions, the associate DP remains underneath the verb on the surface, but the phi-features must raise covertly into Spec,TP on the LF branch, in order for the agreement to be licensed. Only *mereology* cannot do this, and so whilst nothing prevents the singular number feature from covert movement, plural agreement cannot happen in existentials. A similar explanation is given to scope reconstruction. Specifically, the assumption is that narrow scope readings are obtained through movement on the PF branch of the CNP, and so at LF, the CNP will be in the lower clause whilst the CNP is pronounced in the high clause. However, the conditions for agreement on the matrix verb must still be met. Again, there is not issue with the singular number feature raising covertly to license the agreement on matrix T, but *mereology* cannot, and

so plural agreement is not allowed when the CNP is in the low position in the clause.

Again, a problem for this account is that it is only partial: it is not immediately clear how the asymmetry between predicate and subject readings can be derived from this system. A bigger problem however is the covert movement itself. Recall from earlier that there is good reason to believe that there is no covert movement in existential constructions, see the facts from den Dikken (1995) in (196). Thus, whilst I follow the thrust of the account in Elbourne (1999) and Sauerland and Elbourne (2002) here, in assuming that restrictions on semantic agreement with CNPs is not because of the CNPs themselves, but instead how agree interacts with the semantic information of the CNPs, it is clear that a different way of looking at this than that offered in Elbourne (1999) and Sauerland and Elbourne (2002) is needed.

5.2.4 Further evidence: postverbal conjuncts in English

Before moving on, I should point out that the account offered here, in addition to improving on the previous accounts in that it can offer a unified explanation for all the restrictions that we have discussed here, makes more general predictions beyond CNPs and so can be extended to other phenomena. One area where we can use this explanation more widely is with coordination agreement in English, specifically, it allows for an explanation as to why postverbal conjunctions in English do not allow plural agreement (Sobin, 1997; Alexiadou, Anagnostopoulou, and Wurmbrand, 2014).[66]

It is clear that coordinations have *i*Fs, at least for number and person features. It is easy to see this in English, because a conjunction of two singulars can bind a plural anaphor. The plural value of the anaphor seems to come from the conjunction itself, given that it cannot have come from either of the conjuncts.

(219) [A bear and a fox]$_i$ laughed at themselves$_i$ in the mirror.

Thus, based on the above discussion, we expect then that agreement will not be able to be plural when the conjunction is the associate of the existential construction. The answer is the same for conjunctions as it was for CNPs: the *i*Fs of the conjunction cannot be transferred under AGREE-COPY because the conjunction is in the wrong position to allow this to happen. Importantly, this lends further support to the proposal here, whereby the failure of semantic agreement in existential

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66 See in particular Sobin (1997) who documents the difference in judgements clearly.

constructions with a CNP associate is not something idiosyncratic to CNPs (as proposed by Sauerland 2004; den Dikken 2001), but reflects a more general limitation on semantic agreement itself.

5.2.5 Interim Summary

In the preceding discussion I have argued that CNPs shed light on the mechanics of Agree-Copy, and interestingly, show that Agree-Copy has very distinct properties from Agree-Link. Specifically, whilst in the previous chapter we saw that Agree-Link happens at the earliest possible point that it can in the derivation but that Agree-Copy happens very late in the derivation, at the earliest at the point of transfer. Furthermore, whilst there is no reason to think that Agree-Link operates under any particular direction restrictions, Agree-Copy does appear to, at least when it takes place in the syntactic derivation, as then it has to look upwards in the tree.

5.3 Semantic agreement in Russian

Our discussion has up until now (with the exception of the conjunctions discussed in section 5.2.4) focussed only on CNPs in English. In this section, I will discuss quantified noun phrases in Russian to extend this account, and further motivate the restrictions on Agree-Copy that I have proposed above.

5.3.1 Agreement in Russian: Looking everywhere

Russian agreement broadly follows the same rules that are familiar from many Indo-European languages: agreement is controlled by the NP that has nominative case.[67] Thus, *Maša* in the following determines feminine singular agreement on the verb.

(220) Maša   priglasila   nas v gosti
      Masha.FEM.SG invited.FEM.SG us   in guests
      'Masha invited us to her place.'

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[67] Unless otherwise noted, examples and glosses are taken from Glushan (2013).

With the exception of the QNPs shortly to be discussed, agreement is obligatory. Therefore, in the following, the agreement value on the verb *must* be plural if the controller is plural, rather than revert to a default singular value:

(221) a. studenty byli   v komnate
           students was.PL in room
           'Students were in the room.'

       b. student byl   v komnate
           student was.SG in room
           'A student was in the room.'

       c. stulja byli   v komnate
           chairs was.PL in room
           'Chairs were in the room.'

       d. stul byl   v komnate
           chair was.SG in room
           'A chair was in the room.'

Agreement with an NP that is in nominative case is generally taken to reflect the *u*F features of the NP, which as is regularly the case, lines up with the values of the *i*Fs of the NP. However, one can see a divergence between the two in compound numeral cases where the final numeral is 'one', for instance *twenty one*. In the following, despite the fact that a set of twenty one leaves is clearly a plurality, we can see singular agreement. Thus, the numeral 'one' in the structure renders the feature set on the noun to be (partially) [*u*F:singular]. It is also possible to conclude from this, that agreement in general tracks the *u*F values on the controller, and not the *i*F value (which would be plural).

(222) S   dereva napadal/*napadalo   dvadcat' odin
       from tree   na-fallen.MASC.SG/*na-fallen.N.SG twenty   one
       listik
       leaf.MASC.SG
       'Twenty one leaves have fallen from the tree.'

Agreement with nominative arguments in Russian is possible across a wide domain. Elements that must remain low in the structure are able to control agreement on the verb. For instance, in the following locative inversion structure, the subject remains low in the derivation (Glushan, 2013), but is the controller of agreement.

(223) Na ulice stojali/*stojalo   dorogie   mašiny
       on street stood.PL/*stood.N.SG expensive cars
       'There were expensive cars parked in the street.'

5.3.2 QNPs in Russian

The data that interest us come from quantified noun phrases (QNPs). These nouns are curious for us, because in contrast to the examples given above, it has been noted that they do not show obligatory agreement, but rather optional agreement with the verb. Consider the following cases:

(224)   Pjat' krasivyh devušek prišli/prišlo
        five   beautiful girls   arrived.PL/arrived.N.SG
        'Five beautiful girls arrived.'

In the above *pjat' krasivyh*, 'five girls', seems to be able to control either plural or neuter singular agreement on the verb. These nouns are particularly interesting for our purposes, because they have been analysed in various places as being caseless (Glushan, 2013). To the extent that this is true, they fall outside the usual rules for agreement in Russian, which rigidly tracks nominative case.[68] The question that must be solved is why the QNPs allow for optional agreement. One way we can look at this, in which I follow Glushan (2013) is to assume that when they do show plural agreement, this is semantic agreement. Specifically, I will assume that QNPs are a special class of items in Russian that allow for semantic agreement. In fact, I will assume that they either show semantic agreement, or no agreement at all. That is, the *i*F:number is always active for agreement.

If plural agreement reflects *i*F agreement, then where does the neuter singular agreement come from? The answer that is traditionally assumed is that it reflects a default agreement on the verb, in that the QNP has failed to control agreement and so a default value must be used. The reason for this failure of agreement has been argued to be related to case; various authors have assumed that QNPs are ambiguous between having case and not having case (see Pesetsky, 1982; Franks, 1994; Bošković, 2006b; Glushan, 2013). In case they have case, they control agreement on the verb and we see plural agreement, but if not, T-agreement fails and we see default morphology on the verb.

That these QNPs allow the *u*Fs that usually play the controlling role in Russian to be bypassed in favor of *i*F agreement allows us to test *LF-Visibility* against a wider set of data. Based on what was proposed in section 5.2, we make predictions of where *i*F agreement should be possible with Russian QNPs: *i*F agreement should be possible only if the QNP c-commands the target of agreement (T, here) at LF.

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68 Though it should be noted that there are proposals that treat QNPs as being only optionally marked for case, (Pesetsky, 1982; Franks, 1995; Bošković, 2006b).

There is a lot of support that this is in fact the case. When plural agreement is on the verb, the QNP is allowed to bind a reflexive in object position, however, when there is only singular agreement, binding is not possible (Franks, 1995).

(225)   a. Pjat' ženščin smotreli/smotrelo   na Ivana
           five   women looked.PL/looked.N.SG at Ivan

           'Five women looked at Ivan.'

        b. Pjat' ženščin smotreli/*smotrelo   na sebja
           five   women looked.PL/looked.N.SG at themselves

           'Five women looked at themselves.'

Franks proposes that the ability to bind a reflexive is a property that comes from being in Spec,TP. The reflexive is subject oriented, and is assumed to lie at least in Spec,vP (see Franks, 1995). Therefore, according to our definition of agreement, it then makes sense that there would be a correlation between semantic agreement being possible and being able to bind an anaphor: being located in Spec,TP makes both of these possible as (according to Franks) it is a necessary condition of binding, and it is a position that makes semantic agreement possible on T, which it c-commands (according to me).

Franks also proposes that this is the case for when the QNP controls a PRO in an embedded gerund: the antecedent must be in Spec,TP for this to be licensed. We expect then that plural agreement should be obligatory when the QNP needs to control a PRO in a gerund, which is true:

(226)   a. Po doroge domoj, pjat' malčikov zašli/zašlo
           on way   home five boys   dropped.in.PL/dropped.in.N.SG
           v magazin
           to store

           'On their way home, five boys dropped into a store.'

        b. Vozvraščajas' domoj, pjat mal'čikov
           returning   home five boys
           zašli/*zašlo   v magazin
           dropped.in.PL/dropped.in.N.SG to store

   'Returning home, five boys dropped into a store.'

More evidence that Spec,TP is crucial for licensing semantic agreement comes from how agreement is resolved when the controller is an inanimate QNP subject in an intransitive clause. Glushan shows that there is an important animacy distinction with QNPs (this has been noted in surveys by Corbett, 1983; Robblee, 1993). Above it was said that *i*F agreement seems to be optional with QNPs, but this is only partially true. Animate QNPs optionally control *i*F agreement on the

verb, whereas inanimate QNPs are apparently unable to control *i*F agreement on the verb.

(227) a. Pjat' studentov   prišli/prišlo
           five students.GEN arrived.PL/arrived.N.SG
           'five students arrived.'

       b. Pjat' pisem   ??prišli/prišlo
           five letters.GEN ??arrived.PL/arrived.N.SG
           'five letters arrived.'

Simplifying somewhat for ease of exposition, Glushan argues that the reason why inanimate QNPs, in this instance, are unable to control *i*F agreement on the verb is because in general they are not sufficiently high in the structure. She argues that their default position at the level of LF, is internal to VP, and that this position is not local enough to T in order to allow semantic agreement to be possible.[69] Whilst Glushan assumes a slightly different conception of agreement semantic agreement locality to what I have proposed here, as will be discussed below, the lack of semantic agreement from inanimate NPs is what would also be expected from the discussion of *LF-Visibility* above.

(228)   semantic agreement not possible
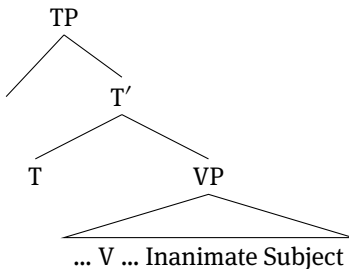
However, it is not the case that inanimate QNPs cannot control agreement on the verb under any circumstances, merely, that on the unmarked reading they do not. Glushan (2013) provides an important observation: inanimate QNPs *can* control plural (semantic) agreement, and in some cases must do. Firstly, when the QNP is the subject of a transitive clause, the inanimate/animate distinction seen in (227) breaks down, and both types of QNP can (optionally) control agreement on the verb:

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69 For further justification of this, I refer the reader to Glushan (2013).

(229) a. Pjat' studentov polučili/polučilo stipendiju
five students.GEN received.PL/received.N.SG scholarship
'Five students received the scholarship.'

b. Pjat' izdanij ?napečatali/napečatalo etu statju
five volumes.GEN published.PL/N.SG this article
'Five volumes published this article.'

More striking is what happens when the QNP is presupposed. In this instance, *i*F agreement with the QNP is obligatory, even for inanimate subjects:

(230) **Context:** There were ten fridges selected for this dorm kitchen. They were used but supposedly in good shape. Five of them functioned, the other five were placed in the kitchen for storage.

Pjat' (iz etih) holodil'nikov rabotali/??rabotalo, pjat' ostal'nyh
five of these fridges worked.PL/workedN.SG five of.the.rest
prosto stojali/??stojalo v kuhne na hranenii
simply stood.PL/NEUT.SG in kitchen on storage

'Five of these fridges worked, the remaining were kept the kitchen for storage."

(231) **Context:** There were ten people selected to be sent to a developing area N. They were all qualified engineers. Five of them worked at this plant, the other five worked in construction.

Pjat' (iz etih) inženerov rabotali/??rabotalo na etom zavode.
five of these engineers worked.PL/worked.N.SG on this plant
Pjat' ostal'nyh inženerov rabotali/??rabotalo v
five of.the.remaining engineers worked.PL/worked.N.SG in
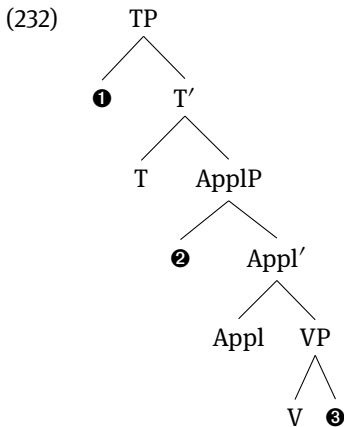stroitel'stve
construction

'Five of these engineers worked at this plant, the rest of the engineers worked at construction.'

Glushan, following Diesing (1992), argues that presupposition forces movement of the NP into Spec,TP, so that they can appear in the restrictive clause of logical structure. This brings them in line with the *LF-Visibility* hypothesis. The contrast with presupposed and non-presupposed inanimate QNPs is especially striking: inanimate QNPs that would otherwise lie within VP at LF do not allow for *i*F agreement, but when they lie in Spec,TP, they do allow for *i*F agreement, exactly as we predict from LF-Visibility.

In sum, the fact that *i*F agreement is obligatory when the QNP binds a reflexive or PRO, coupled with obligatory *i*F agreement when the QNP moves to Spec,TP with a presuppositional reading, provides independent support for the hypothesis of *LF-Visibility*.

5.3.3 The optionality of *i*F agreement, and why Russian might pose a problem

Despite the initial observations in the section above that seem to show Russian conforming to LF-Visibility as we would predict, the picture is a little more complicated. Russian, unlike English, allows for a variety of places where the subject can appear. In English, the subject largely lies in Spec,TP, however, Glushan motivates a number of different places for the subject, which all interact with the notion of animacy. Whilst Spec,TP is the position where presupposed subjects lie, non-presupposed subjects can lie in various other positions. Below I give an outline of the positions of subjects that Glushan proposes, coupled with the explanation in Table 5.1. It is important to bear in mind that the positions in (232) refer to LF-positions, and not necessarily overt positions.

(232)

```
            TP
          /    \
        ❶      T′
              /   \
             T    ApplP
                  /    \
                ❷     Appl′
                      /    \
                   Appl    VP
                           /  \
                          V   ❸
```

A few notes on the positions are in order. Glushan assumes that there presuppositional readings are only possible if the argument is in Spec,TP (*c.f.* Diesing, 1992). Secondly, along with Franks (1995), she assumes that for binding of anaphors and control into gerunds is only possible from Spec,TP. Transitive subjects lie in Spec,ApplP, as do animate intransitive subjects. Finally inanimate intransitive subjects lie reconstruct into VP.

Glushan further claims that this 'middle' position (position ❷) provides an explanation for why it is that *i*F agreement is obligatory for presupposed QNPs, but optional for animate QNPs that are not-presupposed. Glushan argues that a
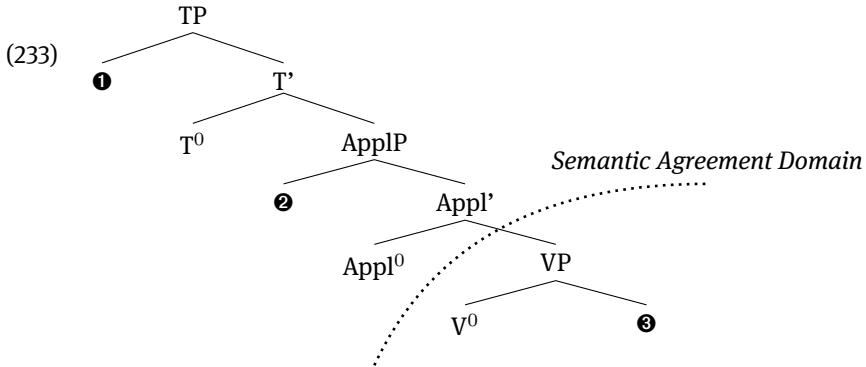
Tab. 5.1: Explanation of potential subject positions according to Glushan (2013).

Type of QNP	Position	*i*F agreement	Example
Antecedent	❶	Obligatory	(225)
Presupposed	❶	Obligatory	(230), (231)
Transitive subject	❷	Optional	(229)
Animate intransitive subject	❷	Optional	(227a)
Inanimate intranstivie subject	❸	*	(227b)

Spec–Head relationship leads to obligatory *i*F agreement with QNPs. Thus, QNPs which lie in Spec,TP are in a Spec–Head relationship with the agreeing head T, and obligatorily control *i*F agreement on the verb.

Glushan claims that *i*F agreement is optional if it does not come from a Spec–Head relationship. Therefore, if the QNP that lies in Spec,ApplP is eligible for semantic agreement (i.e. is a QNP), then this will be optional as it is not in Spec,TP (and so not in a Spec–Head relationship with the target, T). In this way a contrast arises between presupposed and non-presupposed QNPs; presupposed QNPs necessarily lie in Spec,TP whereas non-presupposed (animate) ones lie in Spec,ApplP. Furthermore, those that have moved to Spec,TP in order to serve as an antecedent for an anaphor or PRO will obligatorily control semantic agreement.

Glushan leaves open why Spec–Head relationships should lead to obligatory agreement. This middle position also forces Glushan to adopt a different view of the locality of semantic agreement than proposed here. She argues, along with the general line taken in this chapter, that semantic agreement obeys a different locality than *u*F agreement. *u*F agreement can see to a VP-internal position (as is claimed here), but agreement with an *i*F requires a different configuration. Glushan appeals to the notion of agreement domains (Bobaljik and Wurmbrand, 2005), and argues that semantic agreement has a domain of its own. Although *u*F agreement is possible for an element within VP (see the agreement in the locative construction in (223) above), semantic agreement cannot reach that far.

(233)

```
                    TP
              ╱          ╲
            ❶              T'
                      ╱          ╲
                    T⁰            ApplP
                             ╱          ╲
                           ❷            Appl'            Semantic Agreement Domain
                                    ╱          ╲      ⋰
                                 Appl⁰          VP
                                           ╱        ╲
                                         V⁰           ❸
```

Semantic agreement is restricted to elements that lie in the semantic agreement domain of the target. Elements within the domain, ❶ and ❷ in (233) are visible for semantic agreement, but for elements that lie outside of that domain, such as ❸ in (233), semantic agreement is not possible. In the following, semantic agreement is impossible because the QNP lies outside of the semantic agreement domain in (233):[70]

(234) Na etoj fotografii na bayane igralo/??igrali   pjat' devoček
       on this picture   on bayan   played.N.SG/played.PL five girls

       'There were five girls playing the bayan on this picture.'

The idea of domains specific for agreement is proposed elsewhere in Bobaljik and Wurmbrand (2005), but, as Glushan (2013) notes, that there are specific domains simply for semantic agreement is somewhat stipulative.

   If Glushan's approach is the right way of looking at the data, then what I have proposed above regarding LF-Visibility faces a challenge. The prediction according to what was discussed above is that semantic agreement should only be possible for position ❶. There is agreement with Glushan that position ❸ should not show semantic agreement, yet the optionality of semantic agreement in position ❷ is surprising. It simply shouldn't be possible according to what I am proposing, given that this position does not c-command T. Therefore, even though Glushan shows that Russian provides strong evidence for the claim given here that iF agreement obeys different locality restrictions than uF agreement (which, recall, can see into position ❸), it is not immediately supportive of what I am proposing. In the next section, I provide a reanalysis of the Russian data, showing that there is an analysis whereby it conforms to what was proposed above in section 5.2.

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70 I refer the reader to Glushan (2013) for more motivation regarding the low position of the NP in locative inversion constructions.

5.3.4 Russian does conform to LF-Visibility

As mentioned above, Glushan leaves open why it is that a Spec–Head configuration should lead to obligatory *i*F agreement, whilst it is optional otherwise. However, *LF-visbility* opens up another way of viewing Glushan's data. *LF-visbility* makes the prediction that semantic agreement should only be possible in Spec,TP, essentially redrawing the Semantic Agreement Domain above Spec,ApplP.[71]

(235) Prediction of LF-Visibility, transposed into domains
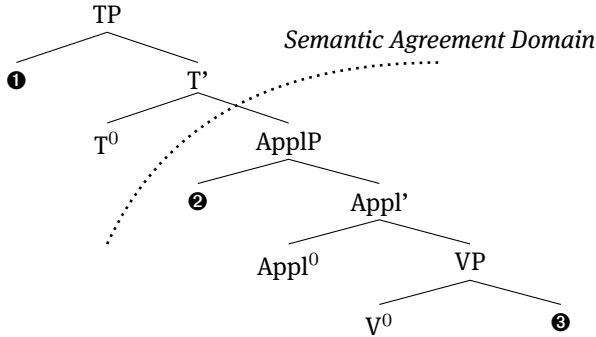
In the current approach, there is no option of position ❷ showing *i*F agreement, optional or not. As shown by Glushan, the difficulty comes from the optional nature of some types of QNP agreement. Whilst Glushan argues that the optionality comes from a difference between Spec–Head *i*F agreement and non-Spec–Head *i*F agreement, another way of looking at it is to assume that there is optional movement of the QNPs. Glushan does offer an alternative analysis (without committing to whether it is correct or not) which is in line with *LF-Visibility*. In the alternative analysis, optionality is derived through optional movement between Spec,ApplP and Spec,TP, coupled with the assumption that whenever an element lies in Spec,TP, *i*F agreement is obligatory.

5.3.4.1 Assumptions

I propose that semantic agreement is obligatory for QNPs, in essence, because their *i*F is obligatorily active. That is, whenever the QNP controls agreement, it only does so with its *i*F feature. Furthermore, I assume that QNPs can optionally bear case, (this builds on a line of reasoning in Pesetsky, 1982; Franks, 1994; Franks, 1995; Bošković, 2006a; Glushan, 2013, but differs in the details). When

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71 Though I am not advocating for the existence of domains particular to semantic agreement, rather it is presented here to allow for easy comparison with Glushan's analysis.

they bear a case feature, they get valued by T for nominative case and control agreement. When they do not bear a case feature, they do not control agreement, and T agreement is default neuter singular. Finally, we must further assume that a failure to copy an *i*F value under AGREE-COPY cancels the derivation:

(236)   If AGREE-LINK has linked a goal with an active *i*F, AGREE-COPY must copy the value of the *i*F onto the goal.

5.3.4.2 Why Spec,TP leads to *i*F agreement

Now I turn to spelling out the analysis. Recall that I assume that at the first possible point in the derivation, T is merged and undergoes AGREE-LINK. This will create a link between it, and the NP that bears nominative case. If the QNP bears a case feature, then it will control agreement on T, as it will come to have nominative case. As *i*Fs on QNPs are always active by assumption, the link is forged between T and the *i*Fs of the QNP. *Per* (236), the derivation can only converge in this instance if the value of the *i*F is copied to the unvalued feature, here on T. If the QNP lies beneath T, then the derivation crashes, since the necessary configuration whereby the QNP c-commands T is not in place to allow the value to be copied. Effectively, whenever a QNP has nominative case, the derivation can only converge if the QNP moves to Spec,TP.

However, given that QNPs can also merge without a case feature, there is another option. If the QNP does not receive nominative case, then it does not control agreement on T, as T agrees with the nominative argument. If this is then the case, the fact that its *i*Fs of the QNP are not copied to T does not cause a problem.
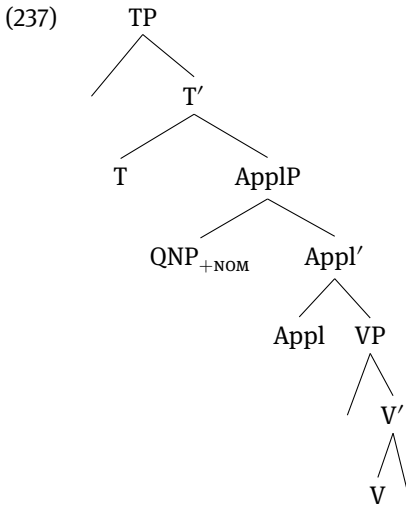
Thus, we are left with a dichotomy between in Russian between Spec,TP and everywhere else. In Spec,TP, agreement with a QNP is obligatory, due to the fact that the *i*Fs of the QNP are active. If the QNP lies anywhere else, then agreement with the QNP is not possible, since the value of the *i*F will not be able to be copied to T, crashing the derivation per (236). QNPs can remain beneath T only if T does not agree with the QNP, in which case we find default agreement on T.

5.3.4.3 Deriving the 'optional' movement through Last Resort

Key to the optional nature of agreement with QNPs is the fact that movement to Spec,TP is optional. Glushan (2013) notes this, but leaves the matter open as pure optional movement, and claims that it is conceptually undesirable to have optional movement (following Chomsky, 1995 and most work within the Minimalist

Program). It is my goal here to show that the optional movement can be analysed as not really an optional movement, but rather distinct derivations.[72]

As QNPs that lie in Spec,ApplP are the ones that show optional agreement, let's restrict our attention for the time being to these. Firstly, consider the following intransitive structure, where the QNP is animate and so lies in Spec,ApplP. Suppose that it has a case feature (annotated with +Nom). The QNP is animate, and so following Glushan, I assume that it must lie in Spec,ApplP:

(237)

```
TP
   \
    T′
   /  \
  T    ApplP
       /   \
   QNP₊ₙₒₘ  Appl′
            /    \
         Appl    VP
                   \
                    V′
                   /  \
                  V
```

For this derivation, there are two options at this point; the QNP can move to Spec,TP or it can stay where it is. First, consider what happens if it remains in Spec,ApplP. The QNP has nominative case, and thus T will link to the *i*F of the QNP (as it is obligatorily active). In the derivation, AGREE-LINK will link T and the QNP. Since the *i*Fs of QNPs are always active in Russian, if the QNP remains in Spec,ApplP, the values of the *i*F will not be able to be copied to T, and so the derivation crashes, according to (236). The second option is that the QNP moves to Spec,TP. If it does, its *i*Fs are able to copied to T, and the derivation succeeds. The question is then what forces the movement. Firstly, we cannot appeal to a traditional EPP to drive movement of the QNP. The status of the EPP in Russian is unclear. Though Lavine and Freidin (2001) and Bailyn (2004) argue that there is an EPP in Russian, which forces movement of some XP to Spec,TP, this will not
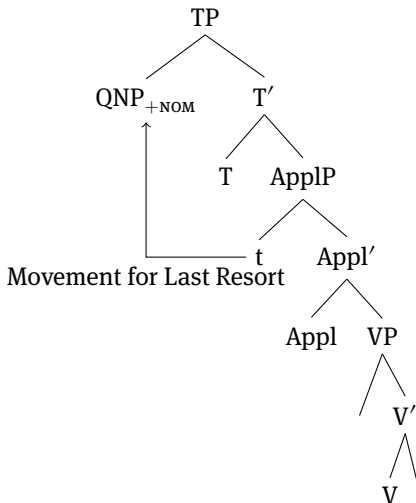
---

72 I don't really have a problem with optional movement and optional operations per se, and indeed assume optional deactivation in chapter 4. However, I am offering this analysis here because this viewpoint is somewhat swimming against the tide in Minimalism.

help us here, given that it would drag all QNPs to Spec,TP, and we would not be able to explain the differences between the different types of NPs.
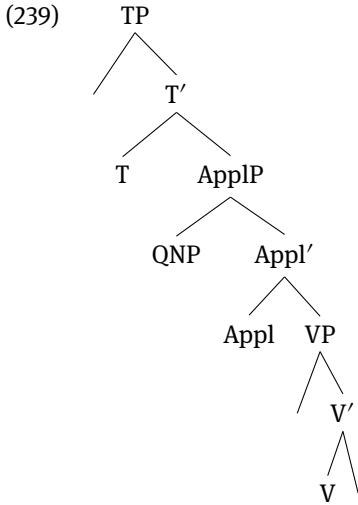
Neither can we assume that QNPs move to Spec,TP in order to license a nominative case feature that they have, more in line with the EPP as it is assumed in English. This faces two problems. Firstly, nominative case can be licensed *in situ* in Russian, making any move to bidrectionally equate Spec,TP with nominative case suspicious. Furthermore, we again face the same problem that this 'English-style' EPP would treat all QNPs the same.

The answer for the movement, I propose lies in Last Resort. I propose that the movement to Spec,TP is forced to save the derivation in (237). According to (236) without the movement to Spec,TP the derivation crashes. Following Bošković (2007) I assume that movement can be licensed so as to save a derivtion from crashing, and thus the movement of the QNP is not optional here, but forced in order to allow the derivation to converge. After movement, the *i*Fs on the QNP are allowed to control agreement on T, and indeed must do so.

(238)

```
                        TP
                       /  \
              QNP_{+NOM}    T′
                           /  \
                          T   ApplP
                              /   \
                             t    Appl′
          Movement for Last Resort /  \
                                Appl   VP
                                        \
                                        V′
                                       /  \
                                      V
```

Now, consider the same structure as in (237) above, whereby the QNP is in Spec,ApplP, but does not bear a case feature.

(239)

```
        TP
       /  \
          T′
         /   \
        T    ApplP
            /    \
          QNP    Appl′
                /    \
             Appl    VP
                    /  \
                       V′
                      /  \
                     V
```

In this situation, the QNP can happily remain in Spec,ApplP, and as it does not bear nominative case, there is no link created between it and T through, Agree-Link. Since no link is created, it is not a problem if the *i*F values are copied to T.

In this manner, we derive the obligatory nature of *i*F agreement in Spec,TP, coupled with the observation that QNPs optionally control *i*F agreement. Movement to Spec,TP is happens only if the QNP bears a case feature, but not because of the case feature. Rather, the movement is forced because Agree-Link creates a link between T and the *i*F on the QNP, and given that the *i*F is always active on a QNP *and* because of (236), then the derivation would crash if this value is not transferred under Agree-Copy. If there is no nominative case on the QNP, then Agree-Link will not link T and the QNP, and then there is no reason for the QNP to move higher (all else equal.)

The issue that remains to be explained why it is only animates that allow for this optional movement to Spec,TP, and not inanimates. The difference between inanimate and animate QNPs is that the latter, but not the former are within the same phase as TP, since they lie at the edge of the lower phase. It is thus then possible to analyze the movement between Spec,ApplP and Spec,TP as being due to last resort, to save the derivation from crashing (Bošković, 2007). Note that due to the fact that nominative can be assigned *in situ* in Russian, case considerations do not force the QNP to move in order to receive case. Thus, a QNP that merges as the complement of V will not move to Spec,vP in the derivation, unless that movement is triggered by something else. Movements that have an effect on interpretation can force it to move (Bailyn, 2001) (hence presuppositional readings can be analyzed as the NP having some feature [F] which forces it to move to Spec,TP),

as can other features standardly assumed to drive movement such as *wh*-features. In the absence of any of these, inanimate QNPs will remain VP internal.

In the above derivations, where Last Resort was appealed to to get the QNP to move to Spec,TP, the reason why the derivation would crash is because AGREE-COPY would otherwise fail to copy the features of the QNP to T if it links to it. However, this violation does not arise until the point at which T merges into the structure and undergoes AGREE-LINK with the QNP. If we follow the version of the Phase Impenetrability Condition offered in Chomsky (2000), then at the point at which T undergoes AGREE-LINK with a VP internal QNP, the QNP is frozen VP-internally, since nothing has forced it to move to the edge of the phase:

(240)   In a phase α with head H, the domain of H is not accessible to operations outside α, but only H and its edge.

A VP-internal QNP cannot then move to Spec,TP, even to save the derivation, as it cannot escape its phase at the point of the violation. Last Resort movement was allowed for the QNPs that are in Spec,ApplP, as they were at the edge of the phase. This is schematised below:
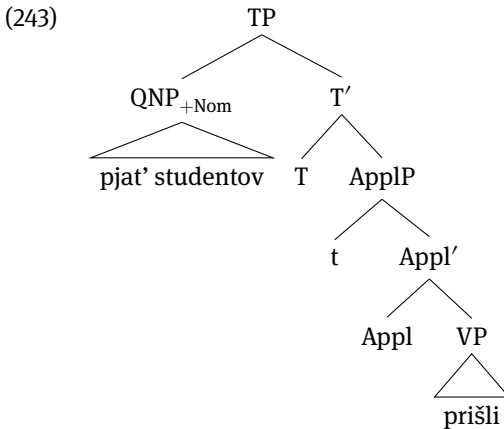
(241)
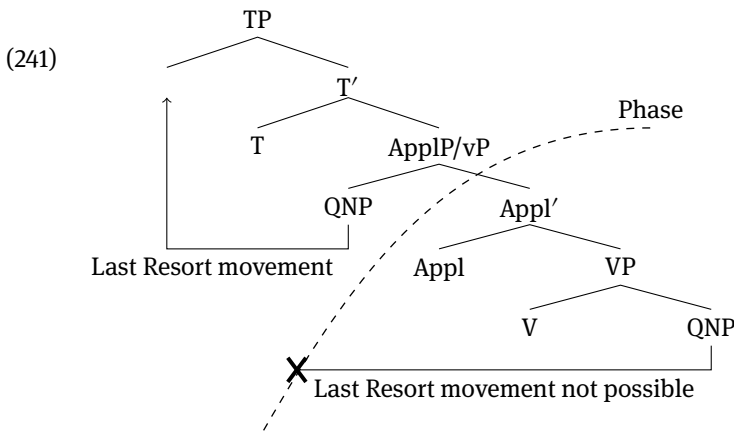
This has the consequence that a QNP that remains internal to the VP can *only* be the caseless version. If it were the version with nominative case, then the derivation can only crash due to the *i*Fs not being able to copy their value to T. Thus, the only way for the derivation to converge with an inanimate intransitive QNP is for a null expletive to be inserted in Spec,TP, and the QNP to be caseless.

5.3.4.4 Derivations
In this subsection, I spell-out the derivations outlining the above. Firstly, consider the structure (242), where plural agreement (*i*F agreement) is licensed on the verb.

(242) Pjat' studentov   prišli
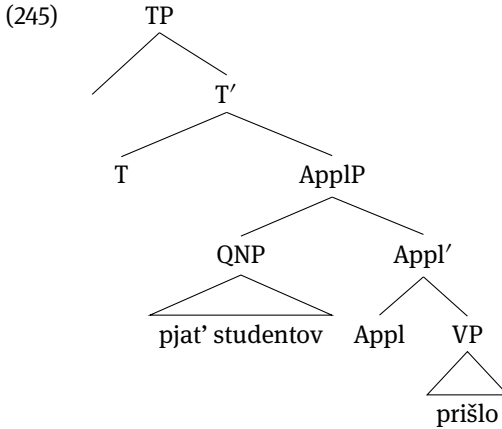   five students.GEN arrived.PL
       'Five students arrived.'

In this structure, the QNP *pjat' studentov* moves from Spec,ApplP into Spec,TP because of Last Resort. The QNP bears nominative case, and so AGREE-LINK is created between T and the QNP. If the QNP does not move to Spec,TP, the derivation is unable to converge, as the *i*Fs will be failed to be copied to T, as it would not be in the right structural configuration.
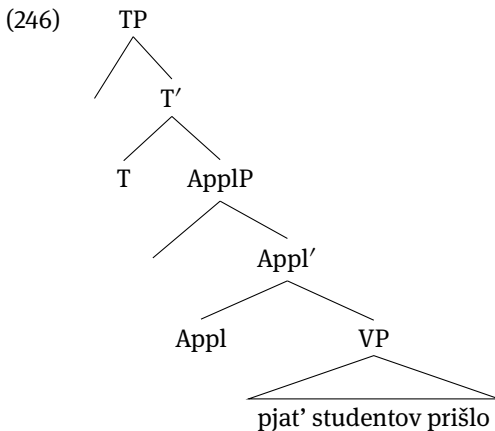
(243)

```
                      TP
             _____/  _____
         QNP_{+Nom}           T′
        __/    \__         __/  \__
    pjat' studentov       T      ApplP
                               __/  \__
                              t      Appl′
                                   __/  \__
                                 Appl    VP
                                        /\
                                       /  \
                                      prišli
```

Secondly, consider the parallel case, but where default agreement is shown on the verb.

(244) pjat' studentov   prišlo
       five students.GEN arrived.N.SG
       'five students arrived.'

In this sentence, the QNP lacks nominative case, and is allowed to remain in Spec,ApplP. As there is no nominative argument, the verb fails to agree (Preminger, 2011; Preminger, 2014), since AGREE-LINK is not formed between T and a nominative element. As there is no nominative case, nor is there any presupposition that would force it to move higher, then the QNP remains in Spec,ApplP.
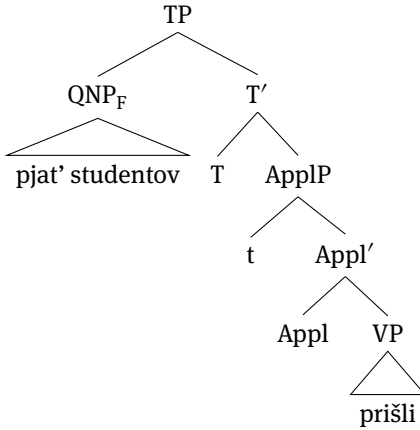
(245)

```
          TP
         /  \
            T′
           /  \
          T    ApplP
              /     \
           QNP       Appl′
          /   \      /   \
    pjat' studentov Appl  VP
                          /\
                        prišlo
```

Now, consider a derivation, where the QNP is inanimate. The QNP is base gener-ated in the complement of V (Glushan, 2013), and does not move further. If it has a nominative case feature, T will link to it with Agree-Link. However, this will cause the derivation to crash, as the *i*Fs on QNP will not be able to be copied, because this position does not c-command T. However, if the QNP is caseless, the verb will fail to Agree resulting in default agreement on the verb, and the derivation can converge. Note that if the QNP were to have nominative case, then movement to Spec,TP is not possible, given that it will be stuck in the lower phase (see discus-sion above).

(246)

```
          TP
         /  \
            T′
           /  \
          T    ApplP
                /    \
                      Appl′
                      /   \
                   Appl    VP
                          /    \
                    pjat' studentov prišlo
```

Finally, consider when an inanimate QNP has a presupposed reading. I will as-sume, following Glushan (2013), who in turn follows Diesing (1992) that this type of reading requires raising to Spec,TP, potentially forced by an information struc-

ture feature, indicated as [F] in the tree. This requirement forces the QNP first to move to the edge of the phase, before moving to Spec,TP.[73]

(247)

```
                      TP
                 ┌─────┴─────┐
              QNP_F          T′
           ┌────┴────┐    ┌───┴────┐
      pjat' studentov     T      ApplP
                              ┌────┴────┐
                              t        Appl′
                                    ┌────┴───┐
                                  Appl      VP
                                           /\
                                         prišli
```

5.4 Summary and Discussion

In this chapter I have shown that there are restrictions on AGREE-COPY with regards to how it can transfer a value of an *i*F from the goal to the probe. I have shown that this is only possible, for an *i*F when the controller of agreement c-commands the probe at the level of LF. However, I have also proposed that this does *not* apply to *u*Fs. That is, whilst *i*Fs are restricted in the sense that they must c-command the probe at LF, all that seems to matter for AGREE-COPY to transfer the value of a *u*F is that some kind of c-command relation holds.[74]

The way that this difference was arrived at was to propose that AGREE-COPY can happen in two places, in the postsyntax and at the point of transfer, but because of the topography of features, *i*Fs would only be able to be accessed at the

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73 A problem which I leave open is why *i*Fagreement is apparently obligatory for all elements in Spec,TP. One might wonder what is stopping a caseless QNP appearing in Spec,TP and not controlling agreement, in which case Spec,TP would remain the only position which can license *i*F agreement, but it is still optional there. One option is that nominative case must be assigned in Russian, and failure to have a nominative argument crashes the derivation. Thus, we could then say that if nominative case is not assigned, a null expletive is inserted into Spec,TP to absorb nominative from T. If we couple this with the assumption that there can be maximally one element in Spec,TP, then we get the effect that a QNP in Spec,TP must have case, and thus all agreement with a QNP in Spec,TP will target the *i*F. Whether this is correct I leave for further research.
74 Sometimes not even that, if the linear view of closest conjunct agreement is correct, see the discussion in section 3.2.1.

point of transfer. It is the difference in timing that makes all the difference: if AGREE-COPY happens at the earlier point (transfer) then the operation only looks upwards in the tree, whereas later in the postsyntax both upwards and downwards are possible. However, as to why this is the case I must leave open in this work, and leave it as a stipulation that AGREE-COPY at the point of transfer will only look upwards.

The specifics of the analysis I have put forward in this chapter aside, it is worthwhile stepping back and looking at the big picture after this discussion. Whether the reader agrees or not with the details of what I have proposed, the observation that semantic agreement is sensitive to LF positions seems to be quite strong. As was discussed throughout for both English CNPs and Russian QNPs, for semantic agreement to be possible the controller must c-command the target *at the level of LF*. Thus, as we saw, in scope reconstruction contexts and when an element is part of a predicate, semantic agreement is not possible because the LF position is too low. This paints the copying part of the operation as quite different from the linking, which was argued in chapter 4 to happen as early as possible.

Thus, when combined with the observations from the previous chapter, then the discussion in this chapter has a strong implication for the definition of Agree. Specifically, it shows that Agree as an operation has parts of it which must happen as early as possible (so as to explain the 3/4 patterns in Chapter 4) but also quite late so that the appropriate LF representations can be built, as discussed here. I have argued throughout this part of the book that we can understand this through a two-step operation of Agree, which divides into AGREE-LINK, which happens as early as possible, and AGREE-COPY, which happens late. To some degree, any definition of Agree will need to recognise two subcomponents of linking and copying. Yet, the innovation of what I have been calling two-step accounts in recent years has been to allow these sub-operations to be distributed over different components of the grammar and let other operations intervene, potentially destroying configurations for AGREE-COPY to successfully take place. A one-step account would have copying happening directly after linking, without other operations potentially happening in the meantime.

Part III: **Mass Nouns**

6 The mass–count distinction

In the third part of the book, attention turns from agreement and towards how the theory of hybridity outlined in the above can impact how we view the mass–count distinction.

At the outset I should delimit first the scope of what I wish to achieve with the remainder of the discussion that follows. There is *a lot* of work that has been done on the mass–count distinction, particularly from the perspective of semantics. This is to be expected: it is a complex topic with many implications for the semantics of nouns. However, my focus will not be directly on the semantics of these nouns. I will touch on the semantic interpretation, but I am far from a semanticist and do not wish to expand the scope of this book so far as to discuss the semantics of the mass–count distinction in depth. The question that I will be concerned with is nouns that have fallen in the middle of the mass–count distinction: ones that are neither fully mass, nor fully count. I will argue that at least some of these nouns can be viewed as hybrids, and that some of their properties that make them look either mass or count, depending on the language, come independently from this fact. To the extent that I am correct about this then, it will raise issues for the semantics of what is means to be mass and what it means to be count, since not all nouns that show these properties can be thought of as each.

6.1 Mass versus count: A general overview

The mass–count distinction divides nouns that can be counted, and those that resist counting. It is very much an open question whether all languages have a mass–count distinction, however, in some languages the differences between the two nouns are quite striking. I will demonstrate with English. The first, extremely salient, difference between the two categories is that count nouns like *owls* can directly combine with numerals, whereas mass nouns like *water* cannot. Instead, they must combine with some kind of measure phrase, which in turn combines with the numeral.

(248)   a.   There are three owls on the branch.

           b.   * There are three waters on the floor.

           c.   There are three *drops of* water on the floor.

A further difference concerns number morphology. In English, count nouns are able to combine with plural morphology, however mass nouns cannot:[75]

(249) a. There are crumbs on the floor.
       b. * There is/are waters on the floor.

Finally, we sometimes see differences in quantifiers. For some languages there are quantifiers that can only combine with count nouns, and others can only combine with mass nouns. In English, this is reflected in differences with combination with *many* versus *much*, and *much* versus *little*. Count nouns, but not mass nouns combine with *many* and *much*, whereas mass nouns, but not count nouns combine with *much* and *little*:

(250) a. There are many/*much ducks in the pond.
       b. There is *many/much sand left to be moved.
       c. There are few/*little questions left to answer.
       d. There is *few/little water left to drink.

Two things are worth bearing in mind here. It is clear that there is a close semantic relationship between *many* and *much*, and similarly *little* and *few*, and so it is possible (though by no means necessary) to view them as mass–count allomorphs of one another.[76] However, just because such a divide exists in a language, it does not mean that every quantifier will have a mass and a count variant. *Several*, for instance, in English is restricted to count nouns:

(251) a. Several owls are wandering around.
       b. * Several waters are spilling on the floor.

Yet, it is not true that there is a mass equivalent of *several*. The closest semantic paraphrase would be *some but not all*, which can be used for mass nouns, but this is also used for count too.

(252) a. Some but not all water is spilling on the ground.
       b. Some but not all owls are watching.

The second point to note is that having quantifiers that are apparently selective for mass versus count is not a prerequisite for there being a mass–count distinction

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75 This sentence is actually grammatical, however only on a reading where *water* has been shifted to a count reading. Not all languages disallow mass nouns to combine with plural morphology, as we will see in Telugu below, see also Tsoulas (2007) and Wiltschko (2008).
76 This is a point that I will return to below.

in some language. Dutch, for instance uses the same quantifier *veel* 'many/much' to cover both mass nouns and count nouns, thus the distinction between *many* and *much* is neutralized:

(253)   Ik heb   veel   boeken/water gekocht.
        I   have many/much books/water   bought
        'I bought many books/much water.'

Despite there being no difference in the quantifier, there is still a mass–count distinction in Dutch, since *boeken* 'books' can combine with numerals, but *water* 'water' cannot:

(254)   a.   Ik heb   drie   boeken gekocht.
           I   have three books   bought
           'I bought three books.'

       b.   ⋆ Ik heb   drie   waters gekocht.
           I   have three waters bought
           intended: 'I bought three waters.'

There are also differences between the two classes which seem to relate to the way that the two classes of nouns are interpreted. Count nouns have been argued to be interpreted as if they are individuated, in the sense that we have a clear intuition as to what counts as a minimal unit of a count noun. Mass nouns on the other hand have been claimed to lack this interpretation, and be interpreted as unindividuated 'stuff' (Bale and Barner, 2009). There are a couple of ways that one can show this. One test is with *stubbornly distributive predicates* which have been shown to combine with count nouns, but not mass nouns (Schwarzschild, 2011). These are predicates like *large, small* and *round*, which must be true of each individual unit in a group. For instance, in the sentence *the boxes are large*, this sentence is only judged as felicitous if each individual box is large, and not if there are many small boxes that make up one large pile. In (255), we see that there is a difference between mass nouns and count nouns in how they combine with *stubbornly distributive predicates*.

(255)   a.   The boxes are large/round/square.
       b.   # The water is large/round/square.

Another test which shows this interpretation difference is to do with comparison sentences. Bale and Barner (2009) show that when count nouns are compared, comparison is done by the number of individual entities under discussion. Thus, (256a) is true if the number of individual owls that Chris saw is larger than the number of individual owls that Mark saw, irrespective of how big each owl was.

For mass nouns on the other hand, comparison is done by overall volume of the noun, and not by number. Therefore in (256b), this sentence is only true if the overall volume of milk that Chris drank is larger than the volume that Mark drank. Here, individual entities do not play a role, so the sentence is false even if Mark drank three single litre bottles of milk, but Chris drank one 5 litre bottle of milk, as the overall volume of milk stands at five litres for Chris, but only three for Mark. The number of individual portions of milk plays no role in the interpretation.

(256) a. Chris saw more owls than Mark.

   b. Chris drank more milk than Mark.

A final test is given by Doetjes (1997), who shows that mass nouns are endlessly divisible, but count nouns are not:

(257) a. A piece of a piano is not a piano.

   b. A piece of a piece of cheese is still cheese.

The above shows that with a count noun, if it is divided into parts then the smaller parts do not satisfy the requirement of the original predicate. However, with mass nouns this is different, as we can divide up mass nouns into smaller parts and they will still constitute the predicate. Thus, if cheese is divided into two, both parts can be felicitously described as *cheese*, in a way that does not hold for a count noun like *piano*.

Finally, whilst the mass–count divide is very clear in some languages like English, it is not true to say that nouns are rigidly fixed to one class or the other. It is also very well known that nouns are not fixed to one of the categories, mass or count, but rather in many languages, for many nouns, it is possible to flit between the two categories, a phenomenon that is in various places known as the Universal Grinder and Universal Packager effect. For instance, there are nouns that very strongly invite a count interpretation: animate human nouns for instance like *girl, boy, mother, father* as well animates more generally. Nevertheless, if the right context is provided — usually quite grim — then it is possible for these nouns to have a mass interpretation.

(258) a. I saw a tree get hit by a rubbish lorry, and unfortunately, the accident left *tree* smeared over the grille of the lorry.

   b. A prides of lionesses caught a gazelle, and after they picked at the kill, there wasn't much *gazelle* left over for the vultures to scavenge.

On the other hand, there are nouns that very strongly favour a mass reading: nouns like *mud* and *air* and so on. Again, however, given the right context, they can be easily made into a count noun.

(259)   a.   I know a guy who bottles air, and then sells them online as different *airs* from different parts of the world.

       b.   This mud has clearly different properties from that mud. You can't mix up your muds like that if you want to keep working at this spa.

6.2 Theories of mass versus count

Various proposals have attempted to explain the mass–count distinction as mass nouns and count nouns being fundamentally different. Here I briefly discuss some of the attempts, however the literature is too large to give a full overview here.

6.2.1 Lattices and mass noun interpretation

With regards to interpretation, mass nouns and count nouns differ in terms of whether the noun is interpreted with an idea of what constitutes a minimal part. The mass–count distinction is often explained in terms of individuated denotations for count nouns, and non-individuated ones for mass nouns. These differences can be modeled in terms of semi-lattices (Link, 1983). Lattices represent individuals and the groups that they form. For example, a noun like *the boys*, where there are three boys, consists of the individual boys, the 'atoms' *a, b and c*, and the groups that can be formed of these *ab, bc, ac and abc*. This is represented on a lattice structure in the following way:

(260)
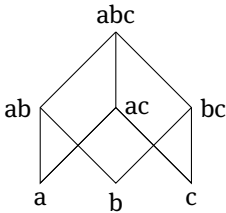
In such lattices, we can see the relationships between all the parts. The ones at the bottom, *a,b* and *c* are the minimal parts of the noun, and the groups are *ab, bc, ac*, and *abc*. Bale and Barner (2009) note that lattices can come in various types, but the ones that I will restrict attention to are individuated lattices, like in (260). Individuated lattices are ones where the members at the bottom of the lattice are individuals, defined in the following way (Bale & Barner 2009:237):

(261) Definition of 'individual': an aggregate z is an individual for a set of aggregates X iff z is a minimal part for X and for all aggregates y ⩽ X, either (i) z ⩽ y or (ii) there is no w ⩽ z, such that w ⩽ y.

Importantly, these lattices make minimal parts available to the grammar for operations that require them. I assume that distributive operations, as well as counting all require access to these minimal parts. Count nouns will have the interpretation in (260).

The other type of lattice that will be relevant to us will be what Bale and Barner, 2009 call *continuous semi-lattices*. The crucial aspect of these lattices is that there are no minimal parts; at no point in the lattice can one define an element that is not itself made up of other elements. It is difficult to represent these graphically, however, what is important is that they would lack the bottom later of (260). They are essentially groups all the way down, and at no point do they make minimal parts available to the operations of the grammar that needs them. These lattices I will assume are the interpretation of mass nouns.

Not everyone assumes that this is a difference between mass and count nouns. Chierchia (1998) and Chierchia (2010), for instance, assumes that all lattices are individuated, but that with mass nouns the minimal parts of vaguely defined. That is, both mass and count nouns can be represented as lattices of the type in (260), but that in the case of mass nouns, there is not a concrete definition for *a*, *b* and *c*. For the current work, it is important that mass and count nouns differ in that only count nouns have an atomic domain.

6.2.2 Flexible roots: Mass and Count defined syntactically

A lot of research into the mass/count distinction has recently centered on the idea that nouns are *not* inherently specified to be either mass or count, and that the grammar contains an operation (or two operations) that allow some nouns to coerce from one class to another. According to this viewpoint, which I will group under the term 'flexible roots', nouns begin life unspecified for being either mass or count, and they are turned either mass or count depending on the syntactic environment in which they find themselves. Such research is guided by the observation that most nouns, at least in languages like English can be either mass or count depending on their surrounding context. Consider a noun like *urchin* for instance. In (262) below, *urchin* is easily identifiable as a count noun since it combines with the indefinite article *an*. In (263) however, the absence of an article, coupled with the absence of plural morphology and the presence of the quantifier *much* allows us to identify that *urchin* is being used as a mass noun, and not count.

(262)   The crafty sea otter plucked an urchin from the sea floor.

(263)   The greedy sea otter ate too much urchin, so needed to sleep.

The fact that this can happen to virtually any noun in English and other languages (though perhaps not Chinese, Cheng, Doetjes, and Sybesma, 2008) has led to a spate of recent proposals arguing that the mass–count distinction is created syntactically, and that nouns are not inherently mass or count. For instance, a prototypical mass noun like *water* can easily be shifted into a count context:

(264)   I bought three waters.

Central to this approach is the notion that nominal roots, without any functional head to create division, denote 'undivided stuff'. That is, the denotation of the noun *cat* is not the set of individual cats, but rather everything that could plausibly fall under being described as 'cat': cat meat, individual cats and pluralities of cats. Furthermore, the second central tenet of this approach is that this is all that mass nouns constitute: they are undivided denotations, which do not contain atomic entities of the noun in question. Therefore, in (263) above, the mass noun *urchin* denotes something that if divided, will still qualify as urchin.

   This view, originally proposed by Borer (2005), and modified in Bale and Barner (2009) (see also de Belder, 2011; De Belder, 2013 holds at its core the idea that roots are unspecified for being either mass or count, and that masshood and counthood is created by syntactic context. The idea in brief states that roots at their most basic level denote undivided material and that masshood is just a reflection of this, i.e. that the extension of a mass noun like *sand* is simply an undivided quantity of sand. Being count, by contrast results from the division of the 'material' that the root originally denotes. The division operation creates minimal parts: parts that can't be divided any further and still truthfully satisfy the predicate. These minimal parts are used as the basis for counting, and make it possible for comparison by number instead of overall volume, since groups of distinct individuals can be created and compared.

   Borer (2005) argues in essence that masshood is the absence of counthood. Roots, as mentioned, are unspecified for being either mass or count. Where this is created is through the presence or absence of a syntactic functional head that creates division, Cl(assifier)P. ClP takes the undivided material that is denoted by the root, and gives a divided output. Importantly at this point, is that roots are mass to begin with, and the absence of any dividing structure will yield a mass noun. Borer gives the structure of mass nouns as the following:[77]

---

[77] In the diagramme, *much* is there to highlight the fact that the structure is mass, and doesn't play any role greater than that here, see also *many* in (266).

(265)

```
              DP
             /  \
            D    #P
                /  \
             much
                   \
                    \
                    #    NP
                        /△\
                      √WATER
```
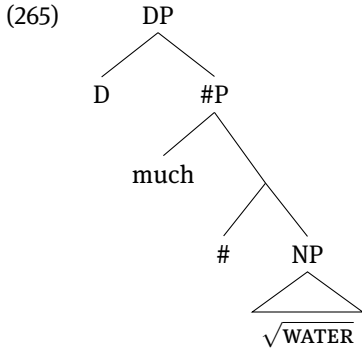
Count nouns are treated differently. Count interpretation, as noted is obtained through the merging of dividing structure, ClP, into the syntax. In the following, we can see the extra layer of complexity that exists in count nouns.
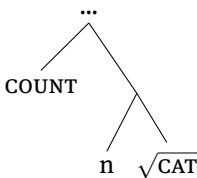
(266)

```
              DP
             /  \
            D    #P
                /  \
             many
                   \
                    #    ClP
                        /  \
                     √CAT
                           \
                          Cl   NP
                                |
                              t_cat
```
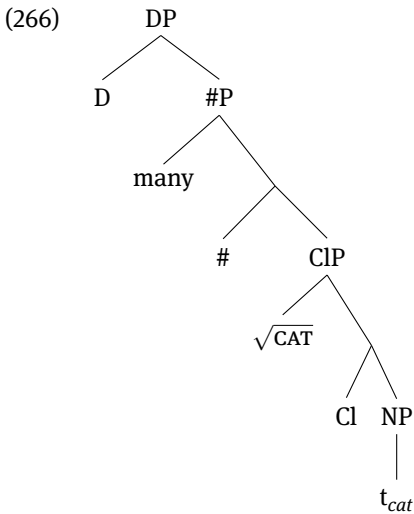
In the tree, $\sqrt{CAT}$ moves up to Spec,ClP. Borer proposes that this is the case in languages like English, where count nouns can be distinguished from mass nouns on the basis of being able to bear number morphology. For Borer, plural inflection is the "realization of an abstract feature which assigns range to the open value that heads a classifier phrase." Crucially in this proposal, plural inflection is only possible when there is a ClP in the tree. Therefore, plural inflection entails being a count noun.[78]

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[78] Generally, but not in case a language freely allows mass nouns to combine with plural morphology, as is the case in Halkomelem Salish (Wiltschko, 2008) for instance.
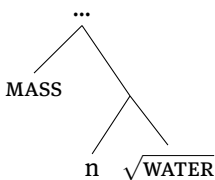
The presence or absence of ClP can be detected in different ways. In languages like English, Cl is spelled out as plural morphology. In languages like Chinese where there is no number morphology, it gets spelled out as a classifier. The argument for treating classifiers as the equivalent of plural morphology is that in languages like Chinese, it is necessary to use a classifier in order to count the noun, whilst in English, plural morphology is necessary. Treating both of these things as the spellout of the Cl allows Borer to have a uniform syntax for different languages as well as explaining why it is overwhelmingly, with few exceptions, the case that classifiers and plural morphology are in complementary distribution across languages.

In a similar manner to Borer (2005), Bale and Barner (2009) propose to capture the mass–count distinction in a way that masshood is not simply the absence of dividing structure in the phrase. Their approach builds on the idea that masshood is simply the default meaning of a nominal root, and that count interpretation comes about through syntactically created division. Recall that for Borer there is in essence only one bit of functional structure relevant for the mass–count distinction, ClP. Nouns that occur in a syntax without ClP are mass, and nouns that combine with ClP are count. Bale and Barner (2009) propose instead that there are two functional heads, COUNT and MASS that are relevant, with each head contributing a different semantic operation.[79] Thus, the structures that are involved in their approach are as follows, with (267) giving a count noun, and (268) giving a mass noun:

(267)

```
          ...
         /  \
     COUNT   \
            /  \
           n   √CAT
```

(268)

```
         ...
        /  \
    MASS    \
           /  \
          n   √WATER
```

According to Bale & Barner, COUNT is the head that is responsible for division. Nominal roots still have mass denotations in the absence of anything to divide

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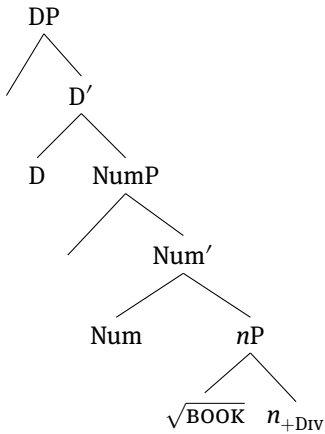**79** COUNT and MASS are my labels for their functional heads.

them. The COUNT head performs this role, and is a semantic function from unindividuated semilattices into individuated ones (see above). Thus, the COUNT head, when applied to a nominal root, will always yield an output where the semantic denotation of the noun in question contains minimal, atomic parts. In other words, the reason why count nouns are semantically divided is because COUNT ensures that their denotation will have minimal parts in it. Mass nouns on the other hand do not contain individuated semilattices. Unlike Borer, who proposed that this happens when nothing is done, Bale & Barner still argue for the existence of a MASS head. However, MASS is simply an identity function: the input to MASS is also the output. And so, when an undivided noun root combines with MASS, then the result is still a denotation without minimal parts.

In Bale & Barner's system, COUNT is essentially a gateway to count syntax; it creates the minimal parts needed for combination with NumP (where numerals and plural morphology are introduced), as well as serving as the selectional property of quantifiers. Quantifiers that go with count nouns select for COUNT, whilst mass quantifiers select for MASS.

I will broadly adopt the approach of Bale and Barner here, however with one key modification. I will assume that the individuating functional heads MASS and COUNT are distinct 'flavours' of n. That is, the dividing, or identity functions that Bale & Barner identify are not separate functional heads in their own right, but rather properties of category defining nodes. I will annotate these as $n_{+\text{DIV}}$ and $n_{-\text{DIV}}$ respectively. The reasons for placing these functions on n will become clearer in section 7.3.2.1. For now, I assume that the structure of count nouns and mass nouns are as follows. Note that the structure of nouns differs only in which type of n is selected:[80]
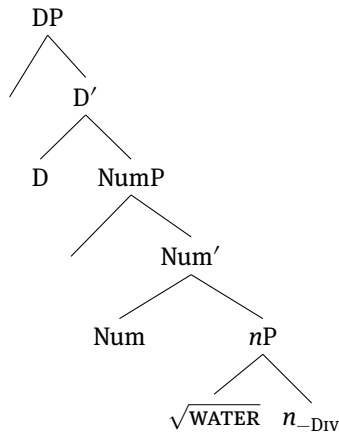
---

[80] I differ from Borer (2005) in assuming that there is number information potentially in mass nouns. That NumP can project in mass nouns is rare, but does arise in languages that allow for plural mass nouns, such as Greek (Tsoulas, 2007) and Halkomelem Salish (Wiltschko, 2008), see 8.1 for discussion.

(269) Count nouns

```
                    DP
                   /  \
                 /     \
                /       D′
               /       /  \
              /       /    \
                     D     NumP
                           /   \
                          /     \
                              Num′
                             /    \
                            /      \
                          Num      nP
                                  /  \
                                 /    \
                            √BOOK    n_{+Div}
```

On the other hand, the structure for mass nouns is as follows. Note that the only difference in the structure is that n_{-Div} is the category defining node instead of n_{+Div}.

(270) Mass nouns

```
                         DP
                        /  \
                      /     \
                     /       D′
                    /       /  \
                   /       /    \
                          D     NumP
                                /   \
                               /     \
                                   Num′
                                  /    \
                                 /      \
                               Num      nP
                                       /  \
                                      /    \
                                 √WATER    n_{-Div}
```

Though at first glance there is much in common with Bale and Barner (2009), and further similarities will be discussed in the next chapter, using n_{-Div} and n_{+Div} instead of dedicated MASS and COUNT heads affords us some benefits, that will become apparent soon. Specifically, recall from the discussion in Chapter 2 that I assume that inherent features come on category defining nodes. I will then show that we can analyse some of the nouns that fall in the middle between mass and count as having a structure whereby, in some instances, n_{-Div} and n_{+Div} carry inherent number features. This will then have an effect on what structures and ele-

ments these items are able to combine with within the DP, and certain properties of the nouns will fall out from this.

7 *Furniture*-nouns in English

In this chapter I discuss a class of nouns that I will refer to as *furniture*-nouns in English. These nouns form a strange class, that seem to straddle the mass–count divide, in some ways behaving as though they are mass nouns, in particular in view of their morphosyntactic behaviour, whilst on the other hand, they seem to share some interpretative properties of count nouns. The reader will note the division here and its relevance for the current work: *furniture*-nouns behave morphologically as if they are members of one class, and semantically as though they are members of another class, and as such, seem prime candidates for a hybrid analysis.

This analysis, to my knowledge, is unique in the literature. Given their overt behaviour, which is unambiguously mass-like, the prevailing direction of analyses is to modify the semantics of mass nouns in order to accommodate their interpretative behaviour. It is *not* my goal here to try to produce a fully-fledged semantic analysis for these nouns — though it naturally is an area that I must touch upon — but rather I aim to show in this chapter that the mass-like surface behaviour can be seen as an illusion: the characteristics which make them look mass arise independently, and should not be necessarily be treated as mass nouns.

7.1 What are *furniture*-nouns?

Before beginning the discussion, I will outline what constitutes the class of *furniture*-nouns and why they are neither fully count nor fully mass. *Furniture*-nouns do not constitute a class of items that follow a natural grouping of entities in the world. Thus, membership of the class is defined by fitting a particular pattern. The characteristics to pay attention to are:

(271) Behaviour of *furniture*-class nouns:

    a. Inflexible inability to combine directly with numerals.

    b. Inflexible inability to combine with plural morphology directly.

    c. Combination with *much* and *little* rather than *many* and *few*.

    d. Felicitous combination with stubbornly distributive predicates like *large* (Schwarzschild, 2011).

    e. They are not infinitely divisible (Doetjes, 1997).

In the discussion below, I will outline each of these. The reader should note at the outset that (271a–271c) are characteristic of mass nouns in general, however, the

statements are qualified by *inflexible*. As I will discuss below, what this means is that whilst mass nouns can be coerced into a count usage (generally), and then *do* have the ability to combine with numerals and plural morphology (*three waters, please!*), *furniture*-nouns cannot do this. They are thus inflexible in that they do not undergo the mass-to-count shifts that are usually seen with nouns that are commonly mass in English.

7.1.1 The morphosyntax of *furniture*-nouns

Fake-mass nouns seem at first glance to be uncontroversially mass nouns. They do not combine with numerals without the aid of some measure phrase like *piece* or *bit*.

(272) a. * I brought three furniture(s)/mail(s)/luggage(s).

  b. I brought three *pieces of* furniture/mail/luggage.

Furthermore, as shown in (276b), they do not take plural morphology:

(273) a. * Furnitures came to life in *Beauty and the Beast*.

  b. * There's no space for more luggages in the cabin.

  c. * Send all mails to the following address.

Finally, *furniture*-mass nouns appear with mass, but not count quantifiers:

(274) a. There isn't *many/much furniture/mail/luggage left to be delivered.

  b. There is *few/little furniture/mail/luggage left.

As it happens, these nouns are in fact more stubborn than other mass nouns in terms of their morphosyntactic behaviour. They appear to firmly resist plural morphology in all circumstances. As noted in the previous chapter, one of the properties of the count–mass distinction is the ability of nouns to shift between the two categories — the Universal Packager and Grinder effects:

(275) a. I don't think it's a good idea to drink that much wine.

  b. I'll order three waters for the table.

  c. Guests can sample a variety of wines from around the world.

Yet, Bale and Barner, 2009 show that *furniture*-nouns cannot shift into a count reading to take plural morphology or combine with numerals.

(276) a. * We sell a variety of different furnitures here, from desks to wardrobes.

  b. * I can fit three more furnitures into the van, but that's it.

In summary, *furniture*-nouns look from their morphosyntactic characteristics as though they are uncontroversially mass nouns given that they show the hallmark characteristics of mass morphosyntax in English. However, they seem to be 'stubbornly' mass, in the sense that they appear to be fixed with those properties, rather than being able to also shift into a count usage.

7.1.2 The interpretation of *furniture*-nouns

Despite the fact that these nouns have all the surface properties of being mass, when looking at the interpretation of these nouns, they seem to be interpreted as if they are individuated. That is, whilst their morphosyntax is mass, they seem to have the semantic properties that one would expect of count nouns. Firstly, Doetjes (1997) notes that when a *furniture*-class noun is used, the speaker has an idea of what constitutes a minimal part. Doetjes gives the following pair of sentences, which show that a true mass noun like *cheese* can be continuously divided, and still be considered *cheese*, yet same is not true of a furniture-mass noun like *furniture*:

(277)   a.   A piece of a piece of cheese is a piece of cheese.

         b.   A piece of a piece of furniture is NOT a piece of furniture.

This property, of course, they share with count nouns:

(278)   A piece of tree is NOT a tree.

There is a slight different in that a measure phrase (*a piece of furniture*) is used to access the minimal part, something that is not needed with count nouns. However, the important point is that if one does use the measure phrase *piece of* with a *furniture*-class noun, then what is interpreted is a single unit of the noun, that is indivisible whilst still being felicitously describable by that noun. Mass nouns obviously can also combine with a measure phrase, but in this case, the unit that is created can be further split, and the component parts can still be felicitously described by the noun.

Another way that *furniture*-class nouns are different from other mass nouns is to do with their behaviour with stubbornly distributive predicates. Recall that Schwarzschild (2011) shows that mass nouns cannot combine with some adjectives like *large*, which must distribute down to the individual units (*the boxes are large ≠ a large pile of small boxes*). Count nouns however do happily combine with these predicates. Schwarzschild shows that *furniture*-class nouns behave in the same way as count nouns here, and not mass nouns:

Tab. 7.1: Properties of *furniture*-nouns when compared to mass and count nouns

	Count	Mass	*Furniture*
Combination with numerals	Yes	No	No
Combination with plural morphology	Yes	No	No
Combination with *many/few*	Yes	No	No
Combination with *much/little*	No	Yes	Yes
Infinitely divisible	No	Yes	No
Combination with stubbornly distributive predicates	Yes	No	Yes
Comparison by	Number	Volume	Number

(279)   a. The furniture is large.

         b. The mail is round.

         c. The luggage is small.

Finally, with respect to their interpretative properties, Bale and Barner (2009) show that *furniture*-class nouns are interpreted in comparison contexts in the same way as count nouns, but not in the way that mass nouns are. That is, they are compared by number of entities in the way that count nouns are, and not size or volume etc. as happens with mass nouns.

(280)   Chris bought more furniture than Mark.

In (280), the sentence is felicitous if it is the case that Chris bought three small barstools and Mark one grand piano, but not vice versa. It is therefore the number of individual pieces of furniture that are relevant for comparison, not the overall volume of furniture that was bought, given that grand pianos are far larger than barstools.

7.1.3 How *furniture*-nouns have been incorporated into the theory of mass versus count

Furniture-nouns then have the distribution in Table 7.1 with respect to their morphosyntax and interpretation. From the table it can be easily seen why nouns like *furniture* cause problems for mass vs. count: the do not fit neatly into the distinction, nor can one point to some of their properties as an idiosyncrasy. Rather, one the one morphosyntactic side, they appear to be mass, whilst on the semantic side, they appear to be count. This is indicated in the table by the division in the rows in the table body: above the divide are morphosyntactic properties, whilst beneath the division are properties that relate to the interpretation of the nouns.

These nouns show variable properties between being count (individuated) and mass (surface properties), which naturally causes problems for any theory which bases the distinction between count nouns and mass nouns on (lack of) individuation, e.g. Link (1983). In the flexible roots approach, where the mass–count distinction is syntactically created, all roots are underspecified for mass or count and count nouns are created through merger with the root of functional structure that creates individuation. Yet, *furniture*-nouns clearly cause a problem for this, because if there is a strict correlation between surface properties and lack of individuation, count-mass nouns are unexplained.

In response to this problem, Bale and Barner (2009) propose that the mass–count distinction is not characterized by the presence or absence of structure (as is the case for Borer, 2005), but simply the presence or absence of division. Bale and Barner claim that roots are still taken to be underspecified for being mass or count, but when merged into the structure, they combine with a MASS functional head or a COUNT functional head. COUNT creates division, since the semantic function of the head is that it takes something that is unindividuated (like a root for instance) and its output is individuated. MASS on the other hand is an identity function, and it simply maps the input to the output. Thus, since roots are unindividuated when they combine with MASS, they are unindividuated in the output. Thus, in contrast to Borer (2005), there *is* a dedicated functional head for mass.

(281)

With regard to *furniture*-nouns, Bale and Barner claim that they are inherently divided, and so they do not need to combine with COUNT in order to receive an interpretation like other nouns. In fact, they further stipulate that this inherent division of the root means that they *cannot* combine with COUNT — it is a restriction of COUNT that it can only combine with roots that are not already divided. This means that the only option for *furniture*-class nouns is to combine with MASS, which, recall, is an identity function, and *not* a function that creates a lack of division. After combination with MASS, the division of the root is retained. Given that COUNT is the gateway to count syntax: it allow for combination with NumP and the count quantifiers *many* and *few*, *furniture* class nouns are then forced into mass morphosyntax, despite having a divided interpretation.

Note further that the division of the *furniture*-nouns is inherent to the root. Thus, whilst most roots in English are not divided, and can therefore combine

with *either* MASS (by default) or with COUNT (which selected for undivided roots), *furniture* nouns cannot *ever* combine with COUNT, as they will always be dividing, precluding them from merging with COUNT. This, for Bale and Barner explains why *furniture*-nouns are so inflexible in comparision to other nouns.

Though Bale and Barner provide an approach within the flexible roots approach to handle *furniture*-nouns that accounts for their mass-like morphosyntax but count-like semantics, there remain some issues that need to be explored further. Specifically, two predictions are made that are worthy of further investigation. Firstly, as *furniture*-nouns combine with MASS, we expect that other syntactic properties broadly follow that of other mass nouns. This is the question that will occupy the remainder of this chapter, and I will show that *furniture*-nouns show some syntactic behaviour that casts doubt on them sharing a common syntax with other mass nouns.

A second prediction that is made by this approach, that will be explored in 8, is that we do not expect to find nouns that are undivided (i.e. true mass nouns) that combine with syntactic structure that is restricted to count nouns. That is, any syntactic structure whose distribution is dependent on COUNT should not be able to show up with a noun that is clearly mass.

7.2 The mass properties of *furniture*-nouns come from elsewhere

In this section I show that some of the properties that characterise mass nouns can come from elsewhere. Specifically, I will argue for two things. Firstly, the inability of a noun to combine with a numeral is not *per se* related to a combination with MASS, but rather happens more generally, even to some nouns that have count syntax, and would purportedly combine with COUNT in Bale & Barner's system. Secondly, that *furniture*-nouns share a closer relationship to their measure phrase than other mass nouns, which suggests that we are not dealing with the same thing.

7.2.1 Combination with numerals

Mass nouns are not the only nouns that are unable to combine directly with numerals in English. Pluralia tantum nouns also do not combine with numerals, but need the help of measure phrases:[81]

(282) a. * I bought three scissors.

  b. I bought three pairs of scissors.

  c. # I have two new wheels.

  d. I have two new sets of wheels.

Despite their need for measure phrases to combine with numerals, pluralia tantum nouns behave much in the same way as other count nouns in English. Obviously, they combine with plural morphology, such is the key property of a pluralia tantum noun, but more interestingly they must combine with the count quantifiers, and not the mass quantifiers:

(283) a. I ordered too many scissors, we should put them on sale.

  b. * I ordered too much scissors, we should put them on sale.

(284) a. There's too few scissors to go around, you'll have to share.

  b. * There's too little scissors to go around, you'll have to share.

Semantically, they behave just as regular count nouns as well. They cannot be further divided:

(285) a. A piece of a pair of scissors is not a pair/piece of scissors.

Furthermore, they can happily combine with stubbornly distributive predicates:

(286) Those scissors are large, grab them and cut the ribbon.

Finally, comparison is done by number of entities, and not by volume. In the following, the sentence would be true if the speaker has more pairs of scissors in their bag than the addressee, even if the addressee has a larger and heavier pair.

(287) I've got more scissors in my bag than you.

What is the interest of all this? It is not so surprising in and of itself that pluralia tantum combine with count quantifiers rather than the mass ones: the tests for division show that they are interpreted as if they are divided, which if we follow

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[81] The sentence in (282c) is grammatical, but not on a reading where *wheels* refers to a car, rather than the actual wheels of the car.

Bale and Barner, means they will have combined with the COUNT head. What *is* surprising about this is that pluralia tantum do not then show all of the properties that we would expect of count nouns. It is fair that they do not have a singular–plural alternation: the defining characteristic of *pluralia tantum* is exactly this, that they are exclusively plural. Yet, it is striking that these nouns cannot combine with numerals. Semantically, there is not an issue: the requisite division is there, as shown by their interpretative properties.

So, the question we are left with is why they do not combine with numerals. One option would be to follow Bale and Barner (2009) and propose that they combine with MASS, rather than COUNT. However, their choice of quantifiers shows that this is not tenable. Thus, their inability to combine with numerals must arise independently their status regarding division. To the extent that this is true then, it is worthwhile exploring whether the explanation that holds there can also be applied to *furniture*-nouns. In the next section I will explore the idea that it is the inherent number specification of the pluralia tantum that prevents them from combining with numerals, and argue that this can be fruitfully applied to *furniture*-nouns.

7.3 Inherent number is the heart of the problem

7.3.1 The effect of inherent number

If, as claimed by the approaches of Bale and Barner (see also De Belder, 2013), that *furniture*-nouns are really underlyingly the same as true mass nouns, differing only in that they have divisibility as an inherent property, then we would expect them to have the same properties as mass nouns with respect to their surface behavior. However, we already know that this is not *quite* correct. Bale and Barner note that *furniture*-nouns are far more resistant with respect to mass to count shifts than mass nouns. In English, it is fairly easy to make a true mass noun like *water* and *beer* into a count noun, such as in (288a) and (288b) below. However, as noted above, *furniture*-nouns rigidly refuse to undergo such shifts, (288c):

(288) a. Mike was so thirsty he drank three waters one after another.

  b. Mike drank so many beers at the party, I didn't think he'd see the end.

  c. * Mike didn't know what to do with so many furnitures.

Recall that Bale and Barner say that the reason that mass to count shifts are not possible with *furniture*-nouns, is simply because they lie outside the domain of the dividing function. Their interpretation is already one of being individuated,

and because COUNT is a function from unindividuated structures to individuated ones, *furniture*-nouns are unable to combine with it, and hence are restricted to only appearing with MASS.

Yet, this is not the only difference. We know that measure phrases must be used in order to allow *furniture*-nouns to combine with count-syntax, such as numerals and host plural morphology. This is much the same as with mass nouns, but there are two key differences to true mass nouns.

Firstly, syntactically, *furniture*-nouns seem to hold a more local relationship with their measure phrase than true mass nouns do. Bhatt (2012) shows that in English, there are three positions in the sentence that *more* can occupy in a comparison structure. *More* can appear between the numeral and the measure phrase (289a), between the measure phrase and the noun (289b) and between the noun and the standard of comparison (289c). These positions are represented schematically in (290):

(289)   a.   Mike bought three *more* gallons of oil than Sam.

      b.   Mike bought three gallons *more* oil than Sam.

      c.   Mike bought three gallons of oil *more* than Sam.

(290)   Mike bought three (❶ more) gallons (❷ more) (of) oil (❸ more) than Sam.

However, when we look at *furniture*-nouns, we see that position ❷ is unavailable, and *more* is unable to interrupt between the measure phrase and the noun. The other positions for *more* are fine, as shown:

(291)   a.   Mike bought three pieces *more* furniture than Sam.

      b.   * Mike bought three *more* pieces of furniture than Sam.

      c.   Mike bought three pieces of furniture *more* than Sam.

The fact that position ❷ is unavailable with *furniture*-nouns hints that they may have a different syntax than true mass nouns, since they clearly seem to hold a more local relationship with the measure phrase than true mass nouns do.

Secondly, the measure phrase that is used for *furniture*-nouns is semantically bleached, whereas with true mass nouns, they appear to have a genuine semantic meaning. To see this, consider the following, when different measure phrases are combined with true mass nouns:

(292)   a.   There is a drop/puddle/flood/speck of water on the floor.

      b.   There is a grain/heap of sand on the floor.

As the measure phrase changes, the meaning of the phrase as a whole changes: *a drop of water* is clearly different to *a flood of water* or *a puddle of water* in terms of

the amount of water that is lying on the floor. However, with *furniture*-nouns, the measure phrases don't seem to make a whole lot of difference. Fake-mass measure phrases are general terms like *bit, piece* and *item*, and, as pointed out in Doetjes (1997), these measure phrases "[...] such as piece are so general that we can assume that they give us no clue as to how to make a partitioning."

(293)   a.   I bought an item/piece/bit of furniture.
        b.   This item/piece of mail fell out of the bag.

There isn't a clear sense in which *a piece of furniture* is different to *an item of furniture*. With these nouns, it seems as though the measure phrase is there *exclusively* to allow the root to interact with count syntax, and not to offer anything meaningful of its own.

Now, this wouldn't be so interesting by itself, but it is worth noting that there is a clear parallel to pluralia tantum here, which remember need measure phrases in order to attach to numerals. Strikingly, when one considers the behaviour of pluralia tantum in comparisons, it can again be seen that that position ❷ is unavailable (294), just as with *furniture*-nouns, but unlike true mass nouns:

(294)   a.   Frodo brought three *more* pairs of trousers than Sam.
        b.   * Frodo brought three pairs *more* trousers than Sam.
        c.   Frodo brought three pairs of trousers *more* than Sam.

Furthermore, the measure phrases for pluralia tantum are items like *pair*, as in *a pair of trousers, a pair of scissors*, and *set* as in *a set of wheels*. One could of course claim that these are semantically meaningful in that *pluralia tantum* in English can be argued to be usually things that are pairs. For instance, *trousers* have two legs, *glasses* have two lenses, *scissors* have two blades. Yet it is notable that we are not talking about literal pairs here: *scissors* are not made up of two separate scissor components, nor does one trouser plus one trouser make trousers. Therefore, the semantics of *pair* seems to play only a marginal role.

We are then left with two interesting similarities between *furniture*-nouns and pluralia tantum with respect to their measure phrases that set them apart from true mass nouns. Firstly, for both *furniture*-nouns and pluralia tantum, the measure phrase is semantically bleached, and does not appear to contribute anything contentful to the interpretation of the noun phrase, whereas with true mass nouns, contentful measure phrases are possible. Furthermore, the syntactic relationship between the measure phrase and *furniture*-nouns and pluralia tantum seems to be closer than that between a true mass noun and its measure phrase. Specifically, it is not possible for *more* to intervene between the former two noun types and the measure phrase, unlike with true mass nouns.

7.3.2 Count-mass nouns are imposters, masquerading as mass nouns

The similarities between *furniture*-nouns and pluralia tantum seem worthy of being taken seriously, and here I propose that the reason that they act the same way is that these properties are the result of each noun having an inherent number specification. I will argue that having an inherent number specification in English prevents a noun from combining with non-inherent number. The result of this is that certain nouns can be made to look like mass nouns, even though they are not really. Throughout this section, I will show that all the properties that make *furniture*-nouns look as though they are mass on the surface are misleading. The fact that they cannot combine with numerals without measure phrases, do not take plural morphology and go with apparently mass quantifiers, all arise independently, from the effect of inherent number.

7.3.2.1 Background assumptions

I propose that *furniture*-nouns in English are not mass nouns, but rather that they are roots that are inherently individuated, and inherently specified to be semantically plural. That is, they have an individuated interpretation consisting of individuals and groups of individuals. This is in line with Chierchia (1998), who notes the clear similarities between *furniture*-nouns and plural count nouns.[82] It is important that they are individuated, since it is with this that they are able to combine with stubbornly distributive predicates and have comparison done by number. Also of note is that the plurality of *furniture*-nouns is only semantic in nature, since as shown, they never appear with plural morphology nor control plural agreement. In the two-half approach to features, we then say that these nouns combine inherently with [*i*F:plural], which lies on $n_{+\text{DIV}}$.

Following Kihm (2005), Harbour (2007), Acquaviva (2008b), Kramer (2009), and Kramer (2014), I assume that there is a disconnect between where inherent and non-inherent information is introduced in the structure. Specifically, following Acquaviva (2008b), I will assume that inherent features on nouns are located on *n*, not on the root itself *contra* for instance Embick and Halle (2005). I postpone further discussion of this point until the end of this subsection, but it is important to note that in what I propose there is no correlation between interpretability and

---

82 Though Chierchia claims that this is the case for all mass nouns. In short, the proposal is that mass and count nouns have the same interpretation in that they are both interpreted with respect to groups and individuals, but with mass nouns (and *furniture*-nouns, with Chierchia not claiming that they are a different class) the identification of individuals is semantically vague.

inherence; inherent features can be either *u*Fs or *i*Fs, in the same way that non-inherent features can be either *u*Fs or *i*Fs.

(295)
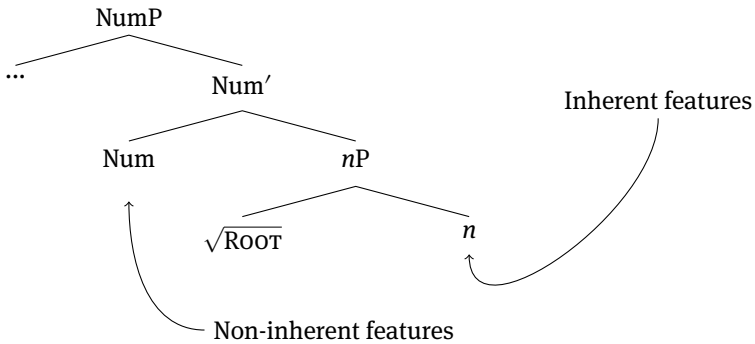
I will further assume that the flexible roots approach is broadly correct, that roots are, in the usual case, unspecified for being either mass or count, and that this distinction is created in the syntax. As noted before, I further assume a version of the flexible roots approach that Bale and Barner (2009) advance, that the difference between mass nouns and count nouns comes from there being different MASS and COUNT heads. However, I assume that these heads are different types of *n*, and as such, the dividing function is part of the category defining node.

(296)   Count nouns
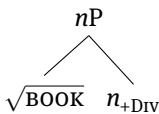
(297)   Mass nouns
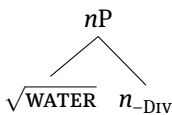
The second modification that I will make to Bale and Barner's approach is that the distinction between mass versus count quantifiers is not related to the $n_{+\text{Div}}$ and $n_{-\text{Div}}$. Bale and Barner propose that the quantifier difference is related to MASS and COUNT, in that count quantifiers surface when they combine with a structure containing COUNT. Mass quantifiers on the other hand arise when they combine with a structure containing MASS. For reasons that will become apparent below, I move away from this proposal, and argue that the relevant factor is morphological number.

Before discussing how mass versus count quantifier differences arise, I make one further proposal regarding *furniture*-nouns. I propose that they are inherently

divided *and* inherently plural. That *furniture*-nouns are inherently divided is not a novel assumption; Bale and Barner make the same assumption and it is this that allows them to explain why it is they behave in the way that they do. I however make the additional assumption that they are plural, that is they always carry the feature [*i*#:plural]. This means that, unless modified by a measure phrase, *furniture*-nouns will always be interpreted as plural entities, that is, they are essentially collections. I depart from Bale and Barner in one crucial respect however: I assume that *furniture*-nouns necessarily combine with $n_{+\text{Div}}$, and the [*i*F:plural] value is located on $n_{+\text{Div}}$. For Bale and Barner, *furniture*-nouns necessarily combine with the functional head that creates mass nouns, whereas for me, they necessarily combine with the functional head that creates count nouns.

This is, admittedly, a rather large divergence from Bale & Barner, and so it warrants further discussion. Firstly, the two accounts differ in how *furniture*-nouns come to show the properties of being divided. For Bale & Barner, there are two ways through which nouns can become divided; either a regular root combines with COUNT, or the root itself is already divided (which then further precludes the root from combining with COUNT). *Furniture*-nouns come to be divided through the latter option. I propose here that there is only one method of division: in order to become divided, roots must combine with $n_{+\text{Div}}$. Therefore, in order for a root to be inherently divided, it must be the case that the grammar restricts the root as such that it can only combine with $n_{+\text{Div}}$. As will be discussed in section 7.3.3, the major reason why Bale and Barner assume that *furniture*-nouns combine with MASS is because they link quantifier selection to this head. However, since I will propose an alternative, namely that quantifier selection is linked to morphological plurality, it opens up the flexibility to eliminate the two methods of division, and have count nouns and *furniture*-nouns combine with the same dividing head.

The second point of difference between the theories is that I assume that *furniture*-nouns are plural, in addition to being divided. Since the plural value is inherent and semantic in nature, following the assumptions above, I again assume that the inherent feature ([*i*#:plural]) is located on *n*.[83] This means that the structure of *furniture*-nouns is as follows:

(298)

nP

$\sqrt{\text{FURNITURE}}$ $n_{+\text{Div}}$
i#:plural

---
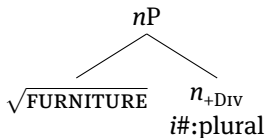
[83] See also Moskal (2015b) for an argument from morphological locality that inherent number is located on category defining nodes.

We can explain pluralia tantum in a similar way. I assume here that they too combine with $n_{+\text{Div}}$, but that instead of having an inherent number feature, the feature that lies on *n* is [*u*#:plural], so as to reflect the fact that the inherent number is morphological in nature. This would give the following:

(299)

$$nP$$

$\sqrt{\text{SCISSORS}}$ $n_{+\text{Div}}$
u#:plural
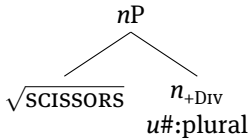
One might question why the number feature in such instances needs to go on the category defining node, rather than simply on the root. Pluralia tantum give us a way to test between the two approaches. If the inherent information were exclusively on the root then we expect that inherent information is inexorably connected to the root, such that whenever the root appears, so does the inherent information. If the inherent information is however located on the category defining node, then we expect that if for some reason the root is prevented from appearing with the category defining node, then the inherent information should disappear. As it happens, inherent plurality can disappear in complex word formation in English:[84]

(300)   a.   The goal was scored by a magnificent scissor-kick (*scissors-kick)

       b.   Every hotel room used to have a trouser-press (*trousers-press)

I assume that the compound structures of the above are the following, crucially lacking a category defining node that combines with the *pluralia tantum* roots:

(301)

     n

$\sqrt{\text{SCISSOR}}$ $\sqrt{\text{KICK}}$

---
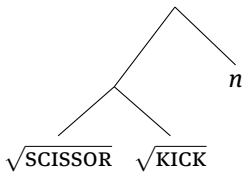
84 The plurality does not have to disappear. For instance *jeans-pocket* seems perfectly fine (?*jean-pocket*), as does *glasses-maker* (a person who makes glasses). However, this only shows that the category defining node *can* be used in compound formation, leading to the preservation of the inherent information, not that it must be. What is important to bear in mind though is that the examples in (300) shows that inherent information can be lost, which is unexpected on the view that inherent information is inexorably carried by the root.

(302)

```
          ╱╲
         ╱  ╲
        ╱    ╲  n
       ╱╲
      ╱  ╲
  √TROUSER  √PRESS
```
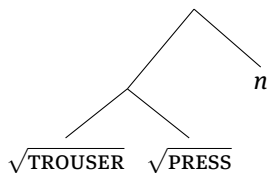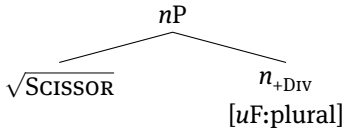
It remains to be answered how it is ensured that inherent features reliably end up with the roots that they are inherent to. In an approach where the inherent information lies literally on the root, this is no problem, however, when the inherent features are located in a position away from the root, it becomes a challenge to make sure that they line up correctly. In this regard, I follow Acquaviva (2008b) in assuming that the grammar includes knowledge of licensing relations of roots. Acquaviva proposes in essence that one must learn which category defining nodes can combine with which roots. If a root and a category defining node can combine, they are licensed. In gender systems, for instance, roots are not fixed with a gender but rather the learner must figure out that a certain root is licensed with an *n* that carries a certain gender. To give an example, the root $\sqrt{\text{OWL}}$ in Dutch is licensed to occur with *n* with a common gender, thereby giving the whole *n*P neuter gender, finally yielding *de uil*, rather than *het uil* (gender is shown on the article in Dutch).

This system allows Acquaviva to analyze pairs of nouns that alternate in gender as being licensed by two different *n*s, without positing largely homophonous roots. For instance, in Italian, nouns are either masculine or feminine. If inherent features are placed on the category defining node, then it must be the case that a noun that is masculine has a root that is restricted to combining with a category defining node that carries a masculine feature, whereas feminine nouns consist of a root that is restricted to combining with a category defining node carrying a feminine feature. However, some nouns can combine with either: for instance, there is an alternation between *cugino* 'male cousin' and *cugina* 'female cousin.' Acquaviva states that there is a single root $\sqrt{\text{COUSIN}}$ that is licensed to appear with two separate functional heads, n_{MASC} and n_{FEM}, giving *cugin+o* and *cugin+a* respectively.
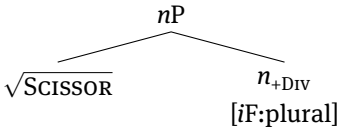
Returning to *furniture*-nouns and *pluralia tantum* nouns, we therefore assume that the class of *furniture*-nouns are all licensed to occur with $n_{+\text{DIV}}$ which carries [*i*F:plural]. *Pluralia tantum* are licensed to occur with $n_{+\text{DIV}}$ which carries [*u*F:plural], as shown in (303), but not with any other type of *n*, as in (304) and (305).
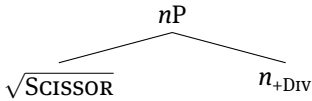
(303)

```
              nP
         ┌────┴────┐
    √SCISSOR      n_{+DIV}
                [uF:plural]
```

✔ Licensed!

(304)

```
              nP
         ┌────┴────┐
    √SCISSOR      n_{+DIV}
                [iF:plural]
```

✘ Not licensed!

(305)

```
              nP
         ┌────┴────┐
    √SCISSOR      n_{+DIV}
```
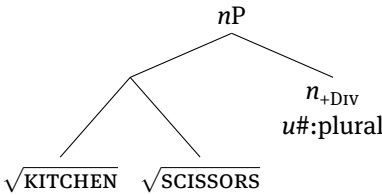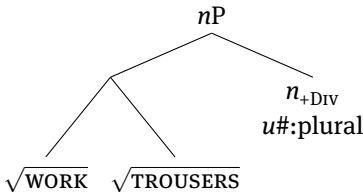
✘ Not licensed!

Crucially, given the discussion of (301) and (302) the licensing relation must be such that it holds only when the roots combine directly with *n*, not wherever the roots are merged into the structure. Thus, when a root like √SCISSOR combines with *n*, it can only combine as in (303), but is able to combine with other things in a more free manner, to produce the root+root compounds above. Since in the root+root compounds, √SCISSOR is not combining with (some type of) *n*, the licensing relations are not at play, and so there is no requirement that it combines with the right one. Note that when √SCISSOR is the head of the compound, then plural morphology is obligatory (*kitchen scissors, *kitchen scissor*). I assume, as is standard (see Moskal and Smith, 2019 for an overview) that it is the head of the compound that determines the selectional properties of the compound as a whole.

(306)

```
                    nP
           ┌─────────┴─────────┐
           │                  n_{+DIV}
      ┌────┴────┐            u#:plural
  √KITCHEN   √SCISSORS
```

(307)

```
                    nP
           ┌─────────┴─────────┐
           │                  n_{+DIV}
      ┌────┴────┐            u#:plural
   √WORK    √TROUSERS
```

Before moving away from this section it is worth considering the form *nail clippers*, as it seems to pose a difficulty for the set of assumptions given above. This compound is a plurale tantum form, as it must combine with plural morphology, control plural agreement on the verb, and does not combine with numerals without a measure phrase:

(308) a. The nail clipper⋆(s) are on the table.

  b. ⋆ The nail clippers is on the table.

  c. There are three *(pairs of) nail clippers on the table.

I have assumed that plural morphology on pluralia tantum comes from the $u\#$:plural feature that lies on n. Yet, in the example of *nail clippers*, there seems to be another morpheme that is realizing n, namely the *-er* suffix. Thus, n seems to be spelled out by two morphemes, *-er* and *-s*. Note that in other pluralia tantum nouns that we have seen, there is the same phonological ending /əz/. However, whilst there is no suggestion that a noun like *scissors* is segmentable into two identifiable heads (the /ə/ is part of the root, and so *scissors* is not $\sqrt{SCIS}+er+s$), with *nail clippers*, the /ə/ does seem to correspond to the agentive suffix *-er* of English, as in *teacher, driver, etc.* and the /-z/ comes from the plural suffix. The contribution of /ə/ is transparently the agentive suffix in the meaning of *nail clippers* — something that clips nails — whereas it is not in *scissors* – ⋆something that scisses.

There are two ways out of this problem. One way out of this apparent problem is to assume that *-er* is not the spell-out of n, but rather is a root itself. This is compatible with the proposals in Lowenstamm (2010) and de Belder (2011) and Creemers, Don, and Fenger (2015), who argue, each differing in details slightly, that derivational suffixes are not category defining nodes but rather roots themselves. Thus, the structure would be:

(309)

$$n_{u\#:plural}$$

$$\sqrt{ER}$$
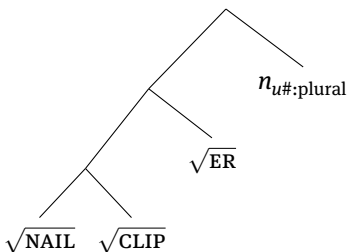
$$\sqrt{NAIL} \quad \sqrt{CLIP}$$

The second option is to assume that for a form like *nail clippers*, we have two distinct n heads, where the lower one is the agentive n and the second head is the plurale tantum creating n. This structure would be:

(310)

$$n_{u\#:\text{plural}}$$

$$n_{\text{agent}}$$
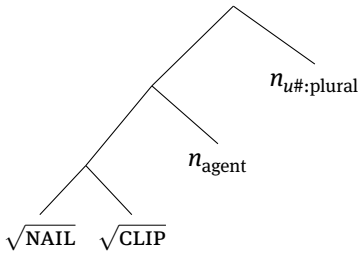
$$\sqrt{\text{NAIL}} \quad \sqrt{\text{CLIP}}$$

Either of these approaches works for our purposes here, and I do not make any commitment on which to adopt. It is notable however that whichever approach is taken, a form like *nail clippers* offers further support for the approach taken here (where I follow Acquaviva, 2008a) that the plural nature of pluralia tantum nouns lies not on the root, but that certain structures are licensed to appear with certain functional heads. There is no item in *nail clippers* which is inherently plural. However, the combination of $\sqrt{\text{CLIP}}$ + *-er* becomes a pluralia tantum noun. Thus, the combination of $\sqrt{\text{CLIP}}$ + *-er* is only possible under $n_{u\#:\text{plural}}$ (*cf.* Marantz, 1995).

7.3.2.2 The effect of inherent number

Returning to *furniture*-nouns, they are known to resist combination with plural morphology, far more so than regular mass nouns in English. Their resistance to plural morphology is to such an extent that they do not undergo mass to count shifts, which we would otherwise expect if they were regular mass nouns. This fact can be explained in the approach of Bale and Barner, since the fact that *furniture*-roots are inherently divided prevents them from combining with COUNT, which can only combine with unindividuated roots (per stipulation). In the present analysis, the inability of *furniture*-nouns to undergo mass to count shifts receives a somewhat deceptive explanation: they are never mass nouns to begin with. However, an apparently larger problem results in that they have the inner structure of count nouns as they combine with $n_{+\text{DIV}}$. Given that they have the inner structure of count nouns, what is it that prevents them from acting like count nouns?

To explain this, I propose that a root that combines with an inherent number specification cannot further combine with NumP in English.

(311) Num^0 cannot be realized on a lexical item that has an inherent number specification.

Suppose that a root combines with *n* carrying *u#:plural*. It cannot then combine with NumP in the same morphological word. There are then two strategies open at this point. Either, (i) NumP does not merge into the structure, and the derivation

proceeds without it. Or, (ii) NumP does merge into the structure; in this case, it cannot combine with $[\sqrt{\text{ROOT}} + n]$.

Option (ii) will be discussed below, but for now I focus attention on option (i). Option (i) has the consequence that no further number features are able to be added to *furniture*-nouns on pluralia tantum. Thus, the only number information that is there is inherent number information, and non-inherent number information will not be present, given that NumP is where non-inherent number information is located. For *furniture*-nouns, this is a fairly striking consequence: it results in *furniture*-nouns not being able to co-occur with plural morphology. The inherent number information on *furniture*-nouns is only semantic, that is, the number feature is an *i*F. For these nouns to receive morphological number information, it would need to be introduced in NumP. Since inherent number and non-inherent number information cannot lie on the same lexical item (at least in English) then we predict that *furniture*-nouns cannot inflect for plural morphology. In the absence of any morphological number specification, I assume that they are spelled out with the unmarked value of the missing features, which for morphological number is singular (Bale, Gagnon, and Khanjian, 2011). This means that they are morphologically singular by default. However, they also apparently control singular agreement:

(312)   The furniture is starting to look shabby.

The singular agreement I treat here as default agreement also. In short, because there is no *u*# feature on the *furniture*-noun, T cannot agree with the *furniture*-noun for number. Thus, the number value on T remains unvalued, and is realized by default 3.sɢ (see Preminger, 2011; Preminger, 2014 on agreement being spelled out as default when an Agree relation cannot be established). One might question why the *i*F on the *furniture*-noun cannot donate the value, and *furniture*-nouns control plural agreement, however, for these nouns I assume that the *i*#:plural that they carry is inactive, unlike the *i*#:plural that is carried on CNPs in English.
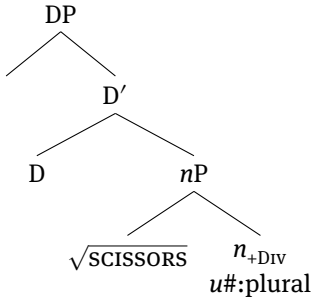
The structure of a *furniture*-noun like *the furniture* is thus as follows:

(313)
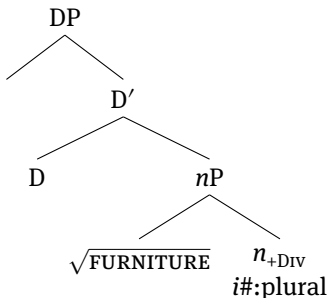
With pluralia tantum, the picture is a little bit more complicated but largely the same. As no non-inherent number will be able to be realized on the same lexical item, this means that pluralia tantum will only carry their (inherent) morphology.

(314)

The question is, what happens with their interpretation? The nouns will be divided, since they combine with $n_{+\text{Div}}$, however, they are predicted to not be able to receive any number *i*Fs. As with *furniture*-nouns, I propose that the missing information is filled in with the unmarked value, and as it is semantic information that is missing in this instance, not morphological information, it is plural, which is semantically unmarked. Thus, pluralia tantum are interpreted in the same way as plural nouns. Note that this does not entail that pluralia tantum will not be able to refer to singular entities, which is transparently not the case, as seen in (315) below. However, plural semantics does not exclude reference to singularities, as shown in (316) (Sauerland, 2008; Bale, Gagnon, and Khanjian, 2011).

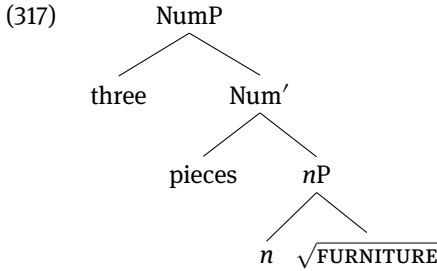(315)   These scissors are the ones that cut me. (pointing to a single pair)

(316)   If you have children, please raise your hand.

7.3.2.3 When NumP is present

Now I turn to option (ii) given above, when the structure necessitates that NumP is projected into the structure. We again predict that *furniture*-nouns and pluralia tantum should pattern together very closely. Though *furniture*-nouns do not combine with NumP on the same lexical item, there are configurations when they do combine with NumP. One of those instances is when they combine with a numeral, following Watanabe (2010) who proposes that numerals are introduced in the specifier of NumP. Count nouns, when they combine with a numeral, provide a host for the number features that are located on Num, as Num can form a morphological word with the root and the category defining node. *Furniture*-nouns on the other hand are not able to do so due to their inherent number. In order to provide the number features of Num with a host, I propose that a dummy lexical

element is inserted. This is akin to dummy-do insertion in English, where *do* is inserted to host the tense features of the auxiliary when it is unable to combine with the verb.

Therefore, in the *furniture*-noun structure that undergoes vocabulary insertion below, *piece* is inserted to provide a placeholder for the features on Num that otherwise could not be hosted:

(317)

```
              NumP
             /    \
         three    Num′
                 /    \
             pieces    nP
                      /  \
                     n   √FURNITURE
```

I assume that the dummy lexical element is what appears to be the measure phrases of *furniture*-nouns. It is not a true measure phrase, as it does not add in any information of division. However, it looks like a measure phrase because it appears in a similar (if not the same, see (291 above) position in the structure, and hosts the number morphology like a measure phrase does with a true mass noun. As they are dummy elements, this explains why they do not contribute much in the way of semantics, being only placeholders to support features, not inserted to give extra information. *Furniture*-nouns are then made to look like true mass nouns because they must combine with an apparent measure phrase in order to be counted, however unlike true measure phrases the ones that go with *furniture*-nouns are not there to provide division, but are only there to host number features.

7.3.2.4 Cross-linguistic justification

(311) is given above as a condition that is present in English, and it is reasonable to wonder whether it holds universally. If so, and nouns that have inherent number can never be counted, then the claim made here is extremely strong. As it happens, this does not seem to be the case, since one can find various instances of languages that happily count pluralia tantum. However, there are also various languages which do not allow direct counting of pluralia tantum, and employ other strategies to get around this, suggesting that the inability to count nouns which have an inherent number specification is not limited to just English.

Firstly, Pesetsky (2013) shows that pluralia tantum in Russian can only combine with collective numerals, such as in the following sentence, where *sutok* is plurale tantum:

(318)   Pesetsky (2013, p. 55)

èt-i   posledn-ie dvo-e   strašn-yx
these-NOM.PL last-NOM.PL two.QUANT-NOM terrible-GEN.PL
sutok
24h-GEN.PL

'These last two terrible days.'

Another case comes from Bosnian.[85] We see in this language that the same pattern holds as in Russian; pluralia tantum cannot be directly modified by the paucal numerals (two, three and four), but a collective numeral must instead be used. However, there is an alternative way of counting for speakers of Bosnian where an adjectival numeral may be used (see Leko, 1998):

(319)   četvere hlače
        four.ADJ pants
        'Four pairs of pants.'

This shows that there is nothing wrong with counting pluralia tantum in general, however in certain languages, just as I propose in English, pluralia tantum are not able to combine with the regular numerals of a language, but they are countable by other means. Crucially, with regard to the Bosnian data, it does not have to be a collective numeral, just not the regular numeral.

7.3.3 What about quantifiers?

Finally, I turn to the issue of quantifiers. Recall that *furniture*-nouns undeniably combine with apparent mass quantifiers like *much* and *little* and not with count quantifiers like *many* and *few*. If *furniture*-nouns are to be analysed as only looking like mass nouns, and not really mass nouns at all, as is the claim here, then the fact that these nouns go with mass quantifiers remains to be explained.

   In the flexible roots approach, it is the syntactic structure that determines whether a noun is interpreted as being divided or not divided. For Borer (2005), division, and lack thereof, was modeled in terms of dividing structure either being present or not in the structure. For Bale and Barner (2009), the difference was not the presence or absence of a certain bit of structure, but rather different functional heads. However, one aspect that unifies these approaches is that the difference in

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85 Thanks to Aida Talić for these data.

syntactic structure (however it is manifested) is what is responsible for determining whether a noun will appear with a mass or a count quantifier. In short, the view is that count quantifiers would merge with count structure, and mass quantifiers would merge with mass structure.

Linking quantifiers to structure in this manner makes intuitive sense, however, it necessarily means that all nouns that combine with mass quantifiers also combine with mass heads, with the same going for count nouns.[86] In the version of the flexible roots approach that I am proposing, this explanation is not possible; given that I am proposing that *furniture*-nouns combine with $n_{+\text{DIV}}$, the functional head that creates division, if we link quantifier choice to division, we would expect *furniture*-nouns to pattern with count, but not mass nouns, contrary to fact.

Here I propose that apparent mass versus count quantifier selection is in fact allomorphy that is sensitive to the morphological number status of a noun: both mass and count quantifiers are allomorphs of the same underlying quantifiers, with the count variant conditioned by morphological plurality and the mass variant being the elsewhere case. Specifically, I propose the following. In English, there are two (relevant) underlying quantifiers MUCH and LITTLE which merge with the noun. They undergo agreement with the noun that they quantify over and agree with the noun's number feature. That quantifiers can undergo agreement with the noun is known from *e.g.* Italian, where the quantifier that translates as *many* differs in form depending on the gender and number of the noun it combines with (*molti* versus *molte*).

Thus, I assume that the quantifiers carry a *u#* number feature that is unvalued, and undergoes agreement with the head noun in order to receive one. If this agreement ends up with the quantifier having a plural number feature, MUCH is spelt out as *many* and LITTLE is spelt out as *few*. However, if the noun that is agreed with is not morphologically plural, then the elsewhere rules contained within (320) below are used, and MUCH is spelt out as *much*, and LITTLE as *little*.

(320) a. [$\sqrt{\text{MUCH}}$, *u#*:plural] ⇔ many
      b. [$\sqrt{\text{LITTLE}}$, *u#*:plural] ⇔ few
      c. $\sqrt{\text{MUCH}}$ ⇔ much
      d. $\sqrt{\text{LITTLE}}$ ⇔ little

---

86 Another prediction, made by both Borer and Bale and Barner is that there ought to be no instance of a non-individuated noun combining with a count quantifier. This prediction turns out to be wrong, as will be shown in chapter 8, and will be discussed there.

In this manner, count nouns will always combine with *many*, since MUCH will get a plural value for its *u*F number feature from the noun.[87] However, both *furniture*-nouns and mass nouns, by virtue of lacking a number specification, will not donate any value to the quantifier. Thus, the quantifier will be spelled out as *much*. The agreement must only target the *u*# of the head noun, otherwise it could result in *furniture*-nouns being able to combine with *many*, contrary to fact, as the quantifier could see the value of the *i*#, which is plural for these nouns. We can easily handle this by assuming that the *i*F of *furniture*-nouns is inactive for agreement. This is in fact true. Unlike *committee*-nouns, *furniture*-nouns never agree with a plural verb:

(321) a. * The furniture are too far away from each other in the room.
  b. * The mail are being delivered right now.

Thus, it is not unreasonable to assume that the *i*#:plural that is inherently on *furniture*-nouns is inaccessible for agreement with the quantifier. Note further that the quantifiers are attributive elements, which do not generally undergo semantic agreement in English even with *committee*-nouns.
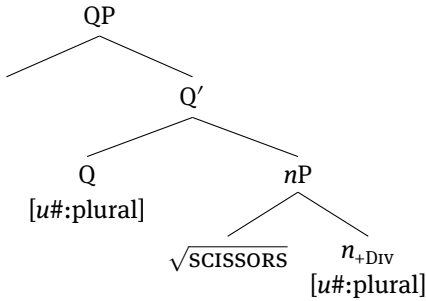
Some derivations are given below to illustrate the point. In (322), the quantifier receives *u*#:plural from Num, resulting in count nouns valuing their quantifier *u*F:plural. We get the same result with pluralia tantum in (323), although the value comes from the inherent number of $n_{+\text{DIV}}$. Both of these result in MUCH being realised as *many*, according to (320).
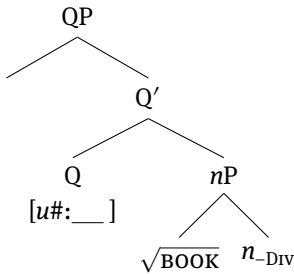
(322)

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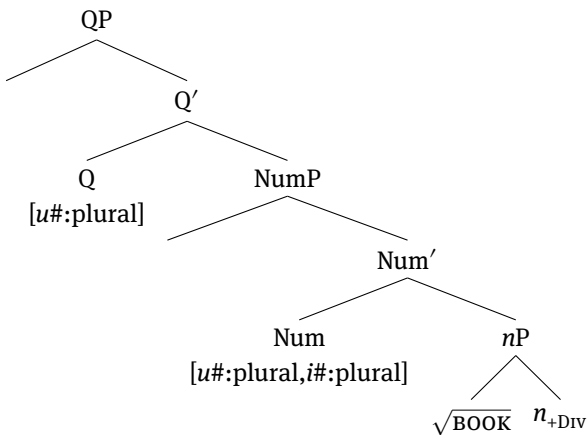
87 Singular count nouns cannot combine with *many*.

(323)

```
              QP
             /  \
                 Q′
                /  \
               Q    nP
          [u#:plural]  /  \
                  √SCISSORS  n+Div
                          [u#:plural]
```
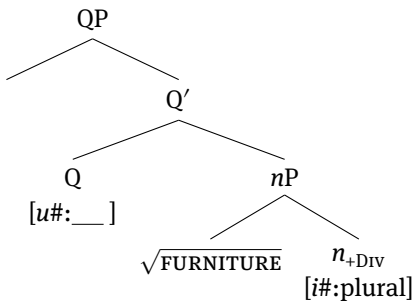
In both (324) and (325), there is no *u#* number feature in the derivation for the quantifier to agree with. Thus, the *u#* on the quantifier remains unvalued, and is spelled out as *much*, per the VI rules in (320).

(324)

```
              QP
             /  \
                 Q′
                /  \
               Q    nP
          [u#:___]  /  \
                  √BOOK  n–Div
```

(325)

```
              QP
             /  \
                 Q′
                /  \
               Q    nP
          [u#:___]  /  \
                 √FURNITURE  n+Div
                          [i#:plural]
```

7.3.4 *furniture*-nouns, woodchippers, and the Universal Grinder

Before moving on from *furniture*-nouns, there is one last issue to discuss: that of the Universal Grinder and how it interacts with *furniture*-nouns. The claim made throughout here is that *furniture*-nouns are inherently divided, as well as plural.

Thus, the root $\sqrt{\text{FURNITURE}}$ must be merged to create the following structure, according to the the licensing conditions discussed above in section 7.3.2.1 (see in particular (326)).

(326)

$$\sqrt{\text{FURNITURE}} \qquad n_{+\text{Div}}$$
$$i\text{F:plural}$$
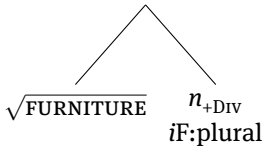
For some speakers of English, however, *furniture*-nouns can appear in a true mass usage. As mentioned earlier, English is quite free in that it allows (most) count nouns to be used in a mass use, and vice versa. *Furniture*-nouns do not usually appear to have such freedom (Bale and Barner, 2009). For instance, whilst it is possible with a true mass like *water* to shift its usage such that it appears with true count properties like *many*, *furniture* doesn't have the same level of freedom.

(327) a.   I brought many waters.
       b.   * I bought many furnitures.

From the discussion here, it should be clear why *furniture*-nouns lack this freedom. We can model mass–count coercion as roots that normally appear with $n_{+\text{Div}}$ appearing instead $n_{-\text{Div}}$, and vice versa. *Furniture*-nouns are licensed to occur with $n_{+\text{Div}}$ and so we expect that this will preclude them from combining with $n_{-\text{Div}}$. However, some speakers do allow for a shift to a true mass usage. Consider the following sentence, which is characteristic of the Universal Grinder effect that is a count to mass shift:

(328)   John put the furniture through the woodchipper, and now there's furniture all over the back garden.

After the furniture has gone through the woodchipper, the result is not *furniture* in any sense of what one can sit on or such, but rather is likely to be chips of ground wood and so on. However, this seems to suggest that a *furniture*-noun can be separated from $[n_{+\text{Div}}+ i\text{F:plural}]$, and should really be a violation of the licensing requirements in (326).

Rather than this cause a problem for the analysis assumed here, we can slightly weaken the licensing conditions of *furniture*-nouns. Recall from the discussion of pluralia tantum within compounds that it is not an absolute requirement that a plurale tantum root like $\sqrt{\text{SCISSOR}}$ appear with $[n_{+\text{Div}}+u\text{\#:plural}]$. In a compound like *scissor kick*, we see that the *n* carrying the inherent plurality is missing, and *scissor* appears in the singular form. Therefore, it does not cause ungrammaticality for a root that has licensing requirements to appear without a

head. *Scissor* can also be used as a verb, so the root can combine with a different head also:

(329)   Pages scissored out of a magazine.[88]

Indeed, *furniture*-nouns can also be used as verbs, thus the requirement that *furniture*-roots combine with $[n_{+\text{Div}}+ i\text{F:plural}]$ is not an absolute requirement:

(330)   a.   We can't wait to furnish our new apartment.

     b.   He mailed a letter.

The explanation is that the licensing requirement identified in (326) above holds only when a root like $\sqrt{\text{FURNITURE}}$ combines with $n_{+\text{Div}}$. So, the only $n_{+\text{Div}}$ head that $\sqrt{\text{FURNITURE}}$ can combine with is $[n_{+\text{Div}}+i\#\text{:plural}]$. Combination with $n_{+\text{Div}}$ without iF:plural violates this, and is not licensed. The more specific needs of $\sqrt{\text{FURNITURE}}$ are not met by simple $n_{+\text{Div}}$. However, the licensing requirement holds only over varieties of $n_{+\text{Div}}$, and so only when $\sqrt{\text{FURNITURE}}$ tries to combine with $n_{+\text{Div}}$. It is however free to combine with other heads, like v and $n_{-\text{Div}}$. This explains why *furniture*-nouns can be used as true mass nouns once they are coerced to do so. Once they combine with $n_{-\text{Div}}$, they will get an undivided interpretation consistent with other mass nouns, but of course they will still combine with the mass quantifier allomorphs *much* and *little*, since they don't get plural morphology, like other mass nouns.

Importantly however, the licensing conditions for when the root combines with varieties of $n_{+\text{Div}}$ are such that it cannot avoid having the inherent iF:plural specification upon combination with this head. Therefore, we cannot subvert the inherent number in such a way to allow *furniture*-nouns to be able to combine with numerals and plural morphology. This would require them combining with a simple $n_{+\text{Div}}$ head without an inherent number specification. However, the more specific head $[n_{+\text{Div}}+i\#\text{:plural}]$ must always be chosen. Thus, mass–count shifts are possible with *furniture*-nouns, however it is not clear why they are restricted compared to other nouns.

7.4 Furniture nouns: Summary

In this chapter I have argued that *furniture*-nouns are not mass nouns in any traditional sense, but rather are made to look as though they are mass nouns in the way that English resolves inherent number. To make this argument, I drew a close

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88 This example taken from the Oxford English Dictionary.

comparison to *pluralia tantum*, and showed that various properties that are shared between *furniture*- and *pluralia tantum* result from both of these classes having inherent number. This means that they cannot combine with NumP in the normal way, which has the result that even though they have the semantics associated with divided nouns, they cannot combine with numerals (assumed to be introduced in NumP), nor can they receive a specification for morphological plurality. This derives from the proposal that these nouns licensed to combine with $n_{+\text{DIV}}$, but crucially only $n_{+\text{DIV}}$ that *also* carries $i\#$:pl. Other heads are available, under the right circumstances, but, crucially, only an $n_{+\text{DIV}}$ with inherent number is possible when the root is to combine with $n_{+\text{DIV}}$, which serves to block potential combination with the regular, number-free $n_{+\text{DIV}}$.

Importantly, a lot of the explanation was based on the result of a mismatch in number features. *furniture*-nouns had a specification for semantic plurality, but could not get one for morphological number; *pluralia tantum* had a specification for morphological plurality but did not receive any semantic number specification. They are thus hybrid nouns in that their morphological number does not match their semantic interpretation and I made crucial use of the number feature being able to show divergent (or even missing) values, as was outlined above. In the next section I show that this general idea helps us understand another class of atypical mass nouns in Telugu. There I show that the current account of the flexible roots approach is to be preferred, since it helps account for something not predicted in the other accounts, namely the existence of (semantically) mass nouns that have count (morphosyntactic) properties.

8 Non-countable count nouns in Telugu

The claim made in the previous chapter is that *furniture*-nouns are count nouns made to look mass by morphological quirks of English. That is, the reason why they look as if they are mass — an inability to combine with plural morphology, inability to combine with numerals, as well as combination with mass quantifiers — all ultimately stem from an inherent specification for semantic plurality. Crucially, this is the case for quantifiers: though *furniture* is in many senses a count noun, it does not have the morphological plurality needed to make it combine with *many*, rather than *much*.

This claim paints a contrast to previous work within the flexible roots approach (Borer, 2005; Bale and Barner, 2009), whereby quantifier selection was implemented in a similar way, but count quantifiers appeared when the head noun had the COUNT functional head, and mass quantifiers appeared otherwise. As noted at the end of section 7.1.3, if one implements quantifier selection in this way, by combination with COUNT, then it makes the predication that there ought to be no noun that has the semantics of being a mass noun, yet has plural morphology. The reason that this prediction stands is that for Borer (2005) and Bale and Barner (2009), COUNT is a gateway to count syntax, and plural morphology is part of count syntax. Furthermore, whilst Bale and Barner do allow for individuated roots to combine with MASS and still be individuated (as MASS is an identity function), the converse is not true: COUNT is a function of division and so *any* root that combines with it must necessarily have a divided interpretation. I will discuss in this chapter a counter-example to this predication, Telugu, which has a small number of nouns that have the semantics of genuine mass nouns in the language, but have plural morphology and combine with count quantifiers.

8.1 Plural mass nouns

At the outset one thing should be kept in mind. The prediction described above is actually more nuanced than I made out there. It is already known that plural mass nouns do exist, but they do not always exist in the right way that we need. In this section I first discuss three ways in which plural mass nouns have already been noted to exist, and discuss how they are not relevant for the matter at hand. The first is where the plural morphology leads to a meaning that is different from what we would normally expect of plural morphology, most often with abundance. Secondly, we will discuss the case of Halkomelem Salish, as outlined by Wiltschko (2008), where plurality is argued to be derivational, and not inflectional, and so

falls outside the remit of what we are discussing here. Finally, we will discuss plural mass nouns in Ojibwe, Mathieu (2012), where a noun that is prototypically mass undergoes a singulative operation, and then is able to interact with plurality.

8.1.1 Plurality leads to a non-transparent or additional meaning

We have seen that it is not the case that nouns are constrained to being mass or count: in English and indeed many languages, it is possible to flit between the two categories as need be. Thus, it is easy to see nouns that are prototypically 'mass' being used with plural morphology: *three waters, please*. Nouns that are shifted to a count usage are not our interest here, but it is worthy of note that this is not the only way to see a noun that is prototypically mass having plural morphology. As Acquaviva (2008a) notes, some mass nouns have a plural without being used as a count noun:

(331) a. The waters in that region are dangerous, I wouldn't sail there.
b. The sands of the Sahara have claimed the lives of many desperate travellers.

These uses have a kind of non-transparent reading: we are not talking about different kinds of water not different types nor grains of sand. Rather, *water* and *sands* here are being used to talk about regions of water and sand. Though interesting in and of themselves, these types of uses are also not our attention here, and I refer the reader to Acquaviva (2008a).

8.1.2 Plurals of abundance

A second way that mass nouns occur with plural morphology is when they have some kind of abundance reading. This is shown in the following example from Halkomelem Salish (Wiltschko, 2008).

(332) tsel kw'éts-lexw te/ye shweláthetel
1SG.S see-TRANS-3O DET/DET.PL fog.PL
'I've seen a lot of fog.'

We'll return to Halkomelem shortly, but this is not a particularly unusual pattern. The same pattern is seen in Greek (Tsoulas, 2007), where the use of the plural suffix on the mass noun gives rise to the reading that a lot of the noun was involved:

(333) Trexoun   nera   apo to tavani
     drip-3RD-PL water-PL-N-NOM from the ceiling-N-SG
     Water is dripping from the ceiling.

Tsoulas notes that these nouns come with an abundance reading, in that the quantity of water denoting by *tavani* in (333) is more than one would otherwise expect. Tsoulas gives the following dialogue to illustrate this point:

(334)   SPEAKER A: Afise o gianis anihto to lastiho ke gemise i avli nera
        (Giannis left the hose on and the yard was full of waters)
        SPEAKER B: Min ipervalis fofo mu, de gemisame nera, na ligo nero#nera etrekse.
        (Don't exagereate Fofo, it wasn't full of waters, just a little water/#waters dripped out of the hose)

8.1.3 Derivational number

Another way in which a mass noun can combine with plural morphology comes from Halkomelem Salish. We already saw above that plural morphology can indicate an abundance reading in this language. However, there are further interesting issues to pay attention to with regards to plural morphology in Halkomelem.

    Firstly, plural marking in Salish is not obligatory. In the first pair of examples, the ablaut that marks plurality is optional, and in the second, the reduplication is optional.

(335)   Wiltschko (2008, p. 642)

      a. te   lhíxw swíweles
          DET three boy
          'The three boys'

      b. te   lhíxw swóweles
          DET three boy.PL
          'The three boys'

(336)   a. qex̱ te   s-the'ím
          many DET NOM-berry
          'many berries'

      b. qex̱ te   s-th'eth'ím
          many DET berries
          'many berries'

Secondly, even when plurality is marked on the noun, Wiltschko shows that is does not necessarily mean that the DP-internal elements will undergo plural agreement. Again, this process is optional. As seen in the following, if the head noun is plural, then the determiner can either agree with it and show the plural variant or not. The determiner can also be plural in the absence of the head noun being plural. Finally, neither can be plural, in which case the normal reading is that the head noun is singular. However, Wiltschko (2008) notes that this sentence is compatible with a plural reading.

(337) Wiltschko (2008, p. 643)

    a. t'ílém ye   s-í:wí:qe
       sing   DET.PL man.PL

       'the men are singing'

    b. t'ílém te   s-í:wí:qe
       sing   DET man.PL

       'the men are singing'

    c. t'ílém ye   swíyeqe
       sing   DET.PL man

       'the men are singing'

    d. t'ílém te   swíyeqe
       sing   DET man

       'the men are singing'

Thirdly, plural marking is possible on the non-head element of a compound. In the following, the head of the compound is the left element, but the right elements are marked for plural:

(338) Wiltschko (2008, p. 644)

    a. tem-qoqo:
       time-water.PL

       'high water time'

    b. tem-weléx̱es
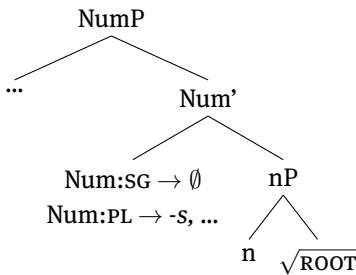   time-frog.PL

       'time of frogs' (='March')

Finally, number morphology in Halkomelem appears *inside* of derivational affixes. In the following, the adjective *p'eq'* 'white' can be nominalised with the prefix *s-*. However, when pluralised, the reduplication is only of the root, and crucially not reduplication of *s-* and the root.

(339)   a. p'eq'
            white
            'white'

   b. s-p'eq'
       NOM-white
       'white spot on skin'

   c. s-p'eq'p'eq'   (*sp'eq'sp'eq')
       NOM-white.PL
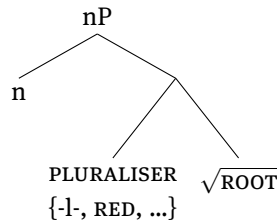   'white spots on the skin'

All of these properties paint plural marking in sharp contrast to English, where plurality is not optional, agreement is obligatory when the head noun is plural, plural marking is not seen on the non-head of compounds (*_mice-eater_), and plural marking comes outside of derivational morphology (_marri-age-**s**/*marry-**s**-age_).

Wiltschko argues that these properties of plural marking in Halkomelem can be understood if we view plural marking as a _derivational_ rather than an _inflectional_ process in Halkomelem. That is, whilst the plural marker in English, for example, is the realisation of a plural Num, in Halkomelem, the pluraliser combines directly with the root.

(340)

```
              NumP
             /    \
           ...    Num'
                 /    \
       Num:SG → ∅      nP
      Num:PL → -s, ...  /  \
                       n   √ROOT
```

(341)

```
           nP
          /  \
         n    \
              /  \
      PLURALISER  √ROOT
      {-l-, RED, ...}
```

The important point to be made here is that pluralisation in Halkomelem is a different kettle of fish than pluralisation in English. Borer (2005) and Bale and Barner (2009) make predictions _only_ for inflectional plural marking: that is, pluralisation that is the regular realisation of a plural Num. We then need to be careful when seeing plural mass nouns in a language to ensure that it is a regular plural marker, and one without a special meaning of abundance. I will show in the discussion of Telugu that this is _not_ a language where pluralisation is a derivational process.

8.1.4 Singulatives

Finally, Mathieu (2012) shows that nouns that look prototypically mass in Ojibwe can combine with plural morphology.

(342) a. maandaamin 'corn' ∼ maandaamin-ag 'corn-PL

      b. semma 'tobacco' ∼ semaa-g 'tobacco-PL

      c. mikwam 'ice' ∼ mikwam-iig 'ice-PL

      d. azhashki 'mud' ∼ azhashki-in 'mud-PL

      e. aasaakamig 'moss' ∼ aasaakamig-oon 'moss-PL

All of the nouns in (342) are protoypically mass nouns, but they appear to freely combine with plural morphology. Number in Ojibwe is not derivational, as we saw above was proposed by Wiltschko (2008) claims for Halkomelem Salish. Mathieu also shows that the plural forms do not come with an abundance reading that is present in similar nouns from Halkomelem Salish. What they come with is in fact an individuated reading. Thus, they are akin to mass to count shifts, like *three waters* in English. However, the process is slightly different, resulting from a singulative operation. Their individuation is shown by the fact that they can combine with numerals, as well as distributive quantifiers like *gakina* 'every':

(343) a. bezhig azhashki
        one   mud
        'One chunk of mud.'

      b. niizh azhashki-n
        two   mud.PL.IN
        'Two chunks of mud.'

      c. gakina azhashki
        every   mud
        'every piece of mud.'

Mathieu claims that they are individuated by a singulative in Ojibwe. This can be diagnosed by a gender shift. In Ojibwe, nouns are classified as either animate or inanimate, which works as a gender classification in the language. Mathieu claims that nouns that inanimate nouns that are singulative undergo a gender shift to animate, and this provides the division. Often this gender shift is not visible on the noun itself, which may by morphologically unaffected, however, the verb will show obviative marking when a shift has occured. Thus, *mitig*, which is normally an inanimate noun meaning 'wood', when interpreted as 'tree', having undergone a singulative shift, is animate, and triggers obviative marking on the verb (as well as having an obviative suffix itself, in this case).

(344) a. John o-gii-waabam-aa-n   mitig-an
           John 3SG.SUBJ-PAST-see.AN-3SG.OBJ-OBV tree-OBV
           'John saw a tree.'

Therefore, again, what looks to be the case of mass nouns undergoing plural marking freely here, it is in fact the case that these are not really mass nouns at all anymore, but rather have been divided by different bits of structure. Specifically, they *have* combined with the dividing head, but in Ojibwe it can be realised by the singulative. Building on Borer's work, Mathieu assumes the following partial typology:

(345) a.

```
        DP
       /  \
      D    #P
          /  \
         #    DivP
             /   \
           Div   nP
```

       b. Possible content of Div:
           – plural
           – numeral classifier
           – numerals
           – singulative

The interesting consequence of this analysis is that there are multiple ways in which a noun can come to be divided: it is not just plurality that indicates division. The idea that numeral classifiers and numerals are dividers in languages without plural morphology is well known (Cheng and Sybesma, 1999; Borer, 2005), but the addition of the singulative (which is at times taken over by the diminutive in Ojibwe, Mathieu, 2012) shows that it is important to make sure that there are more methods of division that need to be taken into account.

8.2 The mass/count distinction in Telugu

In this section I outline the fact that Telugu does has a mass–count distinction in the language, and that there are a clear set of diagnostics for distinguishing between count nouns and mass nouns. There are languages that have been claimed to not make a mass–count distinction, see for instance Yudja (Lima, 2014), and

the discussion in Deal (2013), and so it is important to establish that Telugu is not one of these.

For some background information on the language: Telugu is a Dravidian language spoken in central India. According to Simons and Fennig (2018), it has almost 92,000,000 speakers, with almost 81,000,000 of those L1 speakers. It has various characteristics that one would expect of a Dravidian language, being head-final with agglutinative morphology. A comprehensive grammar of the language is available in Krishnamurti and Gwynn (1985). The Telugu data in this section come from my own consultations with a native speaker of the language, unless otherwise noted.

8.2.1 The morphosyntax of the mass–count distinction in Telugu

The first fact of note is that Telugu has a regular singular–plural distinction, that is shown in obligatory nominal and verbal morphology, as well as being reflected in the pronominal system. In (346), we see that *kukka* 'dog' is present in the sentence without any number marking, and is used in a singular sense, shown by the presence of 3.NM.SG morphology on the verb. When the subject is made plural in (347) by the suffix *-lu*, then the verb inflects for plural.

(346) kukka ṭinn-a-ḍi
       dog   eat-PAST-3.NM.SG
       'A dog ate.'

(347) kukka-lu ṭinn-aa-ji
       dog-PL   eat-PAST-3.NM.PL
       'Dogs ate.'

(348)   * aa abbaaji isuka-lu ṭavvu-ṭunn-aa-Du
           the boy   sand-PL dig-PROG-PRES-3.NM.SG
         intended: 'The boy is digging sands.'

Count nouns in Telugu freely combine with numerals. Again, plural morphology on the noun is obligatory and there are no classifiers for count nouns below:

(349) Raaǰu muuDu aratipanD-lu ṭinn-aa-Du
       Raaju three   banana-PL   eat-PAST-3.MASC.SG
       'Raaju ate three bananas.'

Just like in English, if a mass noun is to combine with a numeral, then a measure phrase must be used:

(350)   * Raaǰu renDu isuka-lu konn-aa-Du
       Raaju two   sand-PL dig-PAST-3.MASC.SG

     intended: 'Raaju dug two (piles of) sand(s).'

Finally, there is a difference in the quantifier *few/little*. Whilst *čaala* covers both mass and count to mean *many* and *much*, *konni* 'few' will only combine with count nouns and *končam* will only combine with mass nouns (Ponamgi, 2012).

(351)   a.   raaǰu čaala   aratipanD-lu ṭinn-aa-Du
         Raaju a.lot.of banana-PL   ate-PAST-3.MASC.SG

         'Raju ate many bananas.'

     b.   raaǰu čaala   annam ṭinn-aa-Du
         raaju a.lot.of rice   eat-PAST-3.MASC.SG

         'Raju ate a lot of rice.'

(352)   a.   Raaǰu konni aratipanD-lu ṭinn-aa-Du
         Raaju few   banana-PL   eat-PAST-3.MASC.SG

         'Raaju ate few bananas.'

     b.   neenu končamu uppu ṭinn-aa-nu
         I   little   salt eat-PAST-1.SG

         'I ate little salt.'

In sum, we see by and large the same mass–count distinction that we see in English in terms of the morphosyntax of Telugu: count nouns have a consistent and obligatory singular–plural opposition whilst mass nouns do not; count nouns can combine with numerals, whereas mass nouns cannot; and count nouns combine with *konni* to express the meaning of LITTLE whereas mass nouns combine with *končam*. Given these properties, and the absence of any reason to think there is more at play — for instance, to my knowledge there is no reason to suspect that there is also a singulative system in Telugu — we can assume that Telugu has the same system as English in terms of how creates division in the interpretation of nouns.

8.2.2 The semantic distinctions between mass nouns and count nouns in Telugu

With regards to the interpretative properties of the two classes of nouns, again we see a similar pattern to English. Once more, the two diagnostics of interest are *stubbornly distributive predicates* (Schwarzschild, 2011) and comparison (Bale and Barner, 2009).

Recall that count nouns differ from mass nouns in their ability to combine with predicates such as *large, round* and *long*. Count nouns can happily combine with these predicates, but mass nouns cannot. This is also seen in Telugu. The adjective *peḍḍagaa* 'big' cannot combine with mass nouns, but happily combines with count nouns:

(353)   a.   aratipanD-lu peḍḍa-gaa unn-aa-ji
             banana-PL   big-GA   be-PRES-3.NM.PL
             'The bananas are large.'

        b.   # venḍi peḍḍa-gaa un-ḍi
               silver large-GA   be-3.NM.SG
             intended: 'The silver is large.'

Baruvugaa 'heavy' however, will combine with count and mass nouns:

(354)   a.   aratipanD-lu baruvu-gaa unn-aa-ji
             banana-PL   heavy-GA   be-PRES-3.NM.PL
             'The bananas are heavy.'

        b.   venḍi baruvu-gaa un-ḍi
             silver heavy-GA   be-3.NM.SG
             'The silver is heavy.'

This shows that it is not the case that adjectives systematically pick out mass nouns vs. count nouns. Rather, Telugu thus shows an identical distribution of stubbornly distributive predicates to English; there exists in Telugu (as in many languages - see Maldonado, 2012) a set of predicates which must obligatorily distribute down to atomic entities, and these predicates happily combine with count nouns in Telugu, but not mass nouns.

Comparison contexts also yield contrasting behaviour between the two classes. Count nouns are compared by number of individual entities and not any volume measurement, whereas mass nouns are compared with respect to the total volume of the mass noun, and the number of distinct individual quantities is irrelevant. (355a) is true when the number of bananas that Raju ate is larger than the number of bananas that Raani ate, whereas (355b) is true when the overall quantity of oil is relevant, and not individual quantities, for instance bottles.

(355)   a.   raaǰu raani kanna ekkuva aratipanD-lu ṭinn-aa-Du
             raaju raani COMP more   banana-PL   eat-PAST-3.MASC.SG
             'Raju ate more bananas than Raani.'

        b.   raaǰu raani kanna ekkuva nuune konn-aa-Du
             raaju raani COMP more   oil   buy-PAST-3.MASC.SG
             'Raju bought more oil than Raani.'

Again, to sum up: in important ways related to the interpretation of division, Telugu behaves like English. Mass nouns cannot combine with stubbornly distributive predicates unlike count nouns, and the two classes have different standards of comparison, in the sense that mass nouns are compared by volume, but count nouns by number of individual entities.

There are other properties relevant to the mass–count distinction in English in Telugu that have not been discussed here. It is not my goal here to provide a complete description of mass vs. count in Telugu, but the above discussion has established the existence of the mass–count distinction in Telugu. I now move the discussion on to a small class of mass nouns that have plural morphology on them.

8.3 Milk and water: Plural mass nouns in Telugu

In section 8.2 the absence of plural morphology on a noun was used as a diagnostic of that noun being a mass noun. However, as has been noted in various places this does not hold without exception; cross-linguistically there are a small number of languages where plural morphology can appear on mass nouns as we saw earlier in section 8.1.

8.3.1 Milk and Water

As shown above, mass nouns do not combine with plural morphology in Telugu. However, as noted in Krishnamurti and Gwynn (1985), there is a small class of mass nouns in Telugu that are inflected for plural. Two such nouns are *niiLLu* 'water' and *paalu* 'milk'. These nouns were the easiest to elicit from my consultant, and so the examples below use these nouns, but as Krishnamurti and Gwynn (1985) note, *wadLu* 'paddy', *pesalu* 'green gram' and *kandulu* 'red gram' also fit this class. Consider the following sentences. Note that the forms do not just look as though they are plural by virtue of ending in -*lu*, but they also trigger plural morphology on the verb that they agree with, and not singular morphology.

(356)   a.   nii-LLu unn-aa-ji
             water-PL be-PRES-3PL
             'There is water.'

        b. *nii-LLu unḍi
             water-PL be-3.NM.SG
             intended: 'There is water.'

c. paa-lu   table miiḍa padd-aa-ji
    milk-PL table on   spill-PAST-3.PL
    'Milk spilled on the table.'

Their combination with plural morphology is not the only count property these nouns show. They appear with the ostensibly count quantifier *konni* rather than *končam*.

(357) a. aa abbaaji konni nii-LLu   ṭaag-ees-ṭun-aa-Du
           the boy   few   water-PL drink-EMPH-PROG-PRES-3.MASC.PL
           'The boy is drinking some water.'

       b. * končam nii-LLu
           little   water-PL
           intended: 'Little water.'

One may suppose that these nouns are simply count nouns in Telugu. This is eminently possible of course: *water* is a noun that we would consider indivisible, but there are many examples of nouns that are mass in one language, and count in another.

Yet, on further investigation, the idea that these nouns can be considered count nouns loses weight given that they do not exhibit the full range of count-properties. Firstly, they do not combine with numerals, and so are uncountable:

(358) Raaǰu renDu *(kap-lu) nii-LLu   ṭaag-ææ-Du
       Raaju two   cup-PL   water-PL drink-PAST-3.MASC.PL
       'Raaju drank two (cups of) water.'

They also have the clear properties of mass interpretation. They do not combine felicitously with stubbornly distributive predicates:

(359) # nii-LLu   peḍḍagaa unn-aa-ji
         water-PL big-GA   be-PRES-3PL
         'The water is large.'

Nor do they combine with quantifiers that require division, such as *prati* 'every' (Ponamgi, 2012).

(360) * aa abbaaji praṭi niiLLu   ṭaag-ees-ṭun-aa-Du
         the boy   every water-PL drink-EMPH-PROG-PRES-3.MASC.SG
         intended 'The boy is drinking every water.'

As with mass nouns, comparison is done by volume, and not number. In the following situation, (361) is true is a situation where Raaju used one 5 litre bottle of milk and Raani used three 1 litre bottles. Thus, the overall volume of milk used

Tab. 8.1: Summary of mass–count properties of *niiLLu* and *paalu*

	Count nouns	Mass Nouns	*niiLLu* and *paalu*
Plural morphology	✓	✗	✓
Combine with *konni*	✓	✗	✓
Combine with končam	✗	✓	✗
Directly countable	✓	✗	✗
Combine with prati	✓	✗	✗
Distributive predicates	✓	✗	✗
Comparison by	Number	Volume	Volume

by Raaju was larger than that used by Raani, even though Raani used more individual portions of milk. It is *not* true if Raaju used three 1 litre bottles of milk and Raani used one 5 litre bottle, where the number of individual portions of milk used by Raaju is greater than the number used by Raani.

(361) Raaǰu Raani kanna ekkuva paa-lu vaaD-ææ-Du
　　　 Raaju Raani COMPR more milk-PL use-PAST-3.MASC.SG
　　　 'Raaju used more milk than Raani.'

Therefore, we can see that semantically, these nouns behave as if they are mass nouns, that is, they are interpreted as if they are not divided. To summarize, Table 8.1 is the situation with Telugu count nouns, mass nouns and *niiLLu* and *paalu*. As was the case in the previous chapter, properties that are to do with the morphosyntax of the mass–count distinction are above the division in the tabe, whereas those associated with the semantic properties are below the division. The table clearly shows the split that *niiLLu* and *paalu* have. The top three rows show that they share their morphosyntactic characteristics with count nouns, but the bottom four rows show they are interpreted in the same way as true mass nouns.

8.3.2 Comparison with previous types of plural mass nouns

Recall from above, that there are a number of ways in which nouns which may look as though they should be mass nouns in terms of their prototypical meaning, can combine with plural morphology. For instance, we saw that Mathieu (2012) argued that the singulative will create the right structure for nouns with this meaning. Yet, this is clearly not at play in Telugu: *niiLLu* and *paalu* have not undergone a singulative operation as evidenced by the fact that they are interpreted as if they are *un*divided.

　　　 Secondly, nouns that are prototypically mass can combine with plural morphology and create an abundance reading, as Tsoulas (2007) argues is possible

for Greek. It is possible to discount this possibility, since my consultant states that *niiLLu* and *paalu* are able to be used when only a little amount of milk and water is intended. In the following situations, an abundance use of the mass noun would render the sentence infelicitous, however the sentences are fine:
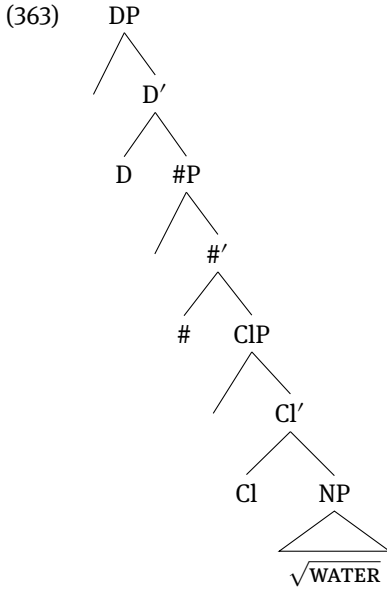
(362) a. Raaǰu ṭana coffee-lo paa-lu   poos-ææ-Du
Raaju his   coffee-in milk-PL pour-PAST-3.MASC.SG
'Raaju put milk in his coffee.'

b. Raaǰu čet-la-ki   nii-LLu poos-ææ-Du
Raaju plant-PL-DAT water-PL pour-PAST-3.MASC.SG
'Raaju gave the plants water.'

Finally, plural morphology can combine with nouns that are prototypically mass when it is derivational in the language, rather than inflectional, as was claimed by Wiltschko (2008) for Halkomelem. Yet, again, such an analysis is inappropriate for Telugu, given that the singular–plural distinction is obligatory and systematic in Telugu, and clearly not optional as is the case in Halkomelem.

8.3.3 Theoretical outlook: what does this plurality mean?

In the above discussion, it was shown that there are nouns that have the semantics of mass nouns in Telugu, but they have plural morphology, and combine with the 'count' quantifier in Telugu. Furthermore, these are genuine plurals: the plurality is not optional and comes from a language that has a system of number marking that is clearly inflectional, rather than derivational.

Since *niiLLu* and *paalu* in Telugu are clearly plural nouns, in Borer's system it *must* be the case that they occur in a count structure like (266):

(363)

```
            DP
           ╱╲
            D′
           ╱╲
          D    #P
              ╱╲
                #′
               ╱╲
              #    ClP
                  ╱╲
                    Cl′
                   ╱╲
                  Cl    NP
                       ╱──╲
                    √WATER
```

Recall that for Borer, plural inflection comes from ClP, thus it must be in the structure for *niiLLu* and *paalu*. Since ClP is in the structure, we would expect that the denotation of *niiLLu* and *paalu* is like any other count noun, with division. Yet this is clearly not the case, as shown by the discussion above: *niiLLu* and *paalu* do not show any sign of being divided given that they do not combine with stubbornly distributive predicates, and their comparison is done by volume, both of which serve as diagnostics for being divided in Telugu.

One could also argue that ClP is not present with *niiLLu* and *paalu*, and that the plural morphology is a decoy. Let's suppose that the plurality on the noun is inherent to the root, and not regular plural inflection that comes about through the syntactic structure. Consonant with the theory in chapter 7, I will assume that were this the right approach, the plural feature would go on the category defining node.[89]

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89 It's possible that it would go lower, in which case we would expect it in other environments, however I don't have any evidence to bear on this question.

(364)

DP
D
...
*n*P
√WATER   *n*
u#:plural
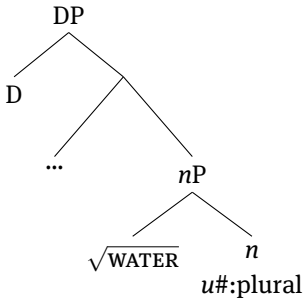
If this were the case, then it could be possible to maintain the view that *niiLLu* and *paalu* occur without ClP. The plural morphology would be inherent to the noun (they would be effectively *pluralia tantum*). As it would be inherent to the noun, there is no necessity to assume that the plurality is introduced in Cl, and therefore, it should be possible to have a noun that is inherently plural, but without the semantics of division.

Yet, there is an additional problem in that the presence of the count structure with *niiLLu* and *paalu* is not just indicated by the plural morphology, but also shown by the quantifier selection. Recall that Borer treats mass–count quantifier selection in terms of phrasal selection: because the mass–count distinction is created syntactically, and not through lexical properties, then quantifier sensitivity to the mass–count distinction must also be a sensitivity to syntactic environment. Borer says that *much* is a mass quantifier because it selects a phrasal complement that is mass; i.e. it does not have ClP. *Many* on the other hand is a count quantifier because *many* selects for a phrasal complement that contains ClP. If we apply this approach to Telugu, where we know that *konni* is a count quantifier, then it follows that *niiLLu* and *paalu* should have count structure in order to combine with *konni*. However, we know that this cannot be the case because it predicts the wrong interpretation for the noun, which would then be predicted to be divided.

The problem does not get easier for the account of Bale and Barner (2009). Recall that in this approach the two heads MASS and COUNT are responsible for providing the gateway to mass and count syntax. Yet here, on the one hand, the semantics of the nouns suggest that they have merged with MASS, but given that count quantifiers select for COUNT, then the morphosyntax suggests that *niiLLu* and *paalu* has in fact merged with COUNT. Just as in the discussion of Borer (2005) immediately above, we appear to be at a stalemate.

Since Bale and Barner (2009) have two functional heads, one for creating counthood and one for creating masshood, another possibility opens up here, as it is in principle possible for both to co-occur on the same noun. Whilst mass and count are in complementary distribution for Borer (2005), given that it is the ab-

sence or presence of structure, this is not the case for Bale and Barner, where there is nothing to stop the two heads from cooccuring. This may be useful, given that we are dealing with two nouns that show the properties of being both count, and mass. However, there are two problems with this. Firstly, supposing that the two heads could cooccur, it seems reasonable to assume that COUNT would be the uppermost head, as this would be the one most local to the quantifier for means of selection. *NiiLLu* and *paalu* both appear with the count quantifier, therefore, when the count quantifier merges into the structure, it can only do so with a noun that is count. In order to prevent mass quantifiers from occurring with *niiLLu* and *paalu*, it is necessary to rule out optionality if two heads coexist, therefore it seems reasonable to assume that the highest head wins, as is standard with phenomena like agreement.[90] Thus, the surface behavior of the nouns leads us to expect the following:

(365)

```
              DP
             /  \
        COUNT    \
               /  \
           MASS    \
                  /  \
                 n   √WATER
```
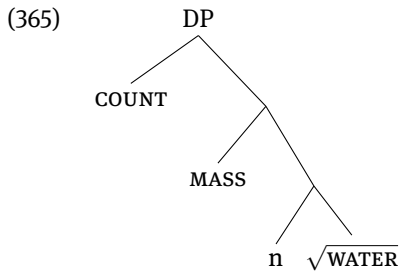
However, supposing that this were possible, when this structure is interpreted by the semantics, we still expect division, since COUNT will always yield an individuated interpretation to what it applies to. As a matter of fact, the problem is inherent to combining the two heads. Given that MASS is an identity function, then whenever COUNT is in the structure we will still get division. Even if the order of COUNT and MASS were reversed, as in (366) then MASS will map an individuated semi-lattice to itself. No matter what we do, with MASS being an identity function, anything with COUNT will yield division.

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90 This problem is circumvented if quantifier selection is done with reference to whichever head is closest to the root. However, this seems *ad hoc* and unmotivated. In addition, the problem with COUNT and MASS cooccurring in a meaningful way will remain.

(366)

```
              DP
             /  \
          MASS
              \
            COUNT
                 \
                 / \
                n   √WATER
```
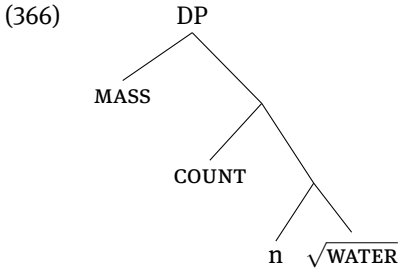
As a final attempt to save this, one could define MASS in such a way such that MASS destroys division, and is a function that maps any type of lattice to an unindividuated semilattice. However, this then would give an apparent paradox in that the semantics would suggest that (366) is the correct structure whilst the morphology suggests (365). Furthermore, moving outside of Telugu, this approach would then fail to account for *furniture*-nouns in English, which would then be expected to be unindividuated, contrary to fact. Recall that Bale and Barner partially based their approach on *furniture*-nouns of English, and proposed that these roots are inherently divided and must combine with MASS, as their inherent division prevented them from combining with count. Mass was necessarily defined as an identity function to allow these roots to combine with MASS yet retain their division.

8.3.4 Summary

From the preceding discussion, we can see that *niiLLu* and *paalu* cause problems for both the approaches of Borer (2005) and Bale and Barner, 2009, in particular with respect to quantifier selection. The major issues that affects both of these approaches comes from linking quantifier selection to the presence of a particular head in the structure. For both Borer and Bale and Barner, the fact that *niiLLu* and *paalu* both combine with *konni* entails that the head that creates division must be in the syntax. Thus, when it gets interpreted we expect a divided interpretation, which is not the case. The problem seems to be that both approaches are too coarse in tying count quantifiers strictly to divisibility. An approach that is to prove satisfactory needs to at least include the following two components. Firstly, MASS and COUNT need to be able to combine in a meaningful way; and secondly, COUNT needs to be in the structure but only relevant for the morphosyntax, not semantics. In the next section I move towards an account which can handle this.

8.4 Quantifier allomorphy again

We have seen that one of the main problems for Borer and Bale and Barner's approaches is that, for both, the dividing head must be in combination with *niiLLu* and *paalu*, which means that the noun must be interpreted as having minimal parts, contrary to fact. What I will begin to outline in this section is a way of allowing whatever it is that creates division to be present on the noun, but only play a role in the morphosyntax and not having any import into the semantics.

The split feature approach advocated for throughout this work provides a new way of looking at things. Representing features in this manner allows for differences between how the morphology sees some item and how the semantics sees it. Its relevance for the matter at hand, where we need a noun to be morphologically count but semantically mass, is clear, and here I show how we can utilise this in order to explain the behaviour of *niiLLu* and *paalu*.

8.4.1 A feature split approach to *niiLLu* and *paalu*

As in the above analysis of *furniture*-nouns in English, the presence of *konni* also does not imply that the division head is in the structure. Quantifier selection is again agreement, and I will show that *konni* is possible if it can agree with [*u#*:plural] on a noun.

The first thing of note is that Telugu fills a hole in the typology predicted in section 7. There it is argued that *furniture*-nouns are not really mass nouns at all, but rather are made to *look* mass by virtue of being semantically plural, but they lack a morphological specification for number. This meant that they were essentially count nouns in terms of their semantic behavior, but mass nouns in terms of their morphological behavior. We then predict that the converse mismatch is possible: that there exists a set of nouns that are semantically mass yet morphologically count. This is apparently unattested in English but stands as a prediction made by the approach where the surface and semantic behavior of mass and count can diverge.[91] Telugu seems to fill in this typological prediction with *niiLLu* and *paalu*, as shown in Table 8.2.

I propose that we understand Telugu in the following way. The plural specification on *niiLLu* and *paalu* is not regular plural inflection like it is with a count noun, but rather arises because these nouns are inherently *morphologically* plural. Recall that I assume that inherent features are located on category defining nodes,

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91 The situation is unattested to the best of my knowledge, though *suds*, as pointed out by Acquaviva, 2008a stands as a possible candidate.

Tab. 8.2: A mass–count spectrum of sorts

		Semantics	
		Count	**Mass**
Morphology	**Count**	Regular count noun	*niiLLu* and *paalu*
	Mass	*furniture*-nouns	Regular mass noun

therefore $\sqrt{\text{WATER}}$ must combine with an *n* that carries [*u*#:plural]. Importantly, as these nouns are *not* individuated, they must combine with $n_{-\text{DIV}}$. Note that there is no semantic contribution of the plural feature: *niiLLu* and *paalu* are not semantically plural but only morphologically. Since they combine with [*u*#:plural], they appear with the plural suffix.

(367)
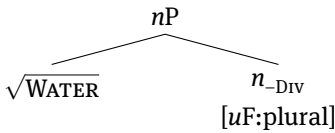
Having the nouns as inherently morphologically plural is relatively trivial to explain. We still must explain the facts about quantifiers. As discussed above, we saw that the biggest problem for the approaches of Borer (2005) and Bale and Barner (2009) was that the presence of an apparently count quantifier necessarily entailed the presence of a syntax that produces semantic division. A central argument of chapter 7 is the fact that English *furniture*-nouns appear with apparent mass quantifiers does not entail the fact that they appear with the functional head that prevents division (i.e. MASS). Apparent selection of quantifiers for masshood and counthood was treated as allomorphy of the quantifier MUCH, which has the allomorphs *much* and *many*. The quantifier agrees with its noun in terms of number, and takes the *u*F value of the noun and so quantifiers are therefore valued as either singular, plural or without number. The allomorph of the quantifier is determined by the following VI rules operative in English. In short, *many* only appears when the noun that it appears with is morphologically plural (the same as with *few*):

(368) a. $\sqrt{\text{MUCH}}$, [*u*#:plural] ⇔ many

  b. $\sqrt{\text{LITTLE}}$, [*u*#:plural] ⇔ few

  c. $\sqrt{\text{MUCH}}$ ⇔ much

  d. $\sqrt{\text{LITTLE}}$ ⇔ little

We can also apply this same idea to Telugu to understand the quantifier facts, and see that the same pattern emerges: *končam* and *konni* are not separate quantifiers

in Telugu that are sensitive to the mass or count status of the nouns that they combine with, but rather they are allomorphs of a single quantifier FEW that are sensitive to the morphological number value of the noun that they combine with. I assume again that an agreement relation is established between the quantifier and the noun, and the quantifier contains a number feature that gets valued by the noun. Since *niiLLu* and *paalu* are valued as [*u*#:plural], then we expect that they pattern with count nouns in terms of which quantifier they appear with due to the following VI rules for Telugu:

(369) a. $\sqrt{\text{KONČAM}}$, [*u*#:plural] $\Leftrightarrow$ konni
       b. $\sqrt{\text{KONČAM}}$ $\Leftrightarrow$ končam

With these VI rules, we can see why *niiLLu* and *paalu* behave the way that they do in Telugu. What makes them appear to be count nouns — the plural morphology and the fact that they combine with an apparently count quantifier — is really a result of them being inherently morphologically plural. Note that we no longer run into any of the problems with quantifiers that Borer (2005) and Bale and Barner (2009) do. Given that quantifier selection is disassociated from the dividing head, there is no reason to think that $n_{+\text{Div}}$ is present in the structure.

8.5 Mass/count quantifiers as allomorphy

In both Telugu and English, I have argued that the difference between mass and count quantifiers is essentially reducible to allomorphy. The English quantifiers *many* and *much* are allomorphs of the same quantifier MUCH, whilst *few* and *little* are allomorphs of the quantifier LITTLE. 'Count' quantifiers (*many* and *few*) are the allomorphs that appear when the quantifier has undergone agreement and received a plural value, whereas 'mass' quantifiers (*much* and *little*) are the elsewhere variants. As explained above, treating mass versus count quantifiers in this way allows for a more nuanced understanding of how *furniture*-nouns in English fit into the picture. We no longer need to analyse these nouns in English as being true mass nouns, which in turn allows us to capture their variation from mass nouns in an intuitive way: they do not act like other mass nouns simply because they are not. This view however, has been considered before in unpublished work by Chierchia, and has not proven uncontroversial. Solt (2009) in particular provides criticisms against this position, arguing in favor of there being a genuine division between mass and count quantifiers.

8.5.1 Plural mass nouns in English

There are three observations that Solt (2009) uses to argue against analysing mass versus count quantifiers as number allomorphy. They can be summarised as follows:

1. The choice of a quantifier determines the interpretation of the noun.
2. In certain instances *many* and *much* can appear in the same syntactic environment.
3. Plural mass nouns (in English) seem to go with *much* instead of *many*.

Regarding point 1, Solt argues that if quantifier choice were determined by agreement, then we do not expect there to be any restrictions on the interpretation on the quantifier. She gives the following examples:

(370) a. SPEAKER A: How many potatoes did you buy?
   b. SPEAKER B: Five.
   c. SPEAKER B: # Two pounds.

From this, Solt argues that *many* fixes the interpretation of *potatoes* to a divided interpretation. However, this argument is undermined by the fact that *potatoes* is clearly a count noun in these example, and given that it can be used in a mass usage, the natural interpretation is to interpret it as a count noun. Once we switch to a clear plural mass noun, then we see that the *many* does not necessarily entail a number interpretation, but other measurements are available:

(371) a. SPEAKER A: How many clothes did you bring?
   b. SPEAKER B: # Three.
   c. SPEAKER B: Three suitcases worth.

The second argument that Solt uses is that *many* and *much*, can appear in the same syntactic environments, which one would not expect if they were allomorphs of each other (in which case we would predict complementary distribution):

(372) a.   We invited many more than 100 people.
   b. ?? We invited much more than 100 people.

(373) a.   ? We waited for many more than twenty minutes.
   b.   We waited for much more than twenty minutes.

Here, it is not clear why complementary distribution also wouldn't be expected on an account where there is a genuine difference between mass and count quantifiers, so it is hard to treat it as an argument in favour of a situation where mass and count quantifiers are caused by mass and count instead.

Solt describes the final argument as the strongest evidence that agreement does not play as big a role in determining quantifier selection as I am claiming. It is a claim which has appeared in numerous places (e.g. Ojeda, 2005), and is worth considering in more detail. Solt uses food examples like *mashed potatoes* and *scrambled eggs* to illustrate her point:

(374)   a.   Everyone likes these/*this mashed potatoes.

     b.   The mashed potatoes are/*is cold.

(375)   a.   How much mashed potatoes should I make?

     b.   * How many mashed potatoes should I make?

To the extent that these data are correct, then according to Solt they constitute strong evidence that there is something other than agreement at play in determining the distribution of *much* and *many*. The argument is as follows. The agreement on the demonstrative in (374a) and the verbal agreement in (374b) are both clearly plural, identifying the entire noun *mashed potatoes* as plural. Thus, if it were the case that plural morphological agreement always led to *many*, then we expect that nouns like *mashed potatoes* would always combine with *many*, irrespective of its interpretation. However, as shown by the grammaticality of (375a) and ungrammaticality of (375b), *mashed potatoes* combines with *much*, and not *many*. Given that *mashed potatoes* has a mass reading, whilst being morphologically plural, Solt concludes that it is the mass status of *mashed potatoes* that is responsible for combination with *much*, and from this, it is MASS and COUNT that determine quantifier selection, and not morphological agreement, as is claimed here. This class of nouns then seem to be problematic. However, the picture is further complicated for two reasons.

Firstly, Solt's arguments regarding *mashed potatoes* are undermined somewhat in that agreement is not always uniform. *Mashed potatoes* can also be used with singular agreement:

(376)   Mashed potatoes is on the menu.

The singular agreement presumably comes from shifting *mashed potatoes* into a naming usage, which causes the internal morphology of the name to be ignored: Similar examples are easy to create:

(377)   Human resources is a great department to work in.

It seems like speakers are able to shift *mashed potatoes* into this usage:

(378)   As a meat and potatoes kind of guy, mashed potatoes is my favorite side dish.

I propose that this shifting results in the internal morphology of *mashed potatoes* being ignored for the allomorphy of the quantifier, and the result is that *mashed potatoes* can appear with *much*. Note that the phrase can also appear with *many*, where it apparently is not treated as a named item:

(379)   I don't know how many mashed potatoes you put in, but you were wrong.

That we are dealing with different usages of *mashed potatoes* is shown by the impossibility of combining them. In the following, we see that plural agreement is not possible when *much* quantifies over *mashed potatoes*, and singular agreement is not possible with *many*:

(380)   a.   How much mashed potatoes is eaten on Christmas Day?
        b.   ⋆ How much mashed potatoes are eaten on Christmas Day?
        c.   How many mashed potatoes are ready?
        d.   ⋆ How much mashed potatoes are ready?

Secondly, in English, it is clear that *furniture*-nouns like *furniture*, as detailed above, do not fit the pattern that Solt predicts. Thus, both the morphological approach and Solt's semantic approach face issues in that there is one class of nouns that cannot be accounted for. In the morphological approach, plural mass nouns in English cause problems, whereas *furniture*-nouns cause problems for the semantic approach.

I contend here that the morphological approach is correct, and that (some) English plural mass nouns like *mashed potatoes* and *scrambled eggs* are idiosyncratic exceptions to the general rule. There are two pieces of evidence that support this view. Firstly, as shown in section 8.3, other languages clearly have morphological number, rather than semantic interpretation determining quantifier selection. The primary case in point is Telugu, discussed above, where nouns with mass semantics combine with count quantifiers precisely because of their morphological number. Furthermore, the data from English are not as clear cut as it seems from (375). The judgements cannot be taken as too reliable, since they are often fuzzy, with relatively few nouns that people have clear intuitions about. A corpus search highlights this even further. These results come from searching for the plural mass noun, with either *many* or *much* within 2 surrounding words to the left of the noun serving as a direct quantifier and not part of a partitive phrase like *how much of your knowledge*.... The nouns picked were selected from looking at frequently cited plural mass nouns in the literature, as well as a subset of the plural mass nouns

Tab. 8.3: *Many* vs. *much* in plural mass nouns

Noun	*n* hits	MANY	MUCH
clothes	30450	62	0
belongings	1933	4	0
preparations	2719	2	0
valuables	445	3	0
fumes	1689	2	0
goods	17009	27	4
brains	5360	1	0
dregs	285	0	0
suds	264	0	0
guts	2984	0	0
contents	6145	0	0
remains	5137	5	0
winnings	670	0	0
ashes	3088	1	0
wages	7500	0	0
intestines	689	0	0

given by Ojeda (2005). Since *much* has other uses, all instances where *much* was clearly not being used as a quantifier were discounted from the totals.[92]

Given the scarcity of any of these nouns combining with *many* or *much* in the corpus, it is hard to draw any firm conclusions about whether plural mass nouns in English combine with mass or count quantifiers. What we can take away from this however, are two significant observations. Firstly, with the majority of these nouns, *if* they go with a quantifier, there is a preference to combine with *many* rather than *much*. Again, however, the numbers are quite small. Secondly, even if one were to disagree that there is a preference for *many* over *much*, given the scarcity of the results, it is hard to sustain an argument that *much* should be treated as *the* quantifier for combining with plural mass nouns in English. Ultimately, the data are messy and the few clear cases that have a preference for *much* (*mashed potatoes*) are matched by those where there is a preference for *many* (*clothes*). The point to be taken away from all of this is that plural mass nouns in English do not suffice as an argument against the morphological approach to quantifier selection.

There is potentially a true argument against morphological quantifier selection that comes from ellipsis.[93] Consider the following data:

---

[92] The corpus search was done on November 3rd, 2014.

[93] Thanks to Jon Gajewski for pointing out this data to me.

(381) a.   Bagels, I have many, doughnuts, I don't.

  b.   * Bagels, I have many, cream cheese, I don't.

The contrast in (381) looks problematic since the sentence appears to be ungrammatical when the quantifiers don't match. This is an interesting observation because allomorph selection, and inflectional morphology differences often do not matter for ellipsis resolution (Lasnik, 1999; Bobaljik and Zocca, 2011) The ungrammaticality then seems to be coming from the fact that there is a clash of two fundamentally different quantifiers or structures, that violates the parallelism requirements of ellipsis.

Yet, the force of this problem is slightly weakened by the fact that quantifier mismatches are allowed under ellipsis when it is *much* that is the first quantifier, and *many* that is the elided one. In the following (382b) seems more acceptable than (381b):

(382) a.   As for bagels, I don't have many, but doughnuts, I do.

  b.   ? As for cream cheese I don't have much, but bagels, I do.

This contrast is reminiscent of another contrast seen in ellipsis shown by Bobaljik and Zocca (2011), but to do with gender marking. Though English lacks a general system of gender marking, in contrast to some of its closely related languages, there are a few noun pairs where the meaning is very similar except for a contrast in gender. For instance, a *sister* is a female sibling and a *brother* is a male sibling; an *aunt* is the sister of one of your parents and an *uncle* the brother of one of your parents (roughly); and a *queen* is a female monarch whilst a *king* is a male monarch. What is interesting about these pairs is that with nouns like these, though the difference is relatively superficial in the sense of it is only the natural gender of the referent that differs, one member of the pair cannot serve as the antecedent of ellipsis of the other. For instance, consider the following, where the element in square brackets is the intended elided item:

(383) a.   # Willem-Alexander is a king and Máxima is [a queen] too.

  b.   # Máxima is a queen and Willem-Alexander is [a king] too.

It is known that there are parallelism requirements in ellipsis, but things are more complicated than simply saying that the gender must match, for two reasons. Firstly, gender is quite often ignored in ellipsis, such as in the following from Brazilian Portuguese (where the item in square brackets again indicates the elided element):

(384)   Bobaljik and Zocca (2011, p. 142)

    a. O   Pedro é médic-o   e   a   Marta também é. [médic-a]
        the Pedro is doctor-MASC and the Marta also   is doctor-FEM

        'Pedro is a doctor and Marta is too.'

    b. A   Marta é médic-a   e   o   Pedro também é. [médic-o]
        the Marta is doctor-FEM and the Pedro also   is doctor-MASC

        'Marta is a doctor and Pedro is too.'

Brazilian Portuguese has a system of gender in the language in contrast to English, and it is known that inflectional morphology (as is the case here, see Bobaljik and Zocca 2011) can be ignored in ellipsis resolution. Thus, it is perhaps not so surprising that there is a difference here.

    Secondly, other nouns in English that *prima facie* appear to have a male–female distinction do not show the same patterns as in (383). Consider the following:

(385)   a.   John is an actor and Mary is too.

    b.   # Mary is an actress and John is too.

Here, whilst the feminine form *actress* cannot license ellipsis of the apparently masculine *actor*, the converse *is* possible showing that there is more at play than a blanket ban on gender mismatches.

    The analysis given in Bobaljik and Zocca (2011) appeals to presuppositions triggered by phi-features. Some forms, like *actress* introduce a presupposition that the referent has a particular gender, here feminine, whilst others do not. *Actor* is an example of the latter type, which is consistent with the referent being male or female. Bobaljik and Zocca (2011) argue that if the antecedent of a noun introduces a presupposition regarding gender, then the elided noun also carries that presupposition as well. There is then a problem with (385b), because *actress* introduces the referent is feminine, which is satisfied by *Mary*. However, because *actress* is the antecedent of the elided noun, then the referent of the elided noun ought to be a female too, as the presupposition is introduced by the elided noun. This clearly fails with *John*, who is male, and so the sentence is bad. On the other hand, in the grammatical sentence, it is fine for the two subjects to mismatch in gender, because the antecedent of the elided noun, *actor*, introduces no presupposition of gender. Therefore, there is no presupposition of gender for the elided noun either.

    In the case of nouns like *king∼queen*, Bobaljik and Zocca argue that both of these nouns carry a semantic presupposition of gender. That is, a *king* is presupposed to be male and a *queen* presupposed to be female. Thus, neither can serve as the antecedent for the other in (383), because there will be a presuppostion

clash. Willem-Alexander is male, and Máxima female, so whichever is in the second clause will not meet the presupposition of the elided noun, which comes from the first clause.

With this pattern in mind, let's return to the quantifier facts above. Recall that the examples under discussion is as follows:

(386) a. * Bagels, I have many, cream cheese, I don't.

  b. ? As for cream cheese I don't have much, but bagels, I do.

It is fairly easy to see the superficial similarity here. I have argued above that *much* is the elsewhere form of the quantifier MUCH, whilst *many* is the specific version (used when there is agreement for plural). This looks like *actor~actress*, where the former is unspecified for gender, but the latter is. It is therefore tempting to use the explanation offered by Bobaljik and Zocca to explain the contrast in (386).

However, Bobaljik and Zocca's approach, as given, does not work here. Their account relies on semantic presuppositions, but the difference between *many* and *much* as I have argued above is created by the $u\#$ that is on the quantifier. uFs are morphological units, never accessible to the semantics, and so cannot induce presuppositions in the way that Bobaljik and Zocca (2011) assume.

However, a unified proposal does seem possible if we understand the gender distinctions in a different way. Let's assume that *actor* and *actress* differ in that *actor* comes from (387), without a gender specification, whereas *actress* comes from (388), where the features of gender, both uF and iF, are carried on *n*:

(387)

$\sqrt{\text{ACTOR}}$ *n*

(388)

$\sqrt{\text{ACTOR}}$ *n*
iGen:fem
uGen:fem
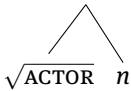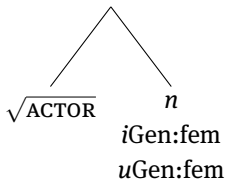
Let's further suppose that ellipsis can be licensed under the following condition:[94]

(389) *Specificity in Ellipsis*
  A more specified representation cannot serve as the antecedent for ellipsis for a less specified representation.

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94 This is by no means the only licensing condition on ellipsis, but a full discussion of ellipsis lies well beyond the scope of this book, and even further beyond the scope of my competence.

(390)   Representation A is more specified than B if A properly includes B.

Under this condition, *actress* is allowed to be elided in (385a), because (387) is more specified than (388). However, because (388) is crucially more specified than (387), it is not allowed to license ellipsis of *actor*.

  With regards to the *king*∼*queen* contrasts, neither can license ellipsis of the other because they are both specified for gender. Bobaljik and Zocca argue that it is part of the lexical semantics that makes this class of nouns different to the *actor/actress* type. There is a true opposition of genders in that *king* is not underspecified for gender, but rather refers to only males, not females. *Queen* is specified for only females. We can represent *king* as in (391) and *queen* (392):

(391)

$$
\begin{array}{c}
\diagup\diagdown \\
\sqrt{\text{MONARCH}} \qquad n \\
\phantom{\sqrt{\text{MONARCH}}} \quad i\text{Gen:masc} \\
\phantom{\sqrt{\text{MONARCH}}} \quad u\text{Gen:masc}
\end{array}
$$

(392)

$$
\begin{array}{c}
\diagup\diagdown \\
\sqrt{\text{MONARCH}} \qquad n \\
\phantom{\sqrt{\text{MONARCH}}} \quad i\text{Gen:fem} \\
\phantom{\sqrt{\text{MONARCH}}} \quad u\text{Gen:fem}
\end{array}
$$

Neither of these structures stands in a containment relation to the other, proper or otherwise, and as such, neither can license ellipsis of the other.

  Now we are in a position to return to the quantifier ellipsis discussed above. In section 7.3.3, I have claimed that the quantifier MUCH carries a number feature that undergoes agreement with the noun that it quantifies over So, the quantifier *much* is actually the following:

(393)

$$
\begin{array}{c}
\diagup\diagdown \\
\sqrt{\text{MUCH}} \quad u\#:\underline{\quad}
\end{array}
$$

Now, if the quantifier agrees with a plurally marked noun (i.e. the noun carries uF:plural), then the uF on the quantifier will also be marked as such, and the quantifier will be spelled out as *many*, as in the following:

(394)

$$
\begin{array}{c}
\diagup\diagdown \\
\sqrt{\text{MUCH}} \quad u\#:\text{plural}
\end{array}
$$

However, *furniture*-nouns do not carry *u#*, and by assumption, neither do true mass nouns.[95] Thus, the *u#* that lies on the quantifier will remain unvalued throughout the derivation. This has the effect that *much* is less specified than *many*, but not vice versa, since *much* lacks a number value, whereas *many* has a plural specification. Thus, per (389), *much* can be the antecedent of an elided *many*, but *many* cannot be the antecedent of an elided *much*, accounting for the contrast between (386a) and (386b) above.

Throughout this subsection, I have considered various counterarguments that have been made against the approach to mass–count quantifiers that I am taking here, namely that the difference is related to plurality. This is a subtle area to test: for the overwhelming majority of nouns, either analysis could be correct, given that most nouns that combine with *many* and *few* are necessarily plural and count, and that most of the nouns that combine with *much* and *little* are mass, and therefore not plural. It is possible to test this using plural mass nouns, and we have seen that where there is enough evidence to adjudicate — which happens in only a few instances — it seems to fall in favour of the number based approach (see Table 8.3). The judgements are subtle, the arguments sparse, and whatever one's inclination, it is hard to claim a convincing argument in favour of that approach. At the very least however, I hope to have shown that there have not been truly convincing arguments against this approach.

8.6 Quantifier selection in Purépecha

To the extent that the above discussion is correct, we have seen two languages that offer support for the view that mass–count quantifier allomorphy is an allomorphy of morphological number, as opposed to mass–count. This is not enforced in the system that I have outlined: rather we have come to this conclusion because of the behaviour of nouns that do not quite fit the mass–count diagnostics properly, in the sense that they seem to lie between the two categories. Specifically, *furniture*-nouns in English combine with *much* and *little* because they are not morphologically plural, whilst *niiLLu* and *paalu* in Telugu combine with *konni* because they do have morphological plurality.

In the remaining discussion of this chapter, I now consider evidence from Purépecha, which, also has a set of nouns that fall between mass and count in the language. The question that will form our main concern is the allomorphy

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95 See the discussion below as to why combining a true mass noun — a root that combines with $n_{-\text{Div}}$ — is semantically meaningless, and presumably ruled out on grounds of economy.

between mass and count quantifiers in Purépecha. All the data are taken from Maldonado (2012) unless otherwise noted.

8.6.1 The mass–count distinction in Purépecha

Purépecha is an isolate language spoken in Central Mexico. As Maldonado (2012) outlines, it has a mass–count distinction for all intents and purposes the same way that English and Telugu does. Plural marking is obligatory for count nouns (395a), whilst it is not possible for mass nouns (395b):

(395)   Maldonado (2012, p. 60)

    a.   Taní-mu acháati*(-icha)
           three-MU man-PL
           'Three men.'

    b.   * yurhíri-icha wichu-iri-i-s-ti[96]
           blood-PL   dog-GEN-COP-PERF-3IND
           intended: 'This blood (these stains of blood) is the dog's.'

Similarly, just as in English, count nouns are able to combine with numerals, but mass nouns cannot:

(396)   Maldonado (2012, p. 60)

    a.   Taní-mu urhíkwa*(-icha)
           three-MU oak.tree-PL
           'Three oak trees.'

    b.   * eshe-s-ka=ni   taní-mu   yurhirhi.[97]
           see-PERF-1/2IND=1SG.SUBJ three-SUM blood
           intended: 'I saw three (stains of) blood.'

Finally, there is quantifier allomorphy which seems to divide mass versus count nouns: *wánikwa* goes with count nouns whilst *kánikwa* combines with mass nouns, apparently mirroring the distribution of *many* and *much* in English.

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96 V. Vazquez Rojas Maldonado p.c.

97 V. Vazquez Rojas Maldonado p.c.

(397) Maldonado (2012, p. 176)

    a. Eróka-sha-p-ka   wánikwa/*kánikwa k'wirípu-icha-ni.
       wait-IMPF-PST-1/2IND many/much   person-PL-OBJ
       'I was expecting a lot of people.'

    b. Churhipu kánikwa/*wánikwa juka-h-i   itúkwa-(*icha).
       soup   much/many   have-PERF-3IND salt-PL
       'The soup has a lot of salt.'

Similarly, mirroring *few* versus *little* in English, there is a similar allomorphy with *namúni-tu* 'few', which goes with count nouns, and *sáni-titu*, 'little', which goes with mass nouns:

(398) Maldonado (2012, p. 178)

    a. Jam-sïn-di=ks i   namúni-tu/*sáni-titu tíndi-cha
       be.around-IMPF-3IND=3P.SUBJ few-DIM/little-DIM   fly-PL
       cosina-rhu.
       kitchen-LOC
       'There are a few flies in the kitchen.'

    b. Jatsi-ku-Ø   sáni-titu/*namúni-tu itúkwa (churípu).
       have-APPL-IMP little-DIM/few-DIM   salt   soup-OBJ
       'Put a little salt in the soup.'

Thus, in terms of morphosyntax, the mass–count distinction in Purépecha is the same as seen in English and Telugu. As shown in the above examples, there are differences between the two classes in nouns with respect to plural morphology, combination with numerals, and quantifier allomorphy. However, as Maldonado outlines in detail, the mass–count distinction in Purépecha is more than a binary system of mass versus count, but rather it is a tripartite system with a class of nouns that do not fit into either mass or count classes.

8.6.2 Nouns that lie in the middle

Maldonado proposes that there is a third class of noun in Purépecha that lie somewhere between mass and count. She terms them count–mass nouns, a term that has been applied to *furniture*-nouns. This class can be semantically identified in Purépecha according to the following criteria,

    The nouns that comprise the class of nouns that lie in between mass and count in Purépecha are noted by Maldonado to be a mixture of inanimate entities (man-made objects, edible things) and some animate entities like some birds, fish and lice. These nouns are number neutral, in the sense that without plural

marking, they can still refer to pluralities, as in the following sentence, which can mean that the child has either one louse, or multiple lice on his head:

(399)   Maldonado (2012, p. 131)

Indé tatáka sapí juka-htsï-h-ti   ambusï(-cha-ni).
dem man   little have-head.LOC-PERF-3IND louse/lice-PL-OBJ

'The child has a louse/lice on his head.'

Note however, that the plural marking is optional for these nouns. Since the plural marking is optional, they do not fit neatly into the class of count nouns, where plural marking is obligatory in order to make reference to pluralities. Neither however, do these nouns pattern with mass nouns, since mass nouns are not able to combine with plural morphology.

The fact that they are number neutral in a language which does not otherwise tolerate number neutrality appears to position them alongside *furniture*-nouns in English, whereby a noun like *furniture* is not marked as plural, and yet still can refer to pluralities of pieces of furniture. Maldonado makes this connection, and analyses them as being of the same ilk. It should be noted however, that this class of nouns in Purépecha differ from *furniture*-nouns in English, as plural marking is never allowed to occur on *furniture*-nouns in English. For reasons of clarity, I will refer to them as being 'middle-class nouns' in Purépecha.

The semantics of these nouns is not too important for our purposes here, though the semantics are discussed in detail in by Maldonado (2012), to which I refer the reader for a full discussion. In brief, Maldonado argues that the denotation of a middle class noun includes both atomic units and groups of these units, which makes them different from mass nouns, whose denotation only includes groups (i.e. no atomic units), and count nouns, whose denotation is only atomic units (and so no plural groups).

What is more important to our purposes is the morphosyntax of these nouns. We have already seen that plural morphology of these nouns is optional in the usual case for these nouns, which paints them in contrast to count nouns. They also differ from count nouns because they combine with numerals, Middle-class nouns in Purépecha are able to combine with numerals, however, unlike count nouns, the plural marker remains optional here:

(400)   Maldonado (2012, p. 60)

Taní-mu   kurhúcha(-icha).
three-SUM fish-(PL)

'Three fish.'

Finally, middle-class nouns in Purépecha combine with the count quantifiers *wánikwa* and *namúni-tu*, and not the mass quantifiers *kánikwa* or *sáni-titu*.

(401)   a. Maldonado (2012, p. 176)

      Wíchu wánikwa/*kanikwa jukarha-h-ti   tsiri(-icha)
      dog   many/much   have-PERF-3IND flea(-PL)

      'The dog has a lot of fleas.'

     b. Maldonado (2012, p. 178)

      Í   wéshurin=ksï namúni-tu/*saní-titu p'iku-s-ka
      DEM year   few-DIM/little-DIM   harvest-PERF-1/2IND
      shaníni(-icha-ni)
      corncob(-PL-OBJ)

      'This year I harvested few corncobs.'

The morphosyntax of middle-class nouns in Purépecha paints them very closely to count nouns of the language, but not quite. The optionality of plural marking sets middle class nouns apart from count nouns. Recall from section 7.2, that I claim that *furniture*-nouns in English are inherently semantically plural and hence divided. Middle-class nouns in Purépecha fit this criteria in a couple of respects. Firstly, Maldonado shows that even without plural marking, middle-class nouns can license the verbal plural clitic *ksï*, which can only be used when the subject is plural. When *ksï* appears on the verb and the subject is a middle-class noun as in (402a), the subject does not have to be plural marked, but with count nouns, plural morphology must also appear on the subject in order to license the clitic:

(402) Maldonado (2012, p. 132)

     a. Marisï-(icha) wekóri-sha-ti=ksï.
      sapodilla(-PL) fall-PROG-3IND=3PL

      'Sapodilla fruit is falling from the tree.'

     b. Sapí-*(icha) wekóri-sha-ti=ksï
      child-PL   fall-PROG-3IND=3PL

      'Children are falling to the ground.'

That they are plural is further shown by the fact that they combine with verbs like *estsákurhi*, which require a plural subject, but also one that is divided (mass nouns cannot combine with this verb).

(403)   Maldonado (2012, p. 129)

Shaníni(-icha) estsákurhi-sha-ti.
corncob-(PL)   scatter-PROG-3IND

'The corncobs are scattering.'

Whether or not this class of nouns really factor into the discussion as being as the same type of nouns as *furniture*-nouns or not, what is relevant for our purposes here is how they fit in with the quantifier allomorphy in Purépecha. Already noted in (401a) and (401b) above, these nouns appear with the *count* quantifiers in Purépecha, not the mass quantifiers. Now, there are two options for how to explain this. Under a flexible roots account, one could posit that these nouns are a special type of count noun in Purépecha, one that does not necessarily need to inflect for plural morphology. This would then, adopting Bale and Barner, 2009, mean that the inner structure of these nouns would be as follows:

(404)

```
              COUNT
         ╱╲
   √FLY    n
```
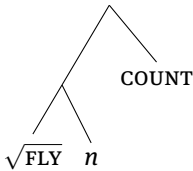
They would then combine with the count quantifiers *wánikwa* and *namúni-tu* by virtue of these quantifiers selecting for, or agreeing with, COUNT.

It is notable that these nouns are seemingly incompatible with what was proposed above for English and Telugu. For those languages, I argued that it was the morphological number that determined the choice of quantifier. In English, *many* and *much* are allomorphs of the same quantifier MUCH, with *many* appearing when the quantifier receives plurality through agreement with the noun it quantifies over. The problem that we face is that in Purépecha, the plurality of the noun is optional, but the quantifier still remains the same.

Yet, I am not trying here to make the claim that *all* instances of apparent mass–count quantifier allomorphy should be analysed in terms of a sensitivity to number rather than a sensitivity to mass versus count. Rather, we already have the tools at our disposal to analyse the pattern of Purépecha and explain why these middle class nouns, that don't fit the classification of mass versus count perfectly behave the way they do with quantifiers. The answer is that in Purépecha, quantifier allomorphy is sensitivity to the type of *n*.

(405) a. $[\sqrt{\overline{\text{MUCH}}}+\text{DIV}] \Leftrightarrow$ wánikwa / $n_{+\text{DIV}}$

  b. $\sqrt{\overline{\text{MUCH}}} \Leftrightarrow$ kánikwa

  c. $[\sqrt{\overline{\text{FEW}}}+\text{DIV}] \Leftrightarrow$ namúni / $n_{+\text{DIV}}$

  d. $\sqrt{\overline{\text{FEW}}} \Leftrightarrow$ saní

In the above formulation, I have tried to remain consistent for what I proposed above for English and Telugu. That is, I have assumed that the (relevant) quantifiers in Purépecha undergo agreement with their head noun in order to find a value for the some uF:Div feature that they are specified with. This is not the only way that this could be achieved. What is fundamentally necessary is that we can divide the quantifiers in Purépecha as being sensitive to divided denotations or undivided denotations. Agreement is just one way to do this: another way would be to assume some form of quantifier selection à la Bale and Barner (2009), whereby *wánikwa* and *namúni* select for $n_{+\text{DIV}}$, and *kánikwa* and *saní* select for $n_{-\text{DIV}}$. The choice does not matter here, and so I do not attempt to argue in favour of one over the other.

Now, there are those reading this who will presumably feel perturbed by the fact that I am claiming for what looks to be the same phenomenon two different sources of allomorphy. On the one hand, languages like English and Telugu are sensitive to number, and Purépecha is sensitive to division. It would be nice if apparent mass–count quantifier allomorphy could always come from the same source, which would lead to a more restrictive theory. For those who are concerned at this point, then it is possible to try to unify Purépecha with the number based sensitivity approach given above.

One way to bring the Purépecha data in line is to assume that the middle-class nouns in Purépecha *do* carry morphological plurality for the quantifier to agree with, but undergo an optional process of neutralisation which deletes the plurality of the noun before pronunciation. On this approach Crucially, during the derivation, the middle class nouns are specified for both morphological and semantic plurality. The quantifiers agree with them, and then the plurality on the noun is optionally neutralized, potentially causing the noun to be realized without the plural suffix. That way, the difference between the middle class nouns and count nouns, would be that the former carry some morphological property that allows them to optionally lose their morphological plurality. Whilst this does have the benefit of allowing for a unified treatment of English, Telugu and Purépecha quantifier allomorphy, it has the drawback that it leaves some characteristics of middle class nouns unexplained. For instance, Maldonado shows that the two classes of nouns also differ with respect to combination with classifiers: middle class nouns frequently combine with classifiers whilst count nouns rarely do.

Rather than attempt to work this explanation out further, I leave it here. Just because we can pursue a unified explanation, it's not quite so clear why we would want to in the first place. The approach that I have outlined allows for the seemingly needed flexibility: we can model quantifier allomorphy according to either number or division. We saw earlier on that the approaches of Borer (2005) and Bale and Barner (2009) ran into issues with quantifier allomorphy, specifically because they lacked the required flexibility with allomorphy because quantifier allomorphy, modelled as selection, does not easily allow for hybridity. On the other hand, the approach argued for here does not face such issues with nouns that lie between the two poles.

8.7 The Typology of Inherent Features

As a final part of this chapter, it is worth considering what typology we are left with once we consider all the different combinations of the combinations of heads and features. Note that in what follows, I will assume that heads can only have inherent iFs or inherent uFs, but not both, as shown in Table 8.4.[98] Once we couple this with $n_{+\mathrm{Div}}$ and $n_{-\mathrm{Div}}$, we are left with eight combinations. I discuss these eight in turn, and show that four are found, one is impossible, one dubious, one impossible to detect and one is genuinely unaccounted for.

Tab. 8.4: Inherent feature combinations with $n_{-\mathrm{Div}}$ and $n_{+\mathrm{Div}}$

$n_{+\mathrm{Div}}$	iF:plural	iF:singular	uF:plural	uF:singular
$n_{-\mathrm{Div}}$	iF:plural	iF:singular	uF:plural	uF:singular

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98 It is not possible to say that literally only a single feature, of whatever type, can be inherent. As shown in Harbour (2007), Harbour (2011), and Harbour (2014), SINGULAR, DUAL and PLURAL are formed by the computation of two number features, [±singular] and [±augmented]. For the languages under discussion here it makes no difference at least to the morphology, whether we only use one of these features, since only a singular/plural contrast is made in the languages discussed. SINGULAR can correspond to [+singular] and PLURAL to [−singular]. Thus, only one feature is needed to encode the contrast. However, in languages that also distinguish the dual, then [±augmented] is important. I do not wish to claim that only singular versus plural can be stored inherently; this is transparently wrong in Kiowa and Jemez as discussed by Harbour, 2007. Since I do not discuss languages with dual number, I continue to use the labels singular and plural just as labels, but the reader should bear in mind that I assume the decomposition of number argued for by Harbour.

8.7.1 Divided noun combinations

Firstly, I discuss combinations of features with $n_{+\text{DIV}}$.

Tab. 8.5: Possible inherent number combinations with $n_{+\text{DIV}}$

$n_{+\text{DIV}}$	iF:plural	iF:singular	uF:plural	uF:singular

We have seen two of these combinations already, and since they have been extensively discussed in Chapter 7, I refrain from further discussion. Firstly, the combination of $[n_{+\text{DIV}}+u\#\text{:plural}]$ gives pluralia tantum. The combination of $[n_{+\text{DIV}}+i\#\text{:plural}]$ gives *furniture* nouns.

Moving on to the combinations that we have not discussed, the first is the combination of $[n_{+\text{DIV}}+u\#\text{:singular}]$ would give rise to *singulare tantum* nouns — nouns that are inherently morphologically singular but can refer to both singulars and pluralities. *Singulare tantum* nouns are found in Archi (Corbett, 2000; Hippisley et al., 2004; Moskal, 2015a; Moskal, 2015b). The forms for 'mother (of a third person)' and 'father' in the language have only the singular form, but no corresponding plural:

(406)   a. *éjt:ur* 'mother of a third person (ABSOLUTIVE)'
        b. *ábt:u* 'father (ABSOLUTIVE)'

As pointed out by Susi Wurmbrand (p.c), *singulare tantum* would be indistinguishable from *furniture*-nouns in English, suggesting that it may be possible to conflate the two. If so, then we could restrict the typology further to four combinations, by saying that only uFs could be inherent, which would be a welcome result. I am not, however, aware of any conceptual reason why iFs should not be able to be inherent features. Furthermore, as noted above, there are languages (Dutch, and some speakers of English) where *furniture*-nouns are not countable but pluralia tantum are countable. If we treat *furniture*-nouns as being inherently specified for $u\#$:singular, then we lose a way to account for this discrepancy. Under the approach here, we can make a slight weakening of (311), repeated below in (407) below, in order to account for the difference (408):

(407)   Num cannot be realized on a lexical item that has an inherent number specification.

(408)   Num cannot be realized on the same lexical item as an inherent $i\#$ specification.

(407) characterises languages where neither *furniture*-nouns nor pluralia tantum can be counted. (408) captures languages where the latter can be counted, but not the former.[99]

The final combination with $n_{+\text{Div}}$ that we predict is a combination of $[n_{+\text{Div}}+$ *i*#:singular]. This would be a noun with divided interpretation, that could exclusively refer to singulars. I do not know of such a noun, and leave it here as an open contention.

In summary, three of the four combinations with $n_{+\text{Div}}$ are attested: *pluralia tantum, singulare tantum* and *furniture*-nouns all exhibit types of nouns that are divided, yet have inherent number. It remains to be seen whether the final type — nouns that refer semantically exclusively to singulars — is found.

8.7.2 Non-divided noun combinations

In this section I discuss combinations with $n_{-\text{Div}}$.

Tab. 8.6: Possible inherent number combinations with $n_{-\text{Div}}$

$n_{-\text{Div}}$	*i*F:plural	*i*F:singular	*u*F:plural	*u*F:singular

We have already seen the combination of $[n_{-\text{Div}}+u$#:plural] this chapter, with Telugu *niiLLu* and *paalu*, thus I refrain from further discussion of this combination.

With regard to the other combinations, I believe that they divide into two types. The first type is impossible, since the combination of $n_{-\text{Div}}$ with *i*#:singular is semantically uninterpretable. The remaining two combinations are semantically possible, but are extremely difficult to detect in a language, casting doubt upon their learnability.

We can discount the combination where $n_{-\text{Div}}$ combines with *i*#:singular, as there is an incompatibility in interpretation between $n_{-\text{Div}}$ and *i*#:singular. Recall that $n_{-\text{Div}}$ yields an undivided lattice; a lattice that no matter what part of it you pick out, there will always be a subpart of that lattice which also satisfies the predicate. However, adopting the semantics of number given in Harbour, 2007; Harbour, 2011, 'singular' is defined in the following way:

(409)   [+singular] = $\lambda x[\text{atom}(x)]$

---

[99] As mentioned earlier, we might expect languages that can count *furniture*-nouns but not pluralia tantum. I am not aware of such a language.

Atoms are by definition only possible with a divided interpretation. There are the parts of a predicate that can be divided no further. A noun semantically cannot have a denotation that does not make atomic units available, yet refer to a single atomic unit. Thus, trying to combine with $n_{-\text{DIV}}$ and i#:singular yields an incompatibility, and I will assume that it is uninterpretable.

This leaves us with two combinations. I believe that both of these types, whilst possible, are not found as inherent specifications. Firstly, the combination of $n_{-\text{DIV}}$ + i#:plural would yield a combination indistinguishable from regular mass nouns. 'Plural', under the assumptions of number made here, refers to the feature combination of [−singular], [+augmented]. Combining the predicate first with [−singular] simply means that the output is not an atom, which is desirable here given that undivided lattices cannot be atoms. [+augmented] is defined in the following way (Harbour, 2011):

(410) $[+\text{augmented}] = \lambda \text{P} . \lambda x{:}\text{P}(x) . \exists y[\text{P}(y) \wedge y \sqsubset x\,]$

This essentially ensures that x satisfies the predicate, and always contains a smaller subpart y that also satisfies the predicate. However, this is necessary for an undivided extension as well, which is defined as being able to take any part of the lattice and there always being a subpart of it which satisfies the predicate. There is however, nothing in [+augmented] which forces the predicate to be interpreted as if it divided however. In fact, plurals and mass nouns are well known to be interpreted in similar ways, see Chierchia (1998). So, whilst [+augmented] is not incompatible in the same way that [+singular] is, it does not impose any further restrictions on a undivided noun. Overall, this combination will be indistinguishable from other mass nouns.

The final combination is [$n_{-\text{DIV}}$+u#:singular]. Again, I believe that this is a potential combination, but it is hard to find. Mass nouns overwhelmingly appear with singular morphology, and very rarely (unless coerced into count usage) combine with plural morphology. Thus, a noun with undivided interpretation but obligatory singular morphology will again be indistinguishable from other mass nouns in a language, and as such very difficult to learn. There are languages such as Greek (Tsoulas, 2007) and Halkomelem Salish (Wiltschko, 2008) where mass nouns combine with plural morphology, so we could potentially find a mass noun that refuses to combine with plural morphology. However, in Greek, Tsoulas notes that only a subclass of mass nouns (substance mass nouns) combine with plural morphology. A language needs to found where all mass nouns can become plural, in order to explain the outliers that do not as being inherently singular. I suspect that this type of language, though possible, would be extremely rare, making detection of the class difficult.

Tab. 8.7: Summary of the feature combination typology

$n_{+\text{Div}}$	*i*F:plural	*i*F:singular	*u*F:plural	*u*F:singular
	Fake mass	Predicted	*Pluralia tantum*	*Singulare tantum*
$n_{-\text{Div}}$	*i*F:plural	*i*F:singular	*u*F:plural	*u*F:singular
	??[100]	Impossible	Telugu	??

To sum up, we have seen that $n_{-\text{Div}}$ combines less freely with inherent features than $n_{+\text{Div}}$. Whilst it is possible to find the combination $[n_{-\text{Div}}+u\#\text{:plural}]$ in Telugu, the singular counterpart to this noun is extremely unlikely to be found on account of the rarity of languages that allow for free combination of plural morphology with mass nouns. With regard to *i*Fs combining with $n_{-\text{Div}}$, *i*#:singular is not possible due to semantic incompatibility, and combination of $n_{-\text{Div}}$ with $[i\#\text{:plural}]$ yields a configuration indistinguishable from other mass nouns.

8.8 Conclusions on Mass–Count

In these last two chapters, I have shown that the proposal that features are decomposed into two distinct halves gives us a new window into the nature of the mass–count distinction, specifically a new way of looking at the nature of nouns which seem to lie some way in between mass nouns and count nouns. In both English and Telugu, I showed that there are nouns that have the morphosyntax of being either mass or count, but the semantics of the opposite value. For Telugu, we saw nouns that have the semantics of being mass nouns, but the morphosyntax that count nouns in the language have. The opposite case was seen in English, whereby nouns which have count semantics have the morphosyntax of mass nouns. The overarching conclusion that was drawn was that these janus like nouns result from having different specifications for their number feature. The relevant nouns in Telugu were inherently specified as being $[u\text{F:plural}]$, but lacked a value for the *i*F part of the number feature. In English, *furniture*-nouns were analysed as nouns which were inherently specified for $[i\text{F:plural}]$, but did not receive a *u*F value for number.

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100 In the table, ?? indicates that this combination would be extremely difficult to detect in a language.

9 Concluding remarks

9.1 Overall summary

The aim of this book has been to explore hybrid nouns, what their existence means for a theory of features, and what the behaviour of hybrid nouns means for different aspects of the morphology and syntax. Hybrid nouns have been little discussed within Minimalism, with previous work having looked at single cases in detail. Pesetsky (2013) for instance discusses in part hybrids in Russian, Landau (2016) hybrids in Hebrew, and Elbourne (1999), Sauerland (2004), Sauerland and Elbourne (2002), and den Dikken (2001) discuss CNPs in English. Whilst these works have shed interesting insights into the behaviour of hybrids, looking at a single set of hybrids glosses over important issues that arise. I hope to have shown throughout this book that a full study of different cases of hybrids allows for insights that have been missed by a narrow focus on isolated cases.

It is clear that hybrid nouns require a particular theory of features; one that is able to handle the fact that the morphological information of a feature is not always equal to the semantic information of a feature. As discussed in Chapter 2 though these tools already exist within Minimalism, in the sense that it is possible for the iF and the uF values to diverge for a particular type of feature, a close look at hybrids suggests that the information has to be assumed to be more closely related that simply leaving it at that. This has, to a large extent, already been shown by discussion of hybrids in HPSG (Wechsler and Zlatić, 2003), but adapting this view of features into Minimalism has consequences for existing operations. Specifically, I have shown that hybrids push us towards a particular view of Agreement, suggest that adjuncts merge uniformly late into the derivation, inherent features can have an effect on what else can merge into the structure, and that the typology of nouns that fall between mass and count is bigger than was thought.

9.2 A close relationship of features

The first issue that I hope this book to have shown is that it is not sufficient to simply recognise that features have different types, uFs and iFs. This model has been around for some time, and to some degree, is necessary for any theory of features given that features are interpreted by both the semantics and the phonology. At a very basic level, hybrid nouns show that the features of the morphology need to be distinguished from those in the semantics, because the values do not always match. Yet, I hope to have shown that the relationship between an iF and a uF

goes deeper than this, and that there needs to be some lines of communication between the two types. To this end I have argued that features are composed of two halves:

(411)   F

           /\   /\
         uF iF

The clearest indication that the morphological and semantic information borne by a feature are connected to one another comes from the behaviour of semantic agreement. In chapter 4 it was shown that mismatches between semantic and morphological agreement on different targets of agreement with a hybrid controller show predictable patterns, in the sense that it is not a free for all in terms of which element will show morphological agreement and which element will show semantic agreement. Rather, patterns of mismatches closely follow Corbett's Agreement Hierarchy. I argued that we can understand this effect if one recognises that elements undergo (the first stage of) agreement as soon as they can, and that semantic agreement takes priority over morphological agreement. Given that there is priority given to semantic agreement over morphological, then there must be some connection between semantic and morphological features, rather than them being loosely bundled together on lexical items.

9.3 The syntax of agreement

Another issue which hybrid nouns shed light upon is the syntax of agreement. This was discussed extensively in Part II, and in particular, I have tried to show that hybrid nouns push us towards a two-step, distributed model of agreement. That agreement is composed of an operation of linking the probe and goal together along with a step of copying the value from the goal to the probe has been known since the inception of Agree in Chomsky (2000) and Chomsky (2001). Indeed, these two parts are necessary components of any model of agreement, in the sense that it needs to be known which elements are going to undergo agreement together, and feature sharing entails the transfer of values between elements. Though these subparts are well known and accepted, the discussion in Part II was around the extent to which these two subparts of the agreement operation are connected. It is entirely conceivable that these two suboperations happen together, such that linking would be immediately followed by copying.

Yet, I have shown in the discussion that it is necessary to view these two suboperations as being distinct, and happening at different points within the syntactic derivation. That is, Agree is not an operation that happens all at once, but is

distributed across different derivational points. This model has already been argued in favour of by, for instance, work on closest conjunct agreement, where it has been shown that linearisation happens in between Agree-Link and Agree-Copy. I came at this question from a different angle, arguing that Agree-Link must be considered an operation that happens early, because once we recognise this, then it is possible to explain patterns of mismatches between morphological and semantic agreement. Agree-Copy on the other hand was argued to happen *at the earliest* at the point of transfer, but also possible to happen in the postsyntactic PF-branch. This not only allowed for the explanation of the fact that semantic agreement appears to be sensitive to LF-representations, but also for the fact that semantic agreement can only happen if the controller of agreement c-commands the target of agreement, a configuration that is not necessary for morphological agreement.

Put together, then one is led to the conclusion that agreement is a two-step operation whereby Agree-Link happens at a different stage to Agree-Copy. This conclusion does not entail that they are spread across different domains of the grammar, but rather I argued that this was the case based on the difference in necessary structural relationships between semantic versus morphological agreement.

9.4 Mass–count hybrids

In the final part of the book, I showed how looking at old issues in the mass–count distinction through the perspective of hybrid nouns offers a potentially interesting novel outlook on certain nouns that appear to straddle the two classes. In particular, *furniture*-nouns, which have the morphosyntactic properties of mass nouns but the interpretation more commonly associated with count nouns have been difficult to incorporate into traditional theories of mass versus count. In this work, I took a different approach and argued that *furniture*-nouns are hybrids for number, in the sense their morphosyntactic properties are made to look like mass independently, by having an inherent specification for number. Their interpretative properties are count because they have the semantic specification of count nouns. However, the inherent specification for number means that they cannot combine with the morphosyntax that would give count nouns.

The inherent semantic number was important because it blocked NumP from merging, meaning that no morphological specification could merge with the roots of *furniture*-class nouns, and the lack of morphological plurality was responsible for them combining with the 'mass' quantifiers, which are argued to be in fact, plural quantifiers. An important argument in favour of this approach was show-

ing that the converse type of hybrids — nouns with a mass semantics but count morphosyntax — also exists in Telugu, and again arises because of an inherent number specification, this time morphological. This type of noun is not expected to exist in the flexible roots approach, and so its existence necessitates a rethink of how the flexible roots approach handles the typology of mass nouns.

9.5 Open Issues

I do not claim to have explored all of the issues that hybrids have to offer, nor can I pretend that I have offered the final word on hybrid properties in this work. There remain various outstanding issues to resolve that must be left for future research. For instance, in Chapter 4 I made use of the optional deactivation of an *i*F when an AGREE-LINK operation was formed between probe and goal. But, it is a widely held opinion within Minimalism that optionality should be avoided wherever possible. It remains to be seen whether my proposal here can be maintained, or whether such optionality should be admitted into the theory.

Furthermore, whilst the difference between morphological and semantic agreement comes out here as a difference in timing, such that semantic agreement happens at the end of syntax whereas morphological agreement can happen in the postsyntax, the part that was crucial — that syntactic AGREE-COPY can only look upwards but postsyntactic AGREE-COPY is not similarly restricted — was left here as a stipulation. Ideally one would derive this difference from the properties of the different components of the grammar, and whilst it intuitively feels that this should be possible, given that the postsyntax is known to alter the syntactic structures and relations between nodes in word formation, a precise formulation of this intuition has not been offered. I hope that at some point in future work a more concise view of why semantic agreement is constrained in the way that it seems to be can be offered.

Finally, I have made little to no attempt to engage deeply with the semantic literature of mass versus count, and my focus is unashamedly on the morphosyntax of these nouns. Yet, the proposals that I make, notably that *furniture*-nouns are not actually mass at all, obviously have consequences for the semantics of the mass–count distinction, not only in the flexible roots approach. Again, I hope that future work will either address this, and explore these consequences further.

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