

UNIVERSITY OF CALIFORNIA

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**DEFINITE MARKERS, PHI-FEATURES, AND AGREEMENT:
A MORPHOSYNTACTIC INVESTIGATION OF THE AMHARIC DP**

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GLOSS ABBREVIATIONS

3	Third person
ACC	Accusative
AUX	Auxiliary
C	Complementizer
DEF	Definite marker
DIM	Diminutive
F	Feminine agreement
FEM	Feminine gender suffix
IMPF	Imperfective aspect
L	Linker
M	Masculine
N	Nominalizer
NEG	Negative
PASS	Passive
PF	Perfective aspect
PL	Plural
S	Singular
TOP	Topic

To transcribe vowels, I use the conventions in Demeke 2003, Appendix II. Consonants are uniformly in IPA except for the palatal glide which is transcribed as [y], not [j].

ABSTRACT

Definite Markers, Phi-Features and Agreement:

A Morphosyntactic Investigation of the Amharic DP

by

Ruth Kramer

This dissertation has two inter-related goals: (i) to describe and provide novel analyses of three types of important and difficult phenomena within Amharic DPs and (ii) to explore the properties of the syntax-morphology interface. The core phenomena explicated are the unusual distribution of the definite marker, the gender system (which relies heavily on natural/biological gender), and the plural system (which involves the relations between several distinct types of plurals). The dissertation shows how these phenomena have important ramifications for morphosyntactic cyclicity, the morphosyntactic treatment of phi-features, and the relationship between the syntax and morphology of agreement.

I show that the definite marker is best accounted for in two sub-cases. When obligatory, it is a second position clitic, and when optional, it is the reflex of a definiteness agreement process. The operation that places the definite marker in second position is shown to be unable to access previous syntactic cycles, i.e., there is phase impenetrability at PF.

The accounts of both gender and number explore the division of labor between little *n* (the nominalizing head) and the root. I argue that both natural gender and grammatical gender must be present in the syntax, and propose that grammatical gender is a feature on roots, whereas natural gender is a feature on little *n*. In the number domain, the differences between regular and irregular plurals (and the behavior of double plurals in Amharic) are best analyzed

with two different slots for plural features: they can appear on Number, for regular plurals, and on little n, for irregular plurals. The system of gendered plurals is derived from the interaction of the gender and number features on little n.

Finally, I explore the syntax and morphology of feature sharing, arguing that the plural feature is in fact shared between Number and little n, and developing an account of the morphological realization of shared features. This account (correctly) predicts that all the types of plurals in Amharic are synonymous yet morphologically distinct. I further generalize the feature sharing analysis of plurals to account for all cases of DP-internal agreement.

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Portions of this work were presented at the Syntax Circle at UCSC, at the Morphology Reading Group at UCSC (twice), at the Third Workshop on Theoretical Morphology (Leipzig, June 2007), at the Annual Meeting of the Linguistic Society of America 2008, and at Georgetown University (February 2009). Many thanks to the audience members at these events for useful feedback. The text of this dissertation also includes reprints (with minor edits) of the following (about-to-be) published material:

Kramer, Ruth. forthcoming. The Amharic definite marker and the syntax-morphology interface.

Syntax.

This material is included as Chapter 2, and thanks are due to two anonymous *Syntax* reviewers for detailed commentary that led to substantial improvements.

Much of the data in the dissertation has been collected from fieldwork with native speakers of Amharic. They have my endless gratitude for their tireless patience and insight. They are: Selome Tewoderos, Senayit Ghebrehiywet, Betselot Teklu, Mignote Yilma, Bezza Ayalew, Hileena Eshetu, Harya Tarakegn, and Issayas Tesfamariam.

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CHAPTER 1:

INTRODUCTION

1 THEMES

The investigations here fit into well-established traditions of research on morphosyntax and Semitic languages, contributing to the incremental development of linguistic theory and to the description of linguistic phenomena. However, the empirical and theoretical focus is markedly different than previous work, with an abundance of data from an understudied language and a persistent interest in the morphological ramifications of syntactic assumptions.

This dissertation has two broad themes, or sets of questions, that are repeated (along with variations) and addressed throughout the chapters. The first set of questions concerns the proper description and analysis of DPs in Amharic (South Semitic). DPs in Amharic are a rich empirical domain, from the unusual distribution of the definite marker, to the heavy reliance on natural gender, to the intricate morphosyntactic system for forming regular, irregular and even double plurals. Much of the Amharic data is based on my own fieldwork, and throughout the thesis generalizations are made that move well beyond the descriptive tradition of research on Amharic (see Section 2 for more details on this tradition). On the analytical side, the dissertation aims to develop thorough and well-motivated analyses of the major phenomena of the Amharic DP, correctly predicting the data, and moreover capturing the intuitions that underlie the beautiful patterns the Amharic facts arrange themselves into.

The second set of questions is focused on a particular area of theoretical investigation: the syntax-morphology interface. Much of the most fruitful and influential research of the past

two decades has focused on the grammatical interfaces, from syntax-prosody to semantics-pragmatics to phonetics-phonology. Among the interfaces, though, the syntax-morphology interface has received less attention than most. However, with the advent and growth of Distributed Morphology (Halle 1990, Halle and Marantz 1993) in concert with Minimalism (Chomsky 2000, 2001, 2004), a new framework for asking questions about how the syntax affects morphology (and vice versa) has become available. The dissertation concentrates on three particular domains of syntax-morphology interaction: cyclicity (Chapter 2), the syntactic location and morphological realization of phi features (Chapters 3, 4 and 5) and the relationship between the syntax of agreement and the morphophonology of agreement (Chapter 5). The results (e.g., phases remain impenetrable at PF) are detailed below in Section 4 and discussed from a broad perspective in Chapter 6 (the conclusion). They are intended to flesh out, push forward, and make falsifiable claims about the current theory of morphosyntax.

The unifying idea across all the chapters can be pithily summed up as: attention must be paid to morphology. The role of morphological operations and the principles that guide the realization of syntactic features has been unfortunately small in the development of linguistic (and certainly syntactic) theory so far. This dissertation attempts to show how paying attention to morphology can help to solve complicated empirical puzzles and, on a deeper level, productively advance our understanding of language itself.

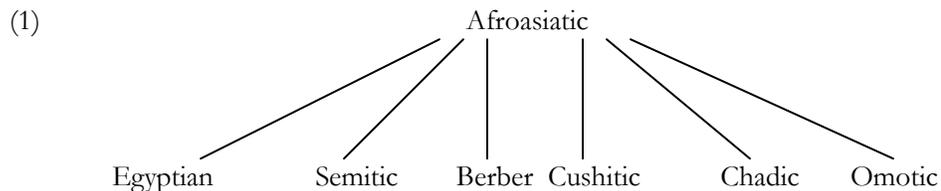
The remainder of the Introduction is structured as follows. In Section 2, a large amount of background is presented on Amharic, the language which is the focus of the dissertation. Information is provided on its genetic situation, sociolinguistic context, and previous research traditions. There is also a brief sketch of its syntax and some discussion of the data sources used in the thesis. In Section 3, the theory of Distributed Morphology is presented. Distributed Morphology is the framework adopted for morphology throughout the thesis, and its main

assumptions are laid out in Section 3 for reference in one single location (they are also explained, to a greater or lesser extent, as they come up in the body of the thesis). Finally, Section 4 outlines the organization of the dissertation and previews the content of the chapters to come.

2 AMHARIC

2.1 Basic Information

Amharic is a South Semitic Ethiopian language and a member of the Afroasiatic language family. Afroasiatic languages are spoken mostly in the Middle East and Northern Africa, and include Berber, Cushitic languages, Chadic languages, Ancient Egyptian and the Omotic languages, as shown below.



Within Semitic, there are three main branches: Eastern (Akkadian, Old Babylonian, etc.), Central (Hebrew, Aramaic, Arabic, etc.) and Southern (South Arabian, Ethio-Semitic). Amharic is a member of the Ethio-Semitic subgroup, and within Ethio-Semitic, it is classified as South Transversal along with Argobba, Harari and the East Gurage languages. Other Ethio-Semitic languages include Tigre and Tigrinya, both spoken in northern parts of Ethiopia, and some minority languages spoken in Ethiopia and Eritrea such as Gafat, Mesmes and Inor.

Amharic is the national language of Ethiopia, taught in schools and used in national newspapers and government publications. There are approximately eighty languages spoken within Ethiopia, including thirteen other Semitic languages (see above), many Cushitic languages (including Oromo, Sidamo and Afar), many Omotic languages, and several languages from the Nilo-Saharan family. In recognition of these many languages, Ethiopia has no official language, but Amharic, with its “national” status, is by far the most prominent politically and is used as a lingua franca (for wide-ranging discussion of all aspects of language in Ethiopia, see Bender et al. 1976).

Gordon (2005) estimates that there are approximately seventeen million speakers of Amharic in Ethiopia, with approximately fifteen million monolinguals. There is a significant Ethiopian diaspora in Europe, Israel and the United States, concentrated in the U.S. in Los Angeles, the Washington D.C. metro area, Atlanta (Georgia), and the San Francisco Bay Area.

Amharic boasts a fairly rich tradition of both texts and philological study. There are textual records reaching back to the 14th century, and Leslau (2000: xv) estimates that as early as the 17th century, Amharic was the dominant language of Ethiopia. Amharic is not a direct descendent of Ge’ez, the dead Ethio-Semitic language used in much of the liturgy of Ethiopian Orthodox churches (Ge’ez is classified as North Ethio-Semitic whereas Amharic is South Ethio-Semitic). However, at various points within the thesis, I will compare Amharic to Ge’ez for diachronic purposes, since it is the best-analyzed type of historical source available.

As an object of linguistic study, Amharic has a small but substantial philological tradition, with the earliest descriptive work done by Europeans of various nationalities from the late nineteenth to the early twentieth century (Praetorius 1879 - German, Afevork 1905 - Italian, Cohen 1936, republished as Cohen 1970 - French). Wolf Leslau (the student of Marcel Cohen) has been the undisputed chief figure of Amharic philology for the past fifty years. His grammar

of Amharic (Leslau 1995) is the current definitive reference source on the language and contains an extensive bibliography of philological research. Within this thesis, Kapeliuk 1994 figures most prominently among the philological sources; it is a description of the syntax of the Amharic noun phrase that contains many useful and important observations.

Amharic has been researched somewhat by functionalists, cognitive linguists and sociolinguists (see e.g. Gasser 1983, 1985; Amberber 2001, 2003; Leyew 1998, 2003, respectively). There has also been a fair bit of work on Amharic in computational linguistics (see e.g., the work of Sissay Fissaha Adafre). However, Amharic has maintained a relatively low profile in theoretical generative linguistics, from the early studies of Bach (1970), Hetzron (1970) and Fulass (1966, 1972) to a cluster of work in the late eighties and early nineties (see e.g. Mullen 1986, Yimam 1988, 1996, Tremblay and Kabbaj 1990, Halefom 1991, 1994).¹ In the past ten years, a formal semantic interest in Amharic has been revived by work on indexical shifting (Schlenker 1999, 2003ab; Anand 2006), and a corresponding focus on Amharic syntax has begun to take shape. A large set of recent papers (Demeke 2001, Ouhalla 2000, 2004, Henderson 2003, den Dikken 2007, Beermann and Ephrem 2007) discuss phenomena relating to the syntax of the Amharic DP and their results are discussed at length in Chapter 2.²

2.2 Grammatical Sketch

Linguistically, Amharic shares many traits with other Semitic languages, including root and pattern morphology (although its orthography indicates vowels, unlike in Hebrew and

¹ For work on Amharic phonology, see the classic papers by McCarthy (1984) and Broselow (1984), and more recent work by Unseth (2002) and Rose (2002).

² Cf. also recent work by Demeke (2003) on the clausal structure of Ethio-Semitic, by Trommer (2008) on Amharic verb classes and by Eilam (2009) on intervention effects in Amharic.

Arabic), an ‘emphatic’ series of phonemes (realized as ejectives in Amharic), and a basic opposition between imperfective and perfective aspect in the verbal system. However, Amharic has been influenced by the Cushitic languages of the surrounding area, the most striking effect of this being that it is predominantly head-final. For example, the unmarked word order is SOV.

- (2) Almaz bet-u-n ayy-ätʃtʃ **SOV**
 Almaz house-DEF-ACC see.PF-3FS
 Almaz saw the house.³

Auxiliary verbs (e.g. *näbbär* ‘was’) follow lexical verbs (e.g., *s’afä* ‘write’).

- (3) bä-t’ɪnt gize bä-mäk’a bHr yɪ-s’ɪf-u näbbär **V > Aux**
 in-ancient time with-reed pen 3PL-write.IMPF-3PL AUX
 In ancient times, they wrote with reed pens.
 Leslau 1995:316

Also, embedded clauses precede main clauses.

³ The verb can also optionally agree with the object. In that case, the form of the verb for (2) would be *ayy-ätʃtʃ-u* see.PF-3FS-3MS.

- (4) [[CP *innat-u* *indä-mot-ät[ft]*] *tnantinna sämm-a*] **Embedded > Root**
 mother-his that-die.PF-3FS yesterday hear.PF-3MS
 He heard yesterday that his mother died.
 Leslau 1995:743

However, an important, non-head-final property of Amharic is that it has prepositions, as well as postpositions.⁴

- (5) a. *kä-bet* *mät't'-a* **Preposition**
 from-house come.PF-3MS
 He came from the house.
 Leslau 1995:605

- b. *mäs'haf-u* *t'äräp'p'eza-w* *sir* *näw* **Postposition**
 book-DEF table-DEF under is
 The book is under the table.
 Leslau 1995:625

The general influence of Cushitic languages on Amharic is discussed with respect to gender and number in Chapters 3 and 4.

A quick sketch of Amharic nominal morphology will provide an orientation for the material later in the thesis. In Amharic, nouns have gender (masculine or feminine) and can be

⁴ Most often, postpositions are used in conjunction with prepositions: *bä-mädir lay* 'in-earth on' = 'on earth' (Leslau 1995:616, 619).

inflected for number (singular or plural). Gender is not marked systematically and adheres fairly closely to natural gender. Some examples of feminine and masculine nouns are in (6). The gender system is discussed at length in Chapter 3.

(6)	<u>Feminine Nouns</u>		<u>Masculine Nouns</u>
	nɨgɨst	‘queen’	bet ‘house’
	mākina	‘car’	nuro ‘life’
	ɨnnat	‘mother’	abbat ‘father’
	agār	‘country’	dɨngay ‘stone’

As for number, singular is unmarked (unsurprisingly). The plural is marked with the suffix *-otʃtʃ*.

(7)	a. bet-u	b. bet-otʃtʃ-u
	house-DEF	house-PL-DEF
	the house	the houses

The number system is the focus of Chapter 4.

The case system in Amharic is rather minimal, which is somewhat atypical for an SOV language and which has led to a few analyses of the prepositions as a complicated case-marking system (Hetzron 1970, Tremblay and Kabbaj 1990). Nominative case is not marked at all. Accusative case is marked by the suffix *-n*, and it is marked differentially, i.e., depending on the definiteness of the direct object (see Aissen 2003 on this phenomenon in general; Weldeyesus

2004, Kramer 2006 on differential object marking in Amharic). Dative case is expressed by attaching the preposition *lä* ‘to/for’ to the DP.

Since the dissertation focuses on DP-internal syntax, some basic information is necessary about the major phrases within the Amharic DPs (adjectives, possessors and relative clauses). There is a rigid constraint that the nominal head is final in every Amharic DP, so adjectives, possessors and relative clauses all precede the noun.⁵ (8) contains examples of adjectives preceding nominal heads.

(8) a. *tɨllɨk’ bet* **Adj > N**

big house = ‘a big house’

b. *astʃäggari fätäna*

difficult exam = ‘a difficult exam’

c. *t’ɨk’ur dɨmmät*

black cat = ‘a black cat’

Possessors are prenominal, and are marked with the relational preposition *yä-* ‘of.’

⁵ The only exception I know of involves the universal quantifier *bulu* ‘all, every’ which can appear after a nominal.

- (9) a. yä-Girma bet b. yä-tāmari mäs’haf **Poss > N**
 of-Girma house of-student book
 Girma’s house a student’s book

I assume possessors are PPs, with the P head *yä-* taking a DP complement. Amharic only has a prepositional possessivization strategy, and thus differs from most Semitic languages in that it has no construct state (Kapeliuk 1989, 1994:90-108, den Dikken 2007:25, fn.12). Intuitively, the connection between the possessor and possessed noun phrase in Amharic is much looser than in the construct state. There is no phonological reduction of the possessed noun phrase, an adjective can intervene between the possessor and possessed noun phrase, and there is no limit on the number of possessors that can embed within possessors.

Relative clauses always precede the noun.

- (10) bira yä-t’ät’t’-a-w tāmari
 beer C-drink.PF-3MS-DEF student
 the student who drank beer

In terms of their internal syntax and morphology, relative clauses are quite similar to main clauses. Their arguments are in the same order, they contain finite verbs which can assign nominative and accusative case, and the verbs are negated using verbal negation strategies. Amharic is thus a counterexample to the typological generalization that prenominal relative clauses almost always contain a non-finite verb (Keenan 1985). Granted, the finite verb in a relative clause also has a definite marker, which may make it seem like relative clauses are

nominalized verbal forms (as suggested in Kapeliuk 1980). However, Mullen (1986: 350-351) argues against this viewpoint, convincingly demonstrating the finite verbal properties of relative clauses. Amharic relative clauses do differ from main clauses in that they can contain a gap in the space of the relativized category, e.g., in subject position in (10).⁶ Note finally that there are no *wh*-words in the relative clauses, but there is a complementizer *yä-*, which is homophonous to the *yä-* that precedes possessors.

2.3 Data Sources

There are three sources for the Amharic data used in this dissertation. The first source is my own fieldwork, conducted in the South San Francisco Bay region from approximately September 2007 to May 2009. Informants ranged from grammar teachers to preachers, with the majority of informants being Ethiopian undergraduates at Stanford University. Examples that have no indication of their source are from my fieldwork notes. The second source is several Amharic grammars, with Leslau 1995 used the most but Cohen 1970 and Hartmann 1980 playing supporting roles. The third source is a set of searchable, electronic corpora of Amharic. The most basic of these is Google Ethiopia, although I have used it sparingly. Its reliability can be suspect (no examples from the well-trafficked Warka chat rooms have been used) and it is unclear how to judge what a certain number of hits means (it is clear that Google Ethiopia is not enormous, though -- a search for the word *ityop'p'ya* 'Ethiopia' returns only 172,000 hits).

⁶ Although I will not present the data here, viewed in terms of Keenan and Comrie's (1977) Accessibility Hierarchy, Amharic is fairly permissive in allowing gaps in different kinds of relative clauses. It has gaps in subject, direct object, indirect object and oblique argument relative clauses, although this does depend on whether or not the agreement morphology is analyzed as clitics. It does not have gaps in possessor relative clauses (there are resumptive pronouns instead), and no data is immediately available on objects of comparison.

The corpus that is most often used is the Walta Information Center Tagged Amharic News Corpus, which contains 1,065 Amharic news articles (210,000 words) from the Walta Information Center (a privately-owned news source in Ethiopia). The news articles are from 1998-2002 and are tagged for part of speech (see Demeke and Getachew 2006 on tagging conventions and the development of the corpus).

Another corpus that is used less often (primarily because it was only recently encountered) is the New Mexico State University Amharic Parallel Text Corpus. This corpus contains approximately 700 news articles from various Amharic news sources with line-by-line parallel translations in English. The corpus used the least, but occasionally appealed to, is a translation of the Bible into Amharic by the International Bible Society. All of these corpora are freely available online.

In general, data from my own fieldwork is given primacy in the thesis, although it is often augmented with data from grammars and confirmed in a broader context with data from the corpora.

2.4 Amharic is Ready

Overall, Amharic is a language prime for theoretical investigation. It is spoken widely and has a rich descriptive tradition. It is a member of a language family whose most widely-spoken languages have been extensively studied, but due to the influence of the Cushitic languages, it varies in deep and interesting ways from Arabic and Hebrew. Throughout the thesis, special attention is granted to Arabic and Hebrew data (see e.g., the section on Arabic plurals in Chapter 4) in the hopes of paving the way for more detailed comparative work in the

future. I hope also that the recent flowering of theoretical work on Amharic itself continues, and that this dissertation will become part of a larger recognition and study of Amharic in the future.

3 THEORETICAL BACKGROUND

This dissertation is an extended investigation of the syntax-morphology interface, and so it is necessary to clarify what frameworks are being adopted for syntax and morphology. Most of this section is spent laying out the fundamental ideas of Distributed Morphology, which is used throughout the thesis and which readers may be less familiar with. On the syntactic side, I adopt standard Minimalist assumptions (Chomsky 2000, 2001, 2004), relying in particular on the notion of phases as cyclic units for the syntax and the syntactic relation Agree as the formalization of agreement. Both of these ideas are extensively discussed in the contexts where they come up in the thesis, so the focus in this background section is on the main assumptions and underpinnings of Distributed Morphology.

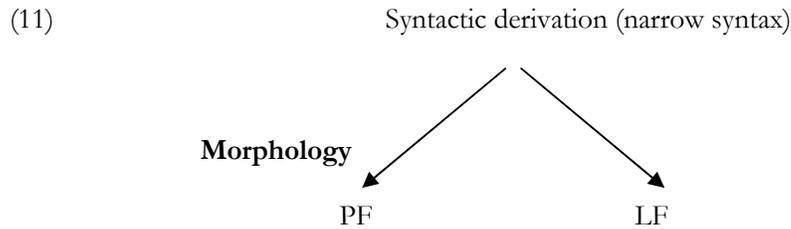
There is a fundamental tension between lexical and syntactic approaches to morphology in research on the syntax-morphology interface. I will not be arguing for one approach over the other (although see Chapter 6 for some discussion), but it is important to provide some context for Distributed Morphology. In traditional grammar, the division between syntax and morphology was strict --- morphology assembled words and syntax assembled phrases. However, Chomsky (1957) altered the syntax-morphology landscape by arguing that verbs combine with inflectional morphemes in the syntax, and this approach has guided much work in the field ever since. Nevertheless, lexicalism is hardly an artifact. Chomsky himself (Chomsky 1970, or at least an interpretation of Chomsky 1970; see Marantz 1997) endorsed a partially lexical approach to complex word formation, and more recent lexical approaches include

Lapointe 1980, di Sciullo and Williams 1987, Anderson 1992, Chomsky 1995 and Wechsler and Zlatić 2003. Many of these approaches adopt some version of the Strong Lexicalist Hypothesis (Scalise 1980: 101ff., see also Pullum and Zwicky 1992:389-390), the idea that syntax cannot access the internal structure of words. Starkly opposed to this are syntactic approaches to morphology where some or all word formation is at least partially accomplished in the syntax. Explicit proposals along these lines include Baker 1988 and Julien 2002.

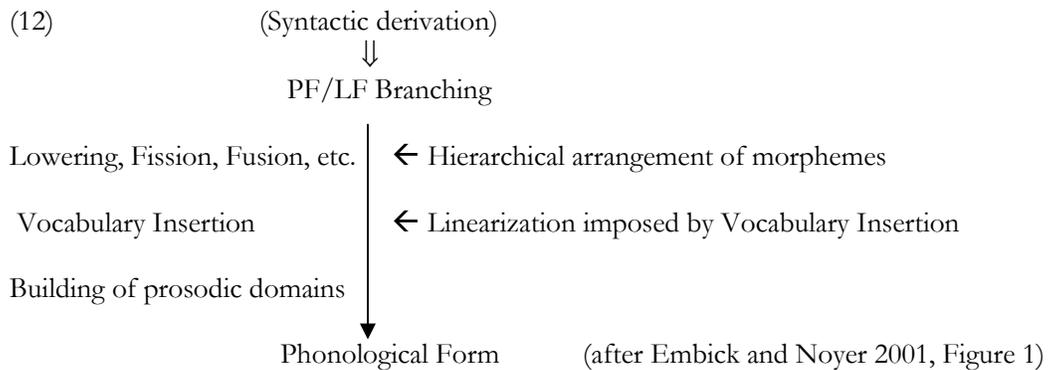
In the dissertation, I assume a syntactic approach to morphology, specifically the theory of Distributed Morphology (Halle 1990, Halle and Marantz 1993, Harley and Noyer 1999, Embick and Noyer 2001, Embick and Noyer 2007 *inter alia*). Much of the traditional ‘morphology’ (in terms of word formation) in this theory occurs in the syntax, where heads (feature bundles) can be grouped together through movement. However, there are also a variety of PF operations that fall under the rubric of morphology and group morphemes into words (e.g., the Lowering of one head to another).

A central tenet of Distributed Morphology is that there is no centralized lexicon. Instead, the information that is contained in the lexicon in other theories (phonological information, semantic information, category, and syntactic features) is ‘distributed’ throughout the grammar. In particular, syntactic operations manipulate bundles of morphosyntactic features (including category), and these bundles lack any kind of morphophonological realization in the syntax (this ensures ‘Phonology-Free Syntax’; cf. Zwicky and Pullum 1986). After the syntactic derivation is complete, the feature bundles are sent to PF where they are given morphophonological content (this idea is often called Late Insertion; cf. the Separation Hypothesis of Beard 1995). The feature bundles are often called ‘morphemes’ in the Distributed Morphology literature, and throughout the thesis, I use the terms ‘feature bundle’ and ‘morpheme’ interchangeably.

To be more specific, Distributed Morphology assumes a conventional model of the grammar where after the syntactic derivation is complete, the derivation is sent to Phonological Form and Logical Form. ‘Morphology’ is a subcomponent of the grammar along the PF branch where morphological operations occur. These assumptions are represented in (11).



Hierarchical structure persists into the first part of PF, and there are several stages of PF as shown in (12).



Directly after the PF/LF Branching, hierarchical structure is still present and certain morphological operations that manipulate feature bundles can occur. Such operations include Lowering, which lowers one feature bundle to adjoin to another (head raising but in the opposite direction; see Embick and Noyer 2001), Fission, which splits off a feature from a feature bundle

and grants it its own node (Noyer 1997 among many others), and Fusion, which combines two feature bundles into one node (Halle 1997 among many others).

Next, the Vocabulary Items are inserted (the terminal nodes are provided with phonological content), and the structure is linearized. Various post-linearization operations (e.g. Local Dislocation: a switch in linear order between two nodes; Embick and Noyer 2001, Embick 2003) also take place, and these operations are conditioned by precedence relations. Finally, prosodic domains are built, and the PF derivation finishes with a complete phonological and linear representation (although see Pak 2008 on how the prosodic part of the model may present difficulties).

Vocabulary Insertion is the process whereby it is decided which Vocabulary Item should be inserted for a particular feature bundle. It will play a large role in the thesis, so it is worthwhile to spend some further time introducing it. Vocabulary Insertion is a very local process in that it applies to one feature bundle at a time, and only one Vocabulary Item can be inserted for any given feature bundle. A Vocabulary Item itself is a relation between a phonological string and information about where the string can be inserted. The information about where the string is inserted is made up both of features and contextual restrictions. Some Vocabulary Items for the past tense in English are in (13).

- (13) a. T, [PAST] ↔ -t / { √LEAVE, √BEND, . . . }
b. T, [PAST] ↔ -ed (example from Embick and Marantz 2008)

The Vocabulary Items in (13) are in competition -- both want to realize the feature bundle T, [PAST]. Two main principles determine which Vocabulary Item wins a given competition: the Pāṇinian Principle (aka the Elsewhere Condition) and the Subset Principle (Halle 1997). The

Pāṇinian Principle states that a more specific rule is applied before a less specific rule, and it suffices to determine the winner in (13). If the context is met to insert Vocabulary Item (13)a (i.e., the root is *leave* or *bend*), then it must be inserted since it is more specific than Vocabulary Item (13)b (in that it has a contextual restriction at all). The Subset Principle determines the winner in other cases.

(14) **Subset Principle**

- i) The phonological exponent of a Vocabulary Item is inserted into a position if the item matches all or a subset of the features specified in that position.
- ii) Insertion does not take place if the Vocabulary Item contains features not present in the morpheme.
- iii) Where several Vocabulary Items meet the condition for insertion, the item matching the greatest number of features specified in the terminal morpheme must be chosen.

(Halle 1997:428)

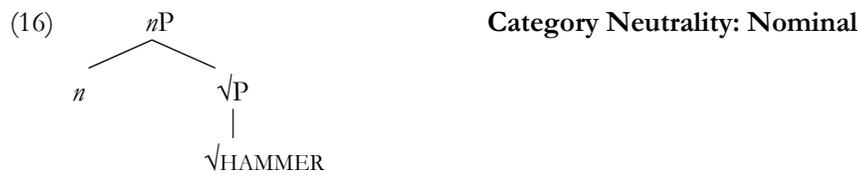
The Subset Principle ensures that a Vocabulary Item cannot be inserted that contains features not present in the morpheme, although the Vocabulary Item might contain fewer features than are present in the morpheme (i.e. the Vocabulary Item might be underspecified) The Subset Principle also states outright that Vocabulary Items that match the most features with the given morpheme win.

These assumptions form the base for the theory, but much recent work within Distributed Morphology has also pursued the idea that all lexical categories are made up of a category-neutral root and a category-determining head (see e.g., Marantz 1997, 2001, Arad 2003,

2005, Embick and Noyer 2007, Embick and Marantz 2008).⁷ For example, a verb like *hammer* consists of a root $\sqrt{\text{HAMMER}}$ that could theoretically be either a noun or a verb, and a functional head v that ‘verbalizes’ it.



This also goes for nouns, which consist of a root and the nominalizing functional head n .



(16) results in the nominal *hammer* ‘a tool for pounding nails’ whereas (15) results in the verb *hammer* ‘to pound (something)’.

The empirical motivation for this decomposition of words into roots and x heads is the traditional distinction between lexical and syntactic word formation. Word formation in the lexicon is more prone to phonological and semantic irregularities (e.g., special phonological processes, idiomatic meanings), whereas syntactic word formation is morphophonologically regular and has semantically predictable meaning. However, in Distributed Morphology, there is no lexicon or lexical processes, so the contrast must be captured in a different way. Marantz

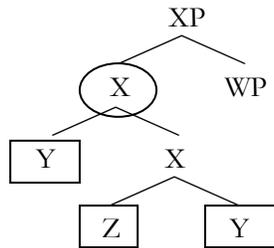
⁷ Although it should be noted that the idea was not entirely new (see e.g., van Riemsdijk 1990 on n), nor do only Distributed Morphologists subscribe to it (see e.g., Lowenstamm 2008). Cf. also Borer 2005 for a similar approach, although Borer (2005:20-21) argues against the specific Distributed Morphology analysis adopted here.

(2001, 2007) and Arad (2003, 2005) specifically propose that ‘lexical’ word formation corresponds to word formation from roots -- the combination of a category defining head (n, ν) with a root. ‘Syntactic’ word formation corresponds to word formation from words -- the combination of some head with a categorized word (i.e., $nP, \nu P$). In Chapters 3 and 4 on gender and number features, these proposals are adopted and, specifically, the role of n in expressing gender and number features in nominals is explored.

A final important concept from Distributed Morphology that recurs in the thesis is the distinction between Morphological Words and Sub Words, originally introduced in Embick and Noyer 2001. As a result of syntactic and morphological word building processes (head movement, Lowering, etc.), complex head-adjunction structures can be formed either in the syntax or the morphology. The terms Morphological Word and Sub Word are ways of referring to either the entire head-adjunction structure or a single head within such a structure. The definitions and an example are below.

- (17) a. Morphological Word: Potentially complex head not dominated by further head-projection
- b. Sub Word: Terminal node within a Morphological Word and not a Morphological Word
- (Embick and Noyer 2001:574)

(18)



Circled head = Morphosyntactic Word
Square heads = Sub Words

In (18), the topmost X node (and all it contains) is a Morphological Word - it is a complex head not dominated by further head-projection. The heads within squares, though, are Sub Words, i.e., terminal nodes within the Morphological Word. Morphological Words are important in Chapters 2 and 5 for determining the locality and properties of PF operations, and are sometimes referred to there simply as ‘complex heads’ to avoid the baggage associated with the term ‘word.’

Many of the concepts just introduced are introduced again as they come up within the thesis. However, hopefully, this prologue has primed the reader’s mind for encountering them again in much more detail.

4 ORGANIZATION

The thesis is organized into four main content chapters that can be classified in terms of the empirical phenomena they treat: Chapter 2 (definite marking), Chapter 3 (gender), Chapter 4 (number) and Chapter 5 (gender and number, concord).

Chapter 2 (‘Definite Marking in Amharic’) investigates the definite marker in Amharic, which has an unusually complex pattern of distribution. Its position varies depending on whether the DP contains an adjective, a relative clause, multiple adjuncts, a demonstrative, or just a noun. I develop an analysis of the definite marker based on the idea that the definite marker is

the realization of D when it is obligatory, and the reflex of a definiteness agreement process when it is optional. Evidence is presented that D undergoes the morphological operation Local Dislocation in Amharic, and that Local Dislocation is subject to the Phase Impenetrability Condition --- the definite marker cannot attach within a phase that has been previously spelled out. Definiteness agreement, however, does not seem to respect phase impenetrability, which leads to the suggestion that phase impenetrability is only relevant after Linearization. From a broader perspective, the chapter explores the effect of Minimalist assumptions about syntactic cyclicity (cyclic spell-out by phase, phase impenetrability) on the cyclicity of morphological operations.

Chapter 3 ('Gender in Amharic Nominals') charts the gender system in Amharic, which relies mostly on natural gender but contains a residue of grammatical gender from an earlier stage of the language. Natural gender 'overrides' grammatical gender in that if there is a conflict between the grammatical gender and the natural gender of a nominal, the nominal is assigned natural gender. This fact is difficult to account for under any theory that does not represent both natural gender and grammatical gender syntactically, and I develop an analysis whereby grammatical gender is a feature on roots and natural gender is a feature on *n* (see discussion of category-neutrality above). The analysis successfully predicts the gender facts, and has important implications for the proper analysis of gender features. It also demonstrates how a seemingly very 'lexical' property of nominals (gender) can be accounted for in Distributed Morphology, a theory that lacks a centralized lexicon.

Chapter 4 ('Number in Amharic Nominals') explores the syntax and morphology of number in the Amharic DP. I propose that irregular plurals are formed via a plural feature on *n* combining with a root, whereas regular plurals are formed via a plural feature on Num combining with a *n*P. This explains a broad range of data, including the idiosyncracies of

irregular plurals, the existence of double plurals (where a single nominal takes both an irregular and a regular plural affix), the fact that every nominal has a regular plural, and the selectional properties of irregular plurals. In the second half of the chapter, I investigate the relationship between a plural *n* and Num, aiming to derive the fact that all types of plurals in Amharic (regular, irregular, double) are semantically identical even if they are morphologically diverse. I ultimately settle on an agreement analysis, where the plural feature is shared between *n* and Num, and show how the analysis impacts the theory of feature sharing.

Chapter 5 ('Gendered Plurals and DP-Internal Agreement: The Interaction of Gender and Number') synthesizes the results from Chapters 3 and 4 and extends them to look at DP-internal agreement in Amharic. In the first half of the chapter, it is shown how certain morphological predictions made by the analyses in Chapter 3 and 4 are completely borne out in Amharic (e.g., that irregular plurals will vary in terms of gender since *n* will have both a number and a gender feature). In the second half of the chapter, I investigate gender and number features further in terms of the agreement relations they are involved in within the Amharic DP. I tentatively develop a feature sharing analysis of Amharic concord, and discuss at length the PF ramifications of feature sharing.

Finally, Chapter 6 integrates the results across chapters. I sketch the emergent picture of Amharic DP syntax that comes out from the chapters, and discuss how future research could develop it. Also, the conclusions reached about various principles that guide the syntax-morphology interface (involving cyclicity, agreement, etc.) are collocated and put into a larger context, leading to a better sense of how the syntax and the morphology interact in several different domains.

CHAPTER 2:

DEFINITE MARKING IN AMHARIC

1. INTRODUCTION

In Minimalism, the cyclicity of syntactic operations is encoded in two assumptions: cyclic spell-out by phase and phase impenetrability. Cyclic spell-out by phase ensures that the spell-out domain of a phase is sent to PF immediately after the phase is built. The effect of phase impenetrability is that, after spell-out, the spell-out domain is no longer accessible to syntactic operations, i.e. the cycle is complete. Because of the close connection with spell-out, these two assumptions raise questions about cyclicity at PF, especially when assuming the articulated model of PF used in Distributed Morphology (Halle 1990, Halle and Marantz 1993, et al.). For example, consider a phase embedded within another phase. When the larger phase is sent to PF, can morphological operations (Lowering, Local Dislocation, etc.) still affect the embedded phase, which was spelled out during the previous cycle? More succinctly, is there phase impenetrability at PF?

Embick (2003) suggests that some morphological operations do apply cyclically, and in this chapter I build on Embick's insight and connect it to phase impenetrability to help explain definite marking in Amharic. I argue that if a phase has been previously spelled out, it is impenetrable to morphological operations at later spell-outs, i.e. the Phase Impenetrability Condition (Chomsky 2000, 2001, 2004) can apply to both syntactic and morphological operations.

The empirical focus of the investigation is the definite marker, which surfaces in a variety of positions that would be unexpected if it were the realization of D. However, its distribution can be easily accounted for by assuming that D undergoes Local Dislocation (Embick and Noyer 2001, Embick 2003) and that Local Dislocation is sensitive to phase impenetrability. There is also evidence that, when the definite marker is optional, it is not a realization of D but the reflex of a definiteness agreement process. The definiteness agreement process does not respect phase impenetrability, and this leads me to suggest that phase impenetrability does not come into play until a late stage of PF (after Vocabulary Insertion and Linearization).

This research is connected to recent work on definite markers in Scandinavian languages (see e.g., Hankamer and Mikkelsen 2002, 2005, Heck, Müller and Trommer 2008) and in Bulgarian (see e.g., Embick and Noyer 2001, Dost and Gribanova 2006). I follow many of these works in using Distributed Morphology and/or phases to account for complex patterns of definite marking. There has also been much recent work on the internal syntax of the Amharic DP (Demeke 2001, Ouhalla 2004, den Dikken 2007), and the connection between this research and definite marking is discussed in Section 3. The primary descriptive work of the chapter is in Section 2, which contains the data on obligatory and optional definite marking. Previous accounts of definite marking and how to approach an analysis of definite marking in general are discussed in Section 3. The analysis of obligatory definite marking is presented in Section 4, and the analysis is supported by additional data in Section 5. Section 6 contains the analysis of optional definite marking, and Section 7 concludes.

2 THE DATA

Indefinite nominals are generally unmarked in Amharic, but definite nominals are always marked by a suffix called the definite marker, as shown in (1).

- | | | |
|-----|-----------|--------------|
| (1) | a. bet-u | b. nɨgɨst-wa |
| | house-DEF | queen-DEF.F |
| | the house | the queen |

The morphophonology of the definite marker is straightforward. There are two main allomorphs for singular nouns, and they depend on gender: *-u* for masculine nouns (with allophone *-w* after vowels), and *-wa* for feminine nouns. Plural nouns uniformly take the masculine allomorph.

- | | | |
|-----|----------------|-------------------|
| (2) | a. bet-otʃtʃ-u | b. nɨgɨst-otʃtʃ-u |
| | house-PL-DEF | queen-PL-DEF |
| | the houses | the queens |

The morphosyntax of the definite marker is much less straightforward. It does not appear only on the nominal stem, as in (1) and (2). It also does not appear where the syntactic D head is predicted to occur, i.e., at the edge of the DP (which edge depending on whether DP is right- or left-headed). In this section, the complex data on where the definite marker attaches within the DP is presented.

As a starting point, it is clear that the definite marker is a morphophonologically dependent element in that it must be attached to other material and can never stand on its own. Specifically, it requires a host to its left; in conventional terms, it is a suffix or an enclitic. It is important to clarify the assumptions made here about the terms affix and clitic. Affixes are conventionally said to have a closer relationship with their stems than clitics, and many tests have been proposed to distinguish between the two (Zwicky and Pullum 1983, Miller 1992a). A standard theoretical treatment is that affixes are attached to their stems in the lexicon, whereas clitics are added to their stems in the syntax or later. Distributed Morphology, however, specifically rejects Lexicalism and lexical composition, and thus the conventional difference between clitics and affixes. In Distributed Morphology, prosodically and morphologically dependent items can be attached to their stems in a variety of ways, and the labels “clitic” and “affix” become descriptive terms for some of these ways, and not primitive categories (see e.g., the discussion in Embick and Noyer 2001). I thus refer to *-u* ~ *-ma* neutrally as a definite marker, and, while I do develop an analysis of how the definite marker is attached to its host, I do not discuss whether it should be labeled a clitic or a suffix due to some characteristic of that attachment.

In the simplest pattern of definite marking, if a DP contains only a nominal head N, then the definite marker attaches to the right of N.

- (3) a. bet-u ‘the house’
b. *u-bet

If the DP contains an AP, though, then the definite marker attaches to the adjective. All APs are prenominal.

- (4) a. tɪlɪk'-u bet big-DEF house 'the big house'
 b. t'ɪk'ur-u dɪmmät black-DEF cat 'the black cat'

If the AP is complex, the definite marker still attaches to the adjective, which is always at the right edge of the AP. For example, it does not attach to degree adverbials (intensifiers), even when the same degree adverbial is repeated or when there are multiple degree adverbials.

- (5) a. [bät'am tɪlɪk'-u]_{AP} bet very big-DEF house
 b. [bät'am bät'am tɪlɪk'-u]_{AP} bet very very big-DEF house
 c. [ɪdʒdʒɪg bät'am tɪlɪk'-u]_{AP} bet really very big-DEF house

- (6) * [bät'am-u tɪlɪk']_{AP} bet very-DEF big house

The definite marker also attaches to the adjective if the adjective has a complement.¹

- (7) [lä-mist-u tammaññ-u]_{AP} gäs'ābahriy
 to-wife-his faithful-DEF character
 the faithful-to-his-wife character

¹ Note that gradability does not affect definite marking. The definite marker still attaches to the right edge of a non-gradable adjective, as with the adjective *wanna* 'main, chief' (*wanna-w nīgār* 'main-DEF thing') and with an ordinal numeral (*bulättāñña-w bet* 'second-DEF house').

- c. [Almaz k'ondʒo ɪndä-hon-ätʃtʃ yä-sämm-a-w] astämari [embedded clause]
 Almaz pretty C-be.PF-3FS C-hear.PF-3MS-DEF teacher
 the teacher who heard that Almaz is pretty

Thus far, the definite marker appears to attach to the right edge of a preceding AP or CP.²

Amharic is a head-final language, and this may make it seem like the distribution of the definite marker can be described with a different generalization: the definite marker attaches to the lexical head of an AP or CP (i.e., it attaches to an adjective or a lexical verb). However, this generalization can be proven not to hold with evidence from two sources: relative clauses and numerals. Lexical verbs are in fact **not** always final in Amharic; as in many head-final languages, auxiliaries follow the finite verb and are final in the clause. This is relevant for the distribution of the definite marker in relative clauses.

- (10) [mäš'haf-u-n y-anäbbä-w yä-näbbärä-w]_{CP} tämari
 book-DEF-ACC 3MS-read.IMPF-3MS C-be.AUX-DEF student
 the student who was reading the book (Leslau 1995:87)

In (10), the lexical verb *yanäbbäw* 'reading' is not at the right edge of the CP. Nevertheless, the definite marker still attaches to the right edge, in this case to the auxiliary *näbbärä* 'was.'

² The morphophonology of the definite marker on relative clauses is somewhat different. The masculine singular definite marker (-u) is homophonous with the 3rd person masc., sing. object agreement marker (-u). This may have caused speakers to conflate them, since in standard Amharic, object agreement markers and definite markers are in complementary distribution on relative clause verbs -- i.e., a relative clause verb that has an object agreement marker cannot be marked for definiteness. Also, when the definite marker does appear in relative clauses, its morphophonology alters to be more similar to that of the object agreement marker. I do not treat this pseudo-syncretism here, but it has interesting cross-linguistic parallels (e.g. French). See discussion in Leslau 1995: 83-87 and suggestions for an analysis in Mullen 1986.

Additional evidence that the definite marker does not always attach to lexical heads is seen in Section 5, where data from complex numerals is presented. In a complex numeral like *one million four hundred fifty thousand*, it is unclear which of the component numerals is the lexical head (if any). Nevertheless, in Amharic (where numerals are pre-nominal, and the order of the complex numeral is as in English), the definite marker always attaches to the rightmost component of a complex numeral. Thus, I conclude that the definite marker cannot be described as (always) attaching to lexical heads.³

Returning to the data, adjectives and relative clauses are both adjuncts, and multiple adjuncts can modify the same noun. What happens with definite marking when this is the case? If two APs modify the same noun, definite marking is obligatory on the first AP and optional on the second.

- (11) ʈllɪk'-u t'ɪk'ur(-u) bet
 big-DEF black(-DEF) house
 the big black house

If three APs modify the same noun, a similar pattern results.

³ Thanks to an anonymous reviewer of the published version of this chapter for raising the issue. The reviewer also notes that in several Balkan languages, suffixal/enclitic definite markers can be proven to attach to lexical heads (see Dimitrova-Vulchanova and Giusti 1998, Giusti 2002). There seems to be an interesting contrast here between Balkan definite markers (attach to lexical heads) and Semitic definite markers (attach to edges of phrases). See also Shlonsky 2004 (1472-1475) for evidence that in other Semitic languages, the definite marker attaches to the **left** edge of an entire AP.

- (12) k'ondʒo-**w** tɪllɪk'(-u) k'äyy(-u) kwas
 beautiful-DEF big(-DEF) red(-DEF) ball
 the beautiful big red ball

The first adjective must be marked for definiteness, and either or both of the additional adjectives may be optionally marked. If an adjective and a relative clause modify the same nominal, the relative clause is obligatorily marked, and the adjective can be optionally marked.

- (13) [tɪnantɪnna yä-mät't'-a-**w**] t'ru(-w) tämari
 yesterday C-come.PF-3MS-DEF good(-DEF) student
 the good student who came yesterday

A pattern clearly emerges for DPs with multiple adjuncts: the leftmost adjunct is obligatorily marked and any following adjuncts are optionally marked.

Stacked relative clauses, though, display a different pattern: both must be obligatorily marked for definiteness.

- (14) tɪnantɪnna yä-mät't'-atʃtʃ-**ɪw** kemistri y-at'än-atʃtʃ-**ɪw** tämari
 yesterday C-come.PF-3FS-DEF chemistry C-study.PF-3FS-DEF student
 the student who studied chemistry who arrived yesterday

This is anomalous in the light of the previous generalization, and I will not be treating this fact in detail here. Some discussion of how it can be accounted for in the analysis developed below, though, can be found in the conclusion.

DPs containing demonstratives seem to have no definiteness marking at all, no matter where the definite marker attempts to attach.

- (15) a. *ya bet* b. **ya bet-u* c. **ya-w bet*
 that house that house-DEF that-DEF house⁴

However, when an adjective is present, the adjective can be optionally marked for definiteness, with no change in meaning.

- (16) *ya tɪllɪkʔ(-u) bet*
 that big(-DEF) house
 that big house

This is reminiscent of the optional definite marking on an adjective after an initial adjective or relative clause, and I argue below that both are cases of definiteness agreement.

Before concluding, it is worth looking briefly at definite marking in possessive DPs.

Amharic possessors are prepositional phrases (using the preposition *yä-*, homophonous with the

⁴ The demonstrative can combine with a definite marker when no nominal stem is present, but these forms are probably frozen, e.g., *yaw* and *yaññaw* “that one,” (*yaw* can also mean ‘the same’), *ythäw* “this one.”

relative clause complementizer⁵), and are significantly different from the typical Semitic construct state (see discussion in Kapeliuk 1989, Kapeliuk 1994:90-108, den Dikken 2007:312).

- (17) *yä-lidʒ-u* *däbtär*
of-boy-DEF notebook
the boy's notebook (Leslau 1995:193)

Intuitively, the connection between the possessor and possessed noun phrase in Amharic is much looser than in the construct state. There is no phonological alteration or reduction of the possessed noun phrase, and other elements can intervene between the possessor and possessed noun phrase.

With respect to definite-marking, the definite marker on the possessor in, say, (17), is associated with the possessor alone, and not with the entire DP in which the possessor is embedded. For example, as noted by Ouhalla (2004), proper names are not marked for definiteness in Amharic, and when there is a proper name possessor (like (18)) there is no definite marking. This is true even if the entire DP is definite, as indicated by the accusative case marking (case marking is differential depending on definiteness).

⁵ The fact that both possessors and relative clauses are preceded by *yä-* presents an intriguing puzzle: could *yä-* be the same lexical item in both cases? Much previous research addresses this question, including Bach 1970, Fulass 1972, Henderson 2003, Ouhalla 2004 and den Dikken 2007. Each of these analyses has its own benefits and drawbacks, but the view I adopt here requires few stipulations. I assume that *yä-* is a relational preposition when attached to possessors, and a complementizer when attached to relative clauses (see similar proposals in Manahlot 1977 and Mullen 1986). There is independent empirical evidence that *yä-* acts both like a preposition (since it triggers allomorphy of demonstratives) and like a complementizer (since it can serve as a complementizer for other kinds of embedded clauses). Therefore any analysis that collapses the two uses of *yä-* will have to collapse the preposition and complementizer categories generally. It is true that similarities between prepositions and complementizers have long been recognized, and Emonds (1985) even argues that the two categories can be fully assimilated in English. However, in order to keep the analysis as simple as possible, I maintain a separation between the two uses of *yä-* henceforth. See also Section 3 for discussion of some of the *yä-*-centered analyses.

- (18) yä-Girma-n bet
 of-Girma-ACC house
 Girma's house (acc.)

Cross-linguistically, it is not unusual for definite articles/markers not to surface in possessive DPs. This is true notably in the English Saxon genitive (**the Mary's house, *Mary's the house*) as well as the Semitic construct state (lack of definite-marking is the one property Amharic and construct state possessors share).⁶ Many different kinds of proposals have been made to account for the lack of definite-marking, ranging from the morphosyntactic (e.g., Ritter 1991) to the phonological (e.g., Siloni 2003) to the semantic (e.g., Heller 2002), even for just one language (Hebrew). Most analyses assume that possessive DPs do not contain definite markers at any stage of the derivation (except for the definite marker in the possessor, whose distribution is always as expected within the possessor DP). To be more concrete, at least one among these many solutions can be implemented straightforwardly in Amharic: a different kind of D occurs with possessors, like the English Saxon genitive 's or Ritter's (1991) D_{gen(itive)} in Hebrew. This D would be phonologically null in Amharic, and in complementary distribution with the D[DEF] that is realized as the definite marker.⁷ Whichever way the lack of definite marking is ultimately

⁶ Lack of definite-marking in possessive DPs is often associated with (in)definiteness spreading where the (in)definiteness of the possessor affects the definiteness of the DP within which it is embedded (see e.g. Barker 2000 on English, Borer 1999 and many others on Hebrew). It is still under investigation whether this occurs in Amharic. den Dikken (2007) argues that definite possessors do not trigger a definite interpretation of the entire possessive DP, but many grammars note the opposite effect (i.e., a definite possessor indicates a definite interpretation of the whole DP, see e.g., Hartmann 1980:306, Leslau 1995:193).

⁷ There is one circumstance under which a definite marker can surface in an Amharic possessive DP. If an adjective modifies the possessum, the adjective can have an optional definite marker.

analyzed, the fact that possessive DPs probably do not contain definite markers at any stage of the derivation renders them significantly less germane to present concerns, and they will not be treated further.

Taking a wide view of all the data seen in this section, certain generalizations emerge. First, the definite marker cannot attach to a nominal stem when the stem is preceded by other material.⁸ Instead, the definite marker attaches to the right edge of the preceding material, regardless of whether the material is internally complex. If more than one AP or CP precedes the nominal stem, the definite marker obligatorily attaches to the leftmost adjunct, and optionally to the others. These generalizations form the empirical base for the analysis to come. Before presenting the analysis, though, it is necessary to discuss how previous research has dealt with the Amharic definite marker.

-
- (i) yä-Girma tällik'(-u) bet
of-Girma big(-DEF) house
Girma's big house

Previewing the analysis to come, I claim that all optional definite markers are instances of definiteness agreement between a D that has a definiteness feature and an adjective. Therefore, as long as the D_{gen} has a [DEF] feature, it is predicted to license definiteness agreement (even if that feature was perhaps acquired from the possessor itself; note also that for the syntactic analysis to work here one must assume that D_{gen} is a separate lexical item always spelled out as null despite the definiteness feature). This predicts that when the adjective is marked for definiteness, the whole DP is interpreted as definite, and see den Dikken 2007 for some support for this. Since a detailed analysis of this data will depend on whether or not there is (in)definiteness spreading in Amharic, I leave it for future work.

⁸ Note that it is difficult to investigate the placement of the definite marker with respect to nominal complements and other kinds of adjuncts. Most complements are possessors (see below), and Amharic does not have DP-internal adjuncts that are not APs or CPs. DPs like *the book on the table* are expressed using a relative clause, and DPs like *the flight tomorrow* are expressed using a possessive: *tomorrow's flight*. However, see Section 5 for some discussion of additional data from free relatives, numerals and compounds.

3 PREVIOUS ACCOUNTS AND POSSIBLE ANALYSES

Ever since the DP hypothesis was proposed (Abney 1987), definite articles have been assumed to be base-generated under the syntactic head D. However it is not obvious that this is the case for the definite marker in Amharic, considering its complicated distribution. It may be that the definite marker is the realization of a morphosyntactic feature [+DEF], perhaps generated through some kind of definiteness agreement with (abstract) D, and previous analyses of the definite marker can be roughly divided into two camps depending on whether the definite marker is treated as D or [DEF].⁹ In the former kind of account, phrasal movement in the syntax accounts for the ordering of D (see e.g., Halefom 1994, Ouhalla 2004). In the [DEF]-based accounts, two main strategies have been pursued. Either there is an AgrDef projection in the syntax (Demeke 2001, following Fassi Fehri's 1999 account of Arabic definite marking¹⁰) or there is a syntactic checking/Agree relationship between the host of the definite marker and an abstract D (den Dikken 2007).¹¹ In Section 3.1, I argue that neither of these kinds of analyses can account for all the data presented above, examining in particular the accounts in Ouhalla 2004 and den Dikken 2007. In Section 3.2, I outline my own analysis, which solves the problems in the previous accounts by having the definite marker be in some cases the realization of D, and in other cases the realization of a definiteness feature.

⁹ Pre-DP analyses of definite marking are rule-based and treat less data (see e.g., Bach 1970, Gragg 1972, Mullen 1986).

¹⁰ Several other Semitic languages have complex definite marking patterns; see Section 6.4 for discussion.

¹¹ In work that became available as this chapter was being prepared, Beermann and Ephrem (2007) briefly develop an HPSG, feature-based account of Amharic definite marking. Following Wintner 2000, they propose a lexical rule that adds a definiteness feature to adjectives and nouns. An adjective then selects for a noun that is not definite-marked. It is unclear to me whether this approach can cover all the data mentioned here, especially DPs with multiple adjectives and relative clauses. Cf. Dost and Gribanova 2006 on Bulgarian.

3.1 D versus [DEF]

Both Ouhalla 2004 and den Dikken 2007 are primarily focused on accounting for Amharic relative clauses and possessors, with definite marking being an issue that is closely related but not central. Nevertheless, it is worth investigating whether their accounts of definite marking could be extended to cover all the data here. In Ouhalla 2004, an account of Semitic relative clauses is developed; relative clauses are merged in Spec, NumP, and are DPs where the D head takes a TP complement. To account for the placement of the definite marker in Amharic relative clauses, the TP within the relative clause raises to Spec,DP.

(19) [DP D [NumP [D_{PREL} TP_i [D' D t_i]] [Num' Num [NP]]]]

This works for the relative clause data, but it is unclear how it would extend to the adjective data presented above, especially when the definite marker appears optionally on multiple adjectives.¹² In Halefom's (1994) approach, which is broadly similar to Ouhalla's, it is suggested that multiple instances of the definite marker are coordinated DPs. This seems unlikely, though, since adjectives can be either listed without a conjunction (the big black house) or conjoined with an overt conjunction (the big and black house), and the definiteness marking patterns are different for each (see Section 4.2). I conclude that these accounts cannot cover the optional definite-

¹² There is a strand of work on adjective syntax where all or some adjectives are reduced relative clauses (see e.g., Kayne 1994, Alexiadou and Wilder 1998, Alexiadou 2001). This could provide a straightforward way to apply Ouhalla's analysis to adjectives. However, this analysis of relative clauses is substantially different from Ouhalla's assumptions, and also has been independently argued to be untenable for Amharic (Demeke 2001).

marking data, at least not without assuming some additional mechanism of (perhaps) definiteness agreement.

In den Dikken 2007, just such a mechanism is proposed to account for all the instances of the definite marker. den Dikken analyzes the definite marker as merging with its host in the lexicon, and checking its definiteness features against a phonologically null D[DEF]. He essentially adopts a classical Minimalist approach (Chomsky 1995), where items are merged from the lexicon already inflected. This is incompatible with a non-lexicalist theory like Distributed Morphology, but it does work with slightly later Minimalism (Chomsky 2000, 2001 *et seq.*). Thus, the following is a sketch of an analysis of the definite marker in the spirit of den Dikken's idea, using the assumptions about features and agreement developed in later Minimalism.

As a first step, I assume that [DEF] can appear as an uninterpretable feature on adjectives. Since it is uninterpretable, the [μ DEF] on an adjective must be valued, and since D[DEF] is (perhaps) the only element that can value this feature, D[DEF] and Adj[μ DEF] must enter into an Agree relationship. The key properties of the Agree relationship are listed in (20). I assume that Agree can relate features like [DEF] even though it typically relates phi-features and case features.

(20) **Agree**

- a. Agree holds between a probe which has uninterpretable features and a goal which can value the uninterpretable features.
- b. The goal must be in the command domain of the probe.
- c. There can be no “interveners.”
- d. Probe and goal must be in the same spell-out domain / phase.
- e. Both probe and goal must be “active,” i.e. have uninterpretable features.

It is clear that the Agree relationship as described in (20) will not hold between Adj[μ DEF] and D[DEF]. Given their feature make-up, Adj should be the probe and D should be the goal, but Adj does not command D, and there is no independent justification for D having uninterpretable features (i.e., being active) as well. However, the properties in (20) comprise essentially the strongest, most restricted version of Agree. It is possible that one or more should be relaxed (in certain cases or in general), and much research explores exactly this issue (see e.g., Richards 2004 which relaxes (20)b, Carstens 2000 which relaxes (20)e). I therefore adjust Agree in the following way: assume that a head X with interpretable feature [F] which commands a head Y with uninterpretable feature [μ F] can enter into an Agree relationship with Y and value Y's [μ F]. In Amharic, then, the head D[DEF] which commands the head Adj [μ DEF] can enter into an Agree relationship with Adj and value its [μ DEF]. The valued [DEF] feature on Adj is spelled out as the definite marker post-syntactically. D[DEF] is always spelled out as a null morpheme.

This account, however, still leads to several problems. To account for multiple instances of the definite marker, assume that Multiple Agree (Hiraiwa 2001) is allowed, and can be configured so that there are multiple Agree relations between D[DEF] and any following Adj[μ DEF]. However, it is unclear how the definite marker could ever be optional. If an

adjective is merged from the lexicon with a [*#*DEF] feature, that feature must be checked in order for the derivation to converge.

Also, under this analysis, N must have a [*#*DEF] feature in order to be realized with the definite marker. However, the feature must be constrained such that it only appears on nouns that do not have modifiers. If it appeared on other nouns, it either (a) could not be valued since the modifier would act an intervener, and the derivation would crash, or (b) could be valued through Multiple Agree, but then definiteness-marking should be morphologically realized on the noun.¹³

Moreover, consider the relative clause data. There would have to be [*#*DEF] features on verbs in order to ensure that the definite marker is realized on the verb in a relative clause. It seems much less plausible for definite features to be relevant to verbal morphology than for the definite marker simply to be a kind of clitic that attaches to the phrase that contains the verb (as will be spelled out in more detail below). For all of these reasons, then, I conclude that there are serious obstacles to constructing an account that relies only on the definite marker being realized as a definiteness feature.

3.2 Combined Analysis

The analysis of the Amharic definite marker which will be developed in the rest of the chapter is a “combined” account of definiteness marking -- the definite marker is sometimes the

¹³ Both of these problems can be avoided if [*#*DEF] is optional on nouns and adjectives (see Adger and Smith 2006), but this leads to a false prediction. Consider a definite DP containing only D and N where D has [DEF] but N does not (since the [*#*DEF] feature is optional). Since the definite marker is the reflex of a [DEF] feature on N or A, there would be no definite marker in this DP. Therefore, this account predicts that bare nouns should be able to be interpreted like definite DPs, which is incorrect, e.g., *tāmari* can mean ‘student’ or ‘students’ (bare nominals are number-neutral) but never ‘the student.’

morphological realization of the syntactic head D, and sometimes the morphological realization of a [DEF] feature. Dividing up the data in this way makes the analysis more complex, but has positive consequences in terms of empirical coverage and explanatory power.

I propose that the syntactic head D (when definite) is always spelled out as the definite marker in Amharic. Specifically, I propose that D[DEF] is a **second position (2P) clitic within DP**, using the term 2P clitic to simply mean a morphophonologically dependent element merged at the edge of a domain which finds a host as close to the edge as possible in the “second” position from that edge. Having D be a 2P clitic has immediate advantages. First, it explains why the leftmost element in a string of modifiers is favored in terms of definite marking - the first modifier counts as first position. It also explains why a nominal stem is marked only when nothing precedes it in the DP -- that is when the nominal itself is in first position.

However, having D be a 2P clitic does not explain the data where non-initial adjectives can be optionally def-marked. To explain optional definite-marking on adjectives, I propose there is **optional definiteness agreement on APs**, where the [DEF] feature is realized as the definite marker. The analysis is supported by the fact that other DP-internal agreement processes (e.g., number agreement) are optional as well. These ideas are fleshed out in the remainder of the chapter. In Sections 4 and 5, the 2P clitic analysis is presented and supported, and the definiteness agreement analysis is presented in Section 6.

4 THE ANALYSIS OF DEFINITE MARKING : SECOND POSITION

Before beginning this section, a small digression is necessary on the headedness of the DP. Amharic is primarily a head-final language, but the DP has most often been treated as head-initial in the literature. This is either because it has been assumed that all functional projections

are head-initial in Amharic (Halefom 1994), or that head-final projections are not licit in general (Ouhalla 2004, den Dikken 2007). Empirical evidence concerning the headedness of the DP projection is unfortunately difficult to find. The distribution of the definite marker is rather complex, and other uncontroversially D elements are not forthcoming. One possible piece of evidence comes from the *we students* construction investigated by Postal (1969) for English. In Amharic, the pronoun precedes the nominal, just as in English.

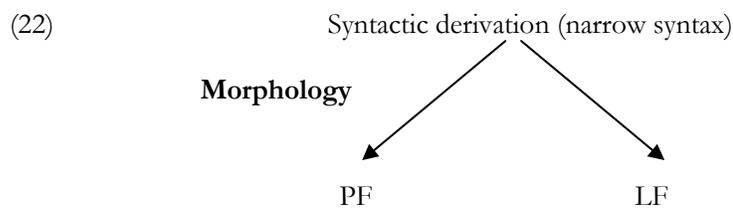
- (21) *ñña tāmari-wotʃtʃ*
 we student-PL
 we students (Yimam 1988:600)

If pronouns are D heads, then the DP is clearly head-initial. However, the pronoun also precedes the nominal in other head-final languages, e.g. Turkish (J. Hankamer, p.c.) and Japanese (T. Ying, p.c.), so either the DP projection is uniformly head-initial or something more complex is going on with this particular construction (e.g. it may be appositional, despite Postal’s (1969) arguments to the contrary). In the analysis, I begin by assuming the DP is head-initial, in line with previous work, and find some support for this assumption along the way.

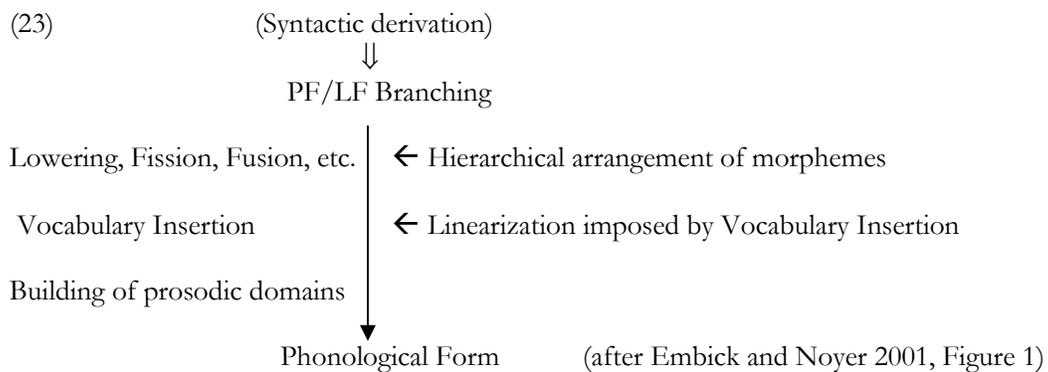
4.1 Second Position

There has been a sustained interest in second position (2P) clitics from a generative perspective since the early 1980s, with the broadest perspectives found in work by Klavans (1980 et seq.), Miller (1992a), Halpern (1995), Anderson (2005), and a collection edited by Halpern and

Zwicky (1996). It is crucial to determine for the Amharic definite marker **where** 2P happens in the grammar and how it works. As a start, then, it will be useful to clarify my assumptions about the grammar, reviewing some information from Chapter 1. I assume that after the syntactic derivation is complete, it is sent to Phonological Form and Logical Form. Following Embick and Noyer (2001), ‘Morphology’ is a subcomponent of the grammar along the PF branch where morphological operations occur. These assumptions are represented in (22).



Embick and Noyer (2001) propose a very articulated order of operations on the PF branch, reproduced in (23).



Directly after the PF/LF Branching, hierarchical structure persists and morphological operations like Lowering, Fission, and Fusion take place. Next, the vocabulary items are inserted (the

terminal nodes are provided with phonological content), and the structure is linearized. Various post-linearization operations (e.g. Local Dislocation; Embick and Noyer 2001, Embick 2003) also take place. Finally, prosodic domains are built, and the PF derivation finishes with a complete phonological and linear representation. There are many potential stages of the derivation at which a second position effect could come into play: syntax, pre-linearization morphology, post-linearization morphology, and in the phonology. I consider each of these possibilities.

To start at the top of the grammar, many (if not most) second position clitic accounts have at least partially relied on operations at the narrow syntax level to explain the placement of the clitics (Black 1992, Tomić 1996, Progovac 1996, Pancheva 2005 and others). A typical syntactic account states that the second position clitic is a head X (or moves to a head X), and that the host of the clitic raises to the specifier position of XP. The analysis in Ouhalla 2004 (discussed in Section 3.1), while it is not couched in these terms, is essentially this kind of analysis. I do not construct such an account here because of what I consider to be a fundamental problem with a purely syntactic approach to morphophonologically dependent items. In an ideal theory of grammar, syntactic operations occur for syntactic reasons (e.g. to check uninterpretable features) -- not in order to provide support to items that are morphophonologically weak, but usually syntactically independent (i.e. heads). There are exceptions to this, the most prominent one being head-raising, but it seems desirable in the main to keep the syntax as free from being governed by syntax-external considerations as possible (see also discussion on this point in Embick and Noyer 2001:556-557). An ideal account of second position clitics, then, will be confined to the morphology or phonology, on the understanding that 2P cliticization occurs in order to provide a morphophonological host for a clitic that cannot

find a host in its base position. I thus continue by considering phonological and morphological accounts.

4.2 2P in the Phonology

Purely prosodic or phonological analyses are not a common kind of account for second position clitics, but they have been advanced in Hock 1996, Taylor 1996, and Chung 2003, among others. A prosodic account of the Amharic definite marker would have to state that the definite marker subcategorizes to attach to the right of some prosodic constituent. It may seem impossible to have the host of the definite marker be one consistent prosodic size -- it can range from a single prosodic word (e.g. an adjective) to a lengthy relative clause. However, let us assume that this is possible for the sake of argument and investigate what kind of prosodic constituent it would have to be.

I assume the standard prosodic constituents: syllable, foot, prosodic word, phonological phrase, intonational phrase and utterance (as listed in, e.g. Selkirk 1986). It is clear that the prosodic constituent in question for Amharic must be larger than a syllable, a foot, or a prosodic word in order to accommodate relative clauses. However, it must be smaller than an intonational phrase in order to accommodate single-adjective APs and nominal stems. The one constituent in-between is the phonological phrase (p-phrase), so this is what the definite marker must subcategorize for. At prosodic phrasing, then, either the definite marker inverts with the leftmost phonological phrase in DP (Prosodic Inversion; Halpern 1995), or it is inserted as a vocabulary item directly where its prosodic subcategorization can be fulfilled (suspending the Distributed Morphology assumption that vocabulary insertion precedes the building of prosodic domains; see Chung 2003, Pak 2008).

However, there is an empirical reason to consider a prosodic account less than ideal -- it cannot account for coordinated structures. When two constituents that would be definite-marked are coordinated, definite marking is required on both conjuncts (see Miller 1992b for discussion of similar phenomena in other languages).

(24) Coordinated APs

t'ik'ur-**u** {ɪnna / wäyɪmm} sämayawi-**w** kwas
 black-DEF and /or blue-DEF ball
 the black and/or blue ball

(25) Coordinated CPs

bira yä-t'ät't'a-**w** {ɪnna / wäyɪmm} wät'-u-n yä-bälla-**w** tämari
 beer C-drank-DEF and/or stew-DEF-ACC C-ate-DEF student
 the student who drank beer and/or ate the stew

(26) Coordinated NPs

däbtär-**u** {ɪnna / wäyɪmm} ɪskɪbto-**w**
 notebook-DEF and /or pen-DEF
 the notebook and/or pen

Under a prosodic account, it is predicted that the definite marker would attach either to the right edge of the whole conjoined structure (if it is one phonological phrase), or to the first conjunct (if the two conjuncts are each phonological phrases). Compare the case of Chamorro weak

pronouns, which are prosodic 2P clitics that attach to the first p-phrase in an intonational phrase. In conjoined maximal projections (conjoined DPs in (27)), the weak pronoun attaches only to the first conjunct (Chung 2003: 594-596), thus choosing the first option of the two described above.

- (27) [Infitmera-n Rosa]_{DP} **yu'** yan [doktu-n Julia]_{DP}
nurse-L Rosa I and doctor-L Julia
I am Rosa's nurse and Julia's doctor. (Chung 2003:595)

A prosodic account of the definite marker does not seem promising given that it cannot predict the coordination data, and I proceed to consider morphological accounts.

4.3 2P in the Morphology : Lowering

Morphological Merger (where a hierarchical or precedence relationship between morphemes is “traded” for a relationship of adjunction/affixation) is one of the major types of morphological operations, and it has often been used to explain second position effects (Marantz 1988, 1989, Embick and Noyer 2001, Embick 2003, Embick and Noyer 2007). Embick and Noyer (2001, 2007) argue for at least two varieties of Morphological Merger: Local Dislocation and Lowering. As shown in (23), Lowering occurs immediately after the syntactic structure is sent to PF and relies on hierarchical structure. Local Dislocation occurs after Linearization and Vocabulary Insertion and relies on linear precedence. In this section, I discuss a Lowering analysis of the definite marker along the lines of Embick and Noyer's (2001) analysis of the

Bulgarian definite marker, and argue that it requires some unmotivated assumptions about the structure of DP.

The operation Lowering lowers a head to the head of its complement.

$$(28) \quad [_{XP} X \ [_{YP} Y \ ZP]]$$

Since Lowering “skips” intervening adjuncts and specifiers, it initially seems like an implausible analysis for Amharic definite marking. APs are adjuncts, and the definite marker assuredly does not skip them. However, the assumption that APs are adjuncts within DP can be questioned, and this is the approach that Embick and Noyer (2001) take in their analysis of the Bulgarian definite marker.

The definite marker in Bulgarian has a similar distribution to the definite marker in Amharic, attaching to the right of the noun if the noun is alone in the DP, or to the right edge of an AP (see Dost and Gribanova 2006 for detailed data). In their analysis, Embick and Noyer (2001:568) crucially assume that the adjective is part of the extended projection of NP, as in (29).

$$(29) \quad [_{DP} D \ [_{AP} A \ [_{NP} N]]]$$

This Abney-style (1987) DP allows for an elegant Lowering analysis of the definite marker. D simply lowers to A (or to N when no AP projection intervenes).

However, there are some problems with (29), as pointed out most recently by Hankamer and Mikkelsen (2005) and Dost and Gribanova (2006). The adjective does not meet the criteria set out in Zwicky 1985 for a head of the nominal phrase: it is not obligatory, it is not unique, and it does not affect the features on the NP it modifies. Moreover, there are several empirical

reasons not to accept the structure in (29). Dost and Gribanova (2006) and Hankamer and Mikkelsen (2005) point out that the motivation for Abney's (1987) original structure was that adjectives do not take complements in English. However, they do in Bulgarian (Dost and Gribanova 2006:135) and they do in Amharic as well (see (7)), so not only will an AP somehow have to take two complements (or have one 'complement' be a specifier), but also there is no motivation for (29) in Amharic independent of present concerns. Finally, it is possible in Amharic for an AP to be fronted to a DP-initial position for focus, as described in Demeke 2001 (211ff.), and den Dikken 2007 (fn. 14). In (29), AP without NP is not a constituent and should not be able to move. In sum, a Lowering account requires AP to be the complement of D, and there is evidence that this cannot be the case in Amharic.

4.4 2P in the Morphology: Local Dislocation

I continue to consider an account that uses Local Dislocation instead of Lowering. Local Dislocation trades a relationship of immediate precedence for affixation under adjacency, and a schematic example is in (30). The star * represents an immediate precedence relation.

$$(30) \quad X * Y \rightarrow Y-X \quad [\text{or}] \quad X-Y$$

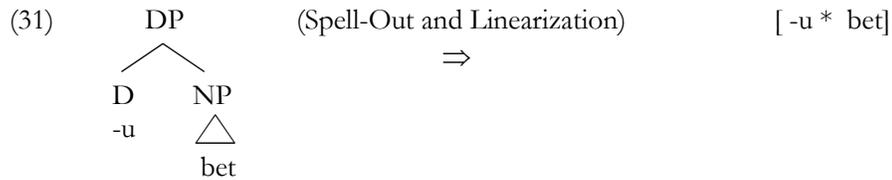
Before Local Dislocation, X immediately preceded Y and they were distinct morphological heads. After Local Dislocation, X has (right- or left-)adjoined to Y and they comprise one complex head. The immediate precedence requirement serves as a simple and strict locality condition, in that X cannot dislocate to Y if there is a Z such that X precedes Z and Z precedes Y (i.e., $X * Z * Y$).

Local Dislocation at first seems too local to be the right approach to the Amharic definite marker --- the definite marker does not necessarily dislocate with the morphosyntactic head that it immediately precedes. However, if phase impenetrability is assumed (in a sense to be made precise below), then using Local Dislocation to place the definite marker in second position is very successful in accounting for the data and has several interesting theoretical consequences.

As a start, assume that spell-out occurs cyclically, phase by phase (or more technically, spell-out domain by spell-out domain). I assume that DP, CP and AP are phases, and that the spell-out domain of a phase XP includes the phase head X and the complement YP to the phase head.^{14,15} With these assumptions, the simplest data concerning the definite marker can be straightforwardly accounted for using Local Dislocation, even without appealing to phase impenetrability. When a DP which contains only the definite marker and a nominal head is spelled out and linearized, the definite marker is at the left edge of the string.

¹⁴ CP has been considered a phase since Chomsky 2000, and DP has also been argued to be a phase (Svenonius 2004). However, to the best of my knowledge, there has been little work on whether AP is a phase. Chomsky (1986:80) suggested that AP is a barrier, which might indicate that it is a phase (see Boeckx and Grohmann 2007 on the similarity between phases and barriers). Additionally, if a phase corresponds to the notion of the Extended Projection of a lexical head (Grimshaw 2005), which seems intuitively attractive, then AP/DegP (see Kennedy 1997 on DegP) should also be a phase since it is the extended projection of the lexical head A.

¹⁵ Assuming that the spell-out domain of a phase includes the phase head prohibits interphase head movement in the syntax. If the phase head is spelled out, it cannot move outside of its phase, e.g. V cannot raise to T (assuming *v*P is a phase). Chomsky (2000) has suggested that all head movement is post-syntactic, but regardless, I am willing to assume a weaker version of my assumption, namely, that the spell-out domain of a DP phase must include the phase head D. To the best of my knowledge, there are very few or no instances of D undergoing head-raising to a position outside the DP.



In the linearized string to the right of the arrow in (31), the definite marker has no host.

Following recent work on definite markers in other languages, I assume that the dependence of the definite marker is encoded in certain PF requirements on morphemes, as in (32).

(32) a. $-u \sim -wa$ must have a host.

b. $-u \sim -wa$ attaches to the right edge of its host.

(cf. Hankamer & Mikkelsen 2005:(38), Embick & Noyer 2001:581)

These requirements motivate the application of operations like Local Dislocation. In the above example, in order for the definite marker to meet its requirements, it must Locally Dislocate to right-adjoin to the nominal *bet* “house.”

(33) [-u * bet] \rightarrow [bet-u]

This results in the attested data where the definite marker is attached to the nominal.

It may seem simpler to assume that DPs are head-final, so that the definite marker could undergo string-vacuous Local Dislocation and right-adjoin to the nominal. However, if this were true, it would be predicted that the definite marker would always attach to the nominal head since it could always string-vacuously Locally Dislocate. It would also make the obligatory marking of the leftmost (as opposed to the rightmost) adjective in a string of adjectives much

harder to explain. Thus, if the definite marker is placed by an operation after Linearization, it must be the case that the Amharic DP is head-initial.

A simple application of Local Dislocation cannot be the correct analysis for all the data since its locality condition is too strict. Here is where phase impenetrability becomes crucial, and the following is the version of Chomsky's (2000, 2001, 2004) Phase Impenetrability Condition (PIC) that will be used here.

(34) **Phase Impenetrability Condition**

In a phase α , the spell-out domain of α is not accessible to operations outside α -- only the edge of α is accessible to such operations.

(Chomsky 2000:108, Chomsky 2001:13; modified to reflect my assumption that the head is part of the spell-out domain)

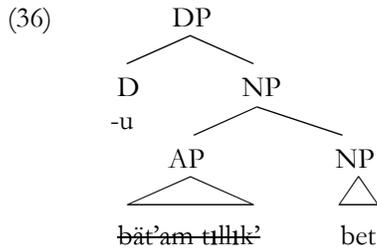
I propose that the Phase Impenetrability Condition also holds at PF. Consider a spell-out domain α which contains a distinct spell-out domain β . β is impenetrable in the sense that morphological operations that occur during the Spell-Out of α (Lowering, Local Dislocation, Fission, Fusion, etc.) cannot target any morphemes internal to β , and cannot move any morphemes into β . In other words, the morphological operations cannot alter β either by removing or adding morphemes to it, or by changing the relationships between the morphemes internal to it. Essentially, β is inaccessible to morphological operations that happen during the Spell-Out of α .

However, there is a crucial exception to this. The edge of β is still available, where the edge material is usually defined as any specifier of β . However, none of the relevant phases (CP,

AP) have specifiers that are morphophonologically realized in Amharic (see Section 4.5.1). Instead, I propose that the edge of β can be interpreted more literally, in the following sense. The PIC has the effect that β is an opaque morphological object – there is no differentiation between the heads internal to it at this point and it has no internal structure. This is because all the PF relations between the heads internal to β have been set previously during its own spell-out, and they cannot be changed during this, later spell-out. However, the relationships between the edges of β and the material surrounding it has not yet been set. In other words, all the β -internal material has been spelled out, but the linearization of β as a whole with respect to the material in α is still open. Morphological operations at α can thus move a morpheme to the edge of β without any disruption of previously-set relationships. In effect, then, β is equivalent to a simple head at PF: internally opaque, but capable of having other heads adjoin to either of its edges.

These assumptions about the nature of previously spelled-out phases at PF can account for the Amharic data. Consider the DP in (35) where (roughly) DP is the spell-out domain α that contains another spell-out domain β (roughly AP).

- (35) bät'am tlltk'-u bet
 very big-DEF house
 the very big house



The linearized string in (37) is a representation of (35) after the DP spell-out domain has been linearized and vocabulary has been inserted. Spelled-out material is struck-through.¹⁶

(37) [-u * [~~bät'am~~* ~~tlllk²~~] * bet]

Since the Phase Impenetrability Condition holds at PF, PF operations like Local Dislocation cannot access any of the heads in the previously spelled-out domain AP. However, the domain itself is a morphological object, internally opaque but with edges available for adjunction, and still in the process of being ordered with respect to the other objects surrounding it. I propose, then, that the domain can participate in Local Dislocation just like a simple head. In (37), since the AP is the closest “head” to the definite marker in terms of precedence, the definite marker simply Locally Dislocates with it and adjoins to its right edge.

(38) [~~bät'am~~* ~~tlllk²~~]-u * bet]

¹⁶ I assume that *bät'am* “very” is in the spell-out domain of the AP, or more specifically, the DegP. Abney (1987) and others argue for a DegP shell over AP where the Deg head houses items like *how*, *so*, *more*, *less*, etc. I have not been using DegP only for purposes of clarity, and I assume that it is DegP that is the actual phase, and not AP. Abney (1987) and Corver (1997) cite examples like *How very charming!* as evidence that *very* is below Deg, which would indeed cause *very* to be in the spell-out domain of DegP.

The definite marker thus receives a host to its right, meeting its PF requirements. The fact that it seems to “skip” so much material is due to the fact that the element that it immediately precedes is a previously spelled-out domain.

The rest of the data seen so far can also be predicted. The relative clause data is accounted for exactly the same way as the adjective data above, with the definite marker Locally Dislocating with the spell-out domain of the relative clause CP. As for the multiple adjective data, the individual APs have been spelled out by the time the spell-out domain of the DP phase is sent to PF, and they are each separate phases, i.e. there is a phase boundary between them. The initial Linearization of (39) thus as in (40), with the phase/domain boundaries indicated by brackets.

(39) $\text{tʰlik}^{\text{'-u}} \text{ t}^{\text{'ik}^{\text{'ur(-u)}}} \text{ bet}$

big-DEF black(-DEF) house

the big black house

(40) $[-u * [\text{tʰlik}^{\text{'}}] * [\text{t}^{\text{'ik}^{\text{'ur}}}] * \text{bet}]$

The leftmost adjective is the element that the definite marker immediately precedes, so that is what it Locally Dislocates to. This same process can explain the obligatory definite marking in DPs that contain both a relative clause and an adjective – the relative clause and the adjective each constitute separate domains and the definite marker attaches to the leftmost domain (the relative clause).

Local Dislocation and phase impenetrability at PF can account for all the obligatory definite marking seen so far.¹⁷ Local Dislocation applies cyclically by spell-out domain, and a previously spelled-out domain is impenetrable, i.e. a closed cycle.

4.5 2P in the Morphology: Further Details

In this section, I discuss some additional aspects of the analysis developed above. In Section 4.5.1, I discuss a particular prediction of the analysis concerning specifiers, and conclude that this prediction cannot be tested in Amharic. In Section 4.5.2, I return to the coordination data that was introduced in Section 4.2, which initially seems problematic but can be plausibly accounted for. In Section 4.5.3, I discuss how the conclusions in Embick 2003 and Heck, Müller and Trommer 2008, both of which involve cyclicity at the syntax-morphology interface, are related to the present analysis.

4.5.1 Predictions about Specifiers

There is a crucial difference between “phase” and “spell-out domain.” In this analysis, a spell-out domain includes only the head X of the phase and the complement to X, but the phase

¹⁷ A reviewer of the published version of this chapter suggests an alternative analysis whereby the Local Dislocation rule can only ‘see’ complete modifiers (i.e., it cannot operate on the internal components of modifiers). The complete modifier analysis and the phase-based analysis can be distinguished via data from numerals, discussed more fully in Section 5. The definite marker always attaches to the right edge of even very complex numerals, which, under the complete modifier analysis, either forces all numerals to be modifiers (against current analyses of numeral syntax) or requires an additional, seemingly random stipulation that Local Dislocation only sees complete numerals. In contrast, as detailed in Section 5, the phase-based analysis is capable of generating the numeral facts without additional stipulation, and it is compatible with many recent accounts of numeral syntax. Also, the phase-based analysis is analytically preferable to the complete modifier analysis since it provides an independently-motivated reason for why certain categories are treated as ‘complete’ by Local Dislocation, i.e., they are phases.

also contains the specifier position of XP. In the context of the above analysis, then, it is predicted that if the specifier position was filled for any of the phases following the definite marker, the definite marker should attach to the leftmost head in the specifier. The specifier has not yet been spelled out and it will be closer to the definite marker in terms of precedence than any other morpheme (assuming leftward specifiers). Unfortunately, this prediction cannot be tested. There is a robust empirical generalization that neither CPs nor APs have filled specifiers in Amharic, and it is worthwhile to briefly look at the data that confirms this generalization.

Consider first the case of relative clause CPs. The specifier position of a relative clause CP can traditionally be filled with either a wh-word or a null Operator, as shown for the English examples below.

- (41) a. the snake [_{CP} **which**_i [_{TP} the boy killed t_i]]
 b. the snake [_{CP} **Op**_i that [_{TP} the boy killed t_i]]

As mentioned earlier, Amharic does not have wh-words within relative clauses, but presumably there are null operators. A null operator, however, has no phonological realization, so it cannot serve as a host for the definite marker. It may have even been eliminated entirely from the derivation by Linearization, depending on how phonologically empty elements are treated at PF.

Spec,CP is often the target of movement that is driven by information structure, e.g. topicalization, focus movement, etc. In Amharic, a definite direct object can be optionally topicalized to the left edge of a clause, resulting in OSV order (instead of canonical SOV). It is reasonable to assume that the direct object has moved to Spec,CP, so this could be a test case for the predictions of the analysis above. However, topicalization is not possible in relative clauses.

- (42) *k'usl-u-n and doktär yä-fäwwäs-ä-bbät mädhanit
wound-DEF-ACC a doctor C-heal.PF-3MS-with.it medicine
the medicine with which a doctor healed **the wound**

Thus, Spec,CP (for relative clauses) never seems to be filled with phonologically overt material.

APs are a slightly more complicated case. Much research on adjective-internal syntax (Abney 1987, Kennedy 1997) has adopted a structure where adjectives have an Extended Projection (Grimshaw 2005), like other lexical heads. The extended projection is headed by a Degree morpheme, which projects a DegP, as in (43).

- (43) [DegP Deg [AP A]]

Following Abney (1987:305), Kennedy (1997:124) argues that measure phrases (*six feet tall*, *fifty yards wide*) are generated in the specifier of DegP, with the following adjective as the head of AP. However, attributive measure phrases in Amharic are ungrammatical with a following adjective, i.e., it is only possible to say *a six-foot fence* and not *a six-foot-tall fence*.

- (44) siddɨst metɨr (*rädʒdʒɨm) at'ɨr
 six meter (tall) fence
 a six-meter fence

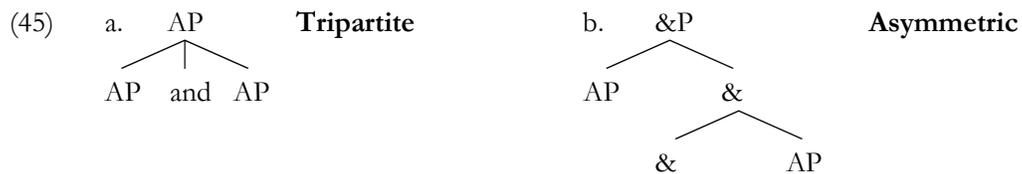
I conclude that the specifier positions of relative CPs and DegPs in Amharic are unfilled, so it cannot be determined whether or not the definite marker would attach to these elements. It may

be the case that other languages with prosodically dependent definite markers that are amenable to this style of analysis (perhaps Bulgarian) can serve as a testing ground for this prediction.

4.5.2 Coordination

In Section 4.2, data was presented on conjoined APs, CPs and NPs that are definite-marked (see (24) - (26)). The key generalization is that definite marking is obligatory on both conjuncts.

The impact of the coordination data on the Local Dislocation analysis depends on how coordination is analyzed syntactically. If coordination structures are either tripartite or asymmetric (as in (45)a and (45)b respectively), incorrect predictions are made depending on the phase-hood of the conjoined structure and &P. If the topmost node is a phase in either structure, then it is predicted that the definite marker would attach to the right edge of the rightmost conjunct. If the two APs in the tripartite structure are separate phases, then they should be treated like other AP-sequences, with obligatory marking on the first AP. If &P is not a phase, then the definite marker should simply attach to the closest accessible head in Spec,&P.



None of these predictions are true, and the overall problem seems to be that the definite marker ends up on not just one, but both conjuncts. However, there is an alternative analysis of coordination proposed by Goodall (1987) which can properly capture the data.

Goodall (1987) argues that it is possible to have pairs of nodes in a tree for which neither the dominance relation nor the precedence relation holds. These nodes may have dominance and/or precedence relations with other nodes, but they do not with each other. This results in, as Goodall phrases it, the nodes existing in “parallel planes” within the same tree, as if there were two trees with one pasted on top of the other. Goodall claims that coordinate structures instantiate this possibility. In a given coordinate structure, no pair of nodes that consist of one node from one conjunct and the other from the other conjunct will be in a dominance or precedence relation with the other.

Goodall assumes that “phrase markers” (a collection of statements about the phrase structure of a sentence) are used to represent syntactic structure (formally, phrase markers are slightly more restrictive than trees, although most phrase markers can be converted into trees). In his analysis of coordination, Goodall proposes that the phrase marker for the sentence in (46)a contains two component sentences, which are in (46)b.

- (46) a. John sleeps and eats doughnuts.
b. John sleeps. John eats doughnuts.

The tree is essentially derived by taking the union of all the nodes in (46)b, crucially assuming that non-terminal nodes which dominate the same terminals are not distinct. Thus, there is essentially only one DP node for *John*, and one TP node for the whole sentence, but two distinct verbal projections -- the nodes of which neither dominate nor precede the nodes of the other. This approach obviously raises the question of how the two distinct verbal projections are pronounced. Goodall (1987:23) proposes a linearization principle that has the effect of imposing

a precedence relation on items that are unordered. In other words, the coordinate structure is “pulled apart” at linearization so that the two conjuncts can be pronounced serially.

Goodall’s account at first seems to make the wrong predictions for the Amharic data. If the coordinate structure is “pulled apart” at linearization, then it will seem just like any other linearized string of adjectives. However, it is probably a simplification to view Linearization as a unitary operation that simply converts a tree (or phrase marker) to a linearized string. Bobaljik (2002) and Embick (2003) have both argued that Linearization is comprised of several sub-operations, and I adopt Embick’s proposals, which separate Linearization into three stages. The first stage (Adjacency) is calculated from the hierarchical relations and relates members of a category to a phrase, e.g., from the tree $[_{DP} D NP]$ the relation $[D * NP]$ is calculated. The second stage calculates the precedence relations of all the terminal elements of the phrases, which Embick terms Concatenation. The final step is Chaining where all the information from the previous processes is represented in a linear sequence.

Following Embick (2003), I assume that Local Dislocation occurs at Concatenation. My proposal concerning coordination is that conjuncts are not linearized until the very latest stage, i.e. Chaining. Note that during Concatenation and other earlier stages of linearization, various morphological operations can occur and alter the linear relations. It is not until Chaining, then, that the linear order is actually set, and the “pulling apart” of the conjuncts is simply delayed until the very last step before pronunciation. Since the “pulling apart” does not happen until after Concatenation, conjuncts are not ordered with respect to each other when Dislocation happens, as shown in (47).

$$(47) \quad [-u * \left\{ \begin{array}{l} t\text{llik}' \\ t'\text{ik}'\text{ur} \end{array} \right\} * \text{bet}]$$

The definite marker precedes both the adjectives, and the noun *bet* “house” follows them, but the adjectives *tʰlʰk* “big” and *tʰkʰur* “black” are unordered with respect to each other. This assumption allows for several different possibilities in accounting for the “double” definite marking. It could be argued that Local Dislocation is subject to a version of the Coordinate Structure Constraint (Ross 1967) that blocks movement into (as well as out of) a single conjunct (see also Hankamer 2008 where it is argued that dissociated morphemes must be inserted in all conjuncts of a coordinated structure.) Alternatively, Local Dislocation could be reformulated such that if two elements are equidistant in terms of precedence from the definite marker, the definite marker must dislocate with both.¹⁸ Regardless, it is now possible to generate the double definiteness marking seen on conjuncts, while maintaining the analysis developed above.¹⁹

In (47), I am abstracting away from the conjunction itself. Goodall (1987:31-3) proposes that the conjunction is unordered along with the conjuncts, and that it is placed between them via the linearization principle. This may predict that the conjunction would be a host for the definite marker. However, there is another alternative to the position of the conjunction that keeps it from being definite-marked and connects to previous work on coordination and Local Dislocation.

¹⁸ Ideally, this could be made to follow from a general principle about how all post-linearization operations treat elements that are equidistant in precedence.

¹⁹ One might suppose that the conjoined adjectives would be already linearized with respect to each other since they have already been spelled out, i.e. taken all the way through PF to chaining. Here, the difference between phase and spell-out domain is crucial. The spell-out domain of the AP phase includes the head A and its complement (if there is any), but not the AP node itself. Recall that under Goodall’s analysis, there are actually two distinct AP nodes since they dominate different terminal items. The coordinate structure cannot be fully pulled apart then, until both top AP nodes are also linearized, i.e. as part of the next largest spell-out domain, the DP. This provides evidence that “phase” and “spell-out domain” are really separate objects, which has not been necessary to assume previously.

The Latin conjunction *-que* is often cited as an example of Local Dislocation (Embick and Noyer 2001, Embick 2003; see also Marantz 1988). It undergoes Local Dislocation to attach to the first head of the second conjunct.

(48) diu noctu-**que** ‘by day and by night’ (Embick 2003: (6))

The Local Dislocation of *-que* does not seem to be sensitive to phase impenetrability. If each of the conjuncts is a phase, their domains will have been already spelled out before *-que* needs to move (assuming syntactic structure is built from the bottom up and that a phase is spelled out after its phase head is merged). Local Dislocation should then not be able to move *-que* within the conjunct. To address this problem, I suggest that *-que* is a part of the spell-out domain of the second conjunct. This is not incompatible with theories about the syntax of coordination (especially a theory that endorses &P). Also, in discussions of *-que*, it is assumed that *-que* is positioned between the two conjuncts and that all material has already been linearized.

However, if *-que* requires a host to its left, then why does it not attach to the final head in the first conjunct? A string-vacuous application of Local Dislocation would seem more economical. If, though, *-que* is in the spell-out domain of the second conjunct, it is correctly predicted to attach within the second conjunct, and could not attach to the first conjunct at all.²⁰

To return to Amharic, if the conjunction is part of the second conjunct, it is not predicted to host the definite marker (since it will not be at the right edge of the conjunct).

Overall, then, the Amharic coordination data can be accounted for with a Local Dislocation

²⁰ There is a second way in which the Local Dislocation of *-que* may not respect phase impenetrability. Even if *-que* is part of the spell-out domain of the second conjunct, it is predicted that it will “skip” spell-out domains (e.g. relative clauses) at the left edge of the second conjunct, just like the Amharic definite marker. There is a limited amount of data on *-que* in the literature, so it remains to be seen whether this prediction is borne out.

analysis using Goodall's (1987) approach to coordination, and by assuming (supported by evidence from *-que*), that a conjunction is contained within the second conjunct of a coordinated structure.

4.5.3 Embick 2003 and Heck, Müller and Trommer 2008

In Embick 2003, it is suggested that PF operations apply cyclically, although there is no discussion of phase impenetrability *per se*. In this section, I begin by examining Embick's (2003) analysis of French prepositions and determiners and show how it fits with the assumptions about phase impenetrability argued for here.

In French, certain prepositions (*à* and *de*) and certain definite determiners (*le* and *les*) usually combine to form one portmanteau morpheme. However, they do not combine if the determiner attaches to a vowel-initial word.

- (49) a. du chat (*de le chat)
b. de l'arbre (*du arbre) (Embick 2003: (38a), (40))

Embick proposes that (49)a is an instance of Lowering from P-to-D, whereas in (49)b the determiner undergoes (string-vacuous) Local Dislocation to attach to the noun (but see Teeple 2007 for a different perspective). However, Lowering precedes Local Dislocation, so it may seem as if D can never attach to a vowel-initial word (P will always lower to D first). If PF operations apply cyclically, though, the determiner can attach to the noun during the DP cycle, i.e. during the spell-out of the DP phase. This bleeds Lowering at the next cycle since the D has adjoined to the N and is no longer a separate head on its own.

The account of phase impenetrability here may seem to prevent P-to-D Lowering at all. D will have been spelled out by the time P-to-D Lowering is supposed to happen, i.e. it is within an impenetrable chunk of material. However, D is at the edge of the domain, and the edge is still accessible to operations since its linearization has not yet been set. Moreover, Embick (2003) suggests that vocabulary is not inserted at D during its initial spell-out. Combining these ideas, P can licitly attach to the edge of the DP domain, and when vocabulary is inserted for the cycle that contains P, it spells out the adjoined P and D as one item – the portmanteau morpheme. Thus, the conclusions reached in Embick 2003 about cyclicity with respect to French can be maintained in the current analysis of phase impenetrability.

Another phase-based analysis deserves comment here: the analysis of Scandinavian definite marking in Heck, Müller and Trommer 2008 (henceforth, HM&T). The analysis is built on the assumption that DP is a phase and N is associated with a [DEF] feature. HM&T propose that, in order to be accessible later in the derivation, [DEF] must move to the edge of the DP. Specifically, they propose that [DEF] moves to D when there is a prenominal AP, with the higher and lower copies of [DEF] spelled out in Swedish (*den gamle best-en* ‘the old horse-DEF’) but just the higher copy in Danish (*den gamle best* ‘the old horse’).

The account is attractive in its appeal to phases, but it is not easily applicable to Amharic. Suppose that [DEF] moves to D in Amharic when there is a prenominal AP. At least one copy of the definite marker should then precede the AP, like *den* does in Swedish and Danish. However, as shown above, the definite marker always follows the AP in Amharic.²¹ One could say the definite marker undergoes Local Dislocation with the AP, but then the HM&T analysis would essentially reduce to the analysis here. Another option could be that the

²¹ It cannot be that only the lowest copy of [DEF] is spelled out (i.e., [DEF] on N) since this would predict that the noun would have the definite marker and not the adjective.

[DEF] feature moves to right-adjoin directly to the AP. However, this is not a valid movement for features under the classical formulation of feature movement in Chomsky 1995, and even if it were licit, it is unclear why this would be licensed in Amharic but not Scandinavian, where definite markers are similarly enclitic.

An anonymous reviewer of the published version of this chapter proposed a variation on HM&T 2008 (referred to below as ‘the variation’) that can generate the Amharic facts. Assume that a definiteness feature [DEF] is generated as part of N (N+DEF) and [DEF] must always be visible at the left edge of a nominal constituent. This results in multiple copies of [DEF] within the DP, and a set of ordered rules determine which copies are spelled out. The relevant representations (along with how they are spelled out) and the spell-out rules (along with what effect they have) are below.

- (ii) a. [DEF N+DEF] = bet-u = ‘the house’
 - b. [DEF AP [DEF N+DEF]] = t̩llik’-u bet = ‘the big house’
 - c. [DEF AP [DEF AP [DEF N+DEF]]] = t̩llik’-u t’ik’ur(-u) bet = ‘the big black house’
- I. Delete copies of DEF without an appropriate host (e.g., leftmost DEF in (iabc)).
 - II. Spell out the highest copy of DEF (the newly highest copy, e.g., N+DEF in iia, AP [DEF in iib)).
 - III. Delete the lowest copy of DEF (e.g., N+DEF in iib).
 - IV. Spell out all (remaining) copies of DEF (e.g., DEF that is third from left in iic).

The variation generates the basic facts, but it is unclear how it could extend to some of the more complicated definite marking patterns that the Local Dislocation analysis can easily cover (e.g. compounds as described in Section 5 -- would each N have [DEF]? If so, the wrong predictions are made). Regardless of how the empirical facts play out, though, the variation has some serious conceptual problems. The variation discards the central insight of HM&T 2008 that [DEF] must move to the edge domain of a phase in order to be visible to higher probes. In the variation, it must be stipulated that [DEF] always moves to be at the left edge of the structure, regardless of phases or edge domains, and this undermines the theoretical plausibility of the feature movement. It is also unclear where [DEF] is moving to -- probably not to D, but if it is not moving to a head, this (again) goes against the classical formulation of feature movement as head-adjunction (Chomsky 1995).

The variation also requires a new analysis of the Scandinavian definite marking facts treated in HM&T 2008, which leads to some unwelcome consequences. First, it must be stipulated that, in Scandinavian, [DEF] does not undergo feature movement from an [N+DEF] structure, unlike in Amharic (see *ia*, and also unlike in HM&T 2008 where this comes for free as a result of [N+DEF] being in the edge domain of the DP phase). Also, in Amharic, Rule I prevents [DEF] from being realized when it lacks a host, i.e., it encodes the fact that the definite marker is a suffix. In Scandinavian, though, the reviewer claims that Rule I prevents [DEF] from being realized when its host would be an adjective. These are two distinct morphological problems that should be treated separately: whether [DEF] has a host at all, and whether the morphophonological inventory of the language allows for a realization of [DEF] in the context of a particular host. Even HM&T 2008 does not easily account for all the Scandinavian data, requiring that *-ende* nouns in Danish and Swedish are participles (despite evidence in Hankamer and Mikkelsen 2002 to the contrary; see discussion in HM&T 2008:230), and requiring that

restrictive relative clauses are merged as sisters to N in Scandinavian, which is otherwise unmotivated (HM&T 2008:230). It thus cannot be taken as a benefit of HM&T 2008 or the variation that they can easily account for both Amharic and Scandinavian definite marking.

Overall, it seems a feature movement analysis of Amharic definite marking must either be motivated in terms of phases and not easily able to account for the data (HM&T 2008) or capable of generating the data but requiring some fundamental stipulations (the variation).

Taken as a whole, it has been demonstrated in this section that the definite marker attaches to a host via the morphological operation Local Dislocation. The definite marker seems to attach non-locally in some cases due to a combination of factors: the phase-hood of the elements that immediately follow it, the impenetrability of phases at PF, and the availability of the edges of a domain to serve as hosts.

5 EXTENDING THE ANALYSIS: ADDITIONAL EVIDENCE FOR LOCAL DISLOCATION

The discussion so far has focused on a relatively small set of data: definite-marking in DPs that either have no modifiers, or contain an adjective and/or a relative clause. In this section, I extend the analysis to data from some additional DP-internal phenomena in Amharic: free relatives, nominal compounds, and numerals. I show that the placement of the definite marker in all cases can be accounted for under a Local Dislocation analysis of definite marking.

5.1 Free Relatives

Amharic free relatives (discussed in Leslau 1995:93-95, Kapeliuk 1988:93-95) have the external distribution of DPs, and except for the lack of head noun, they are formally identical to headed relatives. They do not have *wh*-words, they contain the complementizer *yä-*, and, crucially, they can take the definite marker. An example is in (50).

(50) **izzih yä-mät't'-a-w** wändimm-e näw

here C-come.PF-3MS-DEF brother-my is

The one who came here is my brother. (Leslau 1995:93)

In (50), the free relative *izzih yämät't'aw* 'the one who came here' is indistinguishable from the comparable headed relative (*izzih yämät't'aw säw* 'the person who came here') except of course for the lack of head.²²

The definite marker always attaches to the right edge of a free relative. It cannot attach to any free relative-internal material, as in (51).

(51) * **izzih-u yä-mät't'-a** wändimm-e näw

here-DEF C-come.PF-3MS brother-my is

The one who came here is my brother.

²²Some Amharic free relatives do not take a definite marker (see e.g., Leslau 1995:93). However, these are probably best analyzed as 'existential' free relatives (Caponigro 2003: Ch.3) which never refer to maximal entities and appear as complements of certain existential and modal predicates.

This is again very similar to definite-marking in headed relatives, where the definite marker always attaches to the right edge of the relative clause. In order to determine whether or not the Local Dislocation analysis makes the right predictions here, though, it is necessary to have a better sense of the internal syntax of free relatives.

A central question for syntactic research on free relatives is whether free relatives are DPs (like headed free relatives without the head, more or less) or CPs (more like interrogatives). Amharic free relatives seem more compatible with DP theories, not only because of the distributional and formal similarities between free relatives and headed relatives, but also because the D is overtly realized as the definite marker. I will thus discuss DP accounts first, but it is important to note that the primary goal of the section is not to develop a particular analysis of Amharic free relatives. The aim is just to investigate whether any of the previously-proposed analyses of free relatives can predict the position of the definite marker given the Local Dislocation analysis of definite marking.

Under one version of the DP analysis of relative clauses, free relatives are structurally identical to headed relatives but the head of the relative clause is a null category of some kind (see e.g., Groos and van Riemsdijk 1981, Grosu 1994, et al.). Applying this kind of analysis to the Amharic data yields (52).

(52) [DP -u [NP [CP tzzih yämät't'a] [NP null]]]

If the Local Dislocation analysis of the definite marker is assumed, the position of the definite marker is correctly predicted. (52) is linearized as in (53), and then the definite marker undergoes Local Dislocation with the CP.²³

(53) [-u * [tzzih yämät't'a]] → [tzzih yämät't'a-w]

It is more difficult to straightforwardly adapt analyses where free relatives are CPs to the Amharic data (see e.g., Izvorski 2000, Caponigro 2002 and references therein). However, as Caponigro (2003:79-80) observes, most of these theories must postulate arbitrary nominal characteristics for C or the CP projection to account for the DP-like distribution of free relatives. For example, in Caponigro 2002, the free relative is an interrogative CP with a DP 'shell' above. The D head is covert ('e' in (54)), and is licensed by the wh-phrase moving to Spec,DP.

(54) [DP wh-XP_i [D' e [CP ... t_i ...]]]

If this analysis is transposed directly to the Amharic data, the position of the definite marker is still predicted by the Local Dislocation analysis. The wh-phrase would presumably be a null operator, and thus not present after Vocabulary Insertion. I assume that D would be overt and

²³ There is a different version of the DP analysis where the 'head' of the free relative is a wh-phrase which is either merged or moved to a position outside the free relative (see e.g., Grimshaw 1977, Citko 2002 and many others). Since Amharic relative clauses lack wh-phrases, it may be that a null operator would merge or be moved to a position external to the free relative. The resulting linearization would be essentially the same as (53) so the definite marker would again be correctly predicted to attach to the right edge of the CP.

realized by the definite marker. When linearized, then, the definite marker would precede a previously spelled-out CP, exactly as in the DP analysis of free relatives.

To sum up this subsection, no matter how the syntax is worked out, the correct position of definite marker is predicted. This is a welcome result for the Local Dislocation analysis, and it is not unsurprising. All that the Local Dislocation analysis requires to make the correct predictions is that the definite marker precedes the relative clause CP at Linearization.

5.2 Compounds

Nominal (noun-noun) compounds are very common in Amharic (see e.g., Leslau 1995:247-250, Hartmann 1980:310-315). Some examples are in (55).

- (55) a. tɪmhɪrt bet b. bunna näggade c. mäs'haf s'afi
learning house coffee merchant book writer
school coffee merchant author

All of the compounds I examine here are endocentric and right-headed.²⁴ Each noun-noun compound is treated as 'one word' with respect to the syntax and the morphology, a single unit that cannot be separated syntactically and receives a single set of the relevant nominal inflection. For example, no adjective can intervene between the two members of a compound, even if the adjective could only be interpreted as modifying the second member of the compound.

²⁴ Note that (55)c is an instance of what Fabb (1998) calls a 'synthetic compound' where the head of the compound is deverbal, and the left-hand component is the complement of the verb.

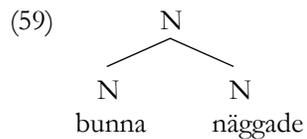
- (56) a. *bunna rädʒdʒim näggade b. rädʒdʒim bunna näggade
 coffee tall merchant a tall coffee merchant

- (57) a. *mäš'haf rädʒdʒim s'afi b. rädʒdʒim mäš'haf s'afi
 book tall writer a tall author

Also, the plural suffix and the accusative case suffix attach only to the second member of the compound, as if the compound were a single N head. Examples with the plural suffix are in (58).

- (58) a. tɪmhɪrt bet-otʃtʃ 'schools'
 b. bunna näggade-wotʃtʃ 'coffee merchants'
 c. mäš'haf s'afi-wotʃtʃ 'authors'

Given this evidence, I propose that Amharic nominal compounds have the following N-adjunction structure (see Spencer 1991:319 for arguments for this structure for similar compounds in Turkish).



The second member of the compound is the head N, and the first member is a second N adjoined to the head. This immediately prevents adjectives from intervening between the two heads, and allows for the entire compound to be treated as one nominal head by the morphology.²⁵

Definite markers attach only to the second member of a compound.

- (60) a. tɨmhɨrt bet-u ‘the school’
 b. bunna nǎggade-w ‘the coffee merchant’
 c. mäs’haf s’afi-w ‘the author’

Under a Local Dislocation analysis of definite marking, this is easily accounted for given the Typing Assumption on Local Dislocation (Embick and Noyer 2001, Embick 2003). In Embick and Noyer 2001 and Embick 2003, two types of morphological objects are distinguished: morphosyntactic words (M-words) and subwords (S-words). The definitions of these objects are below.

- (61) a. M-Word: Potentially complex head not dominated by further head-projection
 b. S-Word: Terminal node within an M-Word and not an M-Word

(Embick and Noyer 2001:574)

²⁵ In the literature on compounds (for an overview, see Spencer 1991, Fabb 1998), it has often been an important question whether the adjunction in compounds like occurs in the lexicon or in the syntax. There is no lexicon in Distributed Morphology, and Harley (to appear) has developed a Distributed Morphology account of compounding where it is syntactic incorporation. Her account works for the Amharic data (see below), but it is worth noting that it does not alter the conclusions here at all if the adjunction were to take place in the lexicon.

In (59), the topmost N node is a M-word, whereas each lower N node is a S-word (see also Harley to appear for a Distributed Morphology account of compounding that also analyzes compounds as M-words). The Typing Assumption on Local Dislocation states that only like can dislocate with like, i.e. M-words can only dislocate with M-words and S-words can only dislocate with S-words. The crucial point here is that the definite marker is an M-word; it is a D head not dominated by further head-projection. Therefore, it must dislocate with M-words, and in this case, with an entire compound.

(62) [-u * [bunna näggade]] → [bunna näggade-w]

If it were to dislocate with the first member of the compound, it would go against the Typing Assumption since it would dislocate with an S-word. In effect, compounds are another kind of morphological unit that is opaque to (M-word) Local Dislocation. Definite marking on compounds can thus be straightforwardly accounted for under a Local Dislocation analysis, using an independently proposed restriction on the mechanics of Local Dislocation.

5.3 Numerals

In this section, I examine patterns of definite marking when a DP contains cardinal numerals (*five, eighteen, fifty* etc.; I will refer to them henceforth simply as numerals). Data from numerals not only provides additional support for the Local Dislocation analysis of definite marking, but shows how the Local Dislocation analysis can be used to distinguish between competing analyses.

Numerals precede the noun in Amharic (see Leslau 1995:251-265 and Kapeliuk 1994:78-81).

- (63) a. *sost tämari-wotʃtʃ* b. *amsa siddist tämari-wotʃtʃ*
 three student-PL fifty six student-PL
 three students fifty six students

In a definite DP, the definite marker attaches to the right edge of the numeral.

- (64) a. *sost-u tämari-wotʃtʃ* b. **sost tämari-wotʃtʃ-u*
 three-DEF student-PL
 the three students

The same pattern holds for higher, internally complex numerals, both additive and multiplicative.

- (65) a. *asra aratt-u tämari-wotʃtʃ* b. **asra-w aratt tämari-wotʃtʃ*
 ten four-DEF student-PL
 the fourteen students

- (66) a. *hulätt mäto-wotʃtʃ-u tämari-wotʃtʃ* b. **hulätt-u mato tämari-wotʃtʃ*
 two hundred-PL-DEF student-PL
 the two hundred students

Even extremely complex numerals can only have the definite marker at the right edge.

- (67) and milyon aratt mäto hamsa *ʃih-otʃtʃ-u* wättaddär-otʃtʃ
one million four hundred fifty thousand-PL-DEF soldier-PL
1, 450,000 soldiers

In (67), it is ungrammatical for the definite marker to be attached to any other element besides ‘thousand.’²⁶

The pattern of definite marking with numerals is very familiar: the definite marker often appears to ‘skip over’ large amounts of linguistic material to attach to the right edge of a constituent.²⁷ Under the Local Dislocation analysis, it must be that this constituent is either part of a phase that has been previously spelled-out, or, as discussed in Section 5.2, that it is part of a compound that comprises one M-word. Whether either of these options are plausible depends on what is assumed about the syntax of numerals.

Within the syntactic literature, there are three main analyses of numerals: the specifier analysis, the functional head analysis and the nominal/mixed analysis. In the specifier analysis, the numeral is an NP or AP specifier of a NumP or QP projection (see e.g., Jackendoff 1977, Li 1999, Shlonsky 2004, Zabbal 2005).

²⁶ One may notice that higher numerals tend to be marked for plural agreement (i.e., have the suffix *-otʃtʃ*). I do not attempt to derive this here, especially because the generalization has yet to be confirmed. Leslau (1995:258) notes only that the numeral may take a plural marker but does not say under what conditions.

²⁷ The pattern here is also reminiscent of Hebrew numerals, which may precede definite markers (e.g. *xamišim ha škalim* ‘fifty the shekels’). However, the Amharic and Hebrew patterns probably have different analyses. Danon (1997) demonstrates that the numeral in Hebrew is in the construct state, and Amharic has no construct state (see Section 2). For example, in Hebrew, an adjective may not intervene between the numeral and the noun, but such intervention is standard in Amharic (e.g. *sost-u tatari tämari-wotʃtʃ* ‘three-DEF diligent students’).

(68) [DP D [NumP/QP [NP/AP *asra aratt*] [Num'/Q' Num/Q [NP *tämari-wot*]{t}]]]

NPs have never been considered to be phases, but I assumed earlier that APs are phases. Given this, the specifier analysis can predict definite marking in numerals only if the numeral is an AP specifier.²⁸ In that case, the definite marker dislocates with the previously-spelled out AP.

(69) [-u * [~~*asra aratt*~~] * *tämari-wot*]{t}] → [*asra aratt-u* * *tämari-wot*]{t}]

If the numeral is an NP, though, since it will not have been previously spelled out, it will be accessible to Local Dislocation. The definite marker will then be incorrectly predicted to dislocate with the first head in the NP (i.e. *asra* ‘ten’, which is ungrammatical, see (65)b).

In the functional head analysis, a numeral is a Num/Q (see e.g., Ritter 1991, Zamparelli 2000), and with simple numerals, the definite marking facts are easily accounted for. The definite marker dislocates with the numeral that it immediately precedes.

(70) a. [DP -u [NumP/QP *sost* [NP *tämari-wot*]{t}]]]

b. [-u * *sost* * *tämari-wot*]{t}] → [*sost-u* *tämari-wot*]{t}]

For complex numerals, it is slightly more complicated. The functional head analysis was not developed in order to account for complex numerals, and it has been remarked that it is

²⁸ It is not a trivial question whether numerals are adjectives or nouns. In many languages, numerals display mixed adjectival and nominal properties with lower numerals having more adjectival properties and higher numerals having more nominal properties (Corbett 1978). I leave open the question of how Amharic numerals should be analyzed; note, though, that some analyses discussed later are indeed plausible even if the numerals are analyzed as nouns.

implausible for a very internally complex numeral to be a single head (see e.g., Zweig 2005).

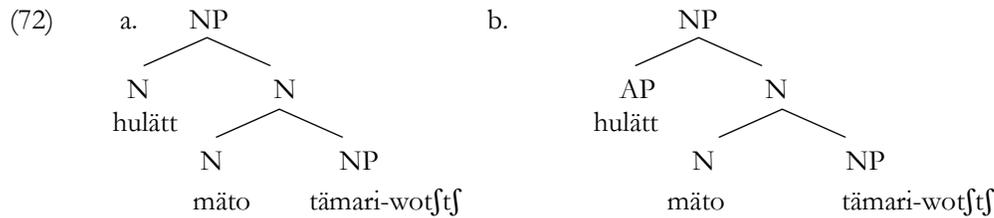
However, it is well-known that heads can have complex internal structure, and if this possibility is granted for numerals, the definite-marking facts fall out. A numeral would be a single complex head, i.e., an M-word, and just as with compounds above, the definite marker would dislocate with the entire M-word.

The nominal/mixed analyses take an entirely different approach to numerals, attempting to strike a balance between the adjectival and nominal properties associated with numerals (see e.g., Zweig 2004, 2005, Ionin and Matushansky 2005, 2006, henceforth I&M). In I&M 2005, a simple cardinal numeral is a lexical N that takes an NP complement, or an AP specifier of NP (depending on whether simple numerals are adjectival in a given language).

- (71) a. [NP [N^{sost} [NP *tämari-wotʃtʃ*]]]
b. [NP [AP *sost*] [N^{sost} *tämari-wotʃtʃ*]]

Either (71)a or (71)b makes the correct predictions for definite-marking. In (71)a, the definite marker would simply dislocate with the N *sost* ‘three,’ whereas in (71)b it would dislocate with the previously spelled-out AP.

The nominal/mixed analyses are less successful with complex numerals. For multiplicative numerals, I&M (2005) propose two structures, one where both numerals are nominals, and one where one of the numerals is an AP.



Neither version correctly predicts the definite marking facts. In (72)a, the definite marker would dislocate with the first N since NP is not a phase, resulting in the ungrammatical string **hulätt-u mäto tämarivotʃtʃ* (see (66)b). In (72)b, the same result is achieved since the definite marker would dislocate with just the AP. The situation does not improve with additive complex numerals. I&M (2005, 2006) propose additive numerals are (sometimes asyndetically) coordinated NPs where either both instances of the head noun undergo right-node raising, or the leftmost head noun is elided. In Amharic, though, conjoined constituents must both take the definite marker (see Section 4.2), so the following ungrammatical form would be predicted.²⁹

(73) *asra-w aratt-u tämar-i-wotʃtʃ
 ten-DEF four-DEF student-PL

Taking stock, it has been shown that the Local Dislocation analysis of definite-marking is compatible with several analyses of numeral syntax: the specifier analysis, the functional head analysis, and the nominal/mixed analysis of simple numerals. It also distinguishes between the analyses -- the nominal/mixed analysis of complex numerals makes incorrect predictions.

²⁹ It is possible to overtly coordinate numerals in Amharic with the preposition *kä-* ‘with,’ e.g. *asra siddist kä-baya ammist* ‘ten six with-twenty five’ = sixteen dollars and twenty five cents. However, these numerals are only used for indicating monetary amounts and telling the time.

Overall, this section has extended the analysis of definite marking to three new empirical domains: free relatives, compounds and numerals, and in each case, it was found that the Local Dislocation analysis can correctly predict definite-marking given certain independently-proposed and/or plausible analyses of the relevant constructions.

6 THE ANALYSIS OF DEFINITE MARKING : DEFINITENESS AGREEMENT

It was suggested earlier that optional definite markers (i.e., definite markers on non-initial adjectives) are the reflex of definiteness agreement, and in this section, I develop an analysis of this agreement. I begin by motivating the assumption that optional definite marking is in fact definiteness agreement.

In many languages, adjectives and other DP-internal constituents agree with N in terms of phi-features. However, agreement in definiteness is much rarer, found primarily in Amharic and fellow Semitic languages Arabic and Hebrew (see e.g., Borer 1999, Danon 2001, Shlonsky 2004, Pereltsvaig 2006 and Section 6.4 for discussion).³⁰ Definiteness agreement does not

³⁰ See also Hughes 2003 on definiteness concord in Swedish. It is also possible to have multiple definite markers within one DP in Modern Greek, but this is not usually analyzed as definiteness agreement. Such DPs are called polydefinites (see Kolliakou 2004, Campos and Stavrou 2004 and references therein).

- | | | |
|-------|--|--|
| (iii) | a. i pena i asimenja
the pen the silver
the silver pen (Campos and Stavrou 2004:137) | b. * o ipotithemenos o antagonismos
the alleged the competition
the alleged competition (C&S 2004:144) |
|-------|--|--|

Greek polydefinites are associated with a range of syntactic and semantic effects that are not present in Semitic. For example, non-predicative adjectives are ungrammatical in polydefinites (see iib), but grammatical with Semitic definiteness agreement (e.g., *ba-sar ba-kodem*, the-minister the-former, Shlonsky 2004:1492, fn.30). In Amharic, initial investigation indicates that non-predictive adjectives (e.g. *wanna* ‘chief’, *yäk’ädmo* ‘former’) are allowed with definiteness agreement.

- | | | |
|------|--|--|
| (iv) | a. räḍḍim-u wanna(-w) azzaḗ
tall-DEF chief(-DEF) commander
the tall commander in chief | b. räḍḍim-u yäk’ädmo(-w) kántiba
tall-DEF former(-DEF) mayor
the tall former mayor |
|------|--|--|

involve phi-features, and the definiteness feature does not necessarily originate on the noun. In his cross-linguistic study of agreement, Corbett (2006) even suggests that, in Hebrew, multiple realizations of a definite marker can never be agreement, but instead are the effect of some “mechanism for marking definiteness multiply on the noun phrase” (136).

However, Corbett’s suggestion is colored by his assumption that nominal phrases are NPs in Hebrew. If the DP hypothesis is assumed, optional definite marking in Amharic meets many of Corbett’s criteria for canonical agreement. According to Corbett, in canonical agreement there is always a controller which determines the agreement. The controller should be present and have overt expression of the relevant features. In my analysis of definite marking, the controller (D) is present as obligatory definite marking in most cases when there is optional definite marking, and also overtly expresses the relevant feature (definiteness). The target canonically has a bound morpheme expression of agreement which is regular and productive, which is true in Amharic. Granted, optional definite marking is optional and does not repeat on all elements within DP, which are non-canonical properties of agreement. However, this does not necessarily render optional definite marking not agreement.

Moreover, nouns, adverbs, and other DP-internal categories never have optional definite marking; adjectives are the only categories that do. Although choosing which elements participate in agreement is a standard example of arbitrary language variation, certain categories are more common than others. In DP-internal agreement, the most frequent category to participate is adjectives (Corbett 2006:40, see also Anderson 1992:106), exactly the category that is marked in Amharic optional definite marking. Optional definite marking thus acts in line with cross-linguistic tendencies for DP-internal agreement.

Thus, Amharic seems to be like the other Semitic languages, but research is ongoing to investigate whether the semantic effects found in Greek polydefinites are not found in Amharic.

There are also some Amharic-internal reasons to consider optional definite marking agreement. To start, at least some other kinds of DP-internal agreement are optional. For example, adjectives optionally agree in number with indefinite nominals, and case concord is optional on non-initial adjectives (see Chapter 5 for further details on number agreement).

- (74) a. tɨgu(-wotʃtʃ) tāmari-wotʃtʃ b. tɨllik'-u-n t'ɨk'ur(-u-n) bet
 diligent(-PL) student-PL big-DEF-ACC black(-DEF-ACC) house
 diligent students the big black house (accusative)

Additional evidence that definiteness agreement is treated like DP-internal agreement comes from the fact that DP-internal agreement in general is being lost in Amharic. Younger and/or more urban speakers often do not have, or have difficulties judging, DPs with number and case concord. In these speakers, optional definite markers are also either ungrammatical or marginal, indicating that optional definite markers behave like other DP-internal agreement processes in terms of language change.

Considering then that optional definite marking meets many of the criteria of canonical agreement, and acts like DP-internal agreement both internally to Amharic and externally in terms of cross-linguistic norms, I conclude optional definite markers are the reflex of definiteness agreement.

6.1 Analysis of Definiteness Agreement

I assume a post-syntactic analysis of agreement, primarily because the agreement relation between adjectives and definite markers does not display many of the properties of syntactic Agree (see Section 3).³¹ The agreement between adjectives and definite markers thus happens during PF before Vocabulary Insertion and Linearization. The first operation is the insertion of an Agr node adjoined to the target of the agreement (i.e., the head on which the agreement features ultimately surface). After the Agr node is inserted, there is a Feature Copying operation that copies the relevant features from the node where they originate into the Agr node.³²

In Amharic, I propose that there is an optional rule which inserts an Agr node adjoined to A. The optionality of this rule captures the optionality of agreement.³³

(75) **Agr Insertion** (optional)

A → [A Agr]

³¹ In Chapter 5, it is shown that DP-internal agreement in phi-features (gender, number) is best analyzed as Agree. See Chapter 5, Section 4 for some discussion on how to reconcile this result with the idea that definiteness agreement is post-syntactic.

³² See also Halle and Matushansky 2006 for an account of Russian DP-internal agreement using Agr Insertion and Feature Copying.

³³ A reviewer of the published version of this chapter comments that the rule here does not explain why definiteness agreement is optional. However, by definition, optionality is unexplained variation -- if definite markers appeared on non-initial adjectives under particular conditions, the conditions would be built into the analysis and the extra definite markers would not be optional anymore. To the best of my knowledge, there are no such conditions. The best explanation for optionality in this case may be diachronic -- DP-internal agreement is being lost from Amharic, and a plausible stage of a phenomenon's disappearance from a language is one where it becomes optional. It is worth noting that the optionality would also not be explained under a Minimalist Agree analysis where adjectives optionally have an uninterpretable definiteness feature. The optionality would be in a different part of the grammar, but it would still be unclear why the uninterpretable definiteness feature was optional on adjectives in the first place.

The relevant Feature Copying rule for definiteness agreement is in (76).

(76) **Feature Copying**

The [DEF] feature on the closest c-commanding D is copied into the Agr node attached to Adj.

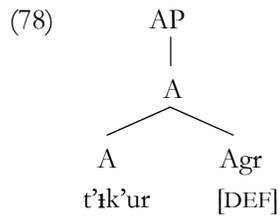
Agr Insertion must occur before Feature Copying (or else an empty Agr node would be in the representation at spell-out), and Feature Copying must not be able to occur if the adjective lacks an Agr node.³⁴ The Agr Insertion rule is straightforward, but Feature Copying has a locality condition, namely, that an adjective can only agree with the closest D to it. Assume the closest D is the particular D (call it D_1) that c-commands the adjective such that there is no other D that c-commands the adjective and is c-commanded by D_1 . This locality condition serves two purposes. First, it prevents an adjective from agreeing with the D internal to any DP complement it may have, or with any D in a preceding relative clause; these D's would not c-command the adjective. Second, it prevents an adjective within an AP complement or a relative clause from agreeing with the main D; it would not be the closest c-commanding D to the adjective.

To illustrate the analysis, consider the example in (77) where the adjective *t'ak'ur* “black” agrees in definiteness with the D.

³⁴ The fact that an adjective may participate in phi-feature agreement with the noun (have an Agr node), but not participate in definiteness agreement, seems initially problematic for this necessary assumption. However, definiteness and phi-feature agreement must use separate Agr nodes since they are spelled out as separate morphemes. I assume, then, that there is some way of differentiating the Agr nodes such that definiteness agreement is not accidentally triggered by the presence of an Agr node for phi-feature agreement. This differentiation may be as simple as the ordering of events in the Morphology (phi-feature agreement could precede definiteness agreement, and Feature Copying for D could target only empty Agr nodes).

- (77) t̪ll̪kʰ-u tʰkʰur(-u) bet
 big-DEF black(-DEF) house
 the big black house

In the Morphology, an Agr node is inserted on A, and then the [DEF] feature on D is copied into it.



At Vocabulary Insertion, the [DEF] feature in Agr is spelled out as *-u*, i.e. the definite marker.³⁵

There is an additional wrinkle in the data that needs to be accounted for: the definite marker on adjectives is feminine if the noun is feminine (e.g., *mākina* 'car').

³⁵ A reviewer of the published version of this chapter comments that the analysis as a whole does not explain why definiteness agreement applies only to adjectives - this is merely ensured by the Agr Insertion rule. However, I do not believe that current analyses of agreement must explain why a particular category is singled out for agreement. For example, in Minimalism, it is simply assumed that certain heads have certain features in the lexicon (e.g., T has uninterpretable phi features) but this only ensures that T participates in agreement and does not explain **why** T has those features to begin with. It is true that there are cross-linguistic tendencies in terms of what categories are singled out (see Corbett 2006), and future work will hopefully make the connection between typological tendencies and theoretical accounts of agreement explicit. However, for now, I do not believe an agreement analysis must explain why certain categories are targets of agreement.

- (79) tɪnnɪʃ-wa k'äyy(-wa) mäkina
 small-DEF.F red(-DEF.F) car
 the small red car

Adjectives do not typically agree in gender with N, so it is unlikely that *-wa* represents a fusion of [DEF] features from D and [FEM] features from N that are both in Agr nodes on A. Instead, I suggest that the “definiteness” agreement process targets all the features that comprise D, including the phi-features on D that agree with N. It is clear D must agree with N in terms of phi-features in any case since its realization depends on the gender and number of N, and it is easy to adjust the Feature Copying rule to simply copy all the features on D.

(80) **Feature Copying (Take 2)**

The features on the closest c-commanding D are copied into the Agr node attached to Adj.

The features on the Agr node are then spelled out just like the feature bundle that comprises D, effectively creating a copy of D that is attached to the adjective. This has the benefit of explaining why the same morpheme is inserted in the Agr node as in the D node – it is the same feature bundle.

Before concluding, it is necessary to clarify the consequences of this analysis for the theory of spell-out. Spell-out is often used to refer to the sending of a completed syntactic derivation to the PF branch of the grammar (and I have used it thus previously in the chapter). It therefore would occur **before** Agr Insertion and Feature Copying, since these operations

occur on the PF branch. However, I argued above that the Phase Impenetrability Condition holds post-syntactically, in that morphological operations cannot alter or target the nodes internal to a spell-out domain. Feature-Copying seems to be doing just that -- copying the features of a node that belongs to a higher spell-out domain (D) into a more embedded spell-out domain (the AP).³⁶

However, this problem is averted if “spell-out” is understood more strictly to mean the dual processes of Vocabulary Insertion and Linearization. This is when the derivation truly becomes a serially ordered sequence of lexical items and, eventually, phonological information. In Distributed Morphology, Agr Insertion and Feature Copying occur before Vocabulary Insertion/Linearization, i.e. before spell-out, so these processes would not be predicted to respect the Phase Impenetrability Condition. In the conclusion (Section 7), further implications of this idea for the architecture of the grammar are discussed, and I proceed now to discuss some remaining empirical issues.

6.2 The Interaction Between Optional and Obligatory Definite Marking

The current analysis predicts that every adjective is capable of receiving optional definite marking, even leftmost adjectives that have already been “def-marked” by the Local Dislocation of D. For example, consider a DP with only one adjective, which would be spelled out as (81).

(81) [-u * tɪllɪk'-u * bet]

³⁶ Note that this problem is not averted if a syntactic (not post-syntactic) account of agreement is assumed --- the Phase Impenetrability Condition holds in the narrow syntax as well.

(83) a. [DP [PP yä-bet] mäskot]

of-house window

the window of the house

b. [DP [PP yä- [DP [PP yä-näggade-w] bet]] mäskot] → yä-näggadew bet mäskot

of of-merchant-DEF house window

the window of the merchant's house (Leslau 1995:196)

In the simple example in (83)a, *window* has the possessor *the house*. *The house* can also take a possessor itself, *the merchant* in (83)b. However, this possessor precedes *house*, intervening between the *yä-* associated with *house* and *house* itself. This possessor (*the merchant*) also begins with *yä-*, which results in two consecutive phonetically identical *yä-* morphemes. Since only one *yä-* surfaces, coextensive haplology must have taken place.

Coextensive haplology has been successfully analyzed using Optimality Theory (see e.g., de Lacy 2000), and it makes sense in the context of the present analysis that haplology is part of the phonological operations. These operations presumably occur after the Morphology is completely finished, i.e. after any operations at Linearization. This would be after Local Dislocation, so the doubling of definite markers does not occur too late in the derivation to be eliminated. Since the elimination of one of the definite markers can be feasibly analyzed as coextensive haplology, I conclude that the prediction of “double definite marking” is not problematic.

6.3 Definite Marking in Demonstratives

There is usually no definite marking in a DP that contains a demonstrative (data repeated in (84)), but if the demonstrative DP contains an adjective, the adjective may optionally have a definite marker (as in (85); see also Julien 2005:113-114 for a similar pattern of facts in Danish).

- (84) a. ya bet b. *ya bet-u c. *ya-w bet
 that house that house-DEF that-DEF house

- (85) ya tɪllɪk'(-u) bet
 that big(-DEF) house
 that big house

Under the current analysis, this indicates the adjective is participating in definiteness agreement. Before sketching how the analysis works, though, it is necessary to determine the syntax of demonstratives.

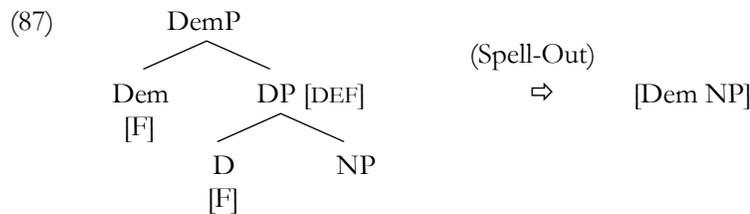
Demonstratives and definite determiners co-occur in a sizable number of languages (e.g., Greek, Javanese, Welsh, Rumanian), and this has led to the proposal that a demonstrative is not a D, but instead is its own type of head Dem which has a separate projection from DP. There are basically two approaches at play in the literature concerning the syntax of DemP: (a) DemPs are specifiers of some functional projection between D and NP (similar to adjectives, under a

Cinque (1994) analysis of adjectives) or (b) DemP immediately dominates DP (henceforth the DP-comp approach).

- (86) a. $[_{DP} D [_{XP} DemP X [_{NP} N]]]$ **Dem as Specifier**
 b. $[_{DemP} Dem [_{DP} D [_{NP} N]]]$ **DP-Comp**

The specifier approach is adopted in much of the work on Romance demonstratives (see e.g., Giusti 1997, 2002; Brugè 1996), whereas the DP-comp approach has been developed in recent accounts of demonstratives in Irish (McCloskey 2004) and Scandinavian (Julien 2005; see also Shlonsky (2004) who argues for both kinds of demonstratives in Semitic languages).

Either of these approaches (combined with the analysis of definite marking above) provide a way to understand the demonstrative facts.³⁷ Under the DP-comp analysis, the D head of the DP complement of a demonstrative is not spelled out in some languages since it is locally c-commanded by a head (Dem) which contains the same features.



³⁷ Whether or not demonstratives actually are specifiers or heads in Amharic is unclear from preliminary investigation. An adjective and its complement can be realized to the left of a demonstrative, seemingly indicating that demonstratives are not specifiers because an AP can move past them. However, the AP may have been extraposed to some adjoined position for prosodic reasons (it is heavy since it has a complement). Unfortunately, judgments on fronting an adjective without a complement past a demonstrative vary. Future research will hopefully clarify the issue, but it is not crucial here.

This mechanism can be thought of as a kind of feature unification at spell-out, and it is supported by the fact that it has been independently proposed to apply between two D heads by Bianchi (1999, 2000; albeit for different analytical purposes).

The conditions for feature unification are both met in Amharic: Dem can locally c-command D, and it has a consistent set of features with D. To be more precise about feature consistency, Dem and D must have the same value for any features they have in common in order to be consistent (e.g. both must be [+DEF]), but they are still consistent if they have some different features (e.g., the demonstrative has a semantic deixis feature that the determiner lacks). Julien (2005:112) suggests that the crucial features that must be consistent between Dem and D are number, gender and definiteness, and Amharic demonstratives are consistent in all those features with determiners. The demonstratives agree in number and gender with the head noun (just like D), and render the entire nominal phrase definite, as shown by the fact that demonstrative DPs are marked for accusative case (case-marking is differential with respect to definiteness).

- (88) a. ya bet that.M house b. ya-n bet
 yatʃtʃi set that.F woman that-ACC house
 ɪnnäzziya bet-otʃtʃ those.PL houses that house (acc.)

Hence, when D is spelled out (i.e. at Vocabulary Insertion), no Vocabulary Item is inserted because the features of D are unified with Dem. Thus, D has no phonological representation, and the demonstrative and the definite determiner seem to be in complementary distribution.

This successfully accounts for the lack of obligatory definite marking when there is a demonstrative, and it can also account for the optional definite marking in (85). Even though D is not spelled out, it is still present in the derivation as a separate bundle of features from Dem. This means that before Vocabulary Insertion, the structure of (85) is the same as any structure with a DP preceding an adjective (with the addition of the DemP on top). All of the features of D are present, so they can be copied into the Agr node on an adjective and realized as definiteness agreement.

The specifier analysis of demonstratives is similarly successful in accounting for the facts. In the specifier analysis developed in Giusti 1997, 2002, the demonstrative is inserted as a specifier to a functional projection between D and NP, and it obligatorily raises to Spec,DP (covertly in some languages). This is a plausible overt movement for Amharic since, in the unmarked order, demonstratives precede all other DP-internal elements (adjectives, relative clauses, and possessors).

To account for languages where determiners and demonstratives are in complementary distribution (e.g., Amharic), Giusti posits a ‘doubly-filled DP filter’ such that the specifier and head position of DP cannot both contain overt material. She proposes that the filter can be understood as the interaction of two general principles. The first principle “disallows insertion of an overt element in a functional head unless necessary” (Giusti 2002:70) and the second maintains that a functional projection must be licensed **either** by making the specifier **or** the head “visible.” It is clear that the first principle is a condition on the insertion of a lexical item, i.e. on Vocabulary Insertion in terms of Distributed Morphology. Hence, in the terms used here, at Vocabulary Insertion for a DP with a demonstrative in Spec,DP, no Vocabulary Item is inserted for D because (as per the second principle) the DP is sufficiently visible since its

specifier is filled and (as per the first principle) it is best not to insert material in a functional head position unless necessary.

As for the Amharic data, the two general principles ensure complementary distribution between D and demonstratives. The definiteness agreement in (85) can also be accounted for because before Vocabulary Insertion, the D head is still present and licenses agreement on the adjective. Both the specifier and the DP-comp analyses then can generate the Amharic facts correctly, given that in both cases demonstratives are not D's and D persists in the derivation until Vocabulary Insertion.

No matter what approach is used, the analysis of demonstratives further supports two of the necessary assumptions about how definiteness agreement works. It provides additional evidence that definiteness agreement happens before spell-out, because D is eliminated from the derivation at Vocabulary Insertion under both analyses. Moreover, it is evidence for treating all adjectives as capable of undergoing definiteness agreement. If instead the analysis stated that only non-leftmost adjectives agree, it would be difficult to ever generate agreement on a single adjective following a demonstrative.

6.4 Definiteness Agreement in Semitic

Before concluding this section, it is worth looking briefly at definiteness agreement in Hebrew and Arabic. An example from Hebrew is in (89).

- (89) **ha**-bayit **ha**-gadol
DEF-house DEF-big
the big house

In both Hebrew and Arabic, when the noun has a definite marker, a prefixal/proclitic definite marker must also appear on any associated adjectives.³⁸ All the definite markers have almost always been analyzed as definiteness agreement, unlike the ‘combined’ account of definite markers developed here where the leftmost definite marker is D and the others are definiteness agreement (although see Ritter 1991 and Shlonsky 2004). Also, there are significant empirical differences between Amharic definiteness agreement and Hebrew/Arabic definiteness agreement, including the position of the adjective (prenominal vs. post-nominal), the definite marking of the noun and the obligatoriness of the definite markers. These empirical differences unfortunately make the relevant analyses of Hebrew and Arabic difficult to apply to the Amharic facts.

The relevant analyses include Fassi Fehri 1999, Wintner 2000, Shlonsky 2004 and Pereltsvaig 2006,³⁹ and they almost uniformly assume the noun and adjective are merged with definiteness features that correspond morphologically to definite markers. The features on the adjective are then licensed through some kind of structural relationship with the noun or NP. Fassi Fehri (1999) and Shlonsky (2004) advocate spec-head analyses of definiteness agreement.⁴⁰ Shlonsky in particular proposes that, when a DP has post-nominal adjectives, the NP has moved through the specifiers of the adjectives (abstracting away here from some functional heads). This results in a spec-head relationship between the NP and each adjective, which licenses

³⁸ This generalization is deliberately broad -- I am glossing over the details of definite-marking in construct state nominals, with demonstratives, etc.. Note also that Arabic (but not Hebrew) has agreement in **indefiniteness**.

³⁹ Note that many classic articles on the Semitic DP discuss definiteness agreement, but do not necessarily provide an explicit mechanism for it (see e.g., Siloni 1997, Borer 1999, Danon 2001). See also Fabri 2001 on definite marking in Maltese.

⁴⁰ Although Fassi Fehri (1999) later develops a Kayneian approach to definite marking similar to some accounts of Greek polydefinites.

definiteness agreement on the adjective. In contrast, Pereltsvaig (2006: Section 6) argues for an Agree account. She assumes an Abney-style DP where AP is sister to D, and argues that N (not NP) raises through the adjective heads and checks their definiteness features. Finally, Wintner (2000) maintains that adjectives are marked for definiteness in the lexicon, and then select a definite-marked nominal head.

All of these accounts rely on the noun having definite features inherently, which is implausible for Amharic. These features would almost never surface, and indeed would have to be erased in exactly the situation that seems to require them for agreement (when there are adjectives). Also, almost all the accounts rely on the movement of the noun through adjectival projections in order to create structural configurations that license agreement. Since Amharic does not have postnominal adjectives, there is no independent motivation for this movement (and the movement would result in the incorrect word order unless further movement is stipulated). Thus, while the Hebrew and Arabic definiteness analyses are successful, they cannot be transferred directly to Amharic. Perhaps in future work, it will be possible to apply the definiteness agreement analysis developed here to other Semitic languages.

7 CONCLUSION

The primary goal of this chapter was to provide a thorough analysis of definite marking in Amharic. I argued that definite marking can occur in one of two ways: by the Local Dislocation of a morphophonologically dependent D (obligatory definite marking), and as the reflex of a morphological agreement process between D and adjectives (optional definite marking).

An empirical issue left open concerns the obligatory definite marking of stacked relative clauses, where both relative clauses are marked for definiteness (see (14)). Interestingly, this pattern is similar to a different set of data also seen in this chapter: the coordination facts, where the definite marker appears on both conjuncts. I tentatively suggest, then, that stacked relative clauses are actually *asyndetically* coordinated. *Asyndetic* coordination is generally licensed for full clauses in Amharic (Leslau 1995: 726), and it is not uncommon for languages to prohibit stacked relative clauses (see Perkins 1982 on Navajo, Bodommo and Hiraiwa 2004 on Dagaare (Niger-Congo)).⁴¹

From a theoretical perspective, the account developed here maps out certain key properties of the syntax-morphology interface. In Minimalism, syntactic material is sent to PF in a piecemeal fashion by spell-out domain. In the analysis of obligatory definite marking, this cyclicity was shown to carry over to PF in that morphological operations cannot access previously spelled-out phases. However, it was shown that a previously spelled-out phase, although opaque, is not invisible. It is treated like a simple head – a single unit of material with no internally accessible structure, but the ability to host other heads at its edges.

In the analysis of optional definite marking, it was shown that not all morphological operations respect phase impenetrability – *Agr Insertion* and *Feature Copying* do not. However, these operations occur at a different stage in the derivation than *Local Dislocation*, which led me to suggest that spell-out, or at least some kind of spell-out, occurs late, at *Vocabulary Insertion/Linearization*. I close with some discussion of the idea of late spell-out.

A late spell-out within PF raises the question of how the syntactic derivation is sent to PF in the first place. If there is no cyclic spell-out from syntax to PF, it may be predicted that

⁴¹ Also, in recently obtained data, a consultant found definite-marking on the second relative clause in a stacked relative to be optional. This is exactly the pattern predicted by the analysis here, and it indicates that some speakers may be able to stack relative clauses.

syntactic operations can access any portion of the derivation at all times, and this is clearly false. I would like to suggest the following model of syntax and PF that makes the correct predictions at each level. Suppose that the syntax is exactly the same as before: there is cyclic spell-out to PF and, once spelled-out, a phase is impenetrable to later syntactic operations. However, at the first stage of PF (before Vocabulary Insertion/Linearization), the operations that occur (Lowering, Feature Copying, etc.) are not restricted by phase impenetrability. This in fact accords with previous research on some of these operations. Postsyntactic agreement (Feature Copying) has been independently argued not to respect phase impenetrability (Legate 2005). Moreover, many examples of Lowering seem to cross phase boundaries, although this depends on whether the head of the phase is considered to be part of the spell-out domain (e.g., T-to-*v* Lowering in English; Embick and Noyer 2001).

After the initial operations of PF finish, I propose that the derivation is linearized cyclically by phase, i.e. the initial spell-out to PF and the linearization algorithm use the same units when applying cyclically (perhaps for economy reasons). Phase impenetrability holds post-Linearization, in that operations like Local Dislocation cannot access previously-linearized chunk material. Additional evidence that phases are relevant post-Linearization comes from the growing body of literature on the role of phases in prosody (see e.g., Kratzer and Selkirk 2007), since prosodic phrasing and operations occur post-Linearization in Distributed Morphology (Embick and Noyer 2001).

The predictions and consequences of these ideas should be explored further. However, together with the analysis of definite marking, they represent a start to a research program focused on cyclicity and impenetrability effects in the syntax, the first stage of PF and at linearization.

CHAPTER 3:

GENDER IN AMHARIC NOMINALS

1 INTRODUCTION

In this chapter I examine the gender system of Amharic nominals. I show how natural gender (aka semantic gender, biological gender, or sex) and grammatical gender (e.g., the arbitrary gender on inanimate objects) both must be part of the analysis of the Amharic gender system. I use Distributed Morphology assumptions about word formation to capture the distinctions between natural and grammatical gender in a novel way. The analysis not only successfully accounts for Amharic but also demonstrates how gender can be accounted for in a theory that lacks a centralized lexicon.

In Section 2, the main descriptive facts about gender in Amharic are presented. In Sections 3 and 4, I investigate where gender features are located within DPs in Amharic, arguing that natural gender is part of the feature bundle associated with the nominalizing head *n*, whereas grammatical gender is a feature on roots. In Section 4, I develop an analysis of gender using licensing conditions that predicts which of the two sources for gender is used for agreement. Previous analyses of gender and the broader implications of the analysis are discussed in Section 5. Section 6 concludes.

2 GENDER IN NOMINALS

2.1 The Facts

As mentioned in Chapter 1, Amharic has two genders: masculine and feminine. The Amharic system for assigning gender is more reliant on natural gender than many of the more widely-known gender assignment systems (e.g., Spanish, Italian, Greek, etc.). For example, almost every inanimate noun is masculine, whether it is concrete or abstract.

(1) Masculine Nouns (inanimate)

mot	‘death’	wididdir	‘competition’
kibir	‘honor’	bet	‘house’
wānbār	‘chair’	dimmir	‘total, sum’
dingay	‘stone’	wārāda	‘district’
kibab	‘circle’	gazet’a	‘newspaper’

However, grammatical gender (also called arbitrary or lexical gender) still plays a role in gender assignment in that there are a handful of inanimate nominals that are usually treated as feminine.

(2) Feminine Nouns (inanimate)

mäkina	'car'	s'ähay	'sun'
azurit	'whirlpool'	kätäma	'city'
agär	'country'	betä krıstıyan	'church'

As for animate nouns, their gender is assigned almost exclusively according to natural gender (Leslau 1995: 161ff., Hartmann 1980:278ff., Appleyard 1995:33). Some male and female pairs have different lexical items for each gender, i.e., the differently gendered forms are suppletive. These will be referred to as different root nominals.

(3) Different Root Nominals

abbat	'father'	ınnat	'mother'
bal	'husband'	mıst	'wife'
säv	'man, person'	set	'woman'
bäre	'ox'	lam	'cow'
wäyfän	'bull calf'	gidär	'heifer'

Note that the nominal *säv*, besides being the typical word for 'man,' can also refer to a human being whose gender is not known to the speaker: 'person.'

The set of different root nominals is more or less limited to kinship terms and certain domesticated animals. The majority of animate nouns use the same root for either gender, and they will accordingly be referred to as same-root nominals. The gender of these nominals can be determined by gender agreement on associated elements, e.g., the definite marker.

- (4)
- | | | |
|----|-----------------------------|-------------------------------|
| a. | tāmari-w | tāmari-wa |
| | student-DEF | student-DEF.F |
| | the (male) student | the (female) student |
| | | |
| b. | muḥṣṣira-w | muḥṣṣira-wa |
| | wedding.participant-DEF | wedding.participant-DEF.F |
| | groom | bride |
| | | |
| c. | hakim-u | hakim-wa |
| | doctor-DEF | doctor-DEF.F |
| | the (male) doctor | the (female) doctor |
| | | |
| d. | halafi-w | halafi-wa |
| | person.in.charge-DEF | person.in.charge-DEF.F |
| | the (male) person in charge | the (female) person in charge |
| | Walta hed12a2 | Walta hed01a2 |
| | | |
| e. | wāḥḥa-w | wāḥḥa-wa |
| | dog-DEF | dog-DEF.F |
| | the (male) dog | the (female) dog |

If natural gender is not known, the default gender is masculine, as the following example from Leslau 1995 makes clear.

- (5) *hɪs'an-u* *wänd nāw set?*
baby-DEF male is female?
Is the baby a he or a she?
(Leslau 1995:164)

The nominal *hɪs'an* 'baby' takes the masculine definite article *-u*, despite its natural gender not being known to the speaker. Further evidence that the default gender is masculine comes from data involving indefinite pronouns like 'nobody.'

- (6) *balläfāw sammɪnt betä krɪstijan mannɪmm al-hed-ä-mm*
last week church nobody NEG-go.PF-3MS-NEG
Last week, nobody went to church.
(Leslau 1995:122)

The indefinite pronoun *mannɪmm* 'nobody' is animate but has no natural gender. Nevertheless, the agreement on the verb *albedämm* 'not went' is masculine (see Roca 1989 for a similar argument for masculine default in Spanish). Since masculine forms are used when gender is unknown (and not just for male natural sex), they can often be translated as gender-neutral, e.g.,

sām as a default masculine is ‘person,’ the nominal *ħdʒ* as a default masculine is ‘child’ (as opposed to ‘boy’).

Exceptionally, certain animal nouns have a feminine default gender in that they are assigned feminine gender when their natural gender is not known (Leslau 1995:166).

(7)	a. bāk’lo-wa	b. ayt’-wa	c. k’ābāro-wa	d. ʃārārit-wa
	mule-DEF.F	mouse-DEF.F	jackal-DEF.F	spider-DEF.F
	the mule	the mouse	the jackal ¹	the spider

If the natural gender of the referent for one of these animal nouns is known, though, it is the natural gender that the definite marker (and other elements) agree with.

(8)	ayt’-u
	mouse-DEF
	the male mouse

Natural gender thus ‘overrides’ grammatical gender. This kind of nominal will be crucial in the analysis of gender to come.

In terms of gender morphology, masculine gender is never morphologically marked (unsurprisingly). Feminine gender is also not universally associated with a particular affix, unlike in other Afroasiatic languages like Ancient Egyptian (where feminine gender is marked by a *-t*

¹ An informant reported masculine gender as the default for *k’ābāro* ‘jackal,’ but feminine gender as the default for *ayt’* ‘mouse.’ This is perhaps a testament to the exceptional nature of these nominals in that they might not be acquired consistently.

suffix; see e.g., Gardiner 1957) and Hebrew (where feminine gender is marked by one of a set of suffixes; see e.g., Arad 2005). A feminine *-at* suffix has in fact been reconstructed in Proto-Afroasiatic and is one of the hallmarks of Afroasiatic languages in general (Zaborski 1992:37). A descendant of this suffix does remain in Amharic, namely, the suffix *-it*, but its use is not consistent. Some of the inanimate nouns that are feminine end in *-it*, but some do not, and not all words that end in *-it* themselves are feminine (Leslau 1995:163-164, Cohen 1970:74).

(9)	<u>Feminine, End in <i>-it</i></u>	<u>Feminine, No <i>-it</i></u>	<u>Masculine, End in <i>-it</i></u>
	ʃärärit ‘spider’	s’ähay ‘sun’	kulalit ‘kidney’
	azurit ‘whirlpool’	agär ‘country’	arawit ‘wild animal’

The suffix *-it*, therefore, is neither a necessary nor a sufficient condition for a noun to be considered feminine.

Moreover, the suffix *-it* does not convert inanimate nominals to feminine grammatical gender. In Hebrew, adding a feminine suffix (*-et, -it*) to an inanimate masculine noun derives a semantically related feminine noun (Ritter 1993).

(10)	a. magav	magav-et	
	wiper	towel	
	b. maxsan	maxsan-it	
	warehouse	magazine	(Ritter 1993:796, (2))

For example, *magaw* without any suffixes has the meaning ‘wiper,’ but *magaw* with a feminine suffix *-et* means ‘towel.’ In Amharic, adding *-it* to an inanimate masculine noun results in a diminutive interpretation of the nominal (i.e., adding an interpretation that the nominal is small and/or cute, among other readings; see Leslau 1995:167-168), not a new, semantically related nominal.² Moreover, removing the feminine suffix from nominals that end in *-it* like *färirit* ‘spider’ or *azurit* ‘whirlpool’ does not result in a related masculine noun. There is in fact no such word as *färär* in Amharic, and *azur* is a verbal form (the masculine imperative of the verb *zorä* ‘to turn,’ which is morphologically related to *azurit*).

However, *-it* does seem to be capable of converting some **animate** nominals to **natural** female gender. For certain animate nouns, adding *-it* causes the noun to denote a female entity.

(11)	a.	hdʒ	hdʒ-it	e.	aroge	arog-it
		boy, child	girl		old man	old woman
	b.	mänäk ^w se	mänäk ^w s-it ³	f.	mämhr	mämhr-t
		monk	nun		teacher	female teacher

² This statement is true under the assumption that, in a nominal like *bet-it-u* ‘the small house’, *-it* is the feminine/diminutive suffix and not part of the definite article. In Leslau 1995, it is claimed that the feminine definite marker may surface as *-itu* (also *-itwä*), but it is unclear whether these forms are truly feminine definite markers or combinations of *-it* and a definite article. A consultant simply judged all examples where *-it* was added to an inanimate noun ungrammatical, regardless of any subsequent definite marking, which is compatible with the general point here that the feminine suffix cannot ‘convert’ inanimate nominals to feminine gender in Amharic.

³ The final vowels in these nouns are deleted when the *-it* suffix is added in order to avoid hiatus. This is similar to other kinds of nominal suffixes, which also trigger deletion of the final vowel on the stem which they attach to (Leslau 1995:36).

c. \int imagille	\int imagill-it	g. t'ot'a	t'ot'-it
old man	old woman	ape	female ape

d. mu \int irra	mu \int irr-it	h. \int gäle	\int gäl-it
groom	bride (compare to (4)b)	so-and-so	female so-and-so

However, this is not a highly productive process since it is not an option for all animate nouns, e.g., **tämarit* 'female student' and **bakim-it* 'female doctor.'

Amharic also has a set of gender 'specifiers' that indicate natural gender (Leslau 1995:164-166, Cohen 1970:76, Hartmann 1980:279). For human nouns, the specifiers are *wänd* for males and *set* for females.

- (12) a. wänd ayat male grandparent 'grandfather'
b. set ayat female grandparent 'grandmother'

There are a few additional specifiers only for animal nouns which still denote either male or female gender, but the lexical items are different from those used for human nouns. There seem to be two options for analyzing the gender specifiers. First, they could be adjectives, like 'male' and 'female,' but more differentiated than in, say, English. Second, they could be nominal classifiers, similar to those found in Mayan languages, Bantu languages and many other language families (see Allan 1977 for an overview of classifier systems). There is some indication that the adjective analysis is correct. The specifiers exhibit the same morphosyntactic behavior as adjectives (e.g., the definite marker attaches to them; Leslau 1995:65) and they can be predicates

of a copular clause (see (5)). Also, most classifier systems operate over several more criteria than gender (animacy, shape, size, etc.) and do not usually co-exist with a masculine/feminine two-gender system. I thus assume the gender specifiers are adjectives, and do not treat them further.

2.2 Summary, Typology, Diachrony

To sum up, it is useful to consider how Amharic fits into Corbett's (1991) classification of the systems of gender assignment in the world's languages. Corbett draws a fundamental distinction between semantic systems of assignment, where most nouns are assigned gender according to semantic principles, and formal systems of assignment, where most nouns are assigned gender according to morphological or phonological principles. Both kinds of systems are found in a variety of languages and language families, and semantic and formal criteria can overlap in a particular language.

Amharic is best described as either a "strict semantic" or a "predominantly semantic" system (Corbett 1991:13), where the gender of most nouns is assigned via semantic principles but there are certain sets of exceptions.⁴ It is certainly not the case that phonology or morphology determine the gender of a noun in Amharic -- there are no phonological regularities about which nouns are assigned which gender and the only morphological indication of gender (the *-it* suffix) is neither necessary nor sufficient to deduce gender.

The semantic principles are clear, though. If a nominal refers to a male animate, then it has masculine gender. If a nominal refers to a female animate, then it has feminine gender.

⁴ It is unclear to me whether the number of exceptional nouns in Amharic is enough to render it 'predominantly semantic.'

These generalizations seem to be virtually exceptionless.⁵ Moreover, for the vast majority of cases, if a noun is inanimate, it is masculine gender (or, better, it lacks gender entirely and masculine is assigned as a morphological default). There are, of course, a small number of exceptions to this principle for inanimates -- there is a 'residue' of inanimate nouns that are assigned feminine gender and presumably simply memorized by the language learner. Finally, if a nominal refers to an animate whose gender is unknown, the nominal is masculine (default) in the vast majority of cases. However, there are a small number of animal nouns for whom feminine is used in this situation and which (again) must be memorized.

The small residue of inanimate feminine nouns suggests that Amharic may have had a gender system based on grammatical gender in the past, and changed to one more based on natural gender over time. In this respect, it is illustrative to look at the history of gender in English. It is universally acknowledged that in the past millennium, English changed from a language that relied on grammatical gender and natural gender, to a language that relies almost exclusively on natural gender (i.e., in Modern English, inanimate nominals are not sorted into two or more arbitrary genders, pronouns and nominals referring to animate nominals have the natural gender of their referents; for recent perspectives on the shift, see Curzan 2003 and Platzner 2005). It is commonly believed that the loss of gender morphology on both nouns and modifiers caused or at least greatly abetted the loss of grammatical gender. The basic idea is that without morphological cues about nominal gender it is difficult to determine (i.e., acquire) what the gender of a nominal is (or whether it has gender at all).

⁵ The major exception is the use of diminutive forms (which are all feminine) to refer to male animates (with some kind of emotional impact: affection, mockery, etc.). The diminutives in Amharic are fascinating, but there is unfortunately not space to discuss them in full. See Leslau 1995:167-169 and some discussion in Section 6.

The Ethio-Semitic language Ge'ez (spoken during the Axumite empire, first written down around the 4th century BCE, now the liturgical language of the Ethiopian Christian church) is not a direct ancestor of Amharic; it belongs to the North branch of Ethio-Semitic (with Tigre and Tigrinya) whereas Amharic is part of the South branch (with Harari and the Gurage languages). However, it offers some tantalizing clues about what an earlier stage of Amharic might have been like, and suggests that changes have happened that facilitated the loss of grammatical gender in Amharic.

Ge'ez had both masculine and feminine gender, but it is difficult to ascertain whether there were more feminine inanimate nouns than there are in Amharic.⁶ It is clear, though, that the gender agreement system was much richer in Ge'ez. Adjectives generally agreed in gender (Lambdin 1978:68), unlike in Amharic where only a handful of adjectives do so (see Chapter 5). Also, verbal paradigms were richer with respect to gender in Ge'ez. In Amharic, across all the verb forms, verbs with plural number do not have separate gender forms, i.e., there is no third person masculine plural or third person feminine plural form. However, this was not true in Ge'ez -- many (if not all) of the verbs show distinct feminine and masculine forms in the plural (see e.g., the perfect verbal paradigm in Lambdin 1978:50, the imperfect verbal paradigm in Lambdin 1978:144). The list continues: cardinal numbers, relative pronouns, and participles all agreed in gender in Ge'ez but do not in Amharic.

The loss of gender agreement could perhaps have triggered the beginning of a shift away from grammatical gender, similar to the loss of agreement in the history of English. Granted, there are many caveats here: again, Ge'ez is not the direct ancestor of Amharic and it remains to

⁶ Lambdin (1978:26-27) notes that the gender of certain inanimate nouns seems to vary in Ge'ez, but this statement should be taken with a grain of salt. Lambdin himself observes that gender usage varies across texts (meaning that gender may be consistent for a particular author) and that some feminine nominals appear to be expressive in use (i.e., he does not separate diminutive from feminine nominals). Both these factors could seriously inflate the number of words whose gender seems to vary.

be established whether the gender system for nominals in Ge'ez relied more heavily on grammatical gender (if it had, for example, epicene nominals). Nevertheless, it is highly suggestive that Ge'ez featured significant gender agreement that seems to have all but disappeared from Amharic, and that the gender system in Amharic is currently very much based on natural gender.

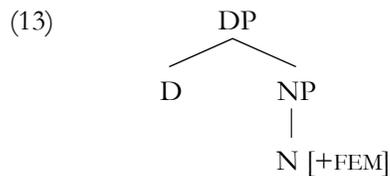
In the analysis below, I attempt to capture the Amharic principles of gender assignment. The 'residue' feminine nominals whose gender must be learned will be stipulatively marked feminine. However, for the other nominals, their gender will in fact be derived from their natural gender (in the case of gendered animates) or by having 'masculine' gender be the default morphological form of nominals that lack gender (in the sense of either lacking natural gender for the animates, or not having a gender feature at all in the case of the inanimates). There are many analytical tools that one could use to capture these principles, and the next section is spent narrowing down the options.

3 THE REPRESENTATION OF GENDER: FIRST STEPS

In most languages with binary masculine/feminine gender systems, the masculine has been argued to be the unmarked or default gender for a variety of empirical reasons (it is not morphophonologically marked in all or most cases, there are more masculine roots in the language, non-nominals that are treated as nouns take masculine gender, etc.; e.g., Roca 1989 and Harris 1991 for Spanish, Levy 1983 for Hebrew, Nelson 1998 for German, etc.; see also discussion in Sauerland 2008). This has led to a general assumption that the gender feature is [\pm FEM], with feminine gender being the marked option. Since masculine gender is the default in

Amharic as well for the vast majority of cases (see Section 2), I will adopt this assumption as well.

Intuitively, gender seems to be an inherent property of nominals. The gender of a nominal is generally consistent no matter how it is inflected, e.g. for case, number, definiteness, etc.⁷ This intuition has led to many proposals that the feature $[\pm \text{FEM}]$ is in the lexical entry for any given noun, i.e., on the nominal head N in the syntax (see e.g., Harris 1991, 1996, Carstens 2000, Koopman 2006, among many others).



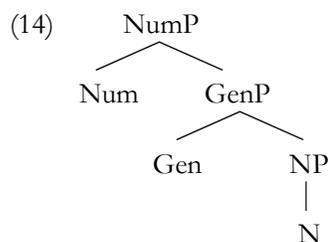
However, it has occasionally been claimed that the gender feature can or must originate elsewhere, and I discuss these proposals in the next section.

3.1 GenP and NumP

In Picallo 1991, it is argued that the gender morphology on a nominal stem heads its own projection, i.e., Gen(der)P. In Ritter 1993, it is proposed that a gender feature can be a part of the Num head within NumP, which typically houses number inflection. I argue that neither of these proposals is supported by sufficient evidence.

⁷ Although there are cases where plural number seems to cause a switch in the gender of a noun, e.g., the so-called ambigenics in Romanian (Farkas 1990, Acquaviva 2008ab) and gender polarity in Somali (Lecarme 2002).

In Picallo 1991, it is proposed on the basis of data from Catalan that GenP immediately dominates NP and that its head is the source of gender inflection for all nominals. Unlike Amharic, Catalan assigns gender (at least partially) according to phonological criteria, so that GenP could have (in this theory) some phonological content (e.g., an *-a* suffix for feminine gender, an *-o* suffix for masculine gender). Picallo argues for an articulated DP structure where NumP, which contains number inflection, dominates GenP.

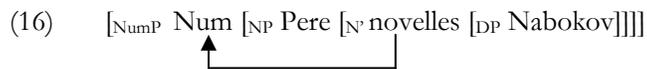


She notes that if N raises through Gen to Num, Gen is successfully predicted to be closer to the stem than Num (Stem-Gen-Num). However, this is not an argument for a gender projection per se. Gender morphology will also be closer to the stem than number morphology if gender is simply a feature on N, and N subsequently moves to Num.

Picallo also notes that when a noun has multiple arguments, the noun precedes all the arguments, e.g., *novelles* ‘novels’ in (15).

- (15) les novelles d'en Pere de Nabokov
 the novels of Pere of Nabokov
 (Picallo 1991:283, (7a), NB: Pere is a male name)

She assumes that *en Pere* ‘Pere’ is base-generated in the specifier of GenP and *Nabokov* is base-generated in the specifier of NP. She then argues that the noun raises past these arguments through Gen to Num, and this results in the N-initial order. However, the starting assumptions about argument position here are unmotivated. It seems equally likely that *Nabokov* would be the complement of the noun *novelles* and that *Pere* would be in Spec,NP -- in which case, the noun would travel past them both by moving to Num, without a need for GenP at all.



Even if two specifier positions turned out to be required for data like (15), there is no necessary link between the existence of an extra functional projection to house the specifier and that functional projection being the source of gender morphology. Overall, the same predictions could be achieved concerning all the Catalan data without GenP being present at all. Picallo essentially presents arguments for N-to-Num raising in Catalan, but not necessarily for GenP.

Moreover, GenP would be a projection that has no consistent semantics. Grammatical gender on inanimates is uninterpretable, and Chomsky (1995:349-355) argues against including projections in the syntax that only contain uninterpretable features (e.g., Agr nodes). In more recent work, Picallo (2006, 2007) has developed a different analysis of gender that addresses this issue, and it is discussed briefly in Section 4.3.1.

Ritter (1993) argues explicitly against GenP⁸, proposing that gender can be fully accounted for as a feature either on N or on Num depending on the language (N for Hebrew, Num for the Romance languages). The linchpin of her argument against GenP for Hebrew is

⁸ See also di Domenico 1997 (p. 136; as cited in Picallo 2007:9) and Alexiadou 2004 for more recent approaches to gender that explicitly argue against GenP.

that a structure like (14) indicates that gender is an inflectional affix on the noun, just like number. In Hebrew, though, gender suffixes are clearly derivational, e.g., a new, related nominal can be formed by adding a feminine suffix to a masculine inanimate noun (see Section 2; Ritter assumes that derivational morphology is attached in the lexicon).

However, for Romance languages, Ritter claims that changing the gender of an inanimate noun does not systematically result in a new related noun. She thus concludes that gender is inflectional in Romance, but argues that it is housed in NumP and not GenP for two reasons: (i) plural nouns in Romanian switch genders (the so-called ambigenics), i.e., Num must have gender and number specifications anyway, and (ii) in Walloon, gender and number are spelled out together as the realization of a Num head, separately from a nominal head that is not inflected for either.

I will not take issue here with the claim that gender is in NumP for Romance, although derivational gender morphology may be more pervasive in the Romance languages than Ritter reports (see e.g., Lowenstamm 2008 on French) and there may be other ways to account for ambigenics in Romanian (see e.g., Farkas 1990, Acquaviva 2008ab). However, the empirical observations that Ritter uses as the basis of her arguments (besides the fact that inanimates cannot switch genders) do not hold in Amharic. First, there is no gender switching in plural nouns like in Romanian. Adjectival agreement with a plural nominal does not often encode gender distinctions in Amharic, but when it does, it encodes the same gender the nominal has when it is singular.

- (17) a. afrikawi-yan wändɪmm-otʃʃ-atʃʃɪn-ɪmm b. afrikawi-yat ihɪt-otʃʃ-atʃʃɪn
 African-M.PL brother-PL-our-TOP African-F.PL sister-PL-our
 our African brothers⁹ our African sisters¹⁰

wändɪmm ‘brother’ is a masculine noun, and when pluralized and modified by an adjective that ends in the suffix *-ami*, there is plural masculine agreement on the adjective. In the same way, when an adjective that ends in *-ami* modifies the plural feminine noun *ihɪt* ‘sister,’ it takes plural feminine agreement.¹¹

As for the data that Ritter uses from Walloon, a little more detail is needed to show how it is not relevant for Amharic. Ritter follows Bernstein (1991) in assuming that, because nouns are not inflected for number in Walloon, they do not move to Num. She also assumes (again following Bernstein) that the feminine plural marker *ès* on adjectives is the realization of a Num head with inherent gender features.

- (18) les belès feyes
 the pretty girls
 (Ritter 1993:801, (13a))

Thus, number and gender features can be realized as one morpheme when the noun is not inflected for number (the *-es* on *fey* ‘girl’ is purely orthographic), and this is a prediction of Ritter’s

⁹ From <http://ectvamharic.blogspot.com>, accessed 10/1/08.

¹⁰ From <http://etiopiainitalia.blogspot.com>, accessed 10/1/08.

¹¹ Plural definite markers and demonstratives do not encode gender, which may misleadingly appear to indicate that the gender of the plural nominal is masculine or not present. The evidence from (17), though, shows that the gender of the nominal is retained, and simply not reflected in the plural forms of these elements.

theory that gender is a feature of Num. However, nouns in Amharic are inflected for number, so the argument from Walloon cannot even get started in Amharic.

As discussed in Section 2, gender assignment in Amharic mostly aligns with natural gender but sometimes aligns with what seems to be inherent, or grammatical, gender (e.g., feminine default animates like *ayt'* mouse). It is difficult to see how to incorporate any generalizations about natural vs. grammatical gender into a NumP analysis since there is only one gender feature. Moreover, it is proposed in Chapter 4 that Num is associated only with regular plural morphology, and regular plural morphology never varies according to the gender of the nominal (as it might be expected to if Num also housed gender features; see also discussion in Chapter 5 on gendered plurals). Overall, then, there is no evidence indicating that gender features are located on Num in Amharic.

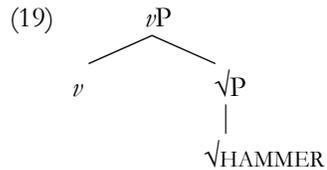
3.2 Gender on the Root or on *n*

In this section, I return to the widely-held intuition that gender features are part of the nominal head N. In Distributed Morphology, the assumption of category-neutral roots has led to a more detailed structure of lexical heads like N. The increase in complexity ultimately allows for a more nuanced analysis of gender in Amharic that makes explicit the relationship between the natural gender (male or female) and the grammatical gender of nominals.

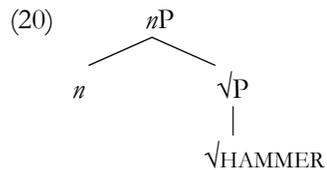
In the Distributed Morphology literature (see e.g., Marantz 1997, 2001, Arad 2003, 2005, Embick and Noyer 2007, Embick and Marantz 2008), the idea has been pursued that all lexical categories are made up of a category-neutral root and a category-determining head.¹² For

¹² Although it should be noted that the idea was not entirely new (see e.g., van Riemsdijk 1990 on *n*), nor do only Distributed Morphologists subscribe to it (see e.g., Lowenstamm 2008). Cf. also Borer 2005 for a

example, a verb like *hammer* consists of a root $\sqrt{\text{HAMMER}}$ that could theoretically be either a noun or a verb, and a functional head v that ‘verbalizes’ it.



This also goes for nouns, which consist of a root and the nominalizing functional head n .



(20) results in the nominal *hammer* ‘a tool for pounding nails’ whereas (19) results in the verb *hammer* ‘to pound (something)’. The upshot of this approach is that there now seem to be two possible heads on which the gender feature could be: the root or n . In Section 3.2.1, I examine whether the gender feature is located only on the root, and in Section 3.2.2, whether the gender feature is located only on n .

3.2.1 Gender on the Root

It is often assumed that roots have no syntactic or semantically active features, i.e., that they do not possess any features that drive syntactic operations or that are interpretable at LF

similar approach, although Borer (2005:20-21) argues against the specific Distributed Morphology analysis adopted here.

(see e.g., Embick and Noyer 2007:295 for a clear statement of this assumption; see also Borer 2005 for the assumption that roots have no features whatsoever). However, they do have so-called diacritic features which encode root-particular quirks like inflection class (see e.g., Embick 2000, Embick and Halle 2005:46) Inflection class and gender should be distinguished empirically and in the theory (as influentially argued in Harris 1991; see Alexiadou 2004 for a recent perspective, and Section 5 for discussion). However, it could be that gender would also be a type of diacritic feature that can occur on a root, especially for a language like French where gender is often perceived as an arbitrary property of nominals. However, there are several reasons to think that gender should not only be on the root in Amharic.

Recall that some animate nouns (the same-root nominals) do not change in form depending on gender.

- (21) a. hakim-u doctor-DEF ‘the male doctor’
 b. hakim-wa doctor-DEF.F ‘the female doctor’

If gender were encoded on the root, there would have to be two roots for all the same-root nominals, one [-FEM] and the other [+FEM].

- (22) √HAKIM [-FEM]
 √HAKIM [+FEM]

This might be acceptable if only a small number of nominals were ambiguous, but ambiguity is in fact quite common. As noted above, different-root nominals tend to be limited to either kinship terms or select domestic animals, whereas the ambiguous, same-root nominals can refer to

almost every other kind of animate human and animal (e.g. *profesor* ‘professor,’ *täkässaf* ‘defendant,’ *dämmät* ‘cat’). An even more troubling consequence of having two separate roots for ambiguous nominals would be that the two roots would not be morphologically related. There would be a large amount of roots in Amharic that would be coincidentally identical in terms of morphophonology and meaning, except for their gender. This kind of massive repetition of information is clearly undesirable.

Also, recall that certain animate nominals have feminine grammatical gender if their natural gender is not known.

- (23) ayt'-wa
mouse-DEF.F
the mouse whose gender is unspecified (or the female mouse)

However, they can have masculine gender if the referent for the animate noun is known to have natural masculine gender.

- (24) ayt'-u
mouse-DEF
the male mouse

Thus, feminine grammatical gender is ‘overridden’ by masculine natural gender, and this overriding is difficult to treat in a root-based approach to gender. Even if each of these animals were associated with two roots, one masculine and the other feminine (as discussed w.r.t. (22)),

there is no non-stipulative way to associate the feminine root with lack of natural gender (especially since lack of natural gender results in masculine grammatical gender elsewhere in the language). Essentially, a root approach cannot capture the interplay between natural and grammatical gender that the facts demonstrate, and I conclude that a root-based approach to gender is not viable.

3.2.2 Gender on *n*

Similar problems are faced by an analysis of gender where the gender feature is only on *n*. To the best of my knowledge, it has not been specifically proposed in previous literature that gender is a diacritic feature on the root (at least insofar as gender has been treated as distinct from inflectional class). However, the idea that gender is a feature on *n*, the ‘nominalizing’ head, has received some support. Working with data from French and Yiddish, Lowenstamm (2008) assumes that *n* has gender features, with there being as many versions of *n* in a particular language as the language has genders. Kihm (2005) proposes that *n* is where Class is located, Class being a kind of supercategory that includes gender, noun class as found in Niger-Congo languages, and numeral classifiers like those found in Chinese (see also Ferrari 2005 for an approach very similar to Kihm’s).

Acquaviva (2008b) argues against diacritic features on roots in general, and lays out explicitly how *n* having a gender feature relates to roots. Roots must have licensing conditions, such that they can only be inserted in the context of an *n*[-FEM] or *n*[+FEM].¹³ For example, in

¹³ Acquaviva (2008b) assumes that roots are inserted post-syntactically, in accordance with the Late Insertion hypothesis of Distributed Morphology (and earlier theories) but against more recent work in Distributed Morphology (see e.g., Embick 2000, Embick and Noyer 2007:296). See Section 4.2 for further discussion.

Amharic, the roots associated with *mākina* ‘car’ or *set* ‘woman’ could only be inserted in the context of $n[+FEM]$. As Acquaviva (2008b:9) points out, this allows for a simple treatment of same-root nominals, e.g., *tāmari* ‘student’ in Amharic. They simply have no licensing conditions and are thus compatible with either gender.

However, the Amharic animal nouns that take feminine gender when the natural gender is not known (e.g., *ayt* ‘mouse,’ see (23) and (24)) are still difficult to deal with, mostly because the n account only allows for one dimension of gender: natural or grammatical. To see why this is so, assume that the gender feature on n corresponds to natural gender for animates, [+FEM] being female and [-FEM] being male. When the natural gender is unknown, assume that n lacks a gender feature altogether.

- | | | |
|------|-----------|-----------------------|
| (25) | $n[+FEM]$ | Female Natural Gender |
| | $n[-FEM]$ | Male Natural Gender |
| | n | No Natural Gender |

When there is no gender feature on n , there can be no gender agreement between the nominal and the categories it usually agrees with, e.g., the definite marker. These categories then must be spelled out in their least marked form, i.e., masculine in Amharic (see (5)).

To give a specific example, the vocabulary items which can spell out the Amharic definite marker in (26).

- | | |
|------|--------------------------------------|
| (26) | D, [DEF], [+FEM], [-PL] ↔ <i>-wa</i> |
| | D, [DEF] ↔ <i>-u</i> |

In Distributed Morphology, the Subset Principle (Halle 1997) governs the insertion of vocabulary items.

(27) **Subset Principle**

- i) The phonological exponent of a vocabulary item is inserted into a position if the item matches all or a subset of the features specified in that position.
- ii) Insertion does not take place if the vocabulary item contains features not present in the morpheme.
- iii) Where several vocabulary items meet the condition for insertion, the item matching the greatest number of features specified in the terminal morpheme must be chosen.

(Halle 1997:428)

Looking again at (26), if the definite marker has feminine and singular features (presumably obtained via agreement with the nominal), then it must be spelled out as *-na*, since *-na* matches a greater number of its features than *-n*. The vocabulary item *-n* is underspecified and hence the elsewhere case -- every non-feminine and/or non-singular definite marker will be spelled out as *-n*. So, when there is no gender feature on *n* (and thus no gender feature transferred to D), the ‘masculine’ form *-n* must be inserted since *-na* contains a feature that would not be present on D: [+FEM]. Under this account, then, ‘default’ gender (when there is no gender feature on D) is never predicted to be feminine. However, this is incorrect for animal nouns like *ayt* ‘mouse’ that are feminine when their natural gender is not known. Since there is no other source of gender in

this analysis, there is simply nowhere for the feminine gender assigned to the relevant animal nouns to have come from.¹⁴

Essentially, the feminine default animal nouns present a case where both grammatical gender and natural gender will need to be referred to in the analysis. However, this is very difficult to accomplish if there is only one element that the gender feature attaches to, i.e., either the root or *n*. I conclude that both the root and the *n* analyses are unsatisfactory with respect to the Amharic gender system.

4 THE REPRESENTATION OF GENDER : GRAMMATICAL GENDER AND NATURAL GENDER

There remains (at least) one more option for analyzing the gender system of Amharic: a gender feature on **both** *n* and the Root, encoding the difference between natural gender and grammatical gender respectively. Having two sources for gender may seem to complicate the gender system. However, in Amharic, both natural gender and grammatical gender are clearly manifested in the data, especially with respect to the ‘feminine default’ animal nouns. Natural gender even has its own morphophonological realization for certain roots (*-it*). In the remainder of this section, I lay out the fundamentals of an analysis that treats both grammatical and natural gender, and develop the details of the analysis using licensing conditions on roots.

¹⁴ Note that the vocabulary items in (26) successfully predict the form of the definite marker in a wide range of contexts (to be discussed in more detail in Chapter 5), including the masculine default gender that was shown above in (5). Similar rules can also be constructed for the other categories that participate in gender agreement, namely, demonstratives, certain kinds of adjectives, etc. (see Chapter 5).

4.1 Fundamentals of the Analysis

As stated above, the heart of the present proposal for the Amharic gender system is that both the root and *n* have a gender feature [+FEM]. However, on the root, the gender feature corresponds to grammatical gender, indicating the arbitrary sorting of all the roots in a language into two types. I assume that feminine roots are marked [+FEM] and this feature is uninterpretable on roots. However, masculine roots do not need to have a gender feature. As shown in (26), the vocabulary items inserted for agreeing elements (e.g., definite markers) can be structured such that a feminine marker is inserted in a context marked specifically as feminine (and singular), and the ‘masculine’ marker is inserted everywhere else. There is thus no need for a [-FEM] feature on roots.

On *n*, the gender feature is interpretable and corresponds to natural gender, that is, biological sex. I assume *n* comes in three varieties with respect to this feature.

- (28) *n* [+FEM] Female natural gender
n [-FEM] Male natural gender
n No natural gender

Note that there is a three-way contrast between having a positive value for the feature (female), having a negative value for the feature (male) and not having the feature at all (i.e., inanimate or natural gender unknown). Despite this, the same underspecified vocabulary items for the definite marker from above may be used, and they are repeated in (29).

- (29) D, [DEF], [+FEM], [-PL] ↔ *-wa*
D, [DEF] ↔ *-u*

Suppose that *n*[-FEM] enters into an agreement relation with D, resulting in the feature bundle: (D, [-FEM]). The vocabulary item *-wa* cannot be inserted in this case because it contains a feature not present in the morpheme, i.e., the feature [+FEM]. However, since the vocabulary item *-u* is underspecified (i.e., does not have very many features), it may be inserted when D has a [-FEM] feature. Hence, all agreeing elements that contain [-FEM] will be spelled out as the underspecified masculine forms. Overall then, nominals which lack a gender feature and those which have a [-FEM] feature will be spelled out with ‘masculine’ vocabulary items.

Since there may be two gender features per *n*P (one on *n* and one on the root), it is necessary to determine which feature is used for the purposes of agreement, i.e., which feature the definite marker, demonstratives, etc. agree with, and how this can be captured. Empirically, if a nominal has natural gender, its natural gender is the agreeing gender.

- (30) a. abbat-u father-DEF ‘the father’
 b. tämari-wa student-DEF.F ‘the (female) student’

However, if a nominal lacks natural gender (because natural gender is unknown or the nominal is inanimate), its **grammatical** gender is the agreeing gender.

- (31) a. mäkina-wa car-DEF.F ‘the car’
 b. agär-itu country-DEF.F ‘the country’
 c. ayt’-wa mouse-DEF.F ‘the mouse whose gender is unspecified’ (or the female mouse)

Essentially, grammatical gender ‘emerges’ when there is no natural gender.

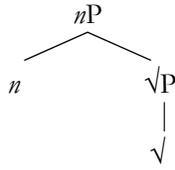
In terms of the *n* and root analysis developed here, these generalizations can be stated as in (32).

(32) **Gender Principle**

- a. If *n* has a gender feature, the agreeing gender is the gender of *n*.
 b. If *n* has no gender feature, the agreeing gender is the gender of the root.

However, simply stating them and appending them to the analysis seems stipulative. It would be better if these generalizations were derivable from some independently established principle(s), and I argue that they are. Consider the syntactic structure that has been assumed for a nominal.

(33)



For many nominals, the agreeing gender is natural gender and the feature that corresponds to natural gender is on n . So, the initial generalization is perhaps better stated as the agreeing gender is the gender of the topmost terminal node in the structure corresponding to the noun ($n + \sqrt{}$), i.e., n .

As shown in (31), sometimes the grammatical gender of a nominal is the agreeing gender, but crucially, this only occurs if the nominal has no natural gender. Recall that I have proposed that grammatical gender is found on the root. With this in mind, the generalizations about agreeing gender can be stated in terms of a search process looking down the tree from above nP : the agreeing gender is the gender that is present on the highest terminal node in nP . When present, natural gender must be the agreeing gender since it is on n and higher than the root. However, if n lacks gender, the search process can continue downward and find the grammatical gender on the root. The approach here is very reminiscent of an unvalued probe searching downward in a tree for a valued goal to enter into the Agree relationship with, i.e., it is very reminiscent of agreement from a Minimalist perspective. The formal account of gender agreement will be dealt with in Chapter 5, but for now, it is sufficient to note that the generalizations concerning the agreeing gender can most likely be derived from the well-known principles of Agree, which is a very welcome result. For the sake of brevity, I will refer to the generalizations about agreeing gender as the Gender Principle in the following discussion.

Before proceeding to discuss the licensing conditions on roots in this analysis, a brief digression is necessary on the formal aspects of the gender feature system just presented. Following convention, I have been using the term ‘feature’ to refer to what is more technically a feature specification, i.e., a pairing of a feature (FEM, PL, etc.) with a value [+/-, in these cases]. For the root and *n*, I have claimed that most roots and one type of *n* lack a gender feature altogether. To be more specific, the claim is that in the bundle of features that comprise this particular type of *n*, and in the relevant roots, there is no such feature [FEM] present (similar to how *n* lacks a [DEF] feature, or a tense feature, etc.). However, another way this claim can be interpreted is that these roots and this type of *n* have a 0 value for the gender feature [0FEM]. I believe that a feature system that includes [0FEM] is in fact formally equivalent to the system proposed here for all current purposes. However, in Chapter 5, it is shown how this feature system makes incorrect predictions about agreement. The reader is directed to Section Chapter 5, Section 3.3.1 for further discussion and I put a [0FEM] analysis aside for the rest of this chapter.

4.2 Licensing Conditions

So far, the analysis consists of (a) assumptions about the distribution of gender features and (b) the (independently derivable) Gender Principle. The final piece is the licensing conditions on roots, like the licensing conditions from the *n* analysis of gender discussed above. It is easiest to see how they come into play by going through each type of nominal in turn, and I begin with inanimate nominals.

Inanimate roots are specified as either [+FEM] or having no gender feature, with the majority having no gender feature. This is an intuitively satisfying result -- the vast majority of

inanimates are masculine and can thus be unmarked, and the few feminine nouns are clearly marked as special. Inanimates are licensed only in the context of the *n* that has no gender features, since they do not have natural gender. The Gender Principle then correctly predicts that the agreeing gender will be that of the root, i.e., a [+FEM] root will result in feminine agreement. To be clear, though, for ‘masculine’ inanimates (which have no gender feature) it is more accurate to say that there is simply no gender agreement and the agreeing elements are in the default form.

Different-root nominals have strict licensing conditions, e.g., *abbat* can only be licensed under $n[-FEM]$, resulting in masculine agreeing gender, and *ʔnnat* can only be licensed under $n[+FEM]$, resulting in feminine agreeing gender. In contrast, the same-root nominals (e.g., *tāmari* ‘student’) have no licensing conditions: they may be inserted under $n[+FEM]$ (resulting in female natural gender and feminine agreeing gender), under $n[-FEM]$ (resulting in male natural gender and masculine agreeing gender) or *n* that has no gender features (resulting in no natural gender and default, i.e., ‘masculine,’ agreeing gender).

Certain different-root nominals that have masculine agreeing gender can refer either to male entities or to entities whose natural gender is unknown. For example, as mentioned above, the nominal *sāw* can mean either ‘man’ or ‘person’ (human of either gender) as opposed to its feminine counterpart *set* which can only mean ‘woman.’ This phenomenon is present in other languages, cf. German *mensch* and Spanish data in Roca 1989. In terms of the licensing conditions analysis, it means that nominals like *sāw* are licensed under both $n[-FEM]$ and *n* such that they always have masculine agreeing gender but can refer to either male entities or entities whose natural gender is unknown.

The feminine default animal nouns, e.g. *ayt* ‘mouse,’ are easily accounted for under this analysis. The roots for these animal nouns are all [+FEM], but they crucially have no licensing conditions. When such a root combines with *n*[+FEM], female natural gender and feminine agreeing gender is the result. When it combines with *n*[-FEM], male natural gender and masculine agreeing gender is the result. The key case is when these roots combine with *n* that has no natural gender -- in this case, the animal’s natural gender will be interpreted as unknown, but since the root is specified for feminine gender, the Gender Principle dictates that the agreeing gender will be feminine.

Finally, to account for the *-it* suffix that indicates female natural gender (see (11)), I assume that *n*[+FEM] (female natural gender) may be spelled out as *-it* in the context of certain roots. A summary of the assumptions and predictions of the licensing conditions analysis is below.

(34) **Inanimate Nominals**

Root: [+FEM] (e.g., *mäkina* ‘car’) or no gender feature (e.g., *bet* ‘house’)

Licensed under: *n*

Agreeing gender = grammatical (root) gender

(35) **Different-Root Nominals**

Root: no gender features (e.g., *ibit* ‘sister,’ *wändimm* ‘brother’)

Licensed under: *n*[+FEM], *n*[-FEM] and/or *n* depending on the root

Agreeing gender = natural gender

(36) **Same-Root Nominals**

Root: no gender feature (e.g., *tämari* ‘student’)

No licensing conditions

Agreeing gender = natural gender or masculine (default)

(37) **Feminine Default Nominals**

Root = [+FEM] (e.g. *ayt* ‘mouse’)

No licensing conditions

Agreeing gender = natural gender, or feminine gender if natural gender not known

(default)

(38) $n[+FEM] \leftrightarrow -it / _ [\sqrt{LHD3}, \sqrt{MÄNÄK^wSE...}]$

In the analysis, *n* without a gender feature is part of the licensing conditions for: (i) inanimate nominals (since they have no natural gender) and (ii) animate nominals whose natural gender is unknown (or unimportant) to the speaker. The two are treated alike here because they are alike in terms of their gender morphology: both kinds of nominals have masculine gender unless the root has a [+FEM] feature. However, it is a fact about the world that inanimate nominals lack biological sex, whereas it is an epistemic matter whether or not a speaker knows (or chooses to express) the natural gender of a particular nominal. A way to make this difference explicit would be through a feature co-occurrence restriction to the effect that [+FEM] or [-FEM] on *n* (the natural gender features) are restricted such that they only co-occur with the feature [+ANIMATE] (on feature co-occurrence restrictions, see Gazdar et al. 1985).

- (39) a. n [+FEM] \rightarrow [+ANIMATE]
b. n [-FEM] \rightarrow [+ANIMATE]

Animate nominals whose gender is unknown could in theory be compatible with a natural gender feature. However, inanimate nominals can never be associated with natural gender features. This captures the fact that inanimate nominals lack natural gender inherently, while still allowing inanimate nominals and animate nominals whose natural gender is unknown to have the same agreeing gender.

The licensing conditions analysis is built on, naturally, licensing conditions, and these should be discussed in more detail before moving on. In Acquaviva 2008b, the licensing conditions on roots are assumed to be conditions on the insertion of roots post-syntactically. However, this raises a problem. The gender feature on the root for a feminine word like *mākina* ‘car’ should be present in the syntax since it can participate in an agreement relation with a definite marker, demonstrative, etc. It may be that such agreement is completely post-syntactic, but that cannot be assumed a priori.

Interestingly, it has been concluded in a prominent strand of research on roots that they are not inserted post-syntactically, but present in the syntactic derivation (Embick 2000 and subsequent work by Embick and colleagues, e.g., Embick and Noyer 2007). Embick (2000) raises the possibility that roots in the syntax are only represented as labels with whatever syntactic features they happen to have, e.g. $\sqrt{365}$ [+FEM] or $\sqrt{294}$ (cf. recent work by Borer). The label would then be phonologically realized post-syntactically. The point of this kind of representation is that it keeps the phonological representation of the root (which is never needed by the syntax) out of the syntactic component.

This idea is workable for the licensing conditions analysis developed here. The gender feature would be visible in the syntax for agreement, and roots would be inserted post-syntactically per contextually-specified Vocabulary Insertion rules like (40)a-d.

(40) Licensing Conditions on Vocabulary Insertion Rules

a. $\sqrt{292} \leftrightarrow \textit{abbat} / n[-\text{FEM}] \text{ ____}$ **Different-Root Nominal**

b. $\sqrt{546} \leftrightarrow \textit{tämari}$ **Same-Root Nominal**

c. $\sqrt{365} [+FEM] \leftrightarrow \textit{mäkina} / n \text{ ____}$ **Inanimate Nominal**

d. $\sqrt{140} [+FEM] \leftrightarrow \textit{ayt}'$ **Feminine Default Nominal**

In the Vocabulary Insertion Rule in (40)a for a different-root nominal, Root 292 is spelled out as *abbat* in the context of an *n*[-FEM]. Since I assume this is the only Vocabulary Insertion Rule for Root 292, the effect is that Root 292 can only be spelled out in the context of a *n*[-FEM]. (40)b is the Vocabulary Insertion rule for a same-root nominal which has no licensing conditions; it can be realized as *tämari* regardless of what kind of context it is in. (40)c is the insertion rule for an inanimate feminine nominal. The root has a [+FEM] feature, and it is realized only in the context of a *n* that lacks a natural gender feature. Finally, (40)d is the insertion rule for a feminine default nominal which has a feminine feature on the root, but no licensing conditions. The licensing conditions, therefore, which I have been discussing in abstract terms, are actually contextual restrictions on Vocabulary Insertion rules for roots.

Alternatively, it is possible that the licensing conditions are active in the semantics. To take a specific example, it may be that some restriction in the semantic component rules out the combination of the root for *mother* and a *n*[-FEM]. In Arad 2005, roots are interpreted in the Encyclopedia in the context of whatever category-defining head they have been merged with in the syntax. So, it may be that there is no Encyclopedia listing for, say, the root for the word *mother* when it is combined with a *n*[-FEM], rather than there being no vocabulary item for such an element as in the analysis above.

Whichever interface the licensing conditions are captured at, the licensing conditions analysis has several advantages. It generates all the data without any repetition of roots (as in the root analysis of gender) and successfully treats the feminine default nominals (unlike the *n* analysis¹⁵). It captures intuitions about the grammatical gender of same-root nominals (they do not really have any) and the grammatical gender of feminine default animal nouns (definitely present). However, there is one remaining issue to be worked out.

4.3 Gender and Interpretability

The licensing conditions analysis raises questions about the interpretability of gender features, and the following section is an extended digression on how these questions can be addressed. The gender feature on *n* corresponds to natural gender, and is thus part of the

¹⁵ It is possible to construct a successful analysis of gender on *n* if the gender feature comes in two different types on *n*: interpretable (natural gender) and uninterpretable (grammatical gender). However, this analysis requires very complicated and stipulative licensing conditions. For example, a nominal like *ayt'* mouse will be licensed under interpretable [+FEM] (female natural gender), interpretable [-FEM] (male natural gender) but also uninterpretable [+FEM] (default feminine gender). In the analysis developed above, all that needs to be said is that the root associated with *ayt'* has a [+FEM] feature - this root then combines freely with different types of *n* to generate the observed gender facts. However, for those who are firmly against any kind of features being on roots, an analysis where gender is only on *n* represents a viable alternative to the analysis above that maintains the fundamental distinction between interpretable and uninterpretable gender features and has natural gender features in the syntax.

meaning of the nominal and interpretable. However, the gender feature on the root has no semantic impact, and thus should be uninterpretable.¹⁶ Under standard Minimalist assumptions (see e.g., Chomsky 2000, 2001, 2004), uninterpretable features must be checked/valued and then deleted before the derivation is sent to LF or else the derivation will crash. It is also assumed that checking/valuation happen via agreement (more specifically, the Minimalist relation Agree). The main problem for present purposes is that the uninterpretable gender feature on roots (grammatical gender) is not always found with its interpretable counterpart (natural gender) available to check it before the syntactic derivation is sent to LF. For example, inanimate nominals lack natural gender entirely and thus are only licensed under the plain *n*.

In the remainder of the section, I go through several different solutions to the problem of an uninterpretable gender feature, ultimately following Legate 2002 (and, to a lesser degree, Pesetsky and Torrego 2007) in claiming that **unvalued** features (and not uninterpretable features) cause a derivation to crash.

4.3.1 Post-Syntactic Agreement and Class Features

A potential solution to the problem of an uninterpretable gender feature in the syntax is to say that the problematic feature is not present in the syntax at all, i.e., that grammatical gender is a purely post-syntactic phenomenon. Under this approach, roots would have no gender features in the syntax, but post-syntactically certain roots (feminine inanimates) would trigger the

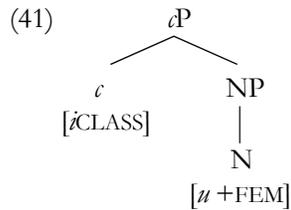
¹⁶ It has occasionally been claimed that grammatical gender is interpretable (most notably in Dowty and Jacobson 1988, but see also Pesetsky and Torrego 2007: fn. 31 and references therein). See Legate 2002:2-3 for some criticism of this idea.

insertion of a [+FEM] feature (presumably adjoined to the root itself).¹⁷ An immediately worrying aspect of this proposal, though, is that the gender feature on a root has no morphophonological exponence (ever), so it is suspicious for it to be inserted specifically in the morphophonological component. The only noticeable effect of the gender feature on a root is the agreement that it controls, and this predicts that, if the gender feature is inserted post-syntactically, the gender agreement that is controlled by grammatical gender (i.e., inanimates, feminine default) must be post-syntactic as well. However, in Section 4.1, it was shown how gender agreement has the characteristics of the syntactic Agree relation (i.e., it involves a probe searching downward into its c-command domain). For now, I assume that gender agreement is not postsyntactic, and proceed to consider other possibilities.

Another kind of solution to the gender/interpretability problem is that the uninterpretable gender on roots is in fact checked/valued in every case, i.e., that there is some head distinct from *n* (natural gender) that can check/value the gender feature on roots. In Picallo 2006, 2007, just this kind of approach is developed.¹⁸ Picallo proposes a unified analysis of gender systems (e.g., Romance languages) and noun classifier systems (e.g., some Bantu languages) whereby both gender and noun classifiers are associated with a functional category *c* which contains an interpretable feature [CLASS] (cf. Kihm 2005, Ferrari 2005). In gender systems, the class category *c* takes an NP complement whose head N has an uninterpretable gender feature.

¹⁷ Gender from this perspective would be a dissociated feature, a feature only inserted at PF (similar to agreement nodes; see Embick 1997, Embick and Noyer 2007:309).

¹⁸ This approach has also been adopted in previous research concerning uninterpretable features on roots. In Embick 2000, it is proposed that certain roots in Latin (the deponent verbs) have an uninterpretable syntactic feature [PASS] that triggers certain morphosyntactic effects associated with the passive. An interpretable version of [PASS] is also found on *v*, and presumably uninterpretable [PASS] on the root and interpretable [PASS] on *v* can enter an agreement or checking relation so that the uninterpretable [PASS] does not persist to the LF interface.



Framed in terms of present assumptions, *nP* will be below *nP* and NP is equivalent to the root. The class category *c* enters into an agree relationship with N/the root and checks/values its uninterpretable gender feature. The relationship between *c* and N is similar to the relationship between T and V in English in certain frameworks (e.g., Pesetsky and Torrego 2007) -- T is inserted with interpretable tense features, and V is inserted with uninterpretable tense features that are checked/valued by T and ultimately spelled out on V. Put another way, [+/- FEM] on N is the formal exponent of the interpretable class feature.

However, the *nP* analysis has a major shortcoming. The [CLASS] feature on *c* is not obviously interpretable, i.e., it is unclear what (if any) contribution it makes to the semantics of the nominal. Picallo (2007) suggests that *c* is related to non-linguistic processes of entity categorization. It is arguably the case in noun classifier systems that the sorting of nouns into classes conveys something about the meaning of the nominal in terms of size, shape, etc. Recall, though, that the only type of gender relevant to the original problem here is **grammatical** gender -- natural gender is of course interpretable (and Picallo deliberately does not treat natural gender (2007:5-6)). The sorting of nouns into kinds of grammatical gender does not generally convey anything systematic about their semantics, which Picallo recognizes (2007:5-6 and fn. 7), but interprets as meaning only that gender is uninterpretable on the noun. However, it is very unclear how the class feature is interpretable if it “translates to the grammatical system processes

of entity categorization” (Picallo 2007:6) and that process of entity categorization has no semantic content. I conclude that the *cP* analysis is not viable.

4.3.2 Questioning Assumptions: Legate 2002

The other kind of solution I consider is of a different sort -- it questions the assumptions that lead to the problem. What if it is not the case that all uninterpretable features must be deleted? Or what if they at least do not have to be deleted by Agree? Two recent proposals for revamping the feature system in Minimalism independently take this approach, and I discuss the first (Legate 2002) in this section.

To start with some background, though, Chomsky (2000, 2001, 2004) suggests that the deletion of uninterpretable features is what motivates the existence of the Agree relation. He takes it as a given that uninterpretable features must be deleted before LF, and then proposes that the only way to do so is via Agree (see e.g., Chomsky 2004:113). He also proposes that uninterpretable features always enter the derivation unvalued (see e.g., Chomsky 2004:116), i.e., without a +/- value (in most cases) for the feature in question. It is unvalued features, then, that are probes and the Agree relation serves the purpose of valuing them w.r.t. a valued version of the same feature.

However, there are several less than ideal aspects about this set of proposals. As Pesetsky and Torrego (2007) note, the obligatory pairing of uninterpretability and unvaluation seems arbitrary: “Why should the *lexicon* couple such distinct properties of lexical items as interpretability (‘Does the item have a message to send to the semantics?’) and valuation (‘Are any syntactically relevant properties of the lexical item left unspecified?’)” (Pesetsky and Torrego 2007: 267). Moreover, uninterpretable features must be deleted before LF, but somehow

reinstated (or preserved) in PF because they often surface morphophonologically (e.g., subject agreement realizes phi features on T). To account for this, Chomsky proposes an operation which deletes features that have been valued during the phase from the part of the derivation that continues to LF, but not from the part of the derivation continuing to PF. As Legate (2002) points out, this operation must look back to a previous stage of the derivation, and this kind of looking-back is usually taken to be a serious flaw in the analysis.

In Legate 2002, a solution to both of these problems is developed. Legate first argues that almost all the syntactic features that have been called interpretable thus far in the literature are actually uninterpretable. Her examples of this includes grammatical gender (understood as part of the interpretable phi-features on a DP in Minimalism, but uninterpretable as discussed above) and tense features on T. With respect to the latter case, she draws on work by semanticists on tense and aspect (e.g., Heim 1994, von Stechow 2002) that documents how the morphological expression of tense/aspect can differ from the semantics of tense/aspect.

Legate then proposes a reconfiguration of the feature system, as laid out in (42).

(42) Types of Features: Legate 2002

Morphosyntactic Features:

uninterpretable, unvalued

uninterpretable, valued

Semantic Features:

interpretable

Uninterpretable features can be either valued or unvalued. Unvalued features are probes and must Agree with a valued version of the same feature or they will cause a crash at PF (presumably because PF cannot spell out a feature that is unvalued). Legate labels this set of

features the “morphosyntactic” features since they drive the syntactic computation and are morphologically realized.

In contrast, valuation is not relevant for interpretable features. They do not participate in syntactic operations/relations and are not morphologically expressed, hence they are labeled purely as “semantic.” Uninterpretability is therefore no longer needed to motivate Agree (Agree exists simply to value features) and there is no longer an arbitrary requirement that uninterpretable features be unvalued. As for the relationship between uninterpretable features and the interfaces, Legate proposes that all the morphosyntactic (uninterpretable) features are deleted in the branch of the derivation that continues to LF. There is no need to look back and see which were valued.

Legate’s proposals not only address some problems inherent in Chomsky 2000, 2001 and 2004, but also provide a basis for understanding why grammatical gender in Amharic (+FEM on certain roots) does not trigger a derivation crash. The crucial fact is that the grammatical gender feature is valued (as is grammatical gender in most languages). So, under Legate’s system, it does not cause a crash at PF and is simply deleted before semantic interpretation occurs.

However, Legate’s system raises some serious questions about both the nature of semantic features and the relationship between morphosyntactic and semantic features that make it less appealing. Consider natural gender features, which are the interpretable counterpart of grammatical gender features. Since they are interpretable, they seem to be part of the semantic set of features for Legate, i.e., syntactically inactive. However, if gender agreement is syntactic, natural gender features must participate in an Agree relation with demonstratives, determiners, etc., which seems to indicate that they are morphosyntactic features, i.e., uninterpretable.

The distinction between morphosyntactic and semantic features seems almost too sharp --- it predicts that, for any feature that participates in agreement (or any feature that is even

morphologically expressed!), it either (a) will not have a semantic impact or (b) there will be a second instance of that feature that does have a semantic impact, which seems to be an unnecessary repetition of information. Legate notes that extragrammatical pressures (acquisition, diachrony) may motivate “compatibility” between semantic and morphosyntactic features, but it is unclear how this compatibility should be captured. Nevertheless, the broader characteristics of Legate’s system are insightful: unvalued features are what must be dealt with via Agree before the derivation is sent to the interfaces, and uninterpretable features can simply be deleted in a global fashion on the way to the semantic component. These characteristics are what enable grammatical gender to be part of the derivation without causing a crash.

4.3.3 Questioning Assumptions: Pesetsky and Torrego 2007

These insights can be preserved, but with fewer semantic issues, in a version of the feature system proposed in Pesetsky and Torrego 2007 (henceforth P&T). P&T modify the feature system, but in a slightly different way than Legate 2002. To eliminate the arbitrary relationship between uninterpretability and unvaluation, they fully separate valuation and interpretability and claim that all four resulting combinations of feature types are available.

(43) Types of Features: Pesetsky and Torrego 2007

- a. uninterpretable, unvalued
- b. uninterpretable, valued
- c. interpretable, unvalued
- d. interpretable, valued

Along with Chomsky (and Legate), they propose that unvalued features are probes and trigger Agree, the novelty being that interpretable unvalued features in P&T can also be probes.

The key part of P&T for present purposes concerns, once more, the motivation for Agree. P&T go along with Chomsky in claiming that Agree is motivated by uninterpretability, i.e., uninterpretable features must enter into an Agree relation with an interpretable version of the same feature as precondition for being deleted. This is not helpful with respect to grammatical gender in Amharic. Since grammatical gender is uninterpretable, P&T predict that it must enter into an Agree relation with an interpretable version of the gender feature, i.e., natural gender. However, as discussed above, this is not always possible.

However, recall Legate's (2002) perspective. In her system, it is **unvalued** features that must enter into an Agree relation as a precondition for morphological realization at PF. Otherwise, they cause a crash. This seems to be the mirror image of a system that relies on **uninterpretable** features to motivate Agree, and Pesetsky and Torrego even briefly note (fn. 17) that "if PF interpretation cannot apply to an element that bears an unvalued feature, consequences similar to those discussed in the text would follow" (P&T 07:274). In fact, with respect to the data discussed later in P&T (raising, *that*-omission), the unvalued approach makes the exact same predictions as the uninterpretable approach to Agree. This is primarily because P&T still maintain that only unvalued features are probes -- hence, every instance of Agree involves an unvalued feature and thus Agree can be straightforwardly motivated by the needs of that feature.

Note also that, in P&T, it must be stipulated that Agree is a precondition for deletion. However, this is not necessary. Since uninterpretability and valuation are separate properties of features, the semantics can look directly at features and see whether they are interpretable or not

without any need for a look-back mechanism to see which were valued. P&T even propose that the semantics essentially attempts to interpret all features and then deletes those which are uninterpretable (P&T 2007:290).

Taking stock, the discussion began with the question of how to account for grammatical gender, an uninterpretable feature that does not cause the derivation to crash. A solution can be found by drawing on two related proposals: Legate 2002 and P&T. Legate 2002 contains the crucial insight that unvalued features are what drives Agree, but the feature system proposed therein is not sketched out fully. P&T is compatible with this approach to Agree (although the approach is not overtly adopted), and proposes a better-motivated feature system. Both Legate 2002 and P&T reap the benefits of separating valuation and interpretability by having the semantics (or an operation that transfers the syntactic derivation to the semantic component) identify uninterpretable features directly and delete them.

Under these combined assumptions, an uninterpretable but valued feature like grammatical gender poses no threat. It is not a probe (i.e., it is not unvalued), so it need not participate in Agree. It is valued, so it will not crash the derivation when it is sent to PF. Although it is uninterpretable, it will be removed by whatever mechanism removes such features at or slightly before the semantic component.

4.4 The Briefest of Summaries

A successful analysis of gender in Amharic nominals has been developed in this section that relies on licensing conditions and different locations for natural gender and grammatical gender features within a nominal. However, what are its wider implications and how does it compare to other analyses of gender? These questions are explored in Section 5.

5 PREVIOUS ANALYSES AND BROADER ISSUES

In this section, I begin by discussing some previous analyses of gender that rely on both natural gender and grammatical gender. This leads to a comparison between the analysis here and the previous analyses in terms of the role of the lexicon in any analysis of gender and the presence of natural gender features during the syntactic derivation. It closes with some discussion of several issues related to having a gender feature be on n , the so-called nominalizing head that can be associated with nominal inflectional class.

5.1 Literature Review

In the morphosyntactic literature, there is a tendency to either conflate natural gender and grammatical gender or to simply deal with one of them. From a Minimalist perspective, gender is presumably one of the bundle of phi-features that are interpretable on a nominal but uninterpretable on, say, T. However, gender is not semantically interpretable on an inanimate nominal. On the other hand, natural gender on an animate nominal is as much a part of the semantic content as number and person (see e.g., Cooper 1983, Heim and Kratzer 1998 for an explicit account of gender for English pronouns). Sometimes, though, natural gender is deliberately set aside from morphosyntactic investigations (Bernstein 1993:117, Picallo 2007:5-6).

The licensing condition analysis formally encodes both natural gender and grammatical gender on n and the root, respectively, as the Amharic data requires. Although it is not a common approach, there is some precedent for treating both natural and grammatical gender

together, and I review several previous analyses in this vein: Roca 1989, Harris 1991, Riente 2003, Ralli 2002, and Alexiadou 2004.¹⁹

Harris 1991 and Roca 1989 are morphological accounts of gender in Spanish nominals. The primary thesis of Harris 1991 is that natural gender, grammatical gender and inflectional class are related but independent properties of nominals, and Roca 1989 comes to roughly the same conclusion. The analyses both rely on the properties of lexical entries and on lexical rules to generate the facts. All inanimate feminine nouns, for example, are marked with an *f* in their lexical entries. The *f* leads to feminine agreement morphology on associated elements like determiners, verbs, etc. In Harris 1991, nouns that have natural female gender are mostly generated in the lexicon from nouns with male natural gender (a central claim Harris makes is that almost all human-referring nouns in Spanish are ‘mated,’ i.e. come in male-female pairs). A separate rule then marks female natural gender nouns with the feminine *f* so that the grammar ultimately treats female natural gender and feminine grammatical gender nouns alike. A similar rule is proposed in Roca 1989 that directly links female natural gender with feminine morphological marking.

In Riente 2003, the focus is on how nouns in Italian are assigned grammatical gender. Riente proposes that gender assignment happens in one of two ways. First, a noun can be inherently specified for gender in the lexicon (and this gender specification is not affected by natural gender, e.g., *guardia* ‘guard’ is always feminine no matter who it refers to). Second, nouns that are not inherently specified for gender are assigned feminine grammatical gender by a redundancy rule if they have a female referent (and masculine default otherwise).

¹⁹ See also research on gender and agreement in HPSG for another approach that treats both natural gender and grammatical gender (see e.g., Pollard and Sag 1994: Ch. 2, Wechsler and Zlatic 2003). There have also been several recent conference papers (given as this dissertation was being written!) that have claimed that different types of gender correspond to different projections within the DP, similar to the approach taken here (Steriopolo and Wiltschko 2008, Matushansky 2009).

(44) **Gender Assignment in Italian**

[]_{GEN} → f / ____ female referent

(Riente 2003:7, (9))

Female natural gender thus leads to feminine morphology, similar to Roca 1989 and Harris 1991, although it is unclear at what point in the derivation Riente's gender assignment rule applies.

Alexiadou (2004) comes to similar conclusions as Riente, although with a broader empirical scope. After examining data from Romance languages, Greek and Hebrew, she concludes that gender is lexically specified in some nouns and not specified in others. She proposes that the nouns for which it is not specified are all human, and that they are assigned grammatical gender via an agreement process with the natural gender of their referents. This is a different technical device than Riente uses (agreement rather than a redundancy rule), but it is the same idea. Alexiadou does not go into detail on the mechanics of the agreement, noting only that it may be licensed by a specific syntactic configuration or in the Numeration (although it is unclear where or how the natural gender of the referent would be represented in the structure or the Numeration).

Ralli (2002) takes the same kind of approach again, although she focuses only on Greek. In her analysis, all nominals have gender features in the lexicon, but some are fully specified and some are underspecified. Nominals with underspecified gender features have the features specified via feature co-occurrence rules.

These analyses all share certain key characteristics. First, they all make a distinction between nominals that are lexically (fully) specified for gender, and nominals that have their agreeing gender assigned to them via some kind of mechanism. Nominals that are lexically

specified include inanimates and epicene nominals (epicene nominals refer to animates but do not vary in gender according to the natural gender of their referents, e.g. *guardia* ‘guard’ in Italian as mentioned above). Nominals whose gender is assigned are usually those whose gender corresponds to the natural gender (e.g., *ragazzo/ragazza* ‘boy/girl’ in Italian), and the assignment mechanism usually assigns them their agreeing gender according to the natural gender (e.g., Alexiadou’s agreement process between a nominal and the natural gender of its referent, Harris and Roca’s assignment of *f* to nouns that are [+female] in the lexicon, etc.). There are two major ways, then, in which these analyses differ from the analysis here: (i) they rely on gender specification in a traditional (non-distributed) lexicon for certain nouns (ii) they do not represent natural gender in the syntax, and instead assign (or derive) the gender feature that appears in the syntax from wherever else natural gender may be in the grammar. I discuss each of these differences in turn.

5.2 A Non-Lexical Analysis of Gender

The analyses above all assume that, for some nominals, gender is specified in the lexicon. More crucially, they assume there is a contrast between these nominals and other nominals which are not specified for gender and have gender assigned to them. This contrast is also found in Amharic between, say, a feminine inanimate noun (fixed, idiosyncratic gender) and a same-root nominal like *tāmari* ‘student’ whose agreeing gender is variable and always equivalent to its natural gender.

It might seem difficult to capture this contrast without a lexicon, but all that is really needed is a way to mark gender on certain roots, and a way to assign gender to other (gender-free) roots. In the analysis here, gender is stipulated to be a feature on certain nominal roots, and

this corresponds to ‘lexically specified’ gender. Nominals whose gender varies depending on natural gender do not have any gender features on their roots, and gender is ‘assigned’ to them insofar as they can combine with a *n* that has [+FEM], [-FEM] or no gender feature whatsoever. The details of how the treatment of natural gender here differs from the other analyses is dealt with immediately below. The main point is that it is not necessary to have a centralized lexicon in order to capture the gender system of a language. The theory of Distributed Morphology can be viewed as an extended experiment into what consequences result from ‘distributing’ the lexicon throughout the grammar, and gender can now be added to the list of phenomena that can be successfully accounted for in this way.

5.3 Natural Gender in the Syntax

None of the analyses above have natural gender features represented in the syntax. Instead, when natural gender is the agreeing gender for a particular nominal, some kind of mechanism (lexical rule, redundancy rule, agreement) converts natural gender features into the kind of features that are present in the syntax. In the present analysis, though, natural gender features are present in the syntax on *n*. From the perspective of minimizing the number of operations the grammar has to go through, the extra step ‘converting’ natural gender to a syntactic feature seems unwarranted. If natural gender is the agreeing gender, why not have it be present in the syntax so it can trigger agreement directly? In this section, I consider several reasons why the previous analyses have taken this approach and argue against them, ultimately concluding that natural gender should be present in the syntax. The section ends with some discussion of the semantics of natural gender.

Many of the analyses above divide natural gender and grammatical gender into two different types of features: [+/- FEMALE] for natural gender and [+/-FEM] for grammatical gender. This may lead to the idea that a natural gender feature and a grammatical gender feature would require separate sets of agreeing elements that would be coincidentally homophonous. In other words, [+FEMALE] must be ‘converted’ to [+FEM] to trigger insertion of [+FEM] agreeing forms -- or else there will be a lot of redundancy among the vocabulary items (or spell-out rules).²⁰

However, the separation of natural gender features and grammatical gender features in this way is a false dichotomy. In Minimalism, there are many paired interpretable and uninterpretable versions of the same feature on different morphemes. For example, there may be a [+PL] feature on T and on a DP -- interpreted as plural in the DP, and not interpreted on T. In the licensing conditions analysis, it is proposed that gender -- a single [+/-FEM] feature -- works in the same way. It comes in uninterpretable (root) and interpretable (*n*) versions. On the root, it has no semantic impact, but on *n*, it indicates female or male natural gender. The vocabulary items associated with agreeing elements can all contain this single feature (regardless of interpretability), and thus the same morphological realization is predicted for natural and grammatical gender. To give a concrete example, consider again the definite marker.

- (45) D, [DEF], [+FEM], [-PL] ↔ *-na*
 D, [DEF] ↔ *-n*

²⁰ It should be noted this is my interpretation of these analyses. I am merely speculating about why they may have separated the two sets of features.

Both an uninterpretable [+FEM] feature on a root and an interpretable [+FEM] feature on *n* will lead to a [+FEM] feature on D. This in turn will be spelled out as *-na*. Thus, there is no need for an analysis of gender to keep natural and grammatical gender strictly separate as features.

However, there may be an empirical reason why previous analyses have kept natural gender away from the syntax. In all of the languages of inquiry for these analyses, grammatical gender plays a much larger role than natural gender in agreement (and agreement is usually assumed to be syntactic). For example, there are epicene nouns in Italian and Spanish where grammatical gender seems to ‘override’ natural gender (see e.g., *guardia* ‘guard’ (always feminine) or *pilota* ‘pilot’ (always masculine) in Italian, and the list of animal nouns with fixed grammatical gender in Harris 1991:41; see also Alexiadou’s conclusion that in Romance, Greek and Hebrew, only human-referring nouns vary in gender). In Amharic, though, natural gender is typically the agreeing gender, with grammatical gender ‘emerging’ only when natural gender is demonstrably absent, as with the feminine default animal nouns like *ayt* ‘mouse.’

It is possible for a licensing conditions analysis to account for language with a greater reliance on grammatical gender by saying, at the broadest level, that the role of *n*[+FEM] and *n*[-FEM] is significantly reduced in Italian, Spanish, etc. After all, epicene nouns like *guardia* in Italian and animals whose gender is fixed do not convey anything about the natural gender of their referents.²¹ The vast majority of nouns in Italian, Spanish, etc. would then only be licensed

²¹ This raises the question of how to deal with nominals like *mädchen* ‘young girl’ in German which is epicene in that its gender is fixed (neuter) but certainly conveys information about the natural gender of the referent. I assume that this information is contained in the Encyclopedia entry for *mädchen*. The Encyclopedia entry for every noun contains non-linguistic knowledge about the noun, e.g., the Encyclopedia entry for *dog* contains information like ‘has four legs, canine, barks,’ etc. I assume the Encyclopedia entry for *mädchen* accordingly contains something like ‘is a young female.’ Under Arad’s (2005) point of view, Encyclopedia entries are assigned to combinations of root and categorizing head. Licensing conditions on gender (like those discussed above) can be conceived of as falling out from these combinations, e.g., there would be no Encyclopedia entry for a root like *mnat* ‘mother’ combined with a *n*[-FEM]. From this perspective, a nominal like *mädchen* simply has an Encyclopedia entry for (i.e., it is licensed under) a combination of root and plain *n*.

under plain *n* with no [+/-FEM] features. The remaining nouns (human-referring nominals with variable gender) could combine with either *n*[+FEM] or *n*[-FEM], resulting in female or male natural gender. The Gender Principle discussed above could still hold, in that, in most cases, *n* would lack gender entirely, leading to gender agreement being with the gender of the root (grammatical gender). However, when *n* does have gender, for most of the human nominals, the natural gender is the agreeing gender.

This is just a sketch of how the licensing conditions analysis could be applied to languages like Italian, and more work must be done to ensure that all the facts can be accounted for. However, it is worth noting that previous analyses immediately struggle (I believe) in accounting for the cases in Amharic where natural gender overrides grammatical gender. A nominal like *ayt* ‘mouse’ in Amharic would have fixed, feminine grammatical gender in the lexicon in these accounts. Some ad hoc mechanism would then be required for overriding the grammatical gender of *ayt* with the natural gender, singling out *ayt* and the nominals like it as, perhaps, taking their gender from the discourse referent of the nominal for no principled reason. In the licensing conditions analysis, though, *ayt* and the nominals like it are only special in that

This may point up a weakness of the licensing conditions analysis: does it miss relationships between encyclopedia entries and natural gender features on *n*? More specifically, it seems that if the encyclopedia entry for a root + *n* like ‘mother’ contains the information ‘is female,’ it should somehow be related to the fact that the *n* in this case can only be [+FEM]. I hope to address this in future work, but in the meantime note that this is a problem only for a small subset of the nominals in Amharic, namely, some of the different-root nominals (different-root nominals that can have default gender like *sām* as well as same-root nominals and all the inanimates do not have similar correlations between encyclopedia entry and natural gender) and that such correlations clearly do not hold in all cases, to wit, *mädchen*.

Alternatively, it could be that *mädchen* is an exceptional case in the following way. *Mädchen* is a diminutive nominal, formed via the diminutive suffix *-chen*. All nominals formed via *-chen* in German are neuter, similar to how all nominals formed via the diminutive in Amharic are all the same gender (feminine). As I discuss briefly in Section 6, it could be that these diminutive suffixes are separate functional heads higher in the structure than *n*, and that they have a particular gender feature as part of their feature bundle (cf. Lowenstamm 2008). In Amharic, it would be a [+FEM] feature whereas in German it would be a neuter feature. Since this gender feature would be the highest in the nominal, it would be the agreeing gender. Thus, *mädchen* would be predicted to be neuter regardless of what *n* it is licensed under. It will be interesting to see whether there are in fact any true cases of a (non-diminutive) epicene nominal that still conveys information about the natural gender of its referent.

their roots are all [+FEM] -- they actually do not have any licensing conditions. Moreover, they are even predicted to occur (and to occur in small numbers) in the Amharic nominal system -- they are what happens when the [+FEM] feature (which is only found on a small number of roots in general) is found on a root that is animate (i.e., can have natural gender).

In general, then, there is no reason for natural gender not to be in the syntax. Having natural gender in the syntax in fact has advantages: it removes the need for any kind of ‘conversion’ rule from natural gender to the kind of gender that appears in syntactic derivations, and it seems to account for both Amharic and Italian-type languages easily (unlike accounts where natural gender is not in the syntax).

I would like to end this section with a very brief discussion of the semantics of natural gender and the gender of pronouns. A key claim of the analysis here is that the features [+FEM] and [-FEM] are interpretable on *n*. I assume that the features are interpreted as properties of individuals in the following (maximally simple) way.

- | | | |
|------|-------------------------|-----------------------|
| (46) | a. [+FEM] | b. [-FEM] |
| | $\lambda x.x$ is female | $\lambda x.x$ is male |

They take an entity/individual and return true if that entity is female for [+FEM] or male for [-FEM]. The feature combines with the root perhaps through Predicate Modification (Heim and Kratzer 1998) if the root denotes a property. For example, if the root denotes the property $\lambda x.x$ is a doctor, then it can combine with [+FEM] via Predicate Modification to result in the denotation $\lambda x.x$ is a female doctor.²² Alternatively, the gender feature could trigger a

²² Having the root be a property of individuals may seem problematic for the assumption that roots are acategorial and ‘nominalized’ by the *n* head. However, the compositional semantics could be more

presupposition that the discourse referent somehow associated with the whole nominal is female or male, similar to how gender features work in pronouns (see e.g., Heim and Kratzer 1998).

In fact, the most influential work on the semantics of gender has mostly focused on pronouns (perhaps because in English pronouns are the only phenomenon where natural gender is reliably attested). Some of the data discussed above may in turn raise questions about the gender of pronouns in Amharic and elsewhere, e.g., what gender does a pronoun referring to an epicene nominal have, what gender does a pronoun referring to a nominal like *ayt'* have, etc. These questions are worth exploring, but pronominal agreement falls outside of the present investigation for two reasons. First, it seems to be different than other types of gender agreement both syntactically (in that it operates over longer distances) and semantically (in that it is interpretable on the target of agreement). Second, the generalizations about pronominal agreement in a particular language are often complicated (see e.g., Lumsden 1987 on Old English, Farkas and Zec 1995 on Romanian, and Josefsson 2006 on Swedish; see also Bosch 1983 and Wechsler and Zlatić 2003 for a more general perspective) and these generalizations are largely unknown for Amharic.

In general, pronominal agreement seems to have a more direct connection with natural gender (aka the gender of the discourse referent). The gender of a pronoun very often corresponds to the natural gender of its referent even if the antecedent of the pronoun is an epicene nominal with 'fixed' gender (see e.g., the Romanian data in Farkas and Zec 1995, Corbett 1991: Ch.8). This can be accounted for by having pronouns agree directly with discourse

complicated here. *n* presumably contains at least two features in the relevant cases: a nominalizing feature and a gender feature. Each feature combines with the root one at a time, and it may be simply that the nominalizing feature is applied to the root (somehow rendering it a property of individuals) before the gender feature applies. Alternatively, several recent strands of research on roots have concluded that roots are classified into different categories depending on whether they are events, entities, states, etc. (see e.g., Embick 2009), and this may translate semantically into a root like *doctor* being a property of entities.

referents (or more specifically, by having their features correlated with those of the discourse referent; as in Farkas and Zec 1995) or by having gender features combine with pronouns freely but trigger a presupposition failure if the context maps the index for that pronoun to a referent with the wrong gender (Heim and Kratzer 1998). It would be interesting to investigate how to connect the licensing conditions analysis with an explicit account of the syntax and semantics of pronominal gender agreement, but that is for a different dissertation.

5.4 Predictions and Consequences of Gender on *n*

In this section, I discuss some of the predictions and consequences of having a gender feature on *n* w.r.t. other phenomena that have been associated with *n*. Specifically, I look at how gender affects the use of *n* in Amharic to capture (a) inflectional class and (b) nominalization (derivational processes that convert verbs, adjectives or nouns to (other) nouns).

5.4.1 Inflection Class

Amharic nominals do not have inflection class in the Indo-European sense, in that they cannot be sorted into two to five types depending on how they are inflected for number, case, gender, etc. However, they may have inflection class in the sense that Amharic, as a root and pattern language, is conventionally analyzed as forming nouns from a consonantal root plus one of a large number of nominal patterns (see e.g., the descriptions in Hartmann 1980, Leslau 1995, etc.). For example, there is a consonantal root /l b s/ which means ‘to wear’ when combined with a verbal pattern. This same root can be combined with one or more nominal patterns to form semantically related nouns, e.g. ‘clothing’ and ‘cover (of a book).’

- (47) Root: / l b s/
 Verb: läbbäsä ‘wear’
 Noun₁: ḥbs ‘clothing’
 Noun₂: ḥbas ‘cover (of book)’

However, across all the Semitic languages, noun formation via root and pattern morphology is far less systematic than verb formation. For example, Arad (2005) observes that in Hebrew there are approximately seven verbal patterns, but over fifty nominal patterns (including patterns that have suffixes and prefixes). Arad also observes that several hundred nouns fall outside of those fifty nominal patterns and are not built from a consonantal root for a variety of reasons (mostly because they are old and new loan words). Moreover, unlike their verbal counterparts, most nominal patterns do not convey anything about the semantics of the noun (which leads Arad (2005: Ch.2) to propose that they only exist to turn consonantal roots into pronounceable strings).

In Amharic, nominal patterns are similarly difficult to pin down. Undoubtedly, there are some productive deverbal noun formations that are associated with particular patterns, e.g., the infinitive, the instrumental, etc. (see Fulass 1966 and below). However, the rest of the nominals display a bewildering variety of patterns which do not convey anything systematic about the semantics of the nominal (as detailed partially in Leslau 1995:261ff. and more fully in Hartmann 1980:223-238). Among the triradicals alone, there are approximately fifty different patterns, not counting prefixal and suffixal patterns (although it is worth noting that most of the patterns vary in terms of vowels and not in terms of syllable structure). This raises the question of whether

the nouns are genuinely formed by root and pattern morphology or whether the nouns are listed with (at least) their vowels and then their morphophonology is constrained by general phonotactic and phonological restrictions.

This question is broader than present concerns, but inflection class is relevant to the preceding discussion of gender in so far as, if nouns in Amharic do have patterns, the pattern might be in *n*. Semitic languages have been taken as paragons of the root-and-categorizing-head approach: the consonantal root is the root and the pattern is the category defining head (for at least some cases; see e.g., Marantz 2001, Arad 2003, 2005 for detailed explication of this approach). Under the analysis above, natural gender is in *n*, which might predict that certain patterns are associated with certain natural genders. However, nominal patterns in Amharic are completely insensitive to gender, in that there is no correlation between the gender of a nominal and its pattern. That would mean there would have to be two versions of every pattern used to derive nouns that can have natural gender: one with a [-FEM] feature and one with a [+FEM] feature. This is obviously undesirable. Moreover, a significant strand of work (see e.g., Roca 1989, Harris 1991, Aronoff 1994, Alexiadou 2004) argues that inflection class and gender are related but not the same, i.e., they should not be part of the same morpheme.²³

There seem to be two obvious solutions to this problem. First, the structure of the nominal could be more complex than originally thought, i.e., the nominal pattern could be in *n* and natural gender could be in its own separate projection. This option is not aesthetically

²³ More specifically, Roca (1989:23-25) claims that while there are correlations between the gender of a nominal and its theme vowel in Spanish, the correlations are unidirectional. Theme vowel can be predicted from gender, but not vice versa. This is highly compatible with an analysis of gender on *n* given the analysis of theme vowels proposed in some recent work within Distributed Morphology (e.g., Embick and Halle 2005, Embick and Noyer 2007). In the DM approach, theme vowels are inserted post-syntactically and adjoined to the categorizing head, i.e., *n* in this case. The insertion of theme vowel would therefore be conditioned by its local environment -- what gender feature is on *n* (or on the root, the complement to *n*).

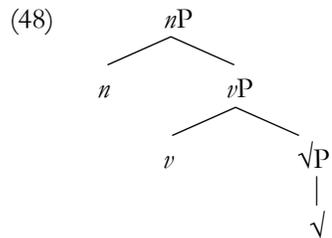
pleasing, but perhaps workable. However, the other option would be that Amharic nominals are not inflected via root and pattern morphology, and this option seems the most viable.

Intuitively, the variation among non-deverbal nominals seems too great to result from any productive root plus pattern combinations, even more than in the other Semitic languages.

Hopefully, this intuition will be substantiated with statistical evidence in future work.

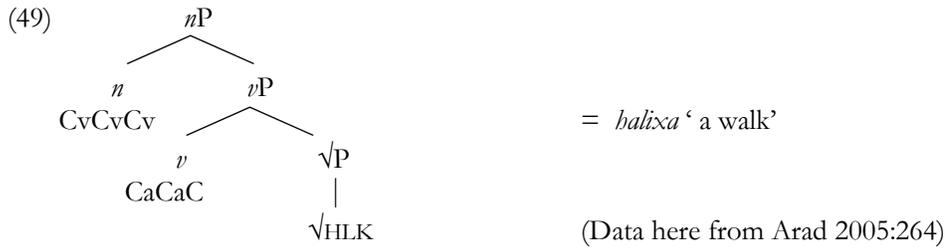
5.4.2 Nominalizations

Besides inflection class, *n* is often assumed to nominalize other categories, e.g., to form nouns from verbs, adjectives, and other nouns. To form a deverbal noun, for example, it is claimed within the framework that I have been assuming here that a *n* is merged with a *v*P (see e.g., Marantz 2001, Arad 2003, 2005).



The root plus *v* constitute the verb, and this verb is nominalized by the addition of a *n*P on top.

A specific example from Hebrew is in (49).



The root \sqrt{HLK} plus a v result in the verb (vP) *halax* ‘walk.’ Merging a n as sister to the vP nominalizes the verb, giving it a new pattern (whose vowel quality is different from but apparently dependent on the vowel quality of the verb -- hence the vowels are unspecified in the pattern in the tree). The resulting deverbal noun is *halixa* ‘a walk.’

In the analysis of gender developed here, n comes in different flavors: with a [+FEM] gender feature, with a [-FEM] gender feature, or plain (without a gender feature). These gender features correspond to the natural gender of the nominal that results when a n is combined with a root. Do any of the n 's that form nouns from verbs, adjectives and other nouns also have natural gender features?

In Amharic, there are many different nominalization strategies: Fulass (1966) lists twelve different patterns of deverbal nouns and ten suffixes that convert adjectives or nouns to other nouns (although it is quite possible that some of these nouns are derived directly from a root and not from a previously-formed verb, adjective, noun, etc.). Many of these nominalizations result in nouns that do not have natural gender. For example, infinitives, ‘instrumental’ deverbal nouns and nouns formed via the suffix *-mma* all result in abstract concepts or inanimate objects.

(50) Infinitives

- a. säbbärä 'break' → mäsbär 'breaking, to break'
- b. sämma 'listen' → mäsmat 'listening, to listen'
- c. ayyä 'see' → mayät 'seeing, to see'
- d. bälla 'eat' → mäblat 'eating, to eat'

(51) Instrumentals

- a. hedä 'go' → mähedʒa 'destination'
- b. tāk'ämmät'a 'sit' → māk'k'ämätʃ'a 'seat'
- c. k'azzäfä 'row' → māk'zäf'a 'paddle'
- d. t'ärrägä 'sweep' → mät'rägʷa 'broom'

(52) -inna Nominals

- a. sänäf 'lazy' → sɪnf-ɪnna 'laziness'
- b. nɪs'uh 'clean' → nɪs'h-ɪnna 'cleanliness'
- c. k'omat'a 'leper' → k'umt'-ɪnna 'leprosy'
- d. gäbäre 'farmer' → gɪbr-ɪnna 'agriculture'

I assume that the *n* converting from verb, adjective or other nominal to noun in these cases is the plain *n* that lacks gender features altogether.²⁴

However, some nominalizations result in animate nominals that can have natural gender. For example, the suffix *-äñña* can derive professions.

(53) -äñña Nominals

- a. gɪmb ‘stone’ → gɪmb-äñña ‘mason’
- b. gazet’a ‘newspaper’ → gazet’-äñña ‘journalist’
- c. färäs ‘horse’ → färäs-äñña ‘horseman’

Also, the so-called participles (deverbal nouns) can also refer to animates.²⁵

(54) Participles

- a. s’afä ‘write’ → s’afi ‘writer’
- b. dʒämmärä ‘begin’ → dʒämmari ‘beginner’
- c. gaggärä ‘bake’ → gagari ‘baker’
- d. nädda ‘drive’ → nädʒi ‘driver’

²⁴ It is possible that one or more of these particular nominals are derived directly from a root, as opposed to a previously-formed verb, adjective or noun. Determining which kind of derivation is the case for a particular nominalization requires semantic and morphophonological evidence that goes beyond the scope of this section. If some of them are root-derived, it is not a problem at all - the root would combine with a plain *n*.

²⁵ To again address the root-derived vs. word-derived distinction, I follow the descriptive literature in assuming that these nominalizations are derived from other nouns and verbs, respectively.

All these derived nominals are same-root nominals in terms of gender, i.e., nominals that can refer to either male or female animates without a change in form (this is not unexpected since both the male and female forms are derived from the same root). For example, *särrat-äñña* ‘worker’ can refer to male or female workers, as shown by the agreement on the definite markers in the examples in (55).

- | | | |
|------|-------------------------|--|
| (55) | a. <i>särrat-äñña-w</i> | b. <i>särrat-äñña-wa</i> |
| | work-N-DEF | work-N-DEF.F |
| | the male worker | the female worker |
| | Fulass 1966:88 | Ethiopian Reporter, 10/15/2008 ²⁶ |

The same goes for participles, e.g. *märi* ‘leader’ derived from *märra* ‘lead’ can be either masculine or feminine depending on the natural gender of the referent.

- | | | |
|------|------------------------|-------------------------|
| (56) | a. <i>budɪn märi-w</i> | b. <i>budɪn märi-wa</i> |
| | team leader-DEF | team leader-DEF.F |
| | the male team leader | the female team leader |
| | Walta yeka23a03 | Walta meg18a07 |

This is straightforward to account for in the licensing conditions analysis. The *n*’s that correspond to *-äñña* and participializing morphology come in different flavors in that they have different gender features on them, just like the *n*’s that combine with roots. There are no

²⁶ <http://www.ethiopianreporter.com/content/view/3026/54/>. Also, note that the *-t-* between *särra* ‘work’ and *-äñña* is epenthetic.

licensing conditions between the previously formed verb or noun and the nominalizing *n*. At first glance, then, having gender features on *n* causes no difficulties for treating nominalized verbs, adjectives and nouns in Amharic. Even better, the fact that these nominalizations are all same-root nominals is in fact predicted if licensing conditions are assumed only to hold between roots and categorizing heads (i.e., they are generalizations about the distribution of roots) and not between categorizing heads and non-root projections they may attach to.²⁷

To wrap up this section, I have taken a quick look at the implications of having a gender feature be on *n* for inflectional class and for nominalizations in Amharic. It was suggested that nominals in Amharic do not have inflectional class, an idea that remains to be confirmed but seems intuitively correct and in line with other root and pattern languages. Nominalizations were fairly straightforward to account for assuming *n* can have natural gender.

6 OPEN ISSUES AND CONCLUSION

There are a few empirical issues that have been left open in the above discussion. First, Amharic has a productive diminutive-forming operation, alluded to briefly in Section 2.1, which results in any number of interpretations including cuteness, smallness and affection. In terms of its morphosyntax, the diminutive is closely related to feminine gender in that it can be signaled by an *-it* suffix (on nominals or adjectives) or simply by feminine agreement on verbs, definite markers, etc -- even if the referent has male natural gender. The diminutive is in fact the only phenomenon that can ‘override’ natural gender in terms of the agreeing gender, which suggests it

²⁷ If licensing conditions are in fact the epiphenomenal result of the presence/absence of Encyclopedia entries (e.g., there is no Encyclopedia entry for the combination of a root like ‘mother’ and a *n*[-FEM]), this result truly falls out. Encyclopedia entries are pairings of roots and categorizing heads, not categorizing heads and other types of projections.

may be present syntactically in a functional head that dominates *n* (see Lowenstamm 2008 for exactly this kind of proposal for French). Future work will hopefully make the connection between the proposals here and the diminutives explicit.

It should also be noted that the inanimate nominals that are classified as feminine here are, in fact, **usually** treated as feminine. The distribution patterns are subtle and complex and will require (I think) detailed statistical study to sort out -- the frequency with which these nominals are treated as feminine appears to vary per nominal (some are always treated as feminine, some less consistently) and perhaps according to other factors (countries are consistently treated as feminine in the Walta corpus, but a consultant judged grammatical treating a country name as masculine). Could some of the feminine nominals have two roots, one [+FEM] and one not? This idea seems unpleasant but there are a couple of important mitigating factors, namely, how small the number of feminine inanimates really is (fifteen to twenty is my best guess, not including country names, and bear in mind that some of them **are** treated consistently feminine) and how Amharic (in my impression) appears to be losing grammatical gender as a language (see Section 2.2). An intermediate period of flux where some roots are listed as both with grammatical gender ([+FEM]) and without it seems reasonable.²⁸

To conclude, in this chapter, an analysis was developed of the Amharic gender system where natural gender and grammatical gender are explicitly formally separated: natural gender is reflected in an interpretable gender feature on *n* and grammatical gender in an uninterpretable

²⁸ There is a crucial distinction to be made here. It was argued earlier in this chapter that having two roots (one masculine and one feminine) for certain nominals was a severe enough offense to knock an analysis out of the running. However, the circumstances were different. First, w.r.t. same-root nominals (see Section 3.2.1), there are many, many more same-root nominals in the language (and more are being added even now as loan words, e.g., *profesor* ‘professor’) than there are feminine inanimate nouns, resulting in much greater inefficiency and redundancy. Second, w.r.t. the feminine default animals (see Section 3.2.1), it was argued that it is difficult to ensure that the feminine root is always used in the default gender case and either root when natural gender is known.

gender feature on roots. The analysis is successful in accounting for how nominals are assigned gender as well as what gender is used for gender agreement in Amharic. From a broader perspective, the analysis is a viable account of gender that does not appeal to a centralized lexicon, and it holds promise in accounting for different types of gender systems that may rely on natural gender to a greater or lesser extent (as opposed to some current analyses of gender which have difficulties accounting for a natural gender-based system as in Amharic).

CHAPTER 4:

NUMBER IN AMHARIC NOMINALS

1 INTRODUCTION

The previous chapter focused on the morphological and syntactic representation of gender in Amharic nominals. In this chapter, I focus on number, another phi-feature that plays a large role in the morphology and syntax (and semantics) of nominals. One of the main properties of the Amharic number system is a clear difference in the behavior of irregular and regular plurals, and the main goal of the chapter is to account for these differences. Specifically, I develop a split analysis of number in the Amharic DP, deriving the empirical contrasts between irregular and regular plurals by positing that irregular plurals are derived from a *n* head that has a plural feature whereas regular plurals are derived from a Num head that has a plural feature.

In Section 2, the basic descriptive facts about number in Amharic are laid out. In Section 3, the differences between irregular and regular plurals are detailed and evidence for the split analysis is presented. An analysis where plural features are found in two locations within the same DP (*n* and Num) naturally raises questions about the relationship between the two heads. In Section 4, a number of different analyses of the relationship between *n*[+PL] and Num[+PL] are compared, and an analysis where the plural feature is shared between *n* and Num is shown to be the most successful. Section 5 concludes with some discussion of the larger ramifications of the analysis, both in terms of its cross-linguistic implications and its ramifications for morphosyntactic theory.

2 NUMBER IN NOMINALS

Amharic has two numbers: singular and plural (see description in Leslau 1995:169-179, Cohen 1970:70-74, Kapeliuk 1994). It lacks the dual of some Semitic and Afroasiatic languages (e.g., Arabic, Egyptian).¹ Singular nominals are generally unmarked, whereas plural nominals generally take the suffix *-otʃtʃ*.

- | | | |
|-----|-----------|----------------|
| (1) | a. bet-u | b. bet-otʃtʃ-u |
| | house-DEF | house-PL-DEF |
| | the house | the houses |

However, an unmarked indefinite nominal can be interpreted as either singular or plural (Leslau 1995:179, Hartmann 1980:283, Cohen 1970:72, Kapeliuk 1994:10-18, see also Corbett 2000:15).

¹ Hartmann (1980:285) identifies five numbers in Amharic, but the ‘numbers’ besides singular and plural are not what would traditionally be considered numbers (for example, partitives are included among them). Yimam (1996) identifies four numbers: singulative, singular, paucal and plural. The term ‘singulative’ generally indicates a singular nominal that is inflected for singular number, often because the bare form is a collective (singulatives and collectives are common in Arabic, see e.g., Ojeda 1992. See also Corbett 2000:17-18, 256, for a cross-linguistic perspective). This may be an accurate description of the forms that Yimam claims are singulative, but they are restricted to a small subset of the vocabulary of the language (certain kinship terms that must take a suffix when definite and singular; see Leslau 1995:160-161). As for the paucal, it is claimed in Yimam 1996 that the plural suffix is in fact a paucal (i.e., used for small numbers of entities), but this claim is not borne out in Leslau 1995 (see p. 257) or in my fieldwork where multiple consultants used the plural suffix for a numeral denoting over a million entities.

(2) ɪdʒ-u mäs'haf wässäd-ä
 child-DEF book take.PF-3MS

Translation 1: The child took a book.

Translation 2: The child took some books.

(Leslau 1995:179)

The direct object *mäs'haf* 'book' is unmarked and can be translated as either a single book or multiple books. The number neutrality indicates that these nominals could actually be syntactically or semantically incorporated nominals (see e.g., Farkas and de Swart 2003 and references therein), as presciently suggested by Kapeliuk (1994:10-13). Crucial empirical facts to settle include whether these nominals are necessarily verb-adjacent (see some discussion on this in Kapeliuk 1994:12), whether they can be case-marked, whether they can undergo movement, and whether they can ever be interpreted as epistemically or scopally specific. Such issues will require careful syntactic and semantic fieldwork to be untangled, and I will set the number-neutral indefinites aside for the most part in the remaining discussion of number.²

The plural suffix is the predominant and/or typical way of forming (definite) plurals in Amharic (Leslau 1995:171, Hartmann 1980:285). However, for many nouns, the plural can be morphologically marked via means other than the plural suffix *-offif*. These means include other suffixes, prefixes, nonconcatenative morphology (ablaut and a change in the prosodic template) or any combination of these factors. As a group, most of these pluralization strategies are either

² Turkish has a similar class of number-neutral nominals which are necessarily non-specific, do not receive case marking, must be verb adjacent and cannot undergo movement (Jorge Hankamer, p.c.). Kapeliuk (1994) is aware of this similarity and uses terms borrowed from a Turkish grammar to situate her discussion of Amharic number-neutral nominals. She suggests that Amharic number-neutral nominals must be verb-adjacent and do not receive case marking, but she does not discuss movement.

descendants of or borrowings from Ge'ez (Leslau 1995:179, cf. the description of Ge'ez plural nominals in Lambdin 1978:18-19).

Irregular plurals are not uncommon among Afroasiatic languages in general, especially Arabic, and have been studied extensively (see e.g., Ojeda 1992, Zabbal 2002, McCarthy and Prince 1990, McCarthy 2000 on Arabic, Palmer 1955 and 1962 on other Ethio-Semitic languages, and Ratcliffe 1998 on broken plurals throughout Semitic, among many others). However, unlike Arabic, Amharic uses a regular pluralization strategy more often than the irregular strategies. Leslau (1995:171) further comments that many nouns with irregular plurals are “learned words,” i.e., that many of the irregular pluralization strategies are not productive.

The irregular plurals can be sorted into a number of categories depending on pluralization strategy. The first category is nominals that take a suffix other than *-ot/fif* when pluralized (Leslau 1995:171, Hartmann 1980:286-287, Cohen 1970:71), e.g. the suffix *-an* or the suffix *-at*. These nominals are often called the ‘external plurals’ (see Hasselbach 2007 for some recent speculation on their historical development within Semitic).

- (3)
- a. mämht̩r ‘teacher’ → mämht̩r-an ‘teachers’
 - b. mäzämm̩t̩r ‘cantor’ → mäzämm̩t̩r-an ‘cantors’
 - c. ht̩s’an ‘baby’ → ht̩s’an-at ‘babies’
 - d. k’an ‘day’ → k’an-at ‘days’
 - e. kah̩n ‘priest’ → kah̩n-at ‘priests’
 - f. k’al ‘word’ → k’al-at ‘words’

Some nominals undergo nonconcatenative morphological processes to inflect for plural number, i.e., the consonantal root remains constant but the vowels change in quality (ablaut/melodic overwriting) and the prosodic structure (the template) changes as compared to the singular form (Leslau 1995:172, Hartmann 1980:288, Cohen 1970:71-72). Such nominals are also often called broken or internal plurals (see McCarthy and Prince 1990 for a detailed overview of Arabic broken plural morphophonology). There are only a few plurals which undergo **only** nonconcatenative morphology.

- (4) a. kǎnfār ‘lip’ → kǎnafīr ‘lips’
 b. dǎngīl ‘virgin, nun’ → dǎnagīl ‘nuns, celibates’

Most are also inflected with a prefix and/or a suffix along with vocalic and prosodic alterations.

- (5) a. nīgus ‘king’ → nǎgās-t ‘kings’
 b. māsīn ‘prince’ → māsafīn-t
 c. ganen ‘demon’ → a-ganīn-t ‘demons’
 d. mās’haf ‘book’ → mās’ahīf-t ‘books’
 e. kokāb ‘star’ → kāwakīb-t ‘stars’

Certain nouns also undergo partial reduplication in the plural.³

- (6) a. wäyzäro ‘lady, Mrs.’ → wäyzazɨrt ‘ladies’
b. gobäz ‘young man’ → gobäzazɨt ‘young men’

It is likely that there are morphophonological subregularities within the irregular plural system, e.g., that quadriconsonantal roots pluralize via a CäCaCɨCt pattern where the final *-t* is deleted after liquids (cf. the subregularities within the English irregular past tense inflection). I leave the detailed investigation of these generalizations for future research that is more morphophonologically-oriented.

To sum up, in Amharic, singular nominals are unmarked, and plural nominals are either unmarked (if non-referential), marked with a suffix *-otɨfɨ*, or derived through other, irregular means. In the next section, a broad range of data is presented on the contrasting properties of regular and irregular plurals, and a split analysis of number is developed.

3 THE REPRESENTATION OF NUMBER: A SPLIT ANALYSIS

There seem to be three options for where number is located within the DP in general: number is its own functional projection (NumP; see e.g., Ritter 1991, 1992 among many others), number is a feature on *n* (see e.g., Lecarme 2002, Lowenstamm 2008, Acquaviva 2008a), or

³ Nominals may also undergo total reduplication but this leads to either a distributive or an adverbial interpretation, e.g., *gara gara-w-t-n bedä* hill hill-DEF-ACC he.went = ‘he went by way of the hills’ (see Leslau 1995:173-174).

number is a feature on the root.⁴ There is a reason why there are no citations for the last option. It is highly implausible for number to be a feature of roots because it is not true for any language that each root is associated only with a certain number, i.e., the nominal associated with any given root can typically be inflected for either singular or plural or number.⁵ Moreover, number is usually represented morphologically across languages by an addition or change to the nominal, e.g., an affix, a clitic or a stem change of some kind (ablaut, prosodic structure alteration, etc.). If one were to claim that number is part of the root, then all plural roots would (partially) contain the same string of segments or be altered in exactly the same way, which seems to glaringly indicate that a generalization is being missed.

No one advocates for number being on the root, but, in contrast, it has been widely assumed that number inflection is housed in Num(ber)P. NumP was originally proposed in Ritter 1991, 1992 (see also Carstens 1991 and Valois 1991). Ritter (1991) argues that there is an additional functional projection between DP and NP in Hebrew and that the projection houses number inflection. In Ritter 1992, she demonstrates the existence of NumP in Haitian and Hungarian as well. Since Ritter's work, NumP has been assumed or shown to be the syntactic location of number features in a wide variety of languages, including the Romance languages (Bernstein 1993 et seq.), Kiowa (Harbour 2007:62), Chinese (Li 1999), Arabic (Fassi Fehri 1993, Zabbal 2002), Welsh (Rouveret 1994), and English (Embick and Noyer 2007).⁶ NumP is now

⁴ The claims in this section (and throughout the chapter) are limited to count nouns. Mass nouns generally do not pluralize except with reference to kinds (*wines, oils*) and initial results from my fieldwork show that it is difficult to pluralize mass nouns in Amharic as well.

⁵ The obvious exception here is *pluralia tantum* roots, e.g., *scissors, shears* and *pants* in English or *mayim* 'water' in Hebrew (the latter is technically a *duale tantum*). See Acquaviva 2008a (15-21) for detailed discussion of how *pluralia tantum* is a more nuanced phenomenon than it originally seems to be (e.g., the acceptability of *a pant leg*) and how *pluralia tantum* roots cross-linguistically fall into particular semantic classes. Note, though, that despite the thorough investigation of *pluralia tantum*, number features are explicitly banned from being on roots in Acquaviva 2008a (see p. 5).

⁶ Although see Ghomeshi 2003, Déprez 2004, and Heycock and Zamparelli 2005 for arguments that some languages lack NumP.

largely taken to be the default location of number features within a DP unless proven otherwise (as in e.g., Ghomeshi 2003).

In Distributed Morphology in particular (see e.g., Embick and Noyer 2007:307), it has been assumed that number is expressed morphologically through the spell-out of Num, and that singular and plural nominals combine with the Num head in some fashion when the two are realized as a single morphosyntactic unit (e.g., through Num lowering, *n* + the root raising, Local Dislocation, etc.). Num[+PL] results in inflection for plural number, whereas Num[-PL] results in inflection for singular number. I similarly take it as a given for now that NumP is the locale of (at least some) number features in Amharic (see also Section 4.1.1 for syntactic arguments that NumP must be present in Amharic).

However, the other option should not be forgotten: what if a root combined with a category-defining *n* head that contained a plural feature? The nominal would be, from an intuitive point of view, inherently plural, even if *n* is spelled out as a separate vocabulary item from the root. Note that the **root** is not inherently plural, just the nominal that results from combining the root with the category-defining head *n*. Number on *n* has thus often been characterized as more ‘lexical’ than plural from Num, and it has accordingly been proposed that number features are found on *n* for more ‘lexical’ plurals within languages (plurals that have idiosyncratic meaning or display otherwise unusual behavior; see e.g., Acquaviva 2008a, Lowenstamm 2008) and to account for entire plural systems where plurality seems lexical (Lecarme 2002).

Having number on *n* raises numerous questions, though: what predictions does this make about the behavior of *n*, and how does *n* interact with Num? In the remainder of this chapter, I explore these questions and develop a split approach to number in Amharic DPs where number is both on *n* and on Num. Specifically, I propose that irregular plural inflection in

Amharic results from the spell out of *n* with a plural feature (*n*[+PL]), whereas regular plural inflection result from the spell-out of Num with a plural feature (i.e., Num[+PL] is spelled out as *-ot/i/f*). In the rest of this section, I review the differences between *n* and Num and show how they correlate to the differences between regular and irregular plurals in Amharic. In particular, I focus on how having the source of irregular plural morphology be *n* explains many of the unusual properties of Amharic irregular plurals.

In Section 3.1, I discuss previous claims that *n*P is a domain of morphophonological and semantic idiosyncrasy (Marantz 2001, 2007; Arad 2003, 2005). The realization of *n* tends to be morphophonologically irregular and dependent on the identity of the root. Semantically, *n* can also trigger idiosyncratic interpretations of roots. In Section 3.2, I show how Amharic irregular plurals display these idiosyncracies (and regular plurals do not), and thus irregular plurals seem to be derived via *n* combining with a root. In Section 3.3, I present several additional arguments for a *n*/Num split, looking at double plurals and plurality in derived words, as well as some analyses that have proposed that there is a plural feature on *n* in languages outside of Amharic (Lecarme 2002, Acquaviva 2008a). In Section 3.4, for completeness, I develop a non-split analysis of number and show how it fails to account for the Amharic facts. Finally, in Section 3.5, I briefly discuss the similarities and differences between the Amharic plural system and the well-studied Arabic plural system, which seem to be superficially similar.

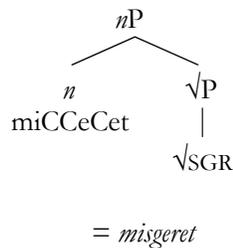
3.1 Root-Derived vs. Word-Derived Words

Marantz (2001, 2007) and Arad (2003, 2005) have developed a framework that makes distinct empirical predictions for word formation from roots (the combination of a root and a

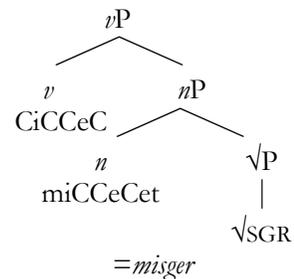
category-defining head) and word formation from words (the combination of some head and an already-formed xP). The predictions for word formation from roots are borne out for irregular plurals, whereas the predictions concerning word formation from words are borne out for the regular plurals.

Under traditional lexicalist theories of morphosyntax, there is a distinction between lexical and syntactic word formation. Word formation in the lexicon is more prone to phonological and semantic irregularities (e.g., special phonological processes, idiomatic meanings), whereas syntactic word formation is morphophonologically regular and has semantically predictable meaning. However, in Distributed Morphology, there is no lexicon or lexical processes, so the contrast must be captured in a different way. Marantz (2001, 2007) and Arad (2003, 2005) propose that ‘lexical’ word formation corresponds to word formation from roots -- the combination of a category defining head (n, v) with a root. ‘Syntactic’ word formation corresponds to word formation from words -- the combination of some head with a categorized word (i.e., nP, vP). The contrast is shown in general in (7), where the derivation of the Hebrew nominal *misgeret* ‘frame’ is shown on the left and the derivation of a denominal verb *misger* ‘to frame’ from *misgeret* is shown on the right.

(7) a. Word Formation from a Root



b. Word Formation from a Word



In (7)a, the category-neutral consonantal root $\sqrt{\text{SGR}}$ combines with a *n* that contains a nominal template. The end result is the nominal *misgeret* ‘frame.’ In (7)b, the already-derived nominal *misgeret* combines with a *v* that contains a verbal template, with the end result being the denominal verb *misger* ‘to frame.’⁷

Using data from Hebrew, a language whose morphological system is very much based on roots, Arad (2003, 2005) demonstrates how words formed from roots (hence root-derived words) have more phonological and semantic idiosyncrasies than words formed from other words (hence word-derived words). To give a specific example, initial [n] assimilates before a stop and initial [y] assimilates before [c] in certain Hebrew root-derived verbs.

(8)	<u>Root</u>	<u>Pattern</u>	<u>Verb</u>	
	a. $\sqrt{\text{NCL}}$	hiCCiC	hicil	‘to save’ (*hincil)
	b. $\sqrt{\text{YCB}}$	hiCCiC	hiciv	‘to position’ (*hiyciv) (Arad 2003:771-772, (45))

However, in verbs that have been derived from some already-formed word, no such assimilations take place (see also Bat-El 1994 where illegal consonant clusters in nominal loans are broken up when verbs are formed from the loans).

(9)	<u>Base</u>	<u>Pattern</u>	<u>Verb</u>	
	a. <i>neged</i> ‘opposite’	hiCCiC	hingid	‘to put in opposition’
	b. <i>necax</i> ‘eternity’	hiCCiC	hinciac	‘make eternal’ (Arad 2003:772, (46))

⁷ The *-et* suffix in the nominal template marks feminine gender. It does not surface in the denominal verb, though. One way to prevent *-et* from being inserted would be to have a separate, null Vocabulary Item for the realization of *n* in the context of a *v*.

To give an example of semantic idiosyncrasies, verbs and nouns formed from roots in Hebrew can give rise to a wide range of meanings related to the core meaning of the root, e.g., for the root $\sqrt{\text{SGR}}$ which combines with a variety of category-defining heads (patterns) in (10).

- (10) $\sqrt{\text{SGR}}$
- a. CaCaC *sagar* ‘to close’
 - b. hiCCiC *hisgir* ‘to extradite’
 - c. hitCaCCeC *hitsager* ‘to cocoon oneself’
 - d. CeCeC *seger* ‘closure’
 - e. CoCCayim *sograyim* ‘parentheses’
 - f. miCCeCet *misgeret* ‘frame’

The root $\sqrt{\text{SGR}}$ seems to have a core meaning associated with closure or separation, but it can take on multiple interpretations in different environments, a phenomenon which Arad calls ‘multiple contextualized meaning.’ However, consider the nominal and denominal verb that were shown in (7).

- (11) a. *misgeret* ‘frame’
 b. *misger* ‘to frame’

The denominal verb *misger* ‘to frame’ has an interpretation that is directly related to the nominal - there is no interpretive leeway and the semantic connection between the two words is straightforward.

Arad (2003, 2005:Ch. 7) also provides independent motivation for the generalization that root-formed words are more likely to have morphophonological and semantic idiosyncrasies. She proposes that this is because the category-defining head that combines with a root defines a phase, and thus the morphophonology and semantic interpretation of the root-formed word is set immediately after it is formed by the spelling-out of the phase (see also Marantz 2007 for some discussion of the same point w.r.t *v* in particular). For example, since the grammar has (already) assigned a meaning to the nominal *misgeret* ‘frame,’ that meaning must be the base of meaning for the corresponding denominal verb.

Although the connection to phases provides some grounding for Arad’s observations, it is perhaps the weakest part of the analysis. Phases are generally considered to be impenetrable once they have been spelled out (the Phase Impenetrability Condition, Chomsky 2000, 2001, 2004). However, it is not discussed fully in Arad 2005 what the consequences are of connecting the central generalization to phases, and see Section 3.2.1 for some recent evidence that this part of the analysis may make predictions that are too strong. Even setting aside this portion of the analysis, though, it still makes clear predictions about how root-derived and word-derived words should behave with respect to the morphophonology and the semantics, and it is time to see how these predictions hold for Amharic irregular and regular plurals respectively.

3.2 Irregular Plurals as Root-Derived

Recall that under the system developed by Arad and Marantz, root-derived words are predicted to have more phonological idiosyncrasies than word-derived words. Irregular plurals in Amharic do not undergo distinct phonological processes from regular plurals (e.g.,

assimilation), to the best of my knowledge.⁸ However, there are two ways in which they display phonological idiosyncrasy as predicted by Marantz and Arad's research: non-productivity and paradigmatic gaps.

Arad (2003:739) notes that word formation from roots is quite often non-productive. Roots may arbitrarily combine with particular category-defining heads. For example, in English the root $\sqrt{\text{CLUMS}}$ combines with the adjectivalizing head *-y*, but $\sqrt{\text{MALIC}}$ combines with the adjectivalizing head *-ious*. In other words, there can be an arbitrary association between a root and the category-forming head which it combines with.

This is certainly borne out for the Amharic irregular plural system. Different roots arbitrarily combine with different *n*[+PL]: a suffix like *-an*, a pattern change plus a suffix, reduplication, etc.⁹ Specifically, I assume that there are different vocabulary items associated with *n*[+PL] that are contextually specified for what roots they can occur with.

- (12) a. *n*, [+PL] ↔ -at / { $\sqrt{\text{K'AL}}$, $\sqrt{\text{HIS'AN}}$, $\sqrt{\text{KAHIN...}}$ }
- b. *n*, [+PL] ↔ äät / $\sqrt{\text{NIGUS}}$
- c. *n*, [+PL] ↔ äaɪ / { $\sqrt{\text{KÄNFÄR}}$, $\sqrt{\text{DINGHL...}}$ }
- d. *n*, [+PL] ↔ -an / { $\sqrt{\text{MÄMHËR}}$, $\sqrt{\text{MÄZÄMMËR}}$ }

⁸ Arad (2003, 2005) notes that, in English, deverbal nouns have a verbal stress pattern (*consént*), whereas pairs of nouns and verbs that are both root-derived have different stress patterns (*recórd*, *récord*). It seems, then, that stress could be a potential area where irregular and regular plurals could be differentiated, but unfortunately, stress in Amharic is very understudied, probably because the facts are very murky (see the brief remarks in Leslau 1995:44-45, and the more thorough investigation in Mullen 1986).

⁹ Arad discusses this in terms of the root selecting for the category-defining head, and assumes that there are different category-defining heads for each different morphophonological realization. However, she notes in a footnote that it could be that certain combinations of root and binyan are unacceptable at the interfaces (Arad 2005:193), and this is the approach I will take.

The vocabulary items in (12) raise important questions about roots in Amharic and about the morphophonology of plural inflection (e.g., how the vocalic affix in (12)c overwrites the vowels of the root, how the two-piece affix in (12)b is aligned, etc.). These questions are outside of the main investigation here, but see Kramer 2007, Tucker 2009 and Embick 2008 for some general discussion. It is also worth noting that a thorough morphophonological analysis of the Amharic irregular plurals could probably narrow down the number of vocabulary items or re-state some of them in terms of phonological constraints (cf. work on Arabic broken plurals like McCarthy and Prince 1990), but there is a core of arbitrariness that remains in the association of a particular $n[+PL]$ with a particular root or set of roots.

As for the paradigmatic gaps, all the roots that do not have irregular plurals essentially constitute a large gap in the paradigm of roots that combines with $n[+PL]$. This is parallel to the fact that not all verbs in Hebrew combine with every binyan, e.g., the root \sqrt{QRC} only combines with the CaCaC binyan (Arad 2005:193-194). In Amharic, it is the case that not all roots can combine with the category-defining head $n[+PL]$, or in other words, only certain roots have an inherently plural nominalization.

The regular plural lacks these phonological idiosyncrasies. As expected, the morphophonological realization of Num does not vary according to the root (it is always the suffix *-ot/it/*).¹⁰ Also, surprisingly, there are no paradigmatic gaps in regular plural formation, i.e., it is very productive. All nominals in Amharic may be regularly pluralized, even if they also have an irregular plural.¹¹

¹⁰ If a noun ends with a vowel, an epenthetic *-w* or *-y* is inserted between the noun and the plural suffix depending on the quality of the vowel of the noun. The glide is inserted purely to avoid hiatus; see discussion in Leslau 1995:170.

¹¹ The data here is from my own fieldwork -- Leslau (1995:171, 172) and Cohen (1970:71-72) note that some nouns have two different plural forms, one irregular and the other with *-ot/it/*, but they do not give many examples.

(13)	<u>Singular</u>	<u>Irregular Plural</u>	<u>Regular Plural</u>	<u>Gloss</u>
	kahɪn	kahɪn-at	kahɪn-otʃtʃ	priest
	k'al	k'al-at	k'al-otʃtʃ	word
	mäs'haf	mäs'ahɪft	mäs'haf-otʃtʃ	book
	kokäb	käwakɪbt	kokäb-otʃtʃ	star
	nɪgus	nägäst	nɪgus-otʃtʃ	king
	mälak	mälʔak	mälak-otʃtʃ	angel
	wäyzäro	wäyzazɪrt	wäyzär-otʃtʃ	lady, Mrs.

The fact that all nominals have regular plurals in Amharic raises the question of when regular and irregular plurals are used: see Section 3.3 for discussion. The main point is that regular plural formation displays no (or at least, no easily detectable and/or very few) paradigmatic gaps, exactly as predicted if it is derived from a word and not from a root. In terms of morphophonological idiosyncrasies, then, the irregular plurals are non-productive and have paradigmatic gaps, and the regular plural is productive and has no gaps, as predicted if the former corresponds to *n* and the latter to Num.

It may seem like the Elsewhere Condition/ Pāṇinian Principle is violated in (13). A more specific rule (for forming irregular plurals) does not necessarily 'win out' over a less specific

rule (for forming regular plurals). This is in fact an initial indication that irregular and regular plurals correspond to different morphemes. In Distributed Morphology, the Pāṇinian Principle comes into play in deciding which vocabulary item to insert: a more specific vocabulary item must be inserted instead of a less specific vocabulary item (see e.g., Halle and Marantz 1993). However, if irregular plurals are formed via plural features on *n* and regular plurals are formed via plural features on Num, they are different ‘slots’ for Vocabulary Insertion and vocabulary items will never compete for insertion between them. This is discussed in more detail in Section 3.4.

The regular and irregular plurals act as word- and root-derived words respectively in terms of semantic idiosyncracies. The effects are not as dramatic as within the Hebrew paradigms (mainly because each root only has one irregular plural form and cannot be inflected over and over again with different meanings), but they are telling nonetheless. Several irregular plurals are associated with special interpretations.

(14)	<u>Singular</u>	<u>Gloss</u>	<u>Irregular Plural</u>	<u>Gloss</u>
	wār	month	wār-at	season
	nāfs	soul	nāfs-at	small insects
	lībs	clothes	albasat	sacerdotal garments
	hīzb	nation	ahzab	barbarians

The irregular plurals in (14) all can receive typical plural interpretations, e.g. ‘months,’ ‘souls,’ etc.¹² However, they can also receive an interpretation where they denote a different, but related concept, although how direct the relation is varies, from reasonably straightforward (a set of months = a season) to less straightforward (many nations = barbarians?).¹³ Regular plurals do not receive special interpretations; they always denote the sum plural of the nominal that they are inflecting (i.e., set of all sums of the elements in the set denoted by the nominal; see Link 1983).¹⁴ Moreover, recall that all nominals can be inflected for a regular plural. When the nominals in (14) are regularly pluralized, they can crucially no longer receive their special interpretations.

(15)	<u>Singular</u>	<u>Regular Plural</u>	<u>Gloss</u>
	wär	wär-otʃtʃ	months, *season
	näfs	näfs-otʃtʃ	souls, *small insects
	ħıbs	ħıbs-otʃtʃ	clothes, *sacerdotal garments
	ħızb	ħızb-otʃtʃ	nations, *barbarians

This demonstrates that the special interpretation is associated only with the root-derived irregular plural, just as they should be if they correspond to *n*.

¹² Speakers vary in whether *abẓab* can mean ‘peoples’ -- for some, it has already been reanalyzed as a collective nominal that purely means ‘barbarians.’ See fn. 13.

¹³ Occasionally, an irregular plural that has a special meaning is even reanalyzed as a singular noun that has only the special meaning. For example, the nominal *abgur* ‘continent’ is singular, but it originally was an irregular plural of *agär* ‘country’ (many countries = a continent).

¹⁴ Leslau (1995:173) lists a few possible exceptions, the most plausible of which is *gabıtʃıf-otʃıf* ‘marriages, relatives through marriage’ from the nominal *gabıtʃıfa* ‘marriage.’ See Section 5 where it is discussed how regular plurals can occasionally give rise to idiomatic meanings, but crucially much, much less often than root-derived words.

There is one additional semantic idiosyncrasy worth mentioning, although only tentative conclusions may be drawn. Certain irregular plurals seem to result in group interpretations, whereas their regular plural counterparts result in typical sum plurals.

(16) \int um ‘official’

a. \int um-ot \int t \int ‘officials (regular plural, a group taken individually)’

b. \int umam \int nt ‘a group of officials’

(17) mänäk^wse ‘monk’

a. mänäk^wse-wot \int t \int ‘monks’ (regular plural, a group taken individually)

b. manäk^wäsat ‘clergy, monks as a class’

The interpretations here are from Leslau, and remain to be confirmed in my own fieldwork. However, they tantalizingly suggest a connection between irregular plurals in Amharic and broken plurals in Arabic (see also Section 3.5). In Arabic, broken plurals can also receive a group interpretation, and in the account developed in Zabbal 2002, the group plurals are derived from a separate group plural operator that is syntactically closer to the nominal head than the typical plural operator, i.e., just like *n* as compared to Num. A clear elucidation of group plurals in Amharic is clearly beyond the task at hand, but the data here suggest not only that irregular plurals are associated with semantically non-standard plural denotations (i.e., idiosyncrasies), but that they are derived by a closer head to the root than regular plurals.

I conclude, then, that irregular plurals show properties of root-derived words, lending support for the proposal that they are derived from *n*[+PL]. In turn, regular plurals show

properties of word-derived words, lending support to the idea that they are derived from Num[+PL].

3.2.1 Coda: Post-Arad/Marantz

As discussed in Section 3.1, Marantz and Arad's proposals about word-derived and root-derived words can be seen as relying on phases, specifically, assuming that a root plus its category-defining head x are the spell-out domain of a phase xP . Once spelled out, a phase becomes impenetrable (as per Chomsky 2000, 2001, 2004), so Vocabulary Insertion for later morphemes cannot 'see inside' the root plus x unit and the semantic interpretation of that unit is fixed. This accords well with the Amharic plural data where regular plural inflection (Num) does not vary morphophonologically according to the identity of the root and does not change the meaning of the root.

However, the impenetrability of the root and categorizing head has been shown to be too restrictive for many languages in a very recent strand of research (see e.g., Borer 2008, 2009, forthcoming, Alexiadou 2009, Harley 2009, Gribanova 2009). What seems to be the case is that the unit formed by the root and its first categorizing head is **more likely** to be phonologically and semantically idiosyncratic. However, higher heads can have allomorphs that depend on the identity of the root and can sometimes affect the interpretation of the root. In this section, I review some of the evidence that Arad and Marantz's proposals are too strict, briefly discuss an alternative proposal, and show that, regardless of how the debate over the domain for idiosyncrasy is ultimately resolved, the split in the Amharic plural system is still motivated.

I will focus on the question of semantic idiosyncrasy since the predictions that Arad and Marantz make in this area are clearer than for morphophonology. Arad (2003, 2005) makes the

specific claim that the combination of a root with a category-defining head (*n*, *v*, etc.) can trigger a variety of idiomatic interpretations. However, once a root-derived word is formed, the interpretation is fixed and any subsequent derivation must use this interpretation. Nevertheless, it does not seem to be the case that all word-derived words keep the original interpretation of the root. Consider the examples in (18).

- (18) a. edit → editor → editorial ‘of or relating to the editor,’ ‘opinion article’
 b. nature → natural → naturalize ‘make natural, become a citizen by residing in a country’
 c. class → classify → classifieds ‘newspaper advertisements’
 (Harley 2009)

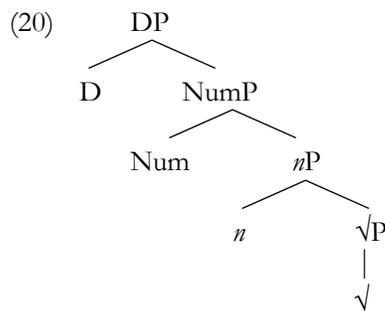
Looking at (18)b, the verb *naturalize* is derived via a *v* combining with the *aP* *natural*, which is itself in turn derived from the *nP* *nature* (whose *n* is null). This is shown in (19) (presumably, the root NATURE raises to *v* or *v* lowers through *a* and *n* to the root).

- (19) [_{vP} -ize [_{aP} -al [_{nP} ∅ NATURE]]]

According to Arad, the interpretation of *nature* should be fixed within the first categorizing head it combines with (the *nP* in this case) and cannot be altered. Subsequent derivation can only be interpreted compositionally as building on this meaning. However, the verb *naturalize* not only has the predicted compositional meaning ‘to make (more) nature-like’ but also ‘to become a citizen by residing in a country.’ This is an idiosyncratic interpretation that does not build on the root meaning of *nature* and it is not expected under Arad.

However, there is not a free-for-all in terms of compositional vs. idiosyncratic meaning. Harley (2009:6-7) notes that “the first combination of a root with a categorizer will likely be idiosyncratic” and that further derivation **can** be idiosyncratic until the first ‘semantic cyclic node’ is reached. The question then becomes what this cyclic node is. Harley (2009) focuses on verbal projections and proposes that it is Voice, but some proposals in Borer (2008, 2009, forthcoming) and Alexiadou (2009) are more germane to present concerns about nominal structure.

Borer (2008, 2009, forthcoming) in particular proposes that the first semantic cyclic domain is the first non-categorizing head, e.g., the first head that is not *n*, *v*, *a*, etc. Crucially, this makes the same predictions as Arad w.r.t. the nominal structures I have considered so far, i.e., the structure in (20).



Under Borer’s assumptions, the first semantic cyclic node is Num, i.e., the semantics sees the complement of this node as a unit and fixes its interpretation at that time.¹⁵ Hence, idiosyncratic interpretation is confined to *nP* and Num cannot alter the basic meaning of the *nP*. This is

¹⁵ It should be noted that the structure here differs from how number is treated in Borer’s body of work. In Borer 2005, number is on two heads: # and DIV where #P dominates DIVP. Interestingly, though DIV can be a categorizing head (F_V) (Borer 2009) and Borer (p.c.) suggests that DIVP may be the source of idiosyncratic plurals like broken plurals whereas #P would be the source for regular plurals.

exactly what is needed for the Amharic data -- irregular plurals (*n*) can trigger idiosyncratic interpretations but not regular plurals (Num).

In sum, then, it seems that despite the fact that Marantz and Arad's original conception of the root-word distinction is too strict, the correct characterization of where idiosyncratic meaning is computed still provides support for the *n*/Num split in Amharic plurals. Of course, many issues remain open here, including the facts about phonological idiosyncrasy and the details of the post-Arad accounts of semantic idiosyncrasy.¹⁶ I leave these issues for future research (and I hope the Amharic data will play a role in resolving them).

3.3 Additional Arguments

In this section, I present several additional arguments for the idea that irregular plurals are derived from *n*[+PL] combining with a root and regular plurals are derived from Num[+PL] combining with a *n*P. Most of the arguments are based on further empirical observations from Amharic about the plurals of derived words and double plurals. The final discussion briefly examines some other analyses where *n* has been proposed to have a plural feature (Lecarme 2002, Acquaviva 2008a). I show how the plural systems accounted for in these analyses are extremely similar to the Amharic irregular plural system. See also Chapter 5 Section 2 where it is shown how gendered plurals in Amharic lends support to the idea that *n* hosts a plural feature.

¹⁶ See Embick 2008 for some further discussion of the phonological idiosyncrasies, although it is unclear whether the account there is strict enough to account for the fact that there are more phonological idiosyncrasies when the categorizing head combines with a root than otherwise. See also Gribanova 2009 for an alternative proposal.

3.3.1 Derivational Selection and Double Plurals

It is well-known that derivational affixes have selectional restrictions (see e.g., the detailed survey of English derivational affixes in Fabb 1988). They can select for a particular category or categories (e.g., the suffix *-able* in English attaches to verbs), or more specifically for particular roots (e.g., the suffix *-y* in English selects for the root $\sqrt{\text{CLUMS}}$). They can also select for already derived elements, e.g., the suffix *-ize* selects for stems (loosely speaking) which end in *-tion* (among other elements).

In Distributed Morphology, the terms ‘inflectional’ and ‘derivational’ are not associated with particular types of morphology and have no status (Harley and Noyer 1999:5). However, affixes that have been traditionally called ‘derivational’ usually correspond to category-defining heads (*n*, *v*), which makes sense in that these morphemes either fix the category of the root or change the category of a *xP*. In contrast, affixes that have been traditionally called ‘inflectional’ usually comprise other kinds of heads: T, Asp, Num, etc. To capture the selection restrictions above in Distributed Morphology, it is reasonably straightforward to posit that a suffix like *-able* is a Vocabulary Item inserted for *a* (adjectivalizing head) in the context of a *vP*, a suffix like *-y* is inserted in the context of the root $\sqrt{\text{CLUMS}}$, and the suffix *-ize* is inserted in the context of *nPs* whose head *n* is *-tion* (see e.g., Arad 2003, 2005 among others).

Returning to Amharic plurals, it was already discussed how that irregular plurals only occur with (i.e., select for) certain roots, and how this is a point in favor of their being derived through *n[+PL]*. However, *n[+PL]* can even select for particular stems to combine with, just like a typical derivational affix. Consider the nominal *ityop’p’itya* ‘Ethiopian.’ It is internally complex -- made up of the noun *ityop’p’itya* ‘Ethiopia’ and the gentilic suffix *-ami* which attaches to

toponyms and results in a nominal for a resident of the country/city/area, etc. One option for pluralizing *ityop'p'iyawi* (and indeed, any noun ending in *-awi*) is an irregular plural suffix *-an*, resulting in the nominal *ityop'p'iyawi-yan* 'Ethiopians.' Therefore, similar to how the suffix *-ize* is inserted in the context of *nP[-tion]* in English, the *-an* realization of *n[+PL]* is inserted in the context of *nP[-awi]* in Amharic.

To the best of my knowledge, Num never has similar selectional restrictions. It is compatible with all kinds of *nPs*, from *n*'s that nominalize roots to *n*'s that attach to already-formed *nPs*, *vPs*, etc. For example, the nominal *ityop'p'iyawi* itself can be regularly pluralized (at least for some speakers) as *ityop'p'iyawi-yotfif*. Other kinds of derived nominals can also be regularly pluralized, e.g., participles (a type of deverbal nominal; e.g., *säfi-wotfif* 'tailors' Fulass 1966:50) and instrumental nominals (formed from deverbal nouns, e.g., *mätfifa-wotfif* 'play things' Fulass 1966:32). We can conclude, then, the fact that irregular plural suffixes impose selectional restrictions on stems is exactly what is expected if they are derived via *n*, and the fact that regular plurals do not is exactly as expected if they are derived via Num.

If there truly are two separate sources for plural inflection in Amharic, it is also predicted that, in at least some cases, they could both surface. This prediction is borne out via forms that I will refer to as double plurals.

(21)	<u>Singular</u>	<u>Irregular Plural</u>	<u>Double Plural</u>	
	māmḥɪr	māmḥɪr-an	māmḥɪr-an-otʃtʃ	teacher
	māzämmɪr	māzämmɪr-an	māzämmɪr-an-otʃtʃ	cantor
	ityop'p'iyawi	ityop'p'iyawi-yan	ityop'p'iyawi-yan-otʃtʃ	Ethiopian
	k'al	k'al-at	k'al-at-otʃtʃ	word
	kaḥɪn	kaḥɪn-at	kaḥɪn-at-otʃtʃ	priest
	mäs'haf	mäs'ahɪft	mäs'ahɪft-otʃtʃ	book
	kokäb	käwakɪbt	käwakɪbt-otʃtʃ	star
	wäyzäro	wäyzazɪrt	wäyzazɪrt-otʃtʃ	lady, Mrs.

An irregular plural can be pluralized 'again' by adding the regular plural suffix to it. The double plural is productive across all the kinds of irregular plurals¹⁷, and also does not appear to alter the interpretation, i.e., double plurals have the same standard plural sum interpretation as non-double plurals.

The sheer fact that double plurals exist in Amharic is evidence for a split analysis of number; in a non-split analysis, irregular and regular plural morphology would be in competition for the same 'slot' (probably Num) and could not both surface at the same time (see Section 3.4).

¹⁷ As confirmed in Leslau 1995, my own fieldwork and Google Ethiopia searches.

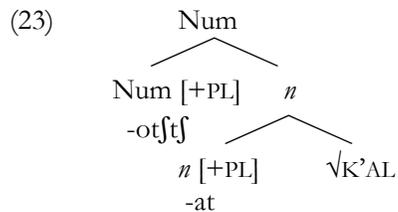
However, the double plurals also support more specifically an analysis where irregular plural morphology is on *n* and regular plural morphology is on Num. Consider the fact that the irregular plural morphology is always closer to the root than the regular plural morphology.

(22) a. k'al-at-otʃtʃ *k'al-otʃtʃ-at

Root-IrregPl-RegPl

b. hi's'an-at-otʃtʃ *hi's'an-otʃtʃ-at

This makes sense if irregular plural morphology is syntactically closer to the root than regular plural morphology.



Num, *n* and the root must all ultimately combine into one complex head (a Morphosyntactic Word in the terminology of Embick 2001). No matter how this is accomplished (whether the root raises to Num, Num raises to the root, or they meet in the middle), *n* will always be between the root and Num in the resulting adjunction structure. Thus, if irregular plural morphology is on *n*, it is correctly predicted to be realized closer to the root than regular plural morphology. It is possible for this to be accounted for in some other kind of split account in Amharic (perhaps where there were two NumPs), but it would have to be stipulated that one projection was below

the other whereas the ordering comes for free in the account advocated for here since the ordering of Num and *n* is set regardless of any plural facts.

Several additional arguments for a split analysis of number have been presented in this section (derivational selection, double plurals, ordering of plural morphemes). I would like to close with some brief discussion of the use of the different plurals in Amharic. Since there can be three different ways to pluralize a given noun in Amharic (regular, irregular, and double plural), it is natural to ask how and when the different forms are used. It seems that speakers are capable of generating all the forms for each noun, but sometimes prefer certain forms based on frequency of exposure and/or register. For example, a speaker highly involved with the church more readily accepts irregular plurals (which are often from Ge'ez) than a younger speaker. A speaker who is younger and/or more urban more often accepts regular plurals of words that are conventionally irregularly pluralized (but may comment that such regular plurals would not be acceptable to their parents). Other speakers classify some irregular plurals as formal and some regular plurals as informal (cf. Cohen (1970:71) who states that irregular plurals are used in erudite and even pedantic forms of the language). Speakers sometimes comment that double plurals and regular plurals which they are more hesitant to accept still “do not sound horrible” or “sound OK” but that they “have never heard them before.” In other cases, double plurals and irregular plurals are dubbed equivalent in terms of register and usage. It seems, then, that the best way forward here is to assume that the Amharic plural system can generate all the forms and the particular usage of the forms can be guided by considerations of register, style or by no particular principle whatsoever if the forms are equivalent (see the discussion of Arabic plural alternants in Acquaviva 2008a (203-206) for similar conclusions).

3.3.2 Other *n* Accounts

Important support for a split analysis of number in Amharic is found in two accounts that independently argue for a plural feature on *n*: Lecarme 2002, which examines Somali, and Acquaviva 2008a, which adopts a cross-linguistic perspective on idiosyncratic plurals.¹⁸ The Somali plurals examined by Lecarme are a particularly interesting contrast because not only is Somali in the same language family as Amharic (Afro-Asiatic), it is one of the Cushitic languages that is spoken within and near Ethiopia.

The plural system in Somali displays an impressively varied array of morphophonological realizations, but Lecarme (2002) successfully reduces the complexity to a handful of plural morphemes: (accented) *-a*, *-o*, a change in tone, *-yaal* and *-oyin*, of which the latter two are mostly used for derived nominals. Lecarme (2002) argues that all plural formation in Somali is derivational, and in particular, that each plural affix is a *n* that has [+PL] features. The evidence that she adduces to support the analysis is strikingly similar to the evidence discussed above. Plural affixes in Somali select for particular roots, and they can also select for particular stems (roots and derivational affix(es)), just like derivational affixes traditionally and just like irregular plural morphology in Amharic. Plural affixes in Somali are associated with particular genders, and this is also true in Amharic (see Chapter 5).¹⁹ Somali has double plurals, where more than one plural morpheme attaches to the same root. Also, a single noun can often be pluralized using several different affixes (e.g., Noun-Affix1, Noun-Affix 2, etc.). This is quite

¹⁸ See also Section 4.1 for extensive discussion of Lowenstamm 2008, a split analysis of Yiddish plurals.

¹⁹ However, there is a careful distinction to be made here. In Somali, every plural affix ‘has’ its own gender and imposes this gender on the nominal. In Amharic, plural affixes have different forms depending on the natural gender of the nominal since, under the analysis developed in Ch.3, natural gender features are in *n* in Amharic. How the analysis of gender in Amharic relates to the analysis of gender in Somali is worth further investigation.

similar to how Amharic nominals can all be regularly pluralized and some can take an irregular and double plurals as well.

Lecarme (2002:125) notes that the double plurals and multiple pluralization strategies for one noun show that the plural affixes are not in competition for a single Num node, and I argue this point specifically for Amharic in Section 3.4. However, unlike in Amharic, none of the Somali pluralization strategies seem to be ‘inflectional’ -- none apply to all nominals, none are morphophonologically more regular, etc. Hence, she concludes that all the plurals are *n*'s with different *n*'s for each affix. In contrast, I argue that there is a regular, inflectional plural in Amharic (realized as the suffix *-ot/iff*) and only one *n*[+PL] that is realized as different Vocabulary Items depending on context. The larger point here, though, is that plurals that are derived via *n* in Somali share properties with irregular plurals in Amharic.

Acquaviva 2008a investigates the behavior and properties of plurality across languages, dividing plurals into roughly two different kinds: lexical plurals and inflectional plurals. He focuses in particular on the properties of the lexical plurals: plural nominals whose meaning and/or form deviate from standard sum interpretations and/or regular, inflectional morphology in a given language. Note that I will continue to use the term ‘lexical plural’ during this brief discussion but only as a label, and not with any theoretical connotations about the lexicon.

According to the criteria laid out in Acquaviva 2008a, irregular plurals are (probably) lexical in Amharic whereas regular plurals are inflectional.²⁰ Irregular plurals that involve changes in the stem of the word (e.g., ablaut, prosodic alterations) are considered by Acquaviva to be morphologically lexical in general (see pp. 268-269 and Ch.7). Hence, all of the Amharic irregular plurals that participate in this kind of plural formation (e.g., *känfür* ‘lip,’ *känfür* ‘lips’) are

²⁰ Acquaviva discusses in depth broken plurals in Arabic, which are somewhat similar to Amharic irregular plurals; see Section 3.5 for some comments on the Arabic data and on Acquaviva’s analysis.

lexical. Needless to say, regular plurals never participate in such stem alternations. Also, recall that regular plurals are semantically transparent, whereas some irregular plurals display semantic idiosyncracies -- this again correlates with the properties of inflectional and lexical plurals respectively.²¹ Finally, the existence of irregular and regular plural alternants for some nouns (without any change in meaning) suggests that at least one of the pluralization strategies is lexical since it does not compete with the other (see Acquaviva 2008a:33ff.).

What is crucial here is Acquaviva's proposals about the syntax of plurality. He suggests that lexical plurals result from combining *n* with a root, whereas inflectional plurals are the realization of features on Num.²² His syntactic proposals are very general (there is no exemplification of this system for particular languages), but the impact for the present analysis is clear. The idea that there is a *n*/Num split in Amharic is not only supported by the Amharic-internal evidence discussed above, but it is also compatible with Acquaviva's conclusions about lexical vs. inflectional plurality across many, many languages. Overall, then, the claim that Amharic irregular plurals are derived via *n*[+PL] is fully compatible with previous accounts of plural features in *n*.

In sum, the Amharic grammar provides a remarkable array of choices for plural inflection: irregular plural (for certain roots), regular plural (for all roots), and double plural (for roots with an irregular plural). It was argued extensively in Sections 3.1 to 3.3 that many of the properties of Amharic plurals are predicted by a split analysis of number: irregular plurals are

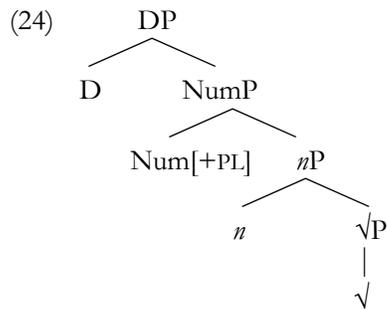
²¹ Acquaviva (2008: Ch.4) carefully delineates the readings that lexical plurals may have. More detailed work on the semantics of irregular plurals in Amharic is needed to classify their semantic idiosyncracies in Acquaviva's typology, but the fact that they have idiosyncracies at all signifies their lexuality.

²² Technically, Acquaviva follows Borer (2005) in having DivP house number inflection. Note also that it is not entirely clear how the morphological and semantic aspects of lexuality are related to this syntactic representation. Acquaviva 2008a as a whole is mostly a descriptive study with a few comments about possible formalizations of the results, and more detailed syntactic theories of lexical plurality are deliberately left for future work (Acquaviva 2008a:273-274).

derived by $n[+PL]$ in combination with a root and regular plurals are derived by the combination of Num with an already-derived word (nP).

3.4 Non-Split Analysis

In this section, I develop a non-split analysis of Amharic number and detail exactly how it falls short compared to a split analysis. The structure of a plural Amharic nominal under this approach is in (24).



Plural number is expressed morphologically only through the spell-out of Num[+PL]. As in several Distributed Morphology accounts of number inflection (Embick and Noyer 2007, Embick 2008), there are multiple Vocabulary Items in competition to realize Num[+PL]. The ‘regular’ plural affix *-otʃʃ* is the default Vocabulary Item, i.e., there are no conditions on its insertion.

(25) Num, [+PL] ↔ -otʃʃ

However, there are also ‘irregular’ plural affixes that compete with *-otff* for insertion. The insertion of these affixes is conditioned by the identity of the root. For example, the *-at* suffix is inserted only in the context of the roots *k'al*, *wär*, *kabm*, etc. Some examples of the Vocabulary Items for these irregular plural affixes under this approach are in (26).²³

- (26) a. Num, [+PL] ↔ -at / { √K'AL, √WÄR, √KAHḤN... }
 b. Num, [+PL] ↔ äät / √NIGUS
 c. Num, [+PL] ↔ äaṭ / { √KÄNFÄR, √DINGḤL... }

The Vocabulary Items in (26) have more specific conditions on their insertion than the ‘regular’ plural affix in (25), so when their conditions are met, they will be inserted instead of (25) (as per the Panini/Elsewhere Principle).²⁴

A key aspect of a non-split analysis is the competition for insertion among the Vocabulary Items that can realize the feature bundle Num, [+PL]. This makes certain predictions that are borne out in well-known plural systems like English. For example, in English, a noun that is irregularly pluralized (e.g., *foot*, *child*, *woman*, *tooth*, *sheep*, *criterion*, *analysis*) cannot be regularly pluralized instead (**foots*, **childs*, **tooths*, **womans*, **sheeps*, **criteria*, **analyses*).²⁵ This would

²³ Another approach here would be to have Num,[+PL] be spelled out as a null morpheme (∅) in the context of roots that undergo ablaut/prosodic alterations. A readjustment rule could subsequently adjust the form of the stem. See Noyer 1997.

²⁴ It may seem like Num and the root are not in a local-enough relationship for the insertion of Num to be conditioned by the root. However, in Embick 2008, Num undergoes Vocabulary Insertion during the same cycle as the root, specifically, the cycle triggered by the insertion of D (which spells out any cyclic domains within D -- i.e., nP which contains the root -- and triggers VI for any non-cyclic nodes in-between D and that cyclic domain -- i.e., Num).

²⁵ This purportedly occurs in English when the regular plural has a different meaning than the nominal that is irregularly pluralized, e.g. *mouses* ‘computer pointers,’ *oxes* ‘strong, brutish men.’ These cases are

violate the Pāṇinian/Elsewhere Principle in that a less specific vocabulary item (regular plural) would be inserted where the context is met for the insertion of a more specific vocabulary item (irregular plural) . Also, a competition-based account of plural inflection predicts that irregular and regular plural morphology cannot be realized at the same time, as is true in English (**feets, *childrens, *teeths, *womens, *sheeps, *criterias, *analyseses*).²⁶ There is only one ‘slot’ for plural inflection that irregular and regular plural morphology both compete for (see Embick and Marantz 2008 for more detailed discussion of similar ‘blocking’ effects in Distributed Morphology).²⁷

However, it was shown above that both of these predictions are untrue for Amharic. All nominals can be regularly pluralized, regardless of whether they can also be irregularly pluralized (see (13)). Also, Amharic has double plurals where both irregular and regular morphology are expressed on the same nominal stem (see (21)). This is strong evidence that

substantially different from multiple plurals for the same nominal in Amharic where in general the different plurals have the same meaning (or, in those cases where the meaning varies, it is the **irregular** plural that has an **optional** special meaning and not the regular one). See Acquaviva 2008a.

²⁶ Again, there is an exception here for nouns like *schematas*, but it seems quite plausible that in this case an irregular plural suffix (e.g., *-ta*) has been reanalyzed as part of the root.

²⁷ Certain nominals in English can have two plurals -- one irregular plural which is formal and one regular plural which is less formal (compare *formulae* and *formulas*). Acquaviva (2008a:34) suggests that these plurals are not ‘lexical plurals;’ in the terms used here, this means they are both realizations of Num[+PL] and the insertion rules for Num are guided by sociolinguistic considerations. It was noted in Section 3.3 that, in some cases, the different plural forms for a given Amharic nominal are associated with different levels of formality. Could it be that a non-split analysis is correct for the Amharic plural system if the insertion of Num can be conditioned by factors like register?

I do not believe so, for the following reasons. First, not all of the irregular plurals are considered more formal than the regular plurals. The consultant who explicitly designated certain plurals as formal only did so for a small subset of the irregulars, and the younger consultant who disliked most of the irregulars still found several perfectly acceptable (for presumably high frequency nominals like *booké*). Thus, not all plural doublets can be distinguished by sociolinguistic factors. Also, the double plurals cannot be forgotten -- it is unclear if their use is guided by sociolinguistic factors at all, and they are of course very difficult to account for under a non-split analysis of meaning. Finally, there is the additional evidence that irregular plurals are associated with *n*: semantic idiosyncrasy, gender distinctions and closeness to the stem in a double plural. Given all these considerations, I think that a purely sociolinguistic, non-split account of Amharic number would not be successful.

irregular and regular plural inflection are not in competition in Amharic, i.e., they correspond to separate feature bundles which in turn are realized by separate sets of Vocabulary Items.

One could attempt to treat Amharic in a competition-based analysis by appealing to some kind of post-syntactic operation. The operation would have to copy the Num[+PL] feature bundle into an additional node, thus providing two feature bundles that could correspond to two separate Vocabulary Items. This would result in a double plural. However, this approach does not straightforwardly explain why one of the feature bundles always corresponds to a regular plural and one to an irregular plural. Moreover, the Pāṇinian Principle/Elsewhere Condition would remain a problem since there would still be no way to ensure that all nominals could be regularly pluralized.

Also, the postsyntactic ‘copying’ operation would be ad hoc -- no such operation is part of the standard repertory of post-syntactic operations in Distributed Morphology. The operation Fission (Noyer 1997, Halle 1997) is perhaps the most similar to what is needed since it splits the features of a single morpheme into two separate terminal nodes. However, Fission is not useful because it cannot copy a feature into a new terminal node; it can only move a feature from one terminal node to another. Hence, there would always be only one [+PL] feature. Indeed, in Noyer 1997, fission is specifically defined so as to **prevent** any given feature from being realized in two different positions (see the discussion of ‘discontinuous bleeding’ in Noyer 1997:6ff).²⁸

²⁸ In Müller 2006, a new post-syntactic operation is proposed to account for ‘multiple exponence,’ e.g., in German *kind-er-n* ‘children (dative pl.)’ where *-er* expresses plural and *-n* expresses dative **and** plural (i.e., plural is expressed twice). The operation is called Enrichment and can add a copy of a feature (e.g., [+PL]) to the post-syntactic representation under certain conditions (it is unclear where exactly the new copy is placed in the representation). I do not comment here on the problem of multiple exponence, which is certainly related to Amharic double plurals but a complex issue in its own right (see e.g., Peterson 1994, Noyer 1997, Inkelas 2008). However, simply copying a [+PL] feature does not help with the Amharic data in that it does not remove the problem that all plurals can regularly pluralize (as noted above) and it raises new problems as well. For example, it is unclear how to ensure that of the two [+PL] features that would result from Enrichment, one must be spelled out as irregular (and that one is closer to the nominal) and one must be spelled out as regular. This is easily done in the *n*/Num split analysis.

Finally, there are some additional differences between irregular plurals and regular plurals that a competition-based analysis does not handle well. Certain irregular plurals take different forms according to gender (see Chapter 5) and the competition analysis offers no insight into why this might be. Also, certain irregular plurals trigger semantically idiosyncratic interpretations (see (14)). A non-split analysis again does not provide a reason for why the irregular plurals would be singled out here, whereas a *n*/Num analysis can draw on independent evidence that *n*P is a domain of semantic idiosyncrasy. Finally, there are the selectional facts whereby irregular plurals can select a particular stem to attach to and regular plurals are not picky. Essentially, the irregular plurals are treated separately in Amharic w.r.t semantically idiosyncratic interpretations and selection, but they are not differentiated in any way in which these differences could easily be captured in a non-split analysis.

Overall, then, the most promising way forward at this point is to treat irregular and regular plural morphology in Amharic as stemming from two separate morphemes, i.e., two separate bundles of features, and that those morphemes are *n* and Num. Many details remain to be fleshed out for the split analysis, though (especially the relationship between *n* and Num), and these are addressed in Section 4. First though, a brief digression on Arabic plurals is necessary.

3.5 Digression: Arabic Plurals

The plural system of Arabic has been extensively described and analyzed, especially the so-called ‘broken plurals’ (see e.g., McCarthy and Prince 1990, Ojeda 1992, Ratcliffe 1998, Zabbal 2002, and see also Acquaviva 2008a: Ch.7 for an overview of the literature and philological references). At a basic descriptive level, the Arabic plural system seems similar to the Amharic plural system since it has an opposition between regular, suffixed plurals (sound

plurals) and irregular plurals that trigger stem changes (broken plurals). In this section, I briefly discuss the empirical similarities and differences between the two systems, and consider how they should be comparatively analyzed. I conclude with some speculation on why the plural systems in these two Semitic languages diverged.

In the literature on the Arabic plural system, there are two main morphological categories: sound plurals and broken plurals. Sound plurals are formed via suffixation.

(27)	a. as-saariq-u	b. as-saariq-uuna	Classical Arabic
	DEF-thief-NOM	DEF-thief-PL	
	the thief	the thieves	
	(Acquaviva 2008a:199)		

In contrast, broken plurals are formed by ablaut (altering the vowels) and prosodic changes from the singular stem.

(28)	<u>Singular</u>	<u>Broken Plural</u>	<u>Gloss</u>	Classical Arabic
	kitaab	kutub	book	
	rajul	rijaal	man	
	qadam	'aqdaam	foot	(Acquaviva 2008a:200)

The relationship between the form of the broken plural and the singular stem may seem arbitrary, but research on the prosody of these forms has demonstrated that the relationship is predictable, at least in the majority of cases (see e.g., McCarthy and Prince 1990).

Another major strand of research on the Arabic plural system has focused on its particularly intricate semantics, with separate oppositions not just between singular and plural forms but also collective and singulative forms (see especially Ojeda 1992, Zabbal 2002, Acquaviva 2008a). Broken plurals are often associated with collective interpretations, but the association is by no means required. It is clear that Amharic lacks a collective/singulative opposition that is as systematic as the opposition in Arabic, but the existence of (allegedly) singulative forms for certain kinship terms (see fn. 1) and the collective readings associated with certain irregular plurals (see (16) and (17)) indicate a certain affinity and make this a productive area for future empirical investigation in Amharic.

Double plurals are permitted in the plural system of Arabic, although they seem to not be generated as productively as in Amharic. Care must be taken to distinguish a genuine double plural from a former broken plural that has been re-lexicalized as a singular noun and then pluralized regularly (see discussion in Acquaviva 2008a:208). There are two types of double plurals in Arabic: broken plurals can take sound plural suffixes ((29)a), and already broken plurals that undergo broken pluralization again ((29)b).

- (29) a. *jamal* ‘camel’ → *jimaal* (broken plural) → *jimaal-aat* (broken and sound plural)
 b. *kalb* ‘dog’ → *’aklub* (broken plural) → *’akaalib* (broken plural from broken plural)

To the best of my knowledge, Amharic double plurals are always of type (29)a where a suffix is added to an irregular plural.

Zabbal (2002) and Acquaviva (2008a) develop morphosyntactic analyses of the Arabic plural system that explore where plural features are located. Acquaviva (2008a: Ch.7) argues extensively that the abstract syntactic representation for a broken and a sound plural nominal is

the same; both contain a plural feature, probably in a Num head (the locus of ‘inflectional number’ for Acquaviva; see Section 3.3.1). Zabbal (2002:64ff.) similarly argues that most broken plurals are derived via a plural feature in Num. The difference in how the plural feature is realized for sound and broken plurals is purely a morphological phenomenon and does not relate to the syntactic structure. For broken plurals that are interpreted as group plurals, Zabbal (2002) proposes that the plural morphology there is the realization of a group operator that is syntactically located between Num and the root.

As for the double plurals, Acquaviva (2008a) does not propose a formal analysis, but he speculates that the double plurals in (29)a are actually ‘single’ plurals which have a primary exponence (the suffix) and a secondary exponence (the stem change) for plurality. A way to make this intuition precise is to use readjustment rules. In the context of certain roots, Num is realized as a suffix, but a readjustment rule also applies that changes the shape of the stem. In this way, a ‘double’ morphological plural can be generated from a single plural feature.²⁹ With respect to the double plurals in (29)b, it is less clear to me exactly how they are to be derived, and more morphosyntactically-focused research on Arabic is needed to establish the analysis here.

In any event, it is necessary to ask whether Amharic can be accounted for in a similar fashion to Arabic. The main similarities are broken plurals and double plurals. However, one crucial difference is that in Amharic all nouns can be regularly pluralized whereas it is not the case that every nominal has a sound plural in Arabic (M.A. Tucker, p.c.). This makes it difficult for any analysis of Amharic to be like Zabbal’s (2002) or Acquaviva’s (2008a) analysis of Arabic where plural features are (for the most part) always on Num -- not split (see Section 3.4).

²⁹ It is unclear to me whether Zabbal 2002 can successfully generate the double plurals. In Zabbal 2002, all double plurals are assumed to be associated with group interpretations, and hence there can be two separate heads for the separate realizations of plurality (the group operator and Num). However, not all double plurals are in fact associated with group interpretations, as Acquaviva (2008a) demonstrates.

The jury is unfortunately out on Arabic double plurals since they have not yet been fully analyzed from a morphosyntactic perspective. However, even just considering my ad hoc formalization of Acquaviva's ideas above, double plurals in Amharic seem less likely to be accounted for using Arabic readjustment rules. Recall that some double plurals do not involve stem changes, e.g. *k'al-at-ofif* 'words.' Readjustment rules were originally intended to effect unpredictable changes in stem form (e.g., *destroy* → *destruct-* in nominal contexts), and not to suffix material to an intact stem.

It will have to remain unclear, then, to what extent Arabic and Amharic plural systems can (or should) be analyzed in a similar way, although the fact that not all nominals have a regular plural in Arabic seems to indicate the systems might be more different than they seem. However, it is worth considering from a general perspective why the systems are similar at all.

Some of the broad similarities between the Amharic and Arabic plural systems are surely due to the familial relationship between the two languages -- most (if not all) Semitic (and Afroasiatic) languages have broken plurals to some extent because most (if not all) Semitic languages use root and pattern morphology for the expression of grammatical categories. If we take the Arabic plural system to be typical of mainstream Semitic, we might ask why Amharic diverged from having number be on Num (a purely inflectional category whose realization involves stem changes) to a hybrid system where number is partially on Num and partially on *n*. I suggest that the answer can be found in Section 3.4.2 above. Recall that in Somali, all number is derived via a plural feature on *n* (according to Lecarme 2002). The influence of Cushitic languages on the Ethio-Semitic languages is well-known (e.g., it is supposedly why many Ethio-Semitic languages are head-final) and I suggest that the plural system may be simply another instance of this influence. The *n*-based Cushitic plural system collided with the Num-based

system of Amharic and a mixture resulted. This is of course speculation, and other Cushitic and Ethio-Semitic languages must be investigated before the hypothesis can be confirmed. Nevertheless, it offers a tantalizing explanation for how the beautifully split Amharic plural system developed.

4 THE DETAILS OF THE SPLIT ANALYSIS

In the previous section, it was shown that a split analysis predicts many of the contrasts between irregular and regular plurals. In this section, the goal is to explicate the details of the split analysis, particularly in terms of the relationship between Num and *n*. The main observation to be captured is that regular, irregular and double plurals are all semantically identical in Amharic, despite the fact that they vary in how exactly (and how many) plural features are realized.

I first examine two approaches where the plural features on *n* and Num are independent from each other, i.e., *n* and Num can be freely combined in the syntax whatever their features. Some separate mechanism then ensures the correct interpretation and morphological realization of the plural features if necessary. The first of these independent approaches is the split analysis of number developed for Yiddish in Lowenstamm 2008. In Section 4.1, I show how this analysis does not generalize well to Amharic and how it has difficulties predicting the semantic uniformity of plurals derived from *n* and Num. The second independent approach I develop (Section 4.2) is based on the Amharic facts directly, and is more successful in capturing the semantic uniformity. However, it is less satisfactory due to the baroque nature of the mechanisms required to generate all the plurals morphologically.

Finally, in Section 4.3, I develop an approach that uses agreement to mediate the relationship between Num and *n*, and thus makes the plural features on *n* and Num dependent on one another. The agreement analysis avoids the pitfalls of the independent analyses, successfully predicting semantic uniformity and morphological variation. It also is shown to make interesting predictions about the PF consequences of feature sharing across languages.

Two additional analyses were mentioned above that rely (at least partially) on a plural feature on *n*, namely, Lecarme 2002 and Acquaviva 2008a. However, these analyses are not returned to in this section for several reasons. In Lecarme 2002, it is proposed that there is no NumP in the syntax of Somali, so there is clearly no relationship between Num and *n* and nothing to compare a potential analysis of the Amharic facts to. Acquaviva 2008a is primarily a descriptive study of idiosyncratic plural forms across languages, not a formal, syntactic analysis of idiosyncratic plurality.³⁰ Acquaviva suggests that when plurality is encoded on *n*, Num “remains null if morphologically dispensable” (271), but he remains uncommitted as to how this would be accomplished technically. In contrast, the goal of this section is to go through the painstaking details of the relationship between *n* and Num.

4.1 Lowenstamm 2008

Lowenstamm 2008 (henceforth L08) is one of the few other split analyses of number in the literature, and it contains an important treatment of double plurals in Yiddish. However, it does not generalize well to Amharic, predicting that *n* in Amharic should not have plural features

³⁰ There is some brief discussion of possible formal analyses, including the lexical/inflectional *n*/Num correlation discussed in Section 3.3.2.

at all. Moreover, it is not fully explicit about the mechanisms needed for the proper semantic interpretation of the plural features on *n* and Num.

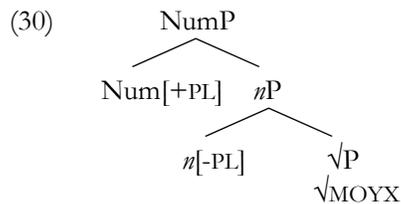
Besides just investigating plurals in Yiddish, L08 also proposes a typology of gender systems, and the typology predicts that the availability of *n*[+PL] in the grammar of a language depends on (i) whether the language has gender distinctions in the plural and (ii) how many genders the language has. In the proposed typology, languages which lack gender distinctions in the plural necessarily have four types of nominals. The first three types are masculine, feminine, and neuter, all of which are inherently singular and formed via the combination of a root with *n*[-PL]. However, the fourth type of nominal is inherently plural -- this type of nominal is outside of the gender system and hence does not show gender distinctions.³¹ The inherently plural nominals are derived from the combination of a root with *n*[+PL].

The typology is supported by evidence from Yiddish, which does not show gender distinctions in the plural, has three genders and also presents some independent evidence for *n*[+PL] (e.g., it has double plurals; see immediately below). Amharic, however, does not meet either of L08's criteria for having *n*[+PL]: it has only two genders (masculine and feminine) and its nominals retain gender when pluralized (see Chapters 3 and 5). Nevertheless, as detailed in Section 3, there is substantial evidence that *n* has a plural feature in Amharic. This is the first indication that L08 is not the right style of analysis for Amharic plurals.

I now turn to the specific analysis of the Yiddish plural system developed in L08, looking at regular plurals, irregular plurals and double plurals in turn. The analysis relies on *n* and Num having independent plural features, but leaves many issues unresolved concerning the

³¹ Lowenstamm ties the distinctions here to a class feature which is associated directly with gender: inherently singular nominals are [+Class] (and thus have gender) but inherently plural nominals are [-Class] (and thus lack gender). In languages where Class is 'active' like Yiddish, plurals have no gender distinctions. In languages like Spanish, where Class is not active, plurals can have gender distinctions since they do not lack Class. The Class feature is intended to be similar to class in e.g., Bantu.

morphology and semantics of pluralization. In L08, a regular plural in Yiddish is formed by the combination of $n[-PL]$ and Num[+PL]. The derivation of the word *מויכאַס* ‘brains’ is in (30).



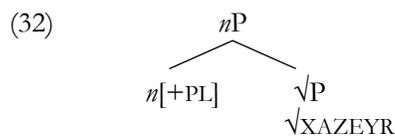
Abstracting away from some details, nP raises into the specifier of NumP and Num[+PL] is spelled out as *-s*. This results in *מויכאַס* ‘brains.’

The derivation raises some questions independent of its plausibility when transferred over to the Amharic facts. First, it is unclear what happens morphologically to $n[-PL]$. Lowenstamm (2008:128) states that the spell-out of $n[-PL]$ is “inhibited” by Num[+PL], but does not propose a mechanism whereby this can be enforced or a specific motivation beyond the vague implication that no more than one number feature can be spelled out (or that Num’s number specification takes precedence over n ?). Having more than one number feature is more of a concern to the semantics than the morphology, but it is not discussed in L08 what happens in the semantics for a structure like (30) -- does $n[-PL]$ not trigger any singular meaning? As will become clear below, its counterpart $n[+PL]$ certainly is interpreted. Is there some stipulation that when both are present, the number feature of Num takes precedence? Such open questions weaken L08, and render it less satisfactory than the two analyses below.³²

³² Also, it is unclear why gender is not retained in a regular plural since it is formed from $n[-PL]$, which is compatible with a [+Class] feature and thus can show gender distinctions.

Moving on to irregular plurals, L08 posits that they are always formed via the combination of $n[+PL]$ and a root. To take a specific example from Yiddish, the nominal *xazər* ‘pig’ has an irregular plural *xazeyrəm*. Its proposed structure is in (32).

- (31) a. *der xazər* ‘the pig’
 b. *di xazeyrəm* ‘the pigs’ (irregular plural) (Lowenstamm 2008:117, (20))

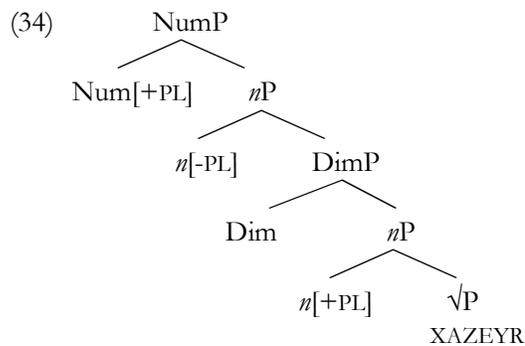


In (32), $n[+PL]$ is spelled out as *-m*. Crucially, no NumP is merged above $nP[+PL]$. This has a positive effect in that it prevents any semantic or morphological confusion about multiple plural features -- there is no plural feature on Num to be interpreted or morphologically realized. However, the lack of NumP also has syntactic consequences which are not explored in L08. In many languages, Num plays an important syntactic role in the DP, e.g., by hosting genitive phrases (see e.g. Ritter 1991, see also Acquaviva 2008a:271 who assumes that Num must be present for syntactic purposes even if n hosts the plural feature). If Num plays any sort of syntactic role in the Yiddish DP, it is less likely that it is prevented from merging whenever there is $n[+PL]$ (unless the inherently plural nominals display syntactic effects that would result from Num not being there, which would be an interesting result). Moreover, there is indirect evidence that NumP is required syntactically in Amharic, although the argument requires that much empirical evidence be laid out and has thus been moved to a separate section: 4.1.1.

Like Amharic, Yiddish also has double plurals, but unlike Amharic, they are crucially only licensed in the context of diminutives.

- (33) a. *der xazər* ‘the pig’
 b. *dos xazər-l* ‘the little pig’ (diminutive)
 c. *di xazeyrəm* ‘the pigs’ (irregular plural)
 d. *di xazeyrəm-l-əx* ‘the little pigs’ (diminutive double plural)
- (Lowenstamm 2008:117, (20))

The double plurals involve Num in L08, but the analysis is again unclear on the semantics and difficult to generalize to Amharic. The derivation of a double plural has the following steps: (i) start with (32), (ii) merge a diminutive phrase whose head Dim takes *n*P as a complement, (iii) merge *n*[-PL] which takes DimP as a complement, because otherwise the nominal cannot be “integrated into syntactic structure” (Lowenstamm 2008:129), (iv) NumP[+PL] is merged and takes *n*[-PL]P as its complement. Various movements occur after this structure is in place in order to generate the correct order of morphemes, but the base structure is in (34).



$n[+PL]$ combines with \sqrt{XAZEYR} to form $xazeyr\partial m$, the diminutive head is spelled out as $-l$ and $Num[+PL]$ is spelled out as $-\partial x$, resulting in the nominal $xazeyr\partial m-l-\partial x$.

The connection between diminutives and double plurals is such that you cannot have a double plural without a diminutive also present, which is a good result for Yiddish. However, it is of course not a good result for Amharic, where double plurals do not require diminutizing the nominal first. In this sense, L08 cannot generate Amharic double plurals since Num never selects directly for $n[+PL]$. Moreover, it is again unclear how (34) is interpreted. Double plurals are synonymous with regular plurals in Yiddish (except for the diminutive interpretation), but there are two $[+PL]$ features and one $[-PL]$ feature in (34) -- it is not obvious how they generate a typical plural interpretation.

In conclusion, L08 cannot be used to explicate the split analysis of Amharic plurals developed in Section 3. It has some analysis-internal shortcomings and it has difficulty with the Amharic facts, predicting that Amharic should not have $n[+PL]$ in the first place, and preventing double plurals from being generated without diminutive morphology also being present.

4.1.1 Digression: NumP in Amharic

In L08, the relationship between $n[+PL]$ and Num is simple: Num is simply not merged for irregular plurals formed through $n[+PL]$. Although this cannot be the case for all Amharic plurals (or else there would be no double plurals), it is at least plausible that in some cases Num is not merged. In this section, I argue that this cannot be the case, i.e., NumP must be present in every nominal in Amharic. The facts indicate there must be at least three levels of projection

within Amharic DP ([XP[YP[ZP]]]), and I argue that the three projections are best identified as [DP[NumP[*ʔ*P]]].

I begin with some basic facts about the order of phrasal constituents in the Amharic DP (see also Chapter 1, Section 2.2). First, possessors typically precede adjectives.

- (35) yä-Gırma tällik' bet
of-Girma big house
Girma's big house
Possessor > Adj

However, relative clauses precede possessors.

- (36) yä-hed-at[*t*]-*tw* yä-Gırma *ihit*
C-go.PF-3FS-DEF of-Girma sister
Girma's sister who left (restrictive interpretation)
Relative Clause > Possessor

When all three are present, the order can be relative clauses > possessor > adjective.

- (37) addis abäba yämmä-t-norä-w yä-Gırma rädʒdʒim *ihit*
Addis Ababa C-3FS-live.IMPF-DEF of-Girma tall sister
Girma's tall sister who lives in Addis Ababa
Relative Clause > Possessor > Adj

The ordering here can be affected by other factors. For example, a “heavy” possessor can precede a “light” relative clause.

(38) [yä-tʰnt yä-roman tarik]_{POSS} [yä-täw-ä-w]_{RC} tämari

of-past of-Roman³³ history C-left.PF-3MS-DEF student

(Context: talking about a party): the student of ancient Roman history who left (the party)

In (39), the possessor is three words whereas the relative clause is one word (I admit this is a rough measure of heaviness), and the possessor may precede the relative clause, i.e., the possessor might be extraposed.³⁴ However, when the possessor and the relative clause are of equal heaviness (one word each), the relative clause precedes the possessor, as in (36). I will thus take relative clause > possessor as the base order.

Another factor that can disrupt the order is that adjectives can front to the left edge of the DP if they are focused (as will be discussed in detail below).³⁵ However, if there is no focus on the adjective and if heaviness is equal across all categories, the basic order of phrasal constituents in the Amharic DP is as in (39).

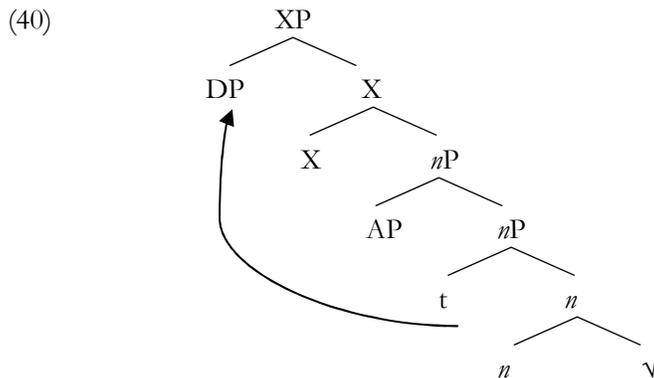
³³ It is unclear to me why Rome is *roman* and not just *rom*, but this is what the consultant reported. It may be that *roman tarik* is treated as a compound here.

³⁴ Whether the possessor **must** be extraposed is an interesting question that deserves fuller exploration elsewhere.

³⁵ Informants also occasionally place the adjective in intermediate positions, e.g., between the relative clause and possessor. It may be that in this case, the relative clause has extraposed to adjoin to DP and the adjective has raised to Spec,DP for focus, but the facts must be investigated more to confirm this hypothesis.

(39) Relative Clause > Possessor > AP > *n*P (*n* + √ = N)

In order to see how NumP fits in, it is necessary to make some basic assumptions about the structure of the Amharic DP. I assume that possessors are initially merged as the specifier of *n*P since they are arguments of the nominal, analogous to free (i.e., non-construct) genitives in Hebrew (Ritter 1991). I also assume that adjectives are either adjoined to *n*P (the classic analysis) or in the specifier of some functional head immediately above *n*P (Cinque 1994 *inter alia*). Since possessors precede adjectives, the possessor must move out of *n*P to a specifier position of some functional head: call it XP. (Note that I will represent the adjectives in the trees below as adjuncts, but nothing hinges on this.)



It has been proposed and argued for in a variety of languages at least since Szabolcsi 1983 that a possessor moves out of the ‘lexical’ NP where it is originally merged into a higher functional projection, so this movement is relatively uncontroversial.³⁶

³⁶ I am glossing over an important issue here -- the fact that Amharic only has one possessivization strategy and it is prepositional. Much of the work that has been done on possessor movement has been done on languages with two strategies (one genitive, one prepositional) and it is usually assumed that it is non-prepositional possessors that move. Also, many Amharic ‘possessors’ have a much looser connection

I assume that relative clauses are adjuncts, i.e., that they are not head-raising (Kayne 1994, Bianchi 1999, 2000). There are still many open questions about the syntax of a head-raising approach to relative clauses (see e.g., Borsley 1997), and Amharic is not a language in which such questions can be ignored. Several arguments against head-raising relative clauses in Amharic are advanced in Demeke 2001 (and the problematic analysis of Amharic relative clauses in Kayne 1994 is discussed), and I assume that relative clauses are adjuncts henceforth. Since relative clauses precede possessors, and they are adjuncts, it can be concluded that they must be adjoined to XP in (40) or a projection higher than XP.

Finally, I would like to return to adjective fronting, mentioned briefly above. Definite-marked adjectives can ‘front’ to a position preceding possessors and preceding relative clauses, probably when focused.

(41) **t**llik'-u yä-Girma bet
 big-DEF of-Girma house
 Girma's **big** house

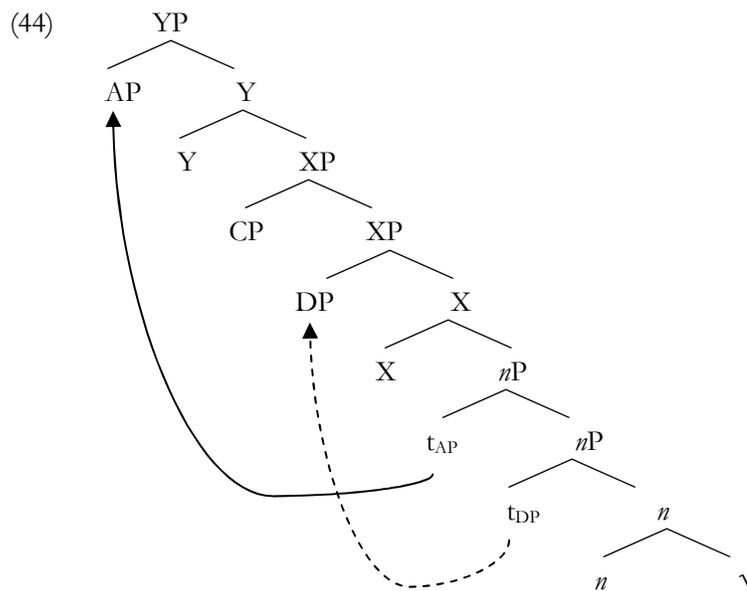
(42) k'äyy-u bizu gänzäb y-awät't'a-bbät mäkina
 red-DEF a.lot money C-cost.PF-in.it car
 the **red** car which cost a lot of money

The adjective must front to a specifier position, not a head position, since the entire AP moves, e.g., a degree element like *very* moves with it.

with the head noun (e.g., they indicate material), like prepositional possessors in general (*a watch of gold*), and it is unclear whether these more loosely connected possessors have correspondingly different syntax.

- (43) bät'am tǎllǎk'-u yā-Gǎrma bet
 very big-DEF of-Girma house
 Girma's very big house

Therefore, there is some additional projection above XP (which houses the possessor), and the adjective fronts to its specifier. Call this projection YP.



Basic assumptions about possessors and relative clauses, combined with data about the order of phrasal constituents, results in a nominal phrase that must have at least three levels of projection: one to host the fronted adjective, one to host the possessor and one to host the root+n complex. The question now is what the mystery projections XP and YP actually are. I compare two proposals.

(45) Proposal 1: YP = FocusP, XP = DP

Proposal 2: YP = DP, XP = NumP

Under Proposal 1, the adjective fronts to the specifier of a FocusP (perhaps analogous to the information structure projections above CP in the clause). Possessors move to the specifier of DP and relative clauses adjoin to DP. Under Proposal 2, the adjective fronts to the specifier of DP. Possessors move to Spec,NumP and relative clauses adjoin to NumP. I argue that Proposal 2 is correct for two main reasons: (i) it is compatible with the analysis of definite marking developed in Chapter 2, and (ii) it is supported by independent work on other Semitic languages and Amharic.

Recall from Chapter 2 that the definite marker attaches to relative clauses.

(46) yä-särräk'-ä-w lɨɟ

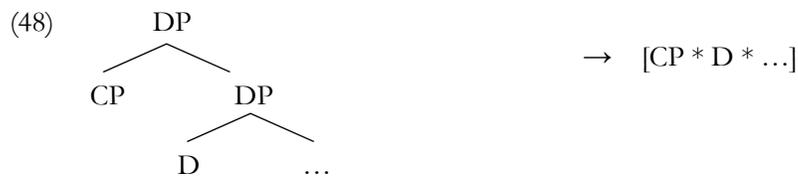
C-steal.PF-3MS-DEF child

the child who stole

This was accounted for by having the definite marker undergo Local Dislocation, and by assuming that relative clauses (since they are phases) are impenetrable at PF. It follows that the definite marker cannot attach within the relative clause itself and undergoes Local Dislocation with the entire CP.

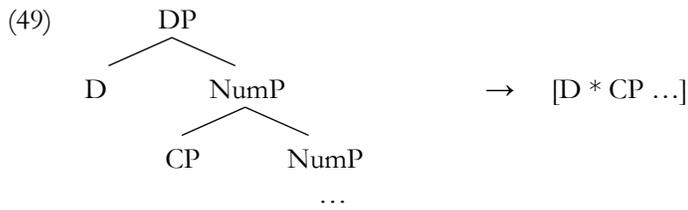
(47) [-u * [yasarak'a] * lɪdʒ] → [[yasarak'a]-u * bet]³⁷

This general approach (Local Dislocation) predicts the definite marking patterns across a range of phenomena. However, under Proposal 1, this approach can no longer be tenable for relative clauses. Relative clauses are adjoined to DP under Proposal 1, which will cause them to be linearized before the definite article (i.e., D).



It may seem that the definite article could simply ‘lean’ leftwards and thus attach to the relative clause. However, recall that DP is a phase, and its spell-out domain is the material from the phase head (D) downwards. Since the relative clause is adjoined to DP, it is not part of the spell-out domain of DP. Hence, when the definite marker is spelled out, the relative clause is not available at PF at the same time to act as a host for the definite marker. The relative clause and the definite marker are part of different spell-out domains and thus cannot be combined using Local Dislocation in a way that will predict the facts. Under Proposal 2, though, the Local Dislocation analysis of definite marking is easily maintained.

³⁷ Low level phonological constraints presumably change -u to -w after a vowel - an instance of the common, Afroasiatic-wide vowel/glide alternation.



Since the relative clause is adjoined to NumP, it is below D and thus will be linearized to the right of D. This is exactly what is needed for Local Dislocation to occur. Hence, Proposal 1 is less preferred in that it is unable to predict definite marking in relative clauses.

Proposal 2 also bests Proposal 1 in terms of support from independent research. Ample evidence for NumP has been provided for other Semitic languages, especially Hebrew (see e.g., Ritter 1991, 1992, 1995, Fassi Fehri 1993, Ouhalla 2004, among others). Moreover, Ouhalla (2004) specifically proposes an analysis of Amharic possessors where they are located in the specifier of NumP, relating them to possessors in Arabic which he also claims are located in Spec, NumP (see Chapter 2 for further discussion of Ouhalla's analysis). Additionally, in den Dikken (2008) and Demeke (2001), the fronting of APs for focus reasons is analyzed as fronting to Spec,DP, in accord with Proposal 2.

These remarks should be taken as a preliminary sketch. Further evidence needs to be provided as to the content of NumP beyond plural inflection in Amharic (e.g., quantifiers; see Ritter 1991 et seq.) and whether the semantic effects sometimes associated with a lack of NumP are present in Amharic (see e.g., Heycock and Zamparelli 2004, Ghomeshi 2003). However, it is clear that three levels of projection are needed, and both previous research on definite marking and independent research on Semitic DPs in general indicate that one of the levels is NumP.

To bring the discussion back to plurals, recall that L08 proposes that irregular plurals (plurals derived via $n[+PL]$) lack a NumP projection (see (32)). However, it was just shown that a NumP projection is syntactically necessary for Amharic nominals. Just to be thorough, if

irregular plurals did lack NumP, it is predicted that irregular plurals could not combine with either possessors or relative clauses. This is false. In (50), the irregular plural *māmhīran* appears with a possessor and in (51) with a relative clause.

(50) 30 yä-tāmhīrt bet-u māmhīr-an

30 of-school-DEF teacher-PL

30 teachers of the school

Walta tik13a4

(51) kā-koledʒ-otʃtʃ yä-tāwt'at'-u māmhīr-an

from-college-PL C-were.gathered-DEF teacher-PL

the teachers who were gathered from colleges

Walta tah09a2

I conclude that any analysis of irregular plurals must include NumP.

4.2 Independent Plural Features Analysis

In L08, the plural features on *n* and Num are independent -- the value of one does not affect the value of the other. However, this cedes a lot of power to the mechanisms ensuring that all plurals are interpreted in the same way (despite their varying realizations), and these mechanisms were not always explicated in detail. In this section, I develop a similar analysis of the Amharic data, but attempt to be more explicit -- this analysis will be henceforth referred to as

the independent analysis. Despite initial promise, I conclude that the analysis has severe difficulties correctly predicting the data, especially the fact that irregular plurals lack regular plural morphology (Num[+PL]) but are interpreted like any other kind of plural.

I begin by looking at how the vocabulary items for an independent analysis would be structured. Recall that Num corresponds to regular plural morphology, so as far as Num is concerned, the vocabulary items are fairly straightforward.

(52) Num, [+PL] \leftrightarrow -otʃtʃ

Num, [-PL] \leftrightarrow \emptyset

Num with a plural feature is always spelled out as the suffix *-otʃtʃ*, whereas Num with a non-plural feature is spelled out as a null morpheme.

The morphological details for n [+PL] are more complex. On the most basic level, it should be asked what kind of feature [+PL] is on n . Is it exactly analogous to the plural feature on Num, i.e., binary (n is either [-PL] or [+PL])? Or is it privative (i.e., n is either [+PL] or just plain n)? Having [+PL] on n be a privative feature is intuitively appealing. It captures the intuition that certain nominals are inherently plural. In a lexicalist theory, these [+PL] nominals might be listed in the lexicon as separate plural forms (see Lowenstamm 2008 for some discussion on this point). However, nominals which lack a [+PL] feature would be indifferent with respect to number and could be inflected as either singular or plural. I adopt the assumption that the plural feature is privative on n henceforth (see Section 4.3 for some discussion of an analysis where the plural feature is binary on n).

As for the vocabulary items that realize $n[+PL]$, several vocabulary items for $n[+PL]$ were laid in Section 3 out and contextual restrictions determine which roots combine with which realizations of $n[+PL]$. I repeat a sample of the Vocabulary Insertion rules for $n[+PL]$ in (53).

- (53) a. $n, [+PL] \leftrightarrow -at / \{ \sqrt{K'AL}, \sqrt{WÄR}, \sqrt{KAHIN} \dots \}$
 b. $n, [+PL] \leftrightarrow äät / \sqrt{NIGUS}$
 c. $n, [+PL] \leftrightarrow äat / \{ \sqrt{KÄNFÄR}, \sqrt{DINGHL} \dots \}$
 d. $n, [+PL] \leftrightarrow -an / \{ \sqrt{MÄMHİR}, \sqrt{MÄZÄMMİR} \}$

The effect of these rules is like a PF filter: any root can combine with $n[+PL]$ in the syntax, but $n[+PL]$ will be spelled out (and the derivation will not crash) only for those roots that appear in the contextual restrictions of the insertion rules. I assume that when n does **not** have a plural feature, it is realized as a null morpheme (if there is no root and pattern morphology for nominals).

- (54) $n \leftrightarrow \emptyset / \{ \sqrt{BET}, \sqrt{SÄW} \dots \}$

In fleshing out the independent analysis, it is necessary to ask what kind of feature the plural features on n and Num in terms of interpretability and valuation. In Minimalism, features vary according to whether they are valued (enter the syntax with a value, +/- in this case) and/or semantically interpretable. In Chomsky 2000, 2001 and 2004, valuation and interpretability are linked concepts: a feature is unvalued if (and only if) it is uninterpretable. However, Pesetsky

and Torrego (2007) propose that valuation and interpretability are separable properties of features, i.e., there are four potential combinations: unvalued and uninterpretable, valued and uninterpretable, unvalued and interpretable, valued and interpretable. I will follow Pesetsky and Torrego's approach here, as it allows for a less direct connection between semantic interpretability and whether or not a particular head enters the derivation with any of its features specified.

Looking first at the dimension of interpretability, then, recall that all the plurals in Amharic are synonymous (they are all sum plurals), despite their varying forms (setting aside for now the group plurals in (16) and (17)). One intuitive way to capture this is to assume that there is only one interpretable plural feature per nominal. I propose that Num carries the interpretable plural feature since it is the semantic locus of plurality in many languages, as discussed above. I also assume provisionally that the plural feature on Num is valued (in Section 4.3, I explore the consequences of having the plural feature on Num be unvalued, i.e., a probe for agreement).

By assumption, then, the plural feature on *n* must be uninterpretable. I also assume that the plural feature on *n* is valued, again saving discussion of unvalued features for the agreement analysis. The kinds of *n* and Num that result are in (55).

(55) **Typology of *n* and Num in the Independent Analysis**

- a. *n*
- b. *n*[+PL] (uninterpretable, valued)³⁸
- c. Num [-PL] (interpretable, valued)
- d. Num [+PL] (interpretable, valued)

³⁸ See Chapter 3 for extensive discussion of how this kind of feature does not crash the derivation.

There are four combinations of *n* and Num, and they are listed in (56) along with what type of plural or singular nominal they initially seem to correspond to.

(56)	a. Num [-PL], <i>n</i>	SINGULAR
	b. Num [+PL], <i>n</i>	REGULAR PLURAL
	c. Num[-PL], <i>n</i> [+PL]	IRREGULAR PLURAL
	d. Num[+PL], <i>n</i> [+PL]	DOUBLE PLURAL

To begin with the simple cases, a singular nominal ((56)a) results when *n* combines with Num[-PL]. Num is spelled out as a null morpheme (as per (52)), and *n* is spelled out as a null morpheme as well. The interpretable [-PL] feature on Num triggers a singular interpretation.

A regular plural ((56)b) results when *n* combines with Num[+PL]. Num is spelled out as *-otʃɪʃ* (again, as per (52)) and *n* is spelled out as either a null morpheme or a nominal pattern. The interpretable [+PL] feature on Num triggers a plural interpretation. This predicts that all nominals should have a singular and a regular plural, and this is correct, as shown in Section 3 above.

Consider the double plurals next: (56)d. Semantically, only the [+PL] feature on Num is interpretable so it is predicted that the semantics will be that of a typical plural. Morphologically, Num[+PL] will be realized as *-otʃɪʃ* and *n*[+PL] will be realized as irregular plural morphology.

The independent analysis seems plausible so far, but the irregular plurals are surprisingly challenging in terms of their semantics. (56)c corresponds to an irregular plural morphologically: *n*[+PL] will be realized as irregular plural morphology, and Num[-PL] will be a null morpheme. However, since the plural feature on Num is interpretable, the nominal should be interpreted as

singular. Since irregular plurals do, in fact, have plural meaning, some mechanism will have to affect Num such that its feature becomes [+PL].

For example, it could be that the value [+] for the [PL] feature could spread or percolate from *n* to Num, as they are both part of the same extended projection. In Grimshaw 2005 (p. 17), it is specifically proposed that a plural feature percolates from a nominal upwards throughout its extended projection. However, percolation must be carefully defined. To have the right effect here, when a feature percolates, it must not only spread to any heads that previously lacked that feature but it must also change the value of the feature on any heads that carried the feature before. The percolation would have to occur in the syntax, so as to ensure that Num[-PL] does not trigger a singular interpretation in the semantics. Unfortunately, PF will then receive a structure containing Num[+PL] and *n*[+PL], which is the same configuration as a double plural. Thus, irregular plurals are predicted to always be realized morphologically as double plurals, an unfortunate consequence.

We can attempt to avert this consequence with some technology. Intuitively, the presence of the same feature ([+PL]) on two immediately local heads (one c-commanding the other) may reduce the need to realize the feature in both locations. Several different kinds of morphological operations could be used here to either combine the features of *n* and Num or impoverish one of them such that the feature is not spelled out. To mention a few possibilities, *n* and Num could optionally undergo feature unification or Fusion, depending on the framework that is preferred. The proper conditions are met for feature unification without any modification of the structure (Num locally c-commands *n*, their matching features have the same value after percolation; see Chapter 2 for more information on feature unification). For Fusion to occur, Num would simply have to lower to *n* (*n* and Num must be sisters; see Halle and Marantz 1993:136).

An alternative to a Fusion/feature unification account involves the operation Impoverishment that deletes features from morphemes (see e.g., Bonet 1991, Halle 1997). An optional application of Impoverishment could remove the [+PL] feature altogether from Num. If it is realized as the null morpheme, an irregular plural results when n [+PL] is realized; if it is realized as *-ot/f/f* a double plural results.

However, the use of morphological operations to generate the irregular plural is ad hoc. Fusion was originally proposed to account for syncretism, e.g., the suffix *-s* on verbs in English expresses both present tense and third person singular agreement. It has been hypothesized that this is the result of a T node and an Agr node fusing (Halle 1997). However, in the case of Fusion proposed above, the realization of the fused Num and n [+PL] is the same as pre-fused n [+PL]. The primary purpose of Fusion in the privative analysis is simply to fold the features of Num, so to speak, into the n [+PL] so that Num is not realized separately.

Similarly, Impoverishment is conventionally used to force a morpheme to be realized in its default form. Impoverishment removes a feature from a morpheme so that a less marked vocabulary item that lacks that feature can be inserted. In the case of Impoverishment proposed above, though, the effect is that **either** vocabulary item associated with Num can be inserted, not just the singular, null morpheme default. The unconventional use of morphological operations is a red flag; it indicates stipulation may be at work.

Overall, the independent analysis is intuitively appealing, but imperfect in terms of implementation. Num is the semantic source of plurality and its morphological realization is fairly straightforward, whereas plurality on n is uninterpretable and idiosyncratically associated with particular roots. The independent analysis requires (perhaps non-standard) percolation of

the number feature from *n*, as well as some kind of ad hoc postsyntactic operation to fuse or remove the number feature on Num in certain cases.³⁹

In the independent analysis, there is effectively no relationship between *n* and Num. Regardless of their plural features, they are freely combined by the syntax, and then additional mechanisms must manipulate these features in order to have the correct interpretations and forms generated. In the next section, I explore an alternative approach to the relationship between *n* and Num -- that it is a dependent relationship of agreement. An agreement analysis can rely on many of the same useful assumptions as the independent analysis (e.g., there is only one interpretable plural feature per DP). However, it does not require the ad hoc machinery necessary for the independent analysis, and turns out to be a much more straightforward way of accounting for the Amharic plurals.

4.3 Agreement Analysis

4.3.1 Basics

In the independent analysis, it was assumed from the start that the plural features on *n* and Num do not affect one another directly. In this section, I develop an agreement analysis of number in Amharic where the plural feature on Num agrees with the plural feature on *n*, i.e., the plural feature on Num is dependent on the plural feature on *n*. This analysis successfully predicts

³⁹ The postsyntactic operation that eliminates a second [+PL] feature will also optionally apply when a double plural is generated by the syntax. This has no negative consequences empirically, but it makes the analysis redundant in that there will be two sources for irregular plurals -- (55)c and (55)d. However, it also means that even if (55)c was not generated by the syntax, irregular plurals could be produced. The elimination of this option would simplify the analysis in that would no longer be a need for a percolation mechanism. However, it is not immediately clear what could prevent Num[-PL] and *n*[+PL] from combining -- it may be that Num[-PL] only subcategorizes for plain *n*, but this is stipulative.

that the plurals are uniform semantically because it retains the idea that only one of the plural features is interpretable (the one on Num). However, it derives the morphological variety of plurals by assuming that agreement is feature sharing, in a sense to be made clear immediately below.

Before launching into the details about plurals, a sketch of my background assumptions about agreement is necessary. I assume that there is a syntactic relation Agree as laid out in Chomsky 2000, 2001, and 2004, i.e., the standard Minimalist view where a probe with uninterpretable features searches downward in the structure for a goal containing interpretable features with which it can agree and thus have its own features valued. However, I deviate from the standard Minimalist view in two assumptions (i) valuation and interpretability are separate properties of features (see discussion in Section 4.2.1) and (ii) agreement is feature sharing (Frampton and Gutmann 2000, Frampton et al. 2000, Pesetsky and Torrego 2007, the HPSG literature (e.g., Pollard and Sag 1994), *inter alia*). Under this view, it is unvalued heads that probe downwards and have their features valued by goals.

I assume that Agree involves a head with an unvalued feature F (the probe) scanning its c-command domain for a head with another instance of F (the goal). When the probe finds a goal, the matching features on the probe and the goal coalesce into a single shared feature (Frampton and Gutmann 2000:4). When an unvalued feature and a valued feature coalesce, the resulting single shared feature has the value of the original valued feature.

A schematic example of feature sharing is in (57).

(57) **Feature Sharing**

$$\begin{array}{ccc} X & \dots & Y \\ F[] & & +F \end{array} \rightarrow \begin{array}{ccc} X & \dots & Y \\ +F & \text{-----} & +F \end{array}$$

In (57), the head X is the probe: it has a feature F that is unvalued, and this is represented by the open square brackets ([]). The head Y is the goal: it has a valued (+) instance of the feature F (and I assume it is in the c-command domain of X). They enter into an agree relationship and their features coalesce into a single shared feature: this is represented by the horizontal line connecting them, as per the notation in Frampton and Gutmann 2000. The shared feature has the value (+) and as a whole is [+F].

To see how feature sharing works for number in Amharic, some assumptions are needed about the plural features involved. Crucially, [PL] cannot be a privative feature on *n* in this analysis. It must be able to be [-PL] as well in order for a singular interpretation to surface at all since the plural feature on Num (where the plural feature is interpreted) always receives a value from *n*. I assume the following feature bundles for Num, *n*[+PL], and *n*[-PL]. A lowercase italic *n* or *i* before a feature indicates uninterpretability or interpretability respectively.

(58) **Plural Feature on Num and *n***

Num	<i>n</i>	<i>n</i>
<i>i</i> PL []	<i>n</i> +PL	<i>n</i> -PL

The plural feature on Num is interpretable but unvalued, whereas the plural features on *n* are always uninterpretable but valued. In other words, Num is where plurality features are interpreted (i.e., they compose semantically with *n*P), but the value for the plurality feature comes from the nominal itself, or more specifically, the nominalizing head *n*.⁴⁰ The Vocabulary Items

⁴⁰ It is possible to not separate valuation and interpretability and have the analysis be simpler here -- Num would simply have an uninterpretable plurality feature where *n* would have an interpretable plurality feature. However, this seems much more arbitrary than the valued/interpretable analysis, which is grounded in the intuition that number, as a phi-feature, comes from *n*. See discussion in Section 4.4.

that realize Num and *n* will be essentially the same as before, but the non-plural Vocabulary Items will contain a [-PL] feature.

(59) Num, [+PL] ↔ -ot[tʃ]

Num, [-PL] ↔ ∅

(60) a. *n*, [+PL] ↔ -at / { √KʷAL, √WÄR, √KAHIN... }

b. *n*, [+PL] ↔ äät / √NIGUS

c. *n*, [+PL] ↔ äat / { √KÄNFÄR, √DINGIL... }

d. *n*, [+PL] ↔ -an / { √MÄMHİR, √MÄZÄMMİR }

e. *n*, [-PL] ↔ ∅

Since the plural feature on Num is unvalued, it is a probe. It searches downward in the structure to find a valued occurrence of the plural feature, and it need look no further than the head of its complement *n*P. Num and *n* enter into an agree relationship, and their PL features coalesce into a shared feature (and value): either [+PL] or [-PL] depending on what value the plural feature on *n* had originally (I will focus only on cases where *n* has a [+PL] feature originally henceforth). This is represented in (61).

(61) **Agreement between Num and *n*[+PL]**

Num	<i>n</i>	→	Num	<i>n</i>
PL []		+PL		+PL	—————	+PL

It is not immediately clear what kind of feature results when two features are coalesced that differ in interpretability. To take an example, when phi-features are shared between a nominal and T, it remains true that the features are interpretable on the nominal but not on T (T does not suddenly vary in interpretability depending on phi features). With this in mind, we might conceive of interpretability more as a semantic property of a given head, and not a diacritic on features that has to be taken into account during feature sharing. The semantic component could attempt to interpret the shared feature on both of the heads it is shared between --- as long as the shared feature is interpretable on one of the heads, it will not cause the derivation to crash at LF. Pesetsky and Torrego 2007 adopt essentially this view in their discussion of the semantics of feature sharing (drawing on Brody's 1997 Thesis of Radical Interpretability; see also Danon 2008 on feature sharing in the construct state).

In the case of (61), then, the shared plural feature is interpretable only on Num and is thus interpreted just once. Thus, all the different types of morphological plurals that can result from the representation in (61) have the same (presumably sum) plural interpretation, and this is the correct result.

Morphologically, the different types of plurals are generated depending on how the shared feature is spelled out at PF. To the best of my knowledge, none of the research on feature sharing explicitly addresses how shared features are realized morphologically. Are they realized on the probe? On the goal? On both? It seems as a minimum that it is possible for a shared feature to be realized on both the heads that share it since this is what occurs in feature sharing between T and a DP subject. The Amharic regular and irregular plurals interestingly provide evidence that a shared feature can, in fact, be spelled out on either head as well as on both.

Consider again (61). After Num and *n* agree, PF receives a representation where a valued plural feature [+PL] is shared between Num and *n*. A choice must be made as to which head (or both) the feature will be assigned to before vocabulary insertion: call this feature resolution. If [+PL] is resolved to be on Num, then Num is spelled out as *-otfif* and a regular plural results. If [+PL] is resolved to be on *n*, then an irregular plural results. If [+PL] is resolved on both heads, then the result is a double plural. In sum, all the choices for Amharic plurals can be derived depending on where the shared feature is spelled out.

- (62) [+PL] realized on Num = REGULAR PLURAL
 [+PL] realized on *n* = IRREGULAR PLURAL
 [+PL] realized on both Num and *n* = DOUBLE PLURAL

The agreement analysis thus deals with all the plurals with ease compared to the independent analysis. The plurals are crucially all semantically the same, but morphologically different, and this result exactly captures the nature of the plural system in Amharic.

4.3.2 Agreement Analysis: Details

It remains to be seen how the morpheme on which the feature is **not** resolved is spelled out. Consider (61) once more, and assume at PF that the [+PL] feature is resolved to Num. Num will then be spelled out as *-otfif*. But how will *n* be spelled out? Perhaps the most obvious assumption about *n* is that it will lack a [+/- PL] feature altogether, since the feature was resolved on Num. However, all of the

vocabulary items for the category *n* also contain either a [+PL] or a [-PL] feature (see (59) and (60)). The Subset Principle states that a vocabulary item cannot be inserted which has a feature not present in the morpheme; since *n* would lack a plural feature in this case, it would seem that it could not be spelled out at all.⁴¹

However, there is another option for what happens when the feature is not resolved to *n*. When a feature is not resolved to a particular morpheme, the feature could revert to its unmarked (default) value on that morpheme. In the case of the plural feature, this means that all morphemes to which the plural feature is not resolved are realized as [-PL], i.e., they are realized in their singular forms. This makes exactly the right empirical predictions. In a regular plural, *n* is spelled out as if it were [-PL], i.e., as simply the typical nominal pattern or a null morpheme. In an irregular plural, Num is spelled out as if it were [-PL], i.e., as a null morpheme. Note that this does not change the semantics at all -- the syntactic representation still contains an interpretable plural feature. It is purely morphologically that these morphemes would be in any way singular.

⁴¹ Another option here would be to change the vocabulary items. Perhaps the vocabulary item that currently relates the feature bundle *n*[-PL] to a null morpheme instead relates plain *n* to a null morpheme. This is an inadvisable move, though, since it makes a false prediction about irregular plurals. Consider the following scenario. A [+PL] feature is resolved to *n*, and *n* takes as its complement a root that does not have an irregular plural, say, $\sqrt{\text{BET}}$. The PF component then attempts to insert a vocabulary item for the feature bundle *n*, [+PL] in the context of $\sqrt{\text{BET}}$. None of the vocabulary items that have the feature bundle *n*, [+PL] will work since $\sqrt{\text{BET}}$ never appears in any of their contextual restrictions. However, according to the Subset Principle, a vocabulary item can be inserted that matches only a subset of the features in the morpheme. So, if there is a vocabulary item $n \leftrightarrow \emptyset$, then the null element will be inserted for this particular *n*, [+PL]. The problem is that the resulting nominal receives a plural interpretation (since there was a [+PL] feature in the syntax) but has no overt morphological realization of plural -- specifically, the nominal *bet* should be capable of being interpreted as singular or plural. This is a false prediction, and it can be prevented if vocabulary items for *n* are either [+PL] or [-PL]. In that case, there is simply no vocabulary item that can be inserted for *n*, [+PL] in the context of $\sqrt{\text{BET}}$ (its [+PL] feature clashes with the [-PL] feature), the derivation crashes, and this is a good result.

It should be noted that a bare nominal like *bet* can indicate multiple entities is when it is a number neutral indefinite (see Section 1). However, the morphology and syntax of number-neutral indefinites, and how they receive a plural interpretation, is very unclear -- it is even still under investigation whether they are incorporated or not. I thus hesitate to equate them with other, more typical types of nominals. Also, more tellingly, a bare nominal like *bet* can never be number neutral if it is definite, and nothing prevents a definite marker from attaching to the nominal *bet* when it is comprised of the root $\sqrt{\text{BET}}$ and *n*[+PL] -- the result (*bet-u house-DEF * 'houses'*) is ungrammatical in every context.

One way to accomplish this effect would be to state it outright as a principle of feature resolution, perhaps along the lines of ‘when a feature is not resolved to a particular morpheme, the feature is realized in its unmarked value on that morpheme.’ Another way to accomplish it would be to assume that when a feature is not resolved to a particular morpheme, the value for that feature is removed from the morpheme. If the [+PL] feature is not resolved to *n*, for example, then the feature bundle for *n* becomes *n*, PL []. Vocabulary items do not contain unvalued features, though, so in order for this morpheme to be spelled out at all, it will need to have a value. A morphological redundancy rule which applies at PF can assign it the default value.

(63) **PF Redundancy Rule**

PL [] → [-PL]

Redundancy rules generally supply unmarked values to features that are valueless. They are well-known from research on phonological underspecification, but are not unattested in morphology (see e.g., Halle and Marantz 1994). A similar kind of redundancy rule is also shown to be independently necessary in Amharic for a completely different phenomenon (gender agreement) in Chapter 5. Having the value removed from a feature and then replacing it with a redundancy rule seems complex, and the details remain to be hammered out here. However, the basic intuition that a feature is realized in its default form when no longer shared appears (to me) to be on the right track.⁴²

⁴² Two remarks are necessary here. First, it is possible that feature sharing could be formalized in such a way so that feature **values** are what is shared (not feature specifications). In that case, not resolving a shared feature to a particular head would necessitate ‘breaking’ the feature sharing relationship and thus leaving the head with a valueless feature. Second, the redundancy rule here may seem overly general since

The feature sharing analysis in general happily makes the correct predictions about singular nominals, in which the feature [-PL] is shared between Num and *n*. If the feature is resolved on Num, Num is realized as a zero morpheme, *n* receives a [-PL] value by default and the typical nominal pattern is inserted. If the feature is resolved on *n*, the typical nominal pattern is inserted, Num is assigned [-PL] by default, and again the correct result obtains. If the feature is resolved on both, the same result obtains. The agreement analysis thus correctly predicts the semantics and morphology of all the singular and plural nominals, assuming that a feature which is not resolved to a given morpheme reverts to its default value.

The last lingering issue to be addressed concerns the broader implications of the Amharic plurals, i.e., what they predict about how shared features are realized in general. In the literature, it is certainly not the case that all the phenomena claimed to be accounted for by feature sharing are like the Amharic plural. Feature sharing is typically used to account for agreement (e.g., between a subject and a verb), which involves features necessarily co-occurring on **both** elements that participate in a relation. Viewed in this light, Amharic seems atypical. However, I would like to suggest a reason why Amharic is different which could be used as a starting point for crafting a general theory of the morphology of shared features.

I have been ignoring until this point the fact that Num, *n* and the root are all ultimately part of the same word. For example, the word *bet-ot:fi:f* ‘houses’ contains a root ($\sqrt{\text{BET}}$), a nominalizing head *n*, and a plural Num suffix (*-ot:fi:f*). This means that by the time these

it is not limited to feature sharing or even nominal contexts. However, I believe this generality does not make incorrect predictions, and in fact allows this exact redundancy rule to be used in other contexts (and thus be independently justified). For example, the same redundancy rule could be used to assign default gender agreement (see Chapter 5). Also, note that the scope of the redundancy rule is necessarily limited since unvalued features do not generally enter PF -- I assume that most unvalued features are successfully valued during the syntax by Agree. These issues are discussed much more thoroughly in Chapter 5, Section 3.3.1.

morphemes are pronounced, they have been morphologically combined to form a single item, whether through raising, Lowering, Local Dislocation or some combination of these operations. This is quite different from typical agreement relations, e.g., between a subject and a T. The subject and T (most of the time) remain completely separate words, i.e., they are not part of the same morphological unit. I would like to suggest that it is possible to spell out only one of the shared features in Amharic plurals because all the feature sharing heads end up in one morphological location. In a word like *bet-otfif*, the shared feature is linked among members of the same morphological unit (Morphological Word, in the terminology of Embick and Noyer 2001), so as long as it is expressed somewhere within that unit, it does not matter if it is resolved in both of its locations or only one. This idea makes strong predictions, and in Chapter 5 it is discussed more fully whether they are all borne out. However, the idea that morphologically local shared features need not all be realized represents a viable reason why Amharic plurals would have more spell-out options than subject-verb agreement.

In sum, the agreement analysis of split number in Amharic makes the right empirical predictions and properly characterizes the data. In terms of the semantics, there is only one plural feature and one plural interpretation. In terms of the morphology, the plural feature can be realized in one or all of multiple locations. Moreover, the agreement analysis is an initial step towards a theory of how shared features are realized at PF.

4.3.3 Idiosyncratic Semantics

It is an advantage of the agreement analysis that all plurals receive the same interpretation, i.e., they are synonymous regardless of whether plurality is marked on *n*, on Num

or on both morphologically. However, in Section 3.2, it was shown that certain irregular plurals trigger idiosyncratic interpretations of the roots involved. For example, *näfs* ‘soul’ can mean ‘insects’ or ‘souls’ when irregularly pluralized as *näfsat* but only ‘souls’ when regularly pluralized as *näfs-ot/iff*. How is this accounted for in an agreement analysis?

I assume that the Encyclopedia is where the meaning of a root is determined, and the meaning is dependent on the context of the categorizing heads that dominate the root (Marantz 2001, 2007, Arad 2003, 2005, Alexiadou 2009, Borer 2008, 2009, forthcoming). Borer (2008, 2009, forthcoming) in particular proposes that Encyclopedia searches are limited to a root plus any categorizing heads that may dominate it (see Section 3.2.1) and the searches operate over a post-syntactic structure. These turn out to be precisely the assumptions needed to account for idiosyncratic irregular plurals.

Consider the example in (64) of the morphological representation of *näfs-at* ‘souls, insects.’ I differ from Borer in that I will assume that the Encyclopedia searches over a PF representation before vocabulary insertion (i.e., hierarchical structure is still present, and morphemes have not been realized yet although roots are present).⁴³

(64) [NumP[Num[-PL] [_{nP} *n*[+PL] [√NÄFS]]]]

⁴³ The reason for this is as follows. At some point during PF, Num, *n* and the root must combine into one Morphosyntactic Word. The operations that would accomplish this (e.g., Lowering) are usually considered to occur in Distributed Morphology **before** Vocabulary Insertion. Thus the representation that the Encyclopedia sees if it operates over a post-VI representation would be more like the following:

(i) [NumP [_{nP} [√NÄFS-at-ot{t}]]]

The problem here is that the regular plural suffix is within the first search domain of the Encyclopedia, so it is predicted to be capable of influencing root meaning. Regular plurals do not influence root meaning, though. I sidestep this problem here by claiming that the Encyclopedia searches occur before the plural morphemes attach to the root. However, hopefully, a more general and better-supported solution will eventually be found since it is common for functional heads like Num and categorizing heads like *n* to all end up in the same Morphosyntactic Word.

The shared plural feature between NumP and *n*P has been resolved on *n* such that it is *n*[+PL]. Num has accordingly received a default value and is Num[-PL]. The Encyclopedia only searches over the *n*P portion of the structure, i.e., the root and its categorizing head *n*. I assume the Encyclopedia entry for $\sqrt{\text{N}\ddot{\text{A}}\text{F}\text{S}}$ is as in (65).

(65)	<u>Root</u>	<u>Context</u>	<u>Interpretation</u>
	$\sqrt{\text{N}\ddot{\text{A}}\text{F}\text{S}}$		soul
	$\sqrt{\text{N}\ddot{\text{A}}\text{F}\text{S}}$	<i>n</i> [+PL]	insect

The root $\sqrt{\text{N}\ddot{\text{A}}\text{F}\text{S}}$ means ‘soul’ in any context, but the interpretation ‘insect’ is licensed only in the context of *n*[+PL]. Thus, the Encyclopedia returns two possible interpretations for the root in (64) since *-at* is present: ‘soul’ or ‘insect.’⁴⁴ Note that the plural interpretation of ‘insect’ is guaranteed by the fact that it is licensed in the context of *n*[+PL]; this will force the shared plural feature between *n* and Num to be [+PL] and thus Num will be interpreted as plural.

In contrast to (64), consider the regular plural *näfs-otff*.

(66)	[_{Num} Num[+PL] [_{<i>n</i>P} <i>n</i> [$\sqrt{\text{N}\ddot{\text{A}}\text{F}\text{S}}$]]]
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The shared plural feature was not resolved to *n* and *n* thus lacks a plural feature. The Encyclopedia searches only over the *n*P, and since there is no *n*[+PL], only the interpretation ‘soul’ is returned for the regular plural.

⁴⁴ This crucially assumes that no Pāinian principle is in effect, i.e., the interpretations are not in competition with one another.

The dependence on n [+PL] makes an interesting prediction about double plurals. Specifically, it predicts that semantic idiosyncracies should be retained in the double plural since n is [+PL]. This prediction is borne out.

(67) a. [_{NumP} Num[+PL] [n [+PL] [$\sqrt{\text{NÄFS}}$]]] = *näfs-at-otšif* = ‘souls, insects’

The double plural *näfs-at-otšif* can mean either ‘souls’ or ‘insects,’ and the other semantically idiosyncratic irregular plurals also retain the idiosyncratic meanings in the double plural.⁴⁵ This section is just a brief sketch, and non-trivial issues remain open (see the footnotes). However, there is a viable way in which the agreement analysis is capable of generating the idiosyncratic interpretations of irregular plurals, relying on (and confirming to some extent) Borer’s proposals about how Encyclopedia searches occur.

4.4 Summary

In this section, I reviewed three different analyses of the relationship between n and Num. The first was an analysis originally proposed for Yiddish double plurals by Lowenstamm (2008), but it predicted that (a) Amharic should lack double plurals, and (b) Amharic should lack a NumP when plural features on n are realized. Both predictions were shown to be false.

I then developed two analyses: the independent analysis and the agreement analysis. In the independent analysis, [PL] is a privative, uninterpretable feature on n and a binary,

⁴⁵ The exception is *abzab* which a consultant reported had **only** the idiosyncratic interpretation ‘barbarians’ in the double plural. What may be happening here is that *abzab* has been reanalyzed as a collective singular ‘barbarians’ and then the alleged ‘double’ plural is actually the regular plural of the collective (more detailed semantic fieldwork and comparative work with Arabic needs to be done here -- see also fns. 12 and 13).

interpretable feature on Num. This approach is initially appealing, but requires a lot of machinery to generate irregular plurals. In the agreement analysis, Num and *n* share a [PL] feature whose value is determined by *n* but which is interpretable on Num. The agreement analysis generates all the plurals and singulars and captures the generalization that all the plurals are semantically identical, but morphologically different.

5 CONCLUSIONS AND REMAINING QUESTIONS

In this chapter, a morphological and syntactic analysis of the Amharic plural system has been developed. I argued for a split analysis of number, where irregular plurals derive from the combination of *n*[+PL] with a root whereas regular plurals derive from the combination of *n*P with a Num head. The split analysis explains many otherwise puzzling facts about the Amharic plural system, including the semantic idiosyncrasies of irregular plurals and the existence of double plurals.

Although supported by the data, a split analysis raises questions about how the plural features on *n* and Num are interpreted semantically and realized morphophonologically. Several different approaches to answering these questions were compared, and I concluded that the analysis of number on *n* and Num in Lowenstamm 2008 and an independent analysis of number on *n* are both not feasible for Amharic. Instead, I developed an agreement analysis that relies on feature sharing.

From a broader perspective, how universal is a split configuration for nominal number? There is unusually strong evidence in Amharic for a split system between Num and *n* -- irregular and regular plural morphology are not in competition, there are double plurals, and there are systematic morphophonological and semantic idiosyncrasies associated only with irregular

plurals. However, these different observations carry different amounts of weight. For languages in which irregular and regular plural morphology are not in competition, it seems clear that number must be split between two different heads in the syntax; I know of no other such languages at this time. For languages which have double plurals (e.g., Arabic, Somali, Breton, etc.), it is clear that number is realized by two different morphological elements, but it is not clear that a plural feature has to be on Num and *n* per se (it could be on two *n*'s as in Lecarme's 2002 analysis of Somali; see also Section 3.5). Finally, most plural systems feature some morphophonological idiosyncrasies and have at least small pockets of semantic idiosyncrasy (e.g., *brothers* and *brethren* in English), and it makes less sense to say that the entire plural system is split in this case.⁴⁶

The question then is how to craft an analysis of number that can subsume all the variation, and the independent analysis actually seems better poised than the agreement analysis to describe other languages. Languages which do not have the traits listed above with any systematicity or frequency simply use Num as the locus of plurality semantically, syntactically and morphologically. Exceptions can be accounted for by the occasional *n*[+PL] associated with a particular root. For systems like Somali and other highly lexical plural systems (see e.g., Wiltschko 2008 on Halkomelem Salish), the locus of plurality may have shifted to *n* morphologically, semantically and syntactically. The remainder are the mixed systems like Amharic, where the locus of plurality is split between *n* and Num in that there are a large number of *n*'s that have plural features (alternatively, the agreement analysis could be Amharic's way of grammaticizing such a split). The unique conditions that may have caused Amharic's split

⁴⁶ Outside of number, a 'split' analysis of TP structure has been proposed by Bobaljik and Thrainsson (1998), such that languages parametrically vary whether their clausal structure includes both AgrSP and TP (split) or just IP (unitary; Inflectional Phrase - hosting both tense and agreement morphology). This seems more 'split' than the number case -- recall that in the agreement analysis, there is really only one shared number feature syntactically and semantically, and both NumP and *n*P are always projected.

system (the colliding of a Semitic plural system and a Cushitic plural system) were described above in Section 3.5, and I hope to continue this research by looking at other Ethio-Semitic languages for evidence of a similar split.⁴⁷

A number of empirical issues were left open in the investigation. The role of number neutral indefinite nominals in a split analysis remains to be clarified, especially if number neutrality is connected to the presence or absence of NumP (see e.g., Ghomeshi 2003, Déprez 2005; see also Heycock and Zamparelli 2003 on the semantics of NumP and Kwon and Zribi-Hertz 2004 on the semantics of ‘lexical’ plurals). Collective and singulative nominals as well as group interpretations are a crucial part of the number system in Arabic and many other Semitic languages. While their presence has been hinted at in Amharic, a full treatment and integration into a split analysis remains to be done. Finally, in other languages with complicated plural systems (Breton, Somali), it is sometimes the case that the more ‘lexical’ plurals can feed ostensibly derivational processes like diminutive-forming. It remains to be seen whether this is the case in Amharic.

The goal of this chapter was to provide a nuanced understanding of the morphology and syntax of Amharic number. I believe the goal has been accomplished, but the chapter also has broader implications for key theoretical issues like word formation and feature sharing. It provides confirmation of the approach to word formation originally advanced in Marantz 2001 that takes category-defining heads and roots to be domains of idiosyncrasy. It provides support

⁴⁷ A cross-cutting issue that muddies the waters here is that morphological and semantic idiosyncrasy are not always correlated as tightly as they are in Amharic. For example, in English, *looks* is regular morphologically but has an idiosyncratic semantic interpretation of ‘attractiveness’ as well as the regular interpretation ‘glances.’ However, it is certainly much more common cross-linguistically for irregular plurals to be idiosyncratic semantically (see Acquaviva 2008a: Ch. 3 for discussion and examples). An analysis that allows for exceptions like *looks* while simultaneously predicting them to be less common has yet to be developed (the analyses of semantic idiosyncrasy discussed in Section 3.2.1 do not help), and I leave the resolution of this issue to future work.

for Borer's (2008, 2009, forthcoming) conception of Encyclopedia searches. It explores the semantic and phonological ramifications of feature sharing, which has become a widely-used tool to formalize agreement in Minimalism. Also, most broadly, it contributes to the theory of number and how its morphological, syntactic and semantic facets can be separate yet closely interconnected in a single language. Amharic is not the only language in which number is complex, and it is my hope that the proposals here will ultimately assist in a better cross-linguistic understanding of nominal number.

CHAPTER 5:
GENDERED PLURALS AND DP-INTERNAL AGREEMENT:
THE INTERACTION OF GENDER AND NUMBER

1 INTRODUCTION

In previous chapters, I developed accounts of number and gender that relied heavily on *n* having phi-features. The first portion of this chapter focuses on synthesizing these results, investigating the predictions that the analyses make about the interaction of gender and number in Amharic (and beyond). The second portion of this chapter discusses the impact these results have on DP-internal agreement (aka concord) in Amharic, which involves these same gender and number features. In the analysis of number especially, it was shown that *n* and Num agree and share a plural feature. In Section 3, the feature sharing account is extended to cover all cases of DP-internal agreement, and the fundamental assumptions which are necessary for this to work are spelled out. Section 4 concludes. Throughout this chapter, the analyses advanced in Chapters 3 and 4 about the key role of *n* will be referred to collectively as the Gender and Number on *n* (GNN) analysis.

2 GENDERED PLURALS AND FEMININE SUFFIXES: EMPIRICAL PREDICTIONS

This section explores the consequences of potentially having both a number and a gender feature on *n*, i.e., the GNN analysis. I investigate in particular how this affects the morphophonological realization of *n*. In Section 2.1, I demonstrate how irregular (*n*-based)

plurals have distinct masculine and feminine plural forms, which is predicted if both a gender and a number feature are part of the feature bundle that comprises *n*. In Section 2.2, the interaction of the female gender suffix *-it* with number is explored and it is shown how its behavior is consistent with the GNN analysis. In all, the predictions of the GNN analysis are fully borne out in Amharic.

From a larger perspective, the issues that the following sections focus on all concern Vocabulary Insertion, i.e., the matching up of morphemes with their morphophonological realizations. The GNN analysis predicts that there will be certain combinations of features on certain heads, and this makes predictions about how these heads will be morphophonologically realized. For example, if the GNN analysis predicts that a certain head contains a gender feature, the analysis is supported if the morphophonological pieces that realize that head vary in terms of gender. I review the key aspects of Vocabulary Insertion that this section will rely on below (the discussion draws primarily on Halle and Marantz 1993, Harley and Noyer 1999 and Embick and Marantz 2008 and is partially repeated from Chapter 1).

I assume syntactic operations manipulate bundles of features, but that these bundles lack any kind of morphophonological realization in the syntax. After the syntactic derivation is complete, the feature bundles are sent to PF where they are given morphophonological content. Vocabulary Insertion is the process whereby the feature bundles are matched up with pieces of morphophonology, and more specifically, the process whereby it is decided what vocabulary item should be inserted for a particular feature bundle. Vocabulary Insertion is a very local process in that it applies to one feature bundle at a time, and only one vocabulary item can be inserted for any given feature bundle.

A vocabulary item is a relation between a phonological string and information about where the string can be inserted. The information about where the string is inserted is made up

both of features and contextual restrictions. Vocabulary items for the past tense in English are in (1).

- (1) a. T, [PAST] ↔ -t / { √LEAVE, √BEND, . . . }
b. T, [PAST] ↔ -ed

The vocabulary items in (1) are in competition -- both want to realize the features T, [PAST]. Two main principles determine which vocabulary item wins a given competition: the Pāṇinian Principle (aka the Elsewhere Condition) and the Subset Principle (Halle 1997). The Pāṇinian Principle states that a more specific rule is applied before a less specific rule, and it suffices to determine the winner in (1). If the context is met to insert vocabulary item (1)a (i.e., the root is *leave* or *bend*), then it must be inserted since it is more specific than vocabulary item (1)b (in that it has a contextual restriction at all). The Subset Principle determines the winner in other cases, and it has been relevant many times throughout the dissertation.

(2) **Subset Principle**

- i) The phonological exponent of a vocabulary item is inserted into a position if the item matches all or a subset of the features specified in that position.
 - ii) Insertion does not take place if the vocabulary item contains features not present in the morpheme.
 - iii) Where several vocabulary items meet the condition for insertion, the item matching the greatest number of features specified in the terminal morpheme must be chosen.
- (Halle 1997:428)

The Subset Principle ensures that a vocabulary item cannot be inserted that contains features not present in the morpheme, although the vocabulary item might contain fewer features than are present in the morpheme (i.e. the vocabulary item might be underspecified). The Subset Principle also states that vocabulary items that match the most features with the morpheme win.

These assumptions are all standard components of the theory of Distributed Morphology. Armed only with these assumptions and the GNN analysis of feature bundles, though, a broad array of facts about gender and number in Amharic are predicted.

2.1 Gendered Plurals in Amharic

In Chapter 3, it was argued that natural gender is represented by a gender feature on n : [-FEM] for male gender and [+FEM] for female gender (or no feature at all for no natural gender or default natural gender). If n also has a [+PL] feature, as argued in Chapter 4, there must be three versions of plural n : n [+PL][+FEM] for female plurals, n [+PL][-FEM] for masculine plurals, and n [+PL] for plurals of entities that have no natural gender (and also for plurals that contain entities of both genders). All things being equal, then, it is predicted that irregular plurals will vary (or at least, will be capable of varying) in their realization according to natural gender.

This is in stark contrast to regular plurals, which are the morphophonological realization of Num. In Chapter 3, it was shown that Num lacks gender features in Amharic. Hence, regular plurals are not predicted to vary with gender. The analyses of Chapter 3 and 4 then make two predictions about gender in plural nominals: irregular plurals will be capable of showing separate gendered plural forms (a masculine plural and a feminine plural), but regular plurals will not (one form is used for all genders). Both of these predictions are borne out.

Starting with the regular plurals, it is very clear that every nominal is inflected with the regular plural suffix *-otʃtʃ* regardless of gender (see e.g., Cohen 1970:70 for a specific statement of this generalization). A sampling of masculine and feminine regular plurals of various types are in (3).

(3)	<u>Masculine</u>		<u>Feminine</u>
	bet-otʃtʃ	‘houses’	mäkina-wotʃtʃ ‘cars’
	nägär-otʃtʃ	‘things’	agär-otʃtʃ ‘countries’
	abbat-otʃtʃ	‘fathers’	ɪnnat-otʃtʃ ‘mothers’
	säw-otʃtʃ	‘men, people’	set-otʃtʃ ‘women’
	tämari-wotʃtʃ	‘(male/mixed) students’	tämari-wotʃtʃ ‘(female) students’

Masculine and feminine nominals can all be pluralized by *-otʃtʃ*, regardless of animacy and regardless of whether they are same-root nominals like *tämari* ‘student’ or different-root nominals like *abbat* ‘father’ and *ɪnnat* ‘mother.’ Corpus evidence for this generalization is in (4) and (5).

- (4) ityop’p’yawɨyan-u **atlet-otʃtʃ** t’runäʃ dibaba-na wärk’näʃ kidane
 Ethiopian-DEF athlete-PL Trunesh Dibaba-and Werknesh Kidane
 the Ethiopian athletes Trunesh Dibaba and Werknesh Kidane
 Walta meg30a01

- (5) kä-2 ʃi 500 bē-lay yāmmi-hon-u yä-alām-atʃiʃin mɪrt' atlet-otʃiʃ
- from-2 thousand 500 in-atop C-be.IMPF-3PL of-world-our best athlete-PL
- ...more than 2,500 of our world's best athletes (participated in the men's marathon)
- Translation from source: *Athlete Gezahegn Wins*, NMSU Parallel-Text News Corpus

Both examples here involve the nominal *atlet* 'athlete.' In (4), the regular plural *atlet-otʃiʃ* is used to refer to two female athletes (Trunesh Dibaba and Werknesh Kidane). However, in (5), the same form is used to refer to the athletes participating in the men's marathon, i.e., male athletes. It is clear, then, that the regular plural suffix is invariant with respect to gender.

Irregular plurals, though, are capable of varying according to natural gender, as predicted by a *n* analysis of irregular plural morphology. It should be noted first that most irregular plurals do not in fact vary, and this is probably due to the general loss of gender and gender agreement in the language (see Chapter 3 and discussion below). However, a few irregular plurals do have separate masculine and feminine forms (Leslau 1995:271, Hartmann 1980:286).¹ Most of them are high-register and/or related to religion, and they are often from Ge'ez.²

¹ Leslau (1995:171) and Hartmann (1980:286) also mention purportedly masculine-only irregular plurals including *māmbɪr-an* 'male professors,' *t'ābib-an* 'wise men,' and *māzāmmɪr-an* 'male cantors.' However, the grammars do not contain information on what happens when a speaker wishes to refer to, say, a female professor (is there ineffability? is a different irregular plural strategy used?). The restriction to the male gender here may in fact be pragmatic and not grammatical. In the past, professors, wise men and cantors were (I believe) almost entirely men. In my fieldwork with a younger speaker who is a student at a university that contains both male and female professors, it was reported that the plural of 'professor' *māmbɪr-an* can be used to refer to male professors and female professors alike. This indicates that there is nothing masculine about the form *māmbɪr-an* itself. Rather, these plurals were probably associated with men for purely sociocultural reasons. This fits with the result below that, across many different roots, *-an* is the realization of the feature bundle *n[+PL]*, i.e., it is underspecified with respect to gender.

² Several of these nominals are related to adjectives, e.g., the adjective *k'iddus* means 'holy' and has an irregular (agreeing) plural form *k'iddus-an* for masculine plural agreement and *k'iddus-at* for feminine plural agreement. However, the nominals discussed above are not adjectives whose NP has been elided. Such NP ellipsis is licensed in two contexts in Amharic: (i) picking out an individual that has the property

- (6) k'iddus 'saint'
- a. k'iddus-an 'saints' (masc. pl. or mixed genders)
- b. k'iddus-at 'saints' (fem. pl.)
- (7) hɪyaw 'the immortal, the living'
- c. hɪyaw-an 'the immortals' (masc. pl. or mixed genders)
- d. hɪway-at 'the immortals' (fem. pl.)

Also, nominals that end in the gentile suffix *-ami* have separate feminine and masculine irregular plural forms.

denoted by the adjective, with an obligatory definite article (e.g., *tɪllk'-u* big-DEF 'the big one,' **tɪllk'* 'a big one') and (ii) generically, with or without a definite marker (see discussion in Kapeliuk 1994).

- (i) **haylāñña-w** dākkama... yɪ-honɪ-l-atɬhw-al
 strong-DEF meek 3PL-become-before-you.PL-AUX
 The strong will turn meek before you. (Kapeliuk 1994:52)

It is easy to find examples of *k'iddus* being used in neither of these ways.

- (ii) yā-roman katolik k'iddus yā-hon-ä-w silvästär...
 of-Roman Catholic saint C-be.PF-3MS-DEF Sylvester
 (the holiday of) Sylvester who was a Roman Catholic saint
 Walta tah23a8

In (ii), *k'iddus* is used as a predicate nominal -- it is not generic and it is not 'picking out' a particular holy person (it also lacks the definite marker obligatory for this use of NP-less adjectives). The relationship between *k'iddus* the adjective and *k'iddus* the nominal remains to be determined (are they derived from the same root? is one derived from the other?), but they are treated as separate categories in the language.

- (8) ityop'p'iyawi 'Ethiopian (person)'
 a. ityop'p'iyawi-yan 'Ethiopians (masc. pl. or mixed genders)'
 b. ityop'p'iyawi-yat 'Ethiopians (fem. pl.)'

The realization of $n[+PL]$ across these irregular plurals is (remarkably) the same: *-at* for feminine plurals and *-an* for masculine or mixed plurals. A couple of simple vocabulary items therefore suffice to cover the facts.

- (9) $n[+PL] [+FEM] \leftrightarrow -at / \sqrt{K'DDUS}, \sqrt{HYAW}, -awi\dots$
 $n[+PL] \leftrightarrow -an / \sqrt{K'DDUS}, \sqrt{HYAW}, -awi\dots$

Feminine gender is associated with a particular form (*-at*), but the other options (masculine and mixed gender forms) are not differentiated. This is common across all (or at least most) of the morphemes that have differently gendered forms in Amharic: the feminine has a distinct form (e.g., *-na* for the definite marker) whereas all other options have the same, default form (*-u* for the definite marker, used for masculine nominals, nominals without gender and plurals of all genders; cf. Jakobson 1932 on markedness). This can be captured for the irregular plurals by having the vocabulary item for *-at* be specified for gender (it has a [+FEM] feature), whereas the vocabulary item for *-an* is underspecified with respect to gender (it has no gender feature).

The data in (6)-(8) have been taken from grammars, and the status of gendered irregular plurals in day-to-day contemporary Amharic is not entirely clear. In my fieldwork, feminine forms like (8)b *ityop'p'iyawiyat* 'Ethiopians' or (6)b *k'iddusat* 'saints' create confusion or are judged

ungrammatical. In the case of ‘Ethiopian’ in particular, speakers often use the default form *ityop’p’ɣyanɣyan* for all genders, i.e., gender differentiation has been lost. However, *ityop’p’ɣyanɣyat* is occasionally found in written Amharic.

- (10) ... bǎ-fabɨya wǎttaddǎr-ot[ɨ] lǎ-tǎ-dǎfǎr-u ityop’p’ɣyawɨ-yat...
- by-Shabian soldier-PL to-PASS-rape.PF-3PL Ethiopian-PL.FEM
- [A human rights organization asks for help to be given] to Ethiopian women raped by Shabian soldiers...
- <http://archives.ethiozena.net/>³

In the DP in (10), only women are being referred to, and the form *ityop’p’ɣyanɣyat* is used (in its variant spelling *ityop’p’ɣyanɣyat*). This suggests that these forms certainly were a part of the language at least in the past (when the data for the grammars were collected), and that they are perhaps being gradually lost and/or only associated with high-register, formal or written language as time goes on.

To summarize this section, the GNN analysis predicts that the realization of regular plurals should not vary in gender, whereas the realization of irregular plurals could vary in gender. These predictions were both shown to be correct, lending support to the GNN analysis, and more specifically, to the idea that the features corresponding to natural gender and irregular plurality are part of the same feature bundle, namely, *n*.

³ Ethiozena is an Ethiopian newspaper.

2.2 Plurals and The Feminine Suffix *-it*

The feminine suffix *-it* made a cameo appearance in Chapter 3. It indicates female natural gender in Amharic and it is capable of being attached to a particular subset of roots. In this subsection, I investigate whether the correct facts concerning the insertion of *-it* are still predicted given that *n* will also contain a plural feature. Initially, it seems the GNN analysis makes a false prediction concerning *-it*, but a slight modification to the vocabulary item that is associated with *-it* results in the right predictions being made for all nominals. Moreover, I show how there is a curious asymmetry in how nominals ending in *-it* are pluralized and how having plural features on *n* exactly predicts the pattern of facts.

2.2.1 Basic Data and Initial Problem

I begin by reviewing the basic facts about the feminine suffix *-it*. A sample of roots that can take *-it* are in (11).

- (11) a. $lɨdʒ$ $lɨdʒ-it$
 boy, child girl
- b. $mänäk^{wse}$ $mänäk^{ws-it}^4$
 monk nun

⁴ The final vowels in these nouns are deleted when the *-it* suffix is added in order to avoid hiatus. This is similar to other kinds of nominal suffixes, which also trigger deletion of the final vowel on the stem which they attach to (Leslau 1995:36).

c. ʃɪmagille	ʃɪmagɪll-it
old man	old woman
d. muʃɪrra	muʃɪrr-it
groom	bride
e. aroge	arog-it
old man	old woman
f. māmɰɪɪ	māmɰɪɪ-t
teacher	female teacher
g. t’ot’a	t’ot’-it
ape	female ape
h. ɪgäle	ɪgäl-it
so-and-so	female so-and-so
i. ityop’p’ɪyawɪ	ityop’p’ɪyawɪ-t
Ethiopian	female Ethiopian

j. k'iddus k'iddist
 saint female saint

A few corpus examples are in (12).

(12) a. and-it **arog-it**

one-FEM old-FEM

one old woman

<http://archives.ethiozena.net/>⁵

b. ...**muḥir-it** bā-rɨk'ät tɨ-k'ozm-all-ätʃtʃ...

wedding.participant-FEM in-distance 3FS-be.sad.IMPF-AUX-3FS

...the bride is thinking deeply...

Translation from source: *Some Days!*, NMSU Parallel-Text News Corpus,

Fiameta.19901224.8

c. **japanawi-t-wa** Miss Tayda Kikoteyra

Japanese-FEM-DEF.F Miss Tayda Kikotera

The Japanese woman Miss Tayda Kikotera...

Walta tik06a4

⁵ Ethiozena is an Ethiopian newspaper.

In Chapter 3, *-it* was analyzed as the realization of a *n* that has a [+FEM] feature. The analysis of *-it* as a *n* is supported by the fact that it is only compatible with certain roots; this kind of selectivity is often associated with category-defining heads, as discussed in Chapter 4.

$$(13) \quad n, [+FEM] \leftrightarrow -it / \{\sqrt{\text{LID}^3}, \sqrt{\text{MÄNÄK}^{\text{WSE}}}, \sqrt{\text{T}^{\text{OT}^{\text{A}}}} \dots\}$$

In Chapter 4, it was argued that *n* must have a plural feature as well, specifically, that *n* is always [-PL] or [+PL] in the syntax. *n*[-PL] is realized as a null morpheme, whereas the realization of *n*[+PL] varies according to the root (for those roots that have irregular plurals).

- $$(14) \quad \begin{array}{l} \text{a. } n, [-PL] \leftrightarrow \emptyset \\ \text{b. } n, [+PL] \leftrightarrow -at / \{\sqrt{\text{K}^{\text{AL}}}, \sqrt{\text{WÄR}}, \sqrt{\text{KAHN}} \dots\} \\ \text{c. } n, [+PL] \leftrightarrow \text{äät} / \sqrt{\text{NIGUS}} \\ \text{d. } n, [+PL] \leftrightarrow \text{äat} / \{\sqrt{\text{KÄNFÄR}}, \sqrt{\text{DINGHL}} \dots\} \\ \text{e. } n, [+PL] \leftrightarrow -an / \{\sqrt{\text{MÄMHÄR}}, \sqrt{\text{MÄZÄMMÄR}} \} \end{array}$$

Thus, the vocabulary items in (13) and (14) will compete over which will be inserted for the *n* feature bundle, and it is necessary to check which ones will win the competition in each case and make sure that this accords with the facts.

Before continuing, though, it will be useful to quickly review the mechanics of feature sharing developed in Chapter 4 since they will be used in the discussion below. It was proposed in Chapter 4 that Num and *n* agree in terms of a plural feature and that agreement involves

feature sharing. I posited that Num enters the derivation with an interpretable unvalued feature and *n* enters the derivation with an uninterpretable but valued plural feature. Num probes downwards to find a value for its unvalued plural feature, and the first goal it sees is the valued plural feature on *n*. Num and *n* then enter into an Agree relation and their plural features coalesce into a single shared feature whose value is from *n* but which is interpreted at Num. This happens in both plural and singular nominals, and is shown schematically in (15) for a plural nominal (feature sharing is represented by a connecting line).

(15) **Agreement between Num and *n*[+PL]**



In Chapter 4, the PF ramifications of feature sharing were investigated in terms of whether a shared feature is part of the feature bundles of all the heads that share it at Vocabulary Insertion. Specifically, it was proposed that a shared feature can be resolved to (i.e., realized on) **either or both** of the heads that share it (and it was tacitly assumed that a shared feature must be realized on at least one of the heads; see below for further discussion of this assumption). For plural nominals, if the shared plural feature is resolved to Num, a regular plural results. If it is resolved to *n*, an irregular plural results. If it is resolved to both, a double plural is produced. Furthermore, I proposed that the unlucky head which the feature is not resolved to receives a default value for that feature -- in a regular plural, then, *n* is [-PL], and in an irregular plural, Num is [-PL].

Returning to the feminine suffix *-it*, the availability of the vocabulary item in (13) unfortunately provides a loophole in the system for deriving plurals, allowing a vocabulary item

to be inserted for *n* in a situation where this should not be possible. Upon closing the loophole, though, all the facts about the interaction of *-it* and number fall out.

The situation where the loophole occurs involves a nominal whose root meets two qualifications: (i) it can take the *-it* suffix, (ii) it does not have an irregular plural. One such root is $\sqrt{\text{T}'\text{OT}'\text{A}}$, which means ‘ape’ when nominalized. Consider the scenario when *t'ot'a* is plural and feminine: a [+PL] feature will be shared between *n* and Num in the syntax, and *n* will also have a [+FEM] feature which is not shared.

$$(16) \quad \begin{array}{ccccccc} \text{Num} & \dots & n & \dots & \sqrt{\text{T}'\text{OT}'\text{A}} & & \\ +\text{PL} & \text{-----} & +\text{PL} & & & & \\ & & +\text{FEM} & & & & \end{array}$$

At PF, assume that the shared plural feature is resolved to *n*. This results in the feature bundle in

(17).

$$(17) \quad \begin{array}{l} n \\ [+FEM] \\ [+PL] \end{array}$$

The question now is: what vocabulary item should be inserted for (17)? Looking at just the vocabulary items in (14), no vocabulary item can be inserted for *n* in this context. *n* is not in the context of any of the roots that have irregular plurals, and the other vocabulary item does not match the value of the plural feature. This is a good result here -- we want the derivation to crash when it tries to insert an irregular plural morpheme for a root that has no irregular plural.

However, there is another option for Vocabulary Insertion: the feminine vocabulary item in (13). It is in fact predicted to be inserted since it contains a subset of the features present in the morpheme and does not clash with any of the features in the morpheme (see the Subset Principle in (2)). If *-it* is inserted here, the resulting nominal (*t'ot'it* 'female ape') is predicted to have a plural interpretation since there was a [+PL] feature present in the syntax. However, as discussed in Chapter 4, (definite) nominals that are unmarked for plurality are not interpreted as plural, so this is highly problematic.

Nevertheless, the problem here is easily dispensed with. I propose that the vocabulary item associated with the feminine suffix *-it* has a slightly more complex feature structure. Specifically, it contains the feature [-PL] as well as [+FEM].

(18) $n, [+FEM], [-PL] \leftrightarrow -it / \{\sqrt{\text{LID3}}, \sqrt{\text{MÄNÄK}^{\text{WSE}}}, \sqrt{\text{T'OT}^{\text{A}}}\dots\}$

This will prevent it from being inserted for the *n* in (17) since its [-PL] feature clashes with the [+PL] feature on the morpheme.

Stating that there is a [-PL] feature as part of *-it* may seem stipulative, but it is useful far beyond the original context that motivates it. Below, it is shown how assuming the vocabulary item in (18) correctly predicts the full range of facts associated with *-it* and *n* in Amharic without needing anything more than the Subset Principle.

2.2.2 Correct Predictions

In this section, I show how the GNN analysis combined with the vocabulary items in (19) and (20) successfully predict the morphophonological realization of *n* in singular and plural feminine nominals.

(19) $n, [+FEM], [-PL] \leftrightarrow -it / \{\sqrt{LAD\mathfrak{Z}}, \sqrt{MÄNÄK^wSE}, \sqrt{T^oT^A...}\}$

(20) a. $n, [-PL] \leftrightarrow \emptyset$

b. $n, [+PL] \leftrightarrow -at / \{\sqrt{K^AL}, \sqrt{WÄR}, \sqrt{KAHIN...}\}$

c. $n, [+PL] \leftrightarrow äät / \sqrt{NIGUS}$

d. $n, [+PL] \leftrightarrow äat / \{\sqrt{KÄNFÄR}, \sqrt{DINGHL...}\}$

e. $n, [+PL] \leftrightarrow -an / \{\sqrt{MÄMHHR}, \sqrt{MÄZÄMMHR}\}$

I start with singular nominals. For singular nominals, the syntax sends to PF a structure where a [-PL] feature is shared between Num and *n*. Assume that *n* also has a [+FEM] feature, which is not shared with Num

(21)
$$\begin{array}{ccc} \text{Num} & \dots & n \\ -\text{PL} & \text{-----} & -\text{PL} \\ & & +\text{FEM} \end{array}$$

At PF, it must be decided whether the [-PL] feature is resolved on Num or *n*. If it is resolved on *n*, the following feature bundles result.

(22)	Num	<i>n</i>
	[-PL]	[-PL]
		[+FEM]

At Vocabulary Insertion, a null vocabulary item is inserted for Num (singulars are unmarked in Amharic). For *n*, the vocabulary item in (19) *-it* will be inserted if the context contains one of the appropriate roots. This vocabulary item simply matches more features with the morpheme (two) than the vocabulary item in (20)a, and is thus predicted to be inserted under the Subset Principle.

If the [-PL] feature is resolved on Num, the feature bundles are the same --- recall that when a shared feature is **not** resolved to a particular morpheme, the feature reverts to the unmarked value on that morpheme which it (*n*, in this case).

(23)	Num	<i>n</i>
	[-PL]	[-PL]
		[+FEM]

Thus, *n* is [-PL] and [+FEM] again and the same vocabulary item is predicted to be inserted.

These are both excellent results -- having a [-PL] feature on *n* does not interfere with the insertion of *-it* for singular feminine nominals.

The plural cases are more complex, but also more interesting. The feminine suffix *-it* has an unusual distribution in the plural, and this distribution turns out to be exactly predicted by the GNN analysis. For plural nominals, the syntax sends to PF a structure where a [+PL] feature is shared between Num and *n*. Assume once again that *n* also has a n unshared[+FEM] feature.

$$(24) \quad \begin{array}{ccc} \text{Num} & \dots & n \\ +\text{PL} & \text{-----} & +\text{PL} \\ & & +\text{FEM} \end{array}$$

Consider first the case where the [+PL] feature is resolved to Num.

$$(25) \quad \begin{array}{ccc} \text{Num} & & n \\ [+PL] & & [+FEM] \\ & & [-PL] \end{array}$$

At Vocabulary Insertion, Num will be realized as the regular plural suffix *-otʃiʃ*. As for the *n* feature bundle, it should be realized as *-it* in the context of the relevant roots since it exactly matches the vocabulary item in (19) which is associated with *-it*. This predicts that nominals ending in *-it* should be capable of taking the regular plural suffix *-otʃiʃ*. This prediction is borne out.⁶

⁶ A few of the nominals listed as taking *-it* above are not in the list of regular plurals in (26). Most of these are not present because, in the fieldwork that was necessary to elicit the plurals, the relevant nominals were not in the dialect of the consultant (several of the nominals in the original list are from grammars, e.g., *ʃɪmagʷɪl-it* ‘old woman’ from Hartmann 1980:280). There is one exceptional case: the nominal *ʌdʒ-it-otʃiʃ* ‘girls’ was judged ungrammatical by one consultant and is not found in any corpora. The term *set ʌdʒ-otʃiʃ* ‘female children’ is preferred. Another, younger consultant, though, found *ʌdʒ-it-otʃiʃ* only curiously antique, like something that would be said by a grandparent. The idiosyncrasy of this corner of the grammar is pointed up by the fact that a phrase (*set ʌdʒ-otʃiʃ*) seems to win out over a single word (*ʌdʒ-it-otʃiʃ*), the opposite of well-known Poser-blocking effects where words block phrases (see Poser 1992 as well as Embick and Marantz 2008 for a Distributed Morphology perspective). It remains unclear why *ʌdʒ-it-otʃiʃ* is ungrammatical or at least highly dispreferred, but it seems likely that it is due to something parochial about the word itself and not general to nominals ending in *-it*.

(26) a. mänäk^{ws}-it-otʃtʃ

nuns

b. muʃɪrr-it-otʃtʃ

brides

c. arog-it-otʃtʃ

old women

d. t'ot'-it-otʃtʃ

female apes

e. ityop'p'ɪyawɪ-t-otʃtʃ

Ethiopian women

f. k'iddɪs-t-otʃtʃ

female saints

The GNN analysis successfully predicts that *-it* nominals can be regularly pluralized, but it makes strikingly different predictions about whether *-it* nominals can be irregularly pluralized. This is relevant when the [+PL] feature is resolved to *n*.

(27)	Num	<i>n</i>
	[-PL]	[+FEM]
		[+PL]

At Vocabulary Insertion, Num will be realized as a null vocabulary item. However, the *n* feature bundle cannot be realized as *-it* since the [+PL] feature clashes with the [-PL] feature in (19).

Instead, it is predicted that an irregular plural vocabulary item (if the root licenses one) will be inserted. In other words, roots which take *-it* should insert the *n*, [+PL] vocabulary item (e.g., *-an*, *-at*) when appearing in a feminine plural context.

This prediction is correct, although the data is limited because there are only a few roots which are both compatible with *-it* and can be irregularly pluralized. Two such nominals are *mänäk^wsit* ‘nun’ and *mämb^wrt* ‘female teacher.’ According to Hartmann (1980:282), ‘nuns’ can be expressed by the irregular plural *mänäk^wsat*, which can also mean ‘monks’ (or a collective plural ‘clergy’). In other words, the typical *n*[+PL] vocabulary item in the context of $\sqrt{\text{MÄNÄK}^{\text{wSE}}}$ is inserted despite the [+FEM] feature on *n*. As for *mämb^wrt* ‘teacher,’ a consultant reported that *mämb^wrt-an* can refer to female professors, male professors or a mixed group, with no trace of the *-t* suffix that indicates feminine gender.

Moreover, it is clear that *-it* and irregular plural morphology (e.g., the suffixes *-an* and *-at*) cannot co-occur. This is further evidence they are the realizations of the same feature bundle (*n*) which can be realized with only one vocabulary item (either *-it* or the irregular plural).

- (28) a. *mänäkos-it-an, *mänakos-it-at
 b. *ityop'p'iyawi-t-an, *ityop'p'iyawi-t-at
 c. *mämhɪr-t-an, *mämhɪr-t-at

Interestingly, for other irregular plurals of nominals that take *-it*, special feminine plural forms are attested (data repeated from above).

- (29) a. ityop'p'iyawi-yan 'Ethiopians (masc. pl. or mixed genders)'
 b. ityop'p'iyawi-yat 'Ethiopians (fem. pl.)'

- (30) a. k'iddus-an 'saints' (masc. pl. or mixed genders)
 b. k'iddus-at 'saints' (fem. pl.)

It is expected that the separately gendered forms will win the competition for the feature bundle $n, [+FEM], [+PL]$.

- (31) $n, [+PL], [+FEM] \leftrightarrow -at / \sqrt{k'IDDUS, -awi...}$

As shown in the vocabulary item in (31), the gendered irregular plural suffix matches more features with the bundle than a non-gendered irregular plural suffix ($n, [+PL]$).

Overall, we have seen that all the predictions of the feature sharing analysis with respect to *-it* and irregular plurals are borne out. Stepping back slightly, the behavior of *-it* nominals is

quite different in regular plurals vs. irregular plurals. Nominals ending in *-it* freely combine with regular plural suffixes, like every other type of nominal in the language. However, an *-it* suffix cannot be co-realized with an irregular plural suffix. To irregularly pluralize a feminine nominal, either a non-gendered irregular plural affix is inserted (as for *mänäkⁿ-at* ‘monks, nuns’) or a separate vocabulary item that expresses both gender and number is inserted (as in *k’iddus-at* ‘female saints’).

The empirical contrast between the behavior of *-it* in regular and irregular plurals may initially seem arbitrary. Why can *-it* co-occur with regular plural suffixes, but not irregular plural suffixes? The GNN analysis, though, provides a straightforward explanation. *-it* and irregular plural morphology compete for the same slot -- the vocabulary item that realizes *n* -- and the irregular plural always wins out since its features do not clash with the morpheme. Having *n* be the host for both gender and irregular number enables the full spectrum of facts concerning *-it* and plurality to be predicted.

2.3 Digression on *-awi* Nominals

Nominals that end in the suffix *-awi* both take the feminine suffix *-it* and have separately gendered irregular plural forms. Despite the richness of their declension, they initially pose a problem for the GNN analysis, but the problem is easily resolved by taking a closer look at the category of the suffix *-awi* itself.

Nominals ending in *-awi* are one of the few types of nominals in Amharic that have a full paradigm for gender and number.

(32) **-awi Paradigm for ‘Ethiopian’**

	Singular	Plural
Male/Default Gender/Mixed Gender	ityop’p’iyawi	ityop’p’iyawi-yan
Female	ityop’p’iyawi-t	ityop’p’iyawi-yat

The suffix *-awi* converts toponyms to names for residents, and it is reasonably common. In the Walta Corpus alone, a quick search reveals the following forms, among others (not including *ityop’p’iyawi* which is, naturally, very widespread).

(33) a. amerik-awi

America-awi

American

b. ertr-awi-w

Eritrea-awi-DEF

the Eritrean

c. somaliy-awi-yan

Somalia-awi-PL

Somalians

d. japan-awi-yan

Japan-awi-PL

Japanese people

e. brazil-awi-t-wa

Brazil-awi-FEM-DEF.F

the Brazilian woman

It is natural to assume that the suffix *-awi* corresponds to a *n* and it takes a *nP* complement, making a new nominal from a country or region nominal (the phonological realization of *-awi* is included in the trees below for expository purposes).



The *n -awi* must have a gender feature as well, since *-awi* nominals refer to humans and humans have natural gender. However, the suffix *-awi* does not seem to compete for insertion with the female natural gender suffix *-it* --- both can be realized at the same time (see e.g., (33)e).

Therefore, if *n -awi* had a [+FEM] gender feature, some kind of morphological operation (e.g., Fission) would have to occur to split off the [+FEM] feature to a different node. The [+FEM] feature could then be realized as a different vocabulary item. The suffix *-awi* also does not seem to compete for insertion with the other type of feature found in *n*, the [+PL] feature that

corresponds to irregular plural morphology. Both *-awi* and an irregular plural suffix can be realized as separate vocabulary items, as in (33)c.

These facts suggest that *-awi* may not be a *n*, and there is in fact evidence that it is instead an adjectivalizing head *a*. The suffix *-awi* is commonly and productively used in Amharic to convert nouns to adjectives (Leslau 1995:240, Fulass 1966:114-115, Hartmann 1980:243-244).

- (35)
- | | | | |
|----|---------|----------------------|-------------------|
| a. | ḥbb | ḥbb-awi | |
| | heart | intelligent, sincere | |
| b. | mṯdr | mṯdr-awi | |
| | earth | earthy | |
| c. | mānfās | mānfās-awi | |
| | spirit | spiritual | |
| d. | ḥlät | ḥlät-awi | |
| | day | daily | |
| e. | hawarya | hawarya-awi | |
| | apostle | apostolic | (Leslau 1995:240) |

Adjectives derived via *-awi* are abundant in written Amharic.

(36) federal-awi demokrasiy-awi ripäblik
federal-awi democracy-awi republic
Federal Democratic Republic
Walta mes02a1

(37) hɪzb-awi program-otʃtʃ
society-awi program-PL
civic programs
Walta mes02a2

(38) astädadär-awi bädäl-otʃtʃ
management-awi abuse-PL
managerial abuses
Walta mes10a3

(39) and zämän-awi film
a time-awi film
a modern film
Walta mes13a1

In fact, words like *ityop'p'ɣyawi* 'Ethiopian' and *amerikawi* 'American' are not only nominals, but also adjectives denoting the property of being from or of a region (these words also do double duty in English: *I met an Ethiopian, I met an Ethiopian woman*).

(40) afrik-awi-t-wa agär Burkina Faso
 Afrika-awi-FEM-DEF.F country Burkina Faso
 the African country Burkina Faso
 Walta mes22a5

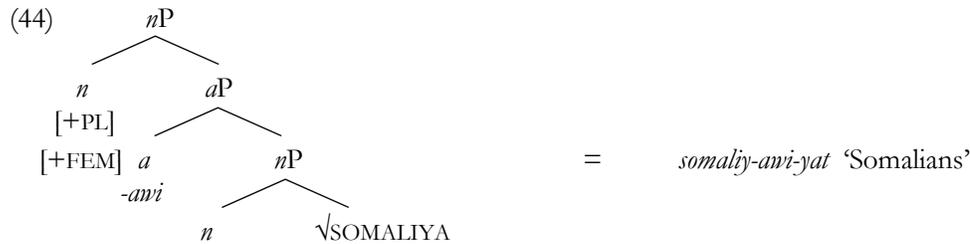
(41) ityop'p'ity-awi-w atlet Täsfaye Jifar
 Ethiopia-awi-DEF athlete Tesfaye Jifar
 the Ethiopian athlete Tesfaye Jifar
 Walta tah23a8

(42) and ertrawi mihur
 an Eritrea-awi scholar
 an Eritrean scholar
 Walta mes22a3

Therefore, I propose that *-awi* is always the realization of an *a* that selects an *nP* complement.



For the resident names discussed above, I propose that there is another, null *n* that nominalizes adjectives like (43).⁷ I assume the null *n* carries number and gender features, e.g., [+FEM], [+PL] in the example below.^{8,9}



This accounts for the fact that number and gender features do not seem to compete for insertion with the *-awi* suffix (but do, of course, compete for insertion with each other). Moreover, it still allows for the choice of vocabulary item for the *n* to be directly conditioned by *-awi*; this is necessary because it is nominals ending in *-awi* that take an *-it* feminine suffix and irregular plural suffixes *-an* and *-at*, not the country names on which these nominals are based.

⁷ It is unclear whether other *-awi* adjectives can be similarly nominalized, e.g., *ḥbb-awi* ‘the intelligent one.’ If not, the merger of *n* will have to be limited to only those *-awi* adjectives formed from country names. It may be that the country-associated *-awi* head itself is a slightly different feature bundle than the *-awi* used in other contexts. Country-associated *-awi* always triggers a resident name interpretation, whereas the other *-awi* has a much looser semantic relationship with the roots it combines with. If country *-awi* is really a different feature bundle, then it can be straightforwardly posited that *n* only subcategorizes for country *-awi*. The differences in the feature bundles across *-awi*’s would not matter at PF -- presumably, there is only one vocabulary item that realizes *a* as *-awi* and it is underspecified with respect to the differentiating feature.

⁸ The lowest *n*, which is attached to the root, must also have a number feature (since all *n*’s do). However this is not problematic since its number feature is below the number feature on the highest *n* -- Num will see the number feature on the highest *n* first when it probes downward.

⁹ One could argue that these are actually adjectives whose NP has been elided. However, NP ellipsis is limited to certain contexts in Amharic (see fn. 2): briefly, when the adjective is definite-marked or when it has generic reference. Corpus examples abound where nominals like *ityop’p’iyami* neither have a definite marker nor generic reference. For example, a news headline reads ‘205 Ethiopians returned to their country from Eritrea’ where *Ethiopians* does not have a definite marker and is not generic (Walta mes12a1).

To sum up, I initially showed that *-awi* seems to be a *n* that is not in competition with the gender suffix or irregular plural morphology. However, *-awi* is better analyzed as an adjectivalizing head, and this allows for an analysis of the interaction of number and gender in *-awi* nominals that is fully in keeping with the behavior of number and gender in other nominals.

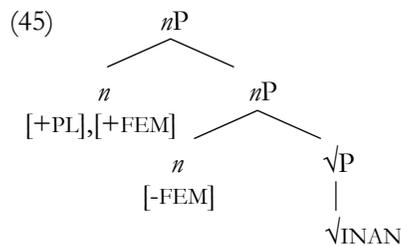
2.4 Summary and a Cross-Linguistic Perspective

The focus of this section has been to combine the analyses of gender and number in the previous chapters and test their predictions within Amharic. The two main predictions were (i) irregular plurals should be capable of varying with natural gender and (ii) the feminine suffix *-it* and irregular plural morphology should compete for insertion. Both predictions were demonstrated to be correct, substantially confirming the analyses of the previous chapters.

The discussion in this section has centered on Amharic, and it is worth asking what the GNN analysis predicts about the interaction of gender and number in other languages. The basic claim that the GNN analysis makes is that only *n* plurals will have separately gendered forms. In languages that never use *n* to form plurals, then, there should be no gendered plurals. This prediction is borne out in languages like English. English does not systematically have plurals formed via *n* (although see some discussion in Acquaviva 2008a), and it has a plural affix (*-s*) that does not vary with gender. The GNN analysis also predicts that in English-type languages, any natural gender affixes and the plural suffix should freely co-occur since they correspond to different morphemes (*n* and Num, respectively). In so far as English has gender morphology (e.g., the feminine suffix *-ess*), this prediction is true (e.g., *actresses*, *countesses*, *poetesses*).

In languages that always use *n* to form plurals, the GNN analysis predicts that all plurals will have different forms according to natural gender. One such language is Somali (Lecarme

2002), and there is in fact a very close relationship between gender and plurality in Somali. Every plural affix in *n* has its own gender feature, e.g., the plural suffix /-Co/ bears a feminine feature (C = a consonant that has been reduplicated). The gender of the plural affix can override the natural gender of the nominal. For example, the nominal *inan* ‘son’ is masculine when singular but feminine when pluralized by the suffix /-Co/. In Somali then, each plural nominal has to have two layers of *n*P projection. The bottom-most *n* nominalizes the root and has a natural gender feature. The topmost *n* is the plural affix which has a plural feature and a gender feature of its own. Lecarme (2002) specifically proposes that each such nominal has two gender features, although she assumes the lower gender feature is simply on a nominal head N.



The highest gender is the agreeing gender, so Somali (interestingly) conforms to the Gender Principle proposed in Chapter 3 (see also Section 3.3 below).

The facts in Somali are therefore not strictly what the GNN analysis predicts, primarily because the plural *n* does not appear to be the same morpheme as the nominalizing *n*. The *n*'s may be separate because plurality (both semantic and morphological) is always expressed via a feature on *n* in Somali --- the plural *n* may have become a separate projection from nominalizing *n* in a similar fashion to NumP being a separate projection in other languages. It is telling, though, that the *n* plurals in Somali are all gendered, and this tight connection between *n* and

gender features indicates that the basic connection made in GNN between gender and the category of *n* is on the right track.

Some languages act neither like English nor like Somali, and here something more must be said for the GNN analysis still to be viable. These are languages that have gendered plural forms, but do not seem to have *n*-plurals, and they include Russian, Hebrew, and Arabic, among others.¹⁰ At first glance, this pattern does not seem to be predicted by the GNN analysis, but it should be stressed that the predictions of the GNN analysis hold only if all things are otherwise equal. In keeping with standard assumptions about Vocabulary Insertion, it has been assumed throughout the preceding discussion that if two features are found on the same morpheme they will be realized with the same vocabulary item, whereas if they are found on different morphemes they will each be expressed with separate vocabulary items. However, while this one-to-one correspondence is a good baseline, it is clear that it does not always hold. Morphological syncretisms are the result of features from different morphemes being expressed in one vocabulary item. For example, the *-s* suffix on English verbs expresses both 3rd person singular phi-features and a present tense feature, and it has been hypothesized to be the result of a Fusion of the T node and an Agr node (Halle 1997). Languages like Hebrew, Russian and Arabic can be said to have syncretic plural affixes which contain both gender and number features. This can easily be accounted for if Num and *n* undergo the operation Fusion at PF.¹¹ The gender and number features would then be part of the same node and hence all realized by a single vocabulary item.

¹⁰ Arabic in particular uses gendered plural forms for its regular/sound plurals, not the irregular/broken plurals. (Ryding 2005: 129-156.)

¹¹ Another alternative would be for a feature *n* (or the Root) to condition the Vocabulary Insertion of Num, e.g., in the context of a *n*[+FEM], Num is realized as a feminine plural. A way of distinguishing this from the Fusion account would be to see whether natural gender morphology and plural morphology can be realized by separate vocabulary items.

Another option for these languages would be that Num could bear an unvalued gender feature (cf. Ritter 1993). The gender feature could be valued by the gender of the nominal below it, i.e., Num and *n* could agree in gender in some languages (as they agree in number in Amharic). If the idea that Num is a functional projection within DP is taken seriously, it might even be expected that Num would agree in gender with the nominal, like determiners, demonstratives, quantifiers and numerals.¹²

These observations are necessarily preliminary. However, it is clear that the GNN analysis predicts English-type languages and can predict Russian-type languages assuming a simple Fusion operation. Somali is a more complicated case but, as stated above, the close connection between gender and *n* plurals in Somali is not wholly unexpected under the assumptions of the GNN analysis. Overall, then, besides perfectly predicting the facts within Amharic, the GNN analysis has some plausibility in being a broader theory of how gender and plurality interact and future work will hopefully confirm its viability.

3 AGREEMENT

Across languages, the features of non-noun elements within a DP (e.g., a determiner, a demonstrative, an adjective) can co-vary with the number and/or gender of the noun. In other words, number and gender features can participate in agreement relations within DPs (cf. the working definition of agreement provided in Steele 1978:610). The aim of this section is to see

¹² This raises the question of whether Num agrees in gender in all languages, but the gender agreement is only realized in certain languages (similar to how it is typically assumed that in, say, English there is full agreement on T in the syntax but it is almost never morphologically realized). Even if this were true for Amharic, the predictions of the GNN analysis still hold, I believe. Gender agreement in the Amharic DP is fairly impoverished (see Section 3.1). Hence, it is less likely that the gender feature on Num (whose value would come from agreement) would result in differently gendered forms, as opposed to the gender feature on *n* (which is not from agreement).

how the GNN analysis of number and gender features impacts the analysis of DP-internal agreement both in Amharic and beyond. In particular, I show how the GNN analysis suggests a feature sharing analysis of DP-internal agreement in Amharic, and I focus on what would need to be said about the morphosyntax in order for a feature sharing analysis to be viable. This section also redeems some promissory notes left in Chapter 4 (and maintained above) about the PF ramifications of feature sharing, examining and stating outright the necessary assumptions.

I begin in Section 3.1 with a brief outline of the facts about gender and number concord in Amharic. Section 3.2 contains a review of previous theoretical approaches to concord. Particular attention is paid to two questions: (i) whether concord uses the same mechanism as other types of agreement and (ii) whether it is licensed by some kind of structural relation. In Sections 3.3 and 3.4, I show how the GNN analysis leads to a feature sharing analysis of concord and sketch the properties the analysis. Section 3.5 summarizes and discusses directions for future work.

The section is intended as a preliminary exploration rather than a fully-developed proposal, and much of the discussion of the feature sharing analysis is speculative. However, the intention here is to conduct a broad survey of the most crucial issues, which in turn can serve as a platform that more microscopically-focused work can build on in the future.

Throughout the section, I use the terms ‘(DP-internal) agreement’ and ‘concord’ interchangeably.

3.1 Concord in Amharic

The goal of this sub-section is to present the descriptive highlights of Amharic concord -- this is a task which has not previously been accomplished outside of grammars, and some of

the generalizations here even go beyond the information contained therein. This section is best viewed as a road map to the range of facts that would have to be accounted for under a full analysis of Amharic concord, even if this dissertation may not travel too far down that road.

Gender and number concord as an observable phenomenon is fairly limited in Amharic. It is limited in the sense that it only targets particular categories: determiners, demonstratives, some quantifiers, and certain adjectives. It is also limited in the sense that it can be conditioned by other properties of the nominal, e.g., certain categories only agree in number when the DP is definite. The categories that agree most fully in Amharic are demonstratives and definite markers. Both proximal and distal demonstratives vary according to the gender of the nominal (Leslau 1995:62-64, 66-67, Hartmann 1980:262-263, Cohen 1970:111, Yimam 2004:333-334).

(46) a. yih säw b. yihitʃtʃ set
 this person this.F woman

(47) a. ya säw b. yatʃtʃ set
 that person that.F woman

However, if the nominal is plural, there is only one, suppletive demonstrative form used for both genders.

(48) a. innäzih säw-otʃtʃ .b. innäzih set-otʃtʃ
 these people these women

- (49) a. *innāzziya sāw-otʃtʃ* b. *innāzziya set-otʃtʃ*
 those people those women

This will turn out to be a general trend in the agreement patterns: masculine and feminine gender are not distinguished formally in the plural.

Definite markers, as we have seen in previous chapters, always agree in gender with the nominals they determine (see also Cohen 1970: 107-108, Leslau 1995:155). Masculine nouns take the masculine form of the definite marker: *-u* (with allophone *-w* after vowels).

- (50) a. *bet-u* house-DEF ‘the house’
 b. *abbat-u* father-DEF ‘the father’
 c. *dʒābdu-w* adventure-DEF ‘the adventure’

There are several different feminine forms for the definite marker including *-wa* (used most often by consultants), *-itu* and *-itʷa*.

- (51) a. *gārād-itʷa* maid-DEF.F ‘the maid’
 b. *lam-wa* cow-DEF.F ‘the cow’
 c. *s’āhay-itu* sun-DEF.F ‘the sun’

Using a feminine definite marker with a masculine noun results in a diminutive reading, and using a masculine definite marker with a feminine noun is ungrammatical.¹³

- (52) a. bet-itu house-DEF.F ‘the small/cute house’
 b. *lam-u cow-DEF

The definite marker for plural nominals, however, is always *-u* (Leslau 1995:156).

- | | | | |
|------|---------------------------|-----------------------|--------------------------------|
| (53) | <u>Masculine Nominals</u> | | <u>Feminine Nominals</u> |
| | nɪgus-otʃtʃ-u | ‘the kings’ | nɪgɪst-otʃtʃ-u ‘the queens’ |
| | säw-otʃtʃ-u | ‘the men, the people’ | set-otʃtʃ-u ‘the women’ |

- (54) lä-lam-otʃtʃ-u-na korma-wotʃtʃ-u
 for-cow-PL-DEF-and bull-PL-DEF
 for the cows and the bulls
 Walta tah27a2

The nominal *lam* ‘cow’ is feminine whereas the nominal *korma* ‘bull’ is masculine, and both take the definite marker *-u* when pluralized in (53). Again with the definite marker, then, we see gender distinctions collapse in the plural.

¹³ Leslau (1995:168-169), however, reports that the masculine gender can be used when referring to a female human being and in that case, expresses contempt. This is quite likely some kind of coercion.

Only certain adjectives participate in gender and number agreement in Amharic (despite the fact that, in DP-internal agreement, it is adjectives that most frequently agree; Corbett 2006:40, see also Anderson 1992:106). To start with gender, Amharic seems to lack adjectival gender agreement at first glance. Most adjectives do not change formally whether they modify a masculine or a feminine noun.

- (55) a. tɨllɨk' bet b. tɨllɨk' lam
 big house big cow

Suffixing *-it* to an adjective, effectively forcing gender agreement, results in a diminutive interpretation (Leslau 1995:163).

- (56) tɨllɨk'-it lam
 big-DIM cow
 the big cute cow

However, there is a small set of adjectives which do agree in gender with the nominal. They can be divided into two types: *-ami* adjectives and adjectives from Ge'ez. In Section 2.3, it was shown that *-ami* is an *a* (adjectivalizing head) that forms adjectives from nominals. When an *-ami* adjective modifies a noun that refers to a woman, it takes a *-t* feminine agreement suffix (similar to how the nominals ending in *-ami* that are formed from these adjectives take a *-t* suffix when referring to a woman). This holds for both country-formed *-ami* adjectives (see (57)) and non-country *-ami* adjectives (see (59)).

- (57) a. ityop'p'iyawi-w doktär b. ityop'p'iyawi-t-wa doktär
 Ethiopian-DEF doctor Ethiopian-FEM-DEF.F doctor
 the (male) Ethiopian doctor the (female) Ethiopian doctor

(58) * ityop'p'iyawi-wa doktär

- (59) a. mänfäsawi-w muzik'a b. mänfäsawi-t-wa nigtst
 spiritual-DEF music spiritual-FEM-DEF.F queen
 the spiritual music the spiritual queen

-awi adjectives also agree in gender with nouns that have feminine grammatical gender, like *agär* 'country'.

- (60) afrikawi-t-wa agär
 African-FEM-DEF.F country
 the African country
 Walta mes22a5

A couple of adjectives that have been retained from Amharic's (indirect) ancestor Ge'ez also take a feminine agreement suffix *-t*, as they did in Ge'ez (see Leslau 1995:162, Hartmann 1980:281 on the Amharic; Lambdin 1978: 68, 72 on the Ge'ez), namely, the adjectives *k'iddus* 'holy' and *k'ibur*

- (63) a. k'äyy(-otʃtʃ) bet-otʃtʃ b. k'äyy*(-otʃtʃ) bet-otʃtʃ
 red(-PL) house-PL red house-PL
 red houses red houses
 (Older speakers) (Younger speakers)

- (64) k'äyy-(otʃtʃ)-u bet-otʃtʃ
 red-PL-DEF house-PL
 the red houses

The same asymmetry is also found with some quantifiers, like *tinnif* 'few' and *biʒu* 'many'.¹⁶

(Note that both of these quantifiers are weak, and weak quantifiers have often been argued to simply be adjectives; see e.g., Milsark 1974, Zamparelli 2000).

suffix *-otʃtʃ* to the adjective, as seen in the examples in the body of this chapter. However, there are two fairly common ways in which adjectives express number agreement irregularly. The set of *-awi* adjectives plus certain adjectives from Ge'ez take the suffixes *-an/-at* when they agree in number (*-an* when the head noun is masculine, *-at* when the head noun is feminine). Also, certain adjectives (mostly indicating dimensions and colors) can be partially reduplicated (e.g. *tllik* 'big,' but *tllllik* *dmgay-otʃtʃ* 'big stones' Leslau 1995:176; see also Cohen 1970:75-76, Hartmann 1980:292-293). With the *-awi* and Ge'ez adjectives, there is a tantalizing connection to irregular number in nominals, since the nominals formed via the same root and/or from these adjectives themselves take the same suffixes when pluralized. I leave the question of how this should be captured (or whether it should be captured directly at all) for future work. The partially reduplicated adjectives must also be left aside for now, mostly because the facts surrounding their distribution are complex. The partial reduplication may convey some sense of attenuation or intensification, not just plurality, and partially reduplicated adjectives may be used in singular contexts (see e.g., Leslau 1995:176).

¹⁶ At least some other quantifiers (e.g., *bullu* 'all') do not participate in number agreement regardless of definiteness, and for others (e.g., *abzuñña* 'most') there is not enough data to determine their agreement patterns.

(65) a. tɪnnɪʃ-*(otʃtʃ)-u tämari-wotʃtʃ

few-PL-DEF student-PL

the few students

b. tɪnnɪʃ-(*otʃtʃ) tämari-wotʃtʃ

few(*-PL) student-PL

few students

(66) a. bɪzu-*(wotʃtʃ)-u tämari-wotʃtʃ

many-PL-DEF student-PL

the many students

b. bɪzu-(*wotʃtʃ) tämari-wotʃtʃ

many(*-PL) student-PL

many students

The asymmetry also exists to a lesser extent in numerals. Numerals in indefinite DPs cannot agree in number.

(67) sost-(*otʃtʃ) tämari-wotʃtʃ

three(*-PL) student-PL

three students

- (68) hulätt mäto-(*wotʃtʃ) tämari-wotʃtʃ
 two hundred(*-PL) student-PL
 two hundred students

However, whether a numeral in a definite DP agrees depends on how large the number is, with larger numbers more likely to agree (cf. data in Leslau 1995:258).

- (69) asra aratt-u tämari-wotʃtʃ
 ten four-DEF student-PL
 the fourteen students

- (70) hulätt mäto-wotʃtʃ-u tämari-wotʃtʃ
 two hundred-PL-DEF student-PL
 the two hundred students

I will not attempt to account for the asymmetry in number agreement with definite and indefinite DPs in this chapter, but it represents an important area of future research for concord in Amharic. The correlation of markedness (in this case, marking with an agreement suffix) with definiteness is found elsewhere in the language -- accusative case marking and verbal object agreement are both differential depending on the definiteness of the direct object. On differential object marking in general, see Aissen 2003 among many others, and on differential object marking in Amharic, see Kramer 2006.

relative clause that is coreferential with the nominal (and not agreeing with the nominal head itself).

Gender agreement in the DP in Amharic is thus obligatory in determiners and demonstratives (for singular nominals) as well as with a small set of adjectives and with the numeral ‘one.’ It is not found on other numerals or quantifiers. Number agreement is similarly obligatory in determiners and demonstratives. There was shown to be an asymmetry in whether number agreement is obligatory for adjectives, certain quantifiers and certain numerals. When the DP is definite, these categories must agree, but when the DP is indefinite, they must not (or agreement is optional). Relative clauses never participate in agreement.

Amharic concord behaves generally the same as concord does in other languages, e.g., there is no agreement for person, and many of the agreement markers are alliterative (repeat the nominal inflectional markers exactly: e.g., the suffix *-otfiʃ* for plural agreeing adjectives; see Corbett 2006 for more detail on the universal properties of concord). In Ge’ez, the concord system was much more robust, and (assuming that the ancestor of Amharic was a language similar to Ge’ez) the changes that occurred to reduce the agreement system are also in keeping with known historical norms (see also the discussion in Chapter 3 on the loss of grammatical gender in Amharic). For example, in Amharic, demonstratives and determiners have retained full agreement, but adjectives only agree under certain conditions, especially with respect to gender. Adjectives are often the first category to lose gender agreement marking, and typically do not lose it as a unified whole, i.e., certain adjectives may retain it, while others lose it (Corbett 1991:142-143). There has not been a large amount of work on diachronic agreement loss, but in one of the more detailed studies (on the Niger-Kordofanian Kru languages; Marchese 1988),

determiners specifically retained agreement longer than adjectives, so there is a precedent for the pattern in Amharic.

As discussed earlier in this section, the analysis I ultimately develop for Amharic concord does not raise to the level of empirical coverage required to encompass all the facts seen here. However, this section has served to give the reader a good sense of how concord works in Amharic, and the facts here will hopefully be returned to and accounted for as thoroughly as they deserve in later work.

3.2 Literature Review

The previous section dove into the empirical details of concord in Amharic, drawing out the generalizations and focusing on the data. This section is, in a sense, the mirror image. It reviews the literature on concord in the generative tradition, focusing on the main ideas proposed. It is intended to be representative rather than comprehensive, though, and the reader is referred to the sources cited.¹⁸ For several good typological reviews of concord, all embedded within broader discussions of agreement, see Moravcsik 1978, Anderson 1985 and Corbett 2006.

From a theoretical perspective, two questions will organize the discussion here.

- (73)
- a. Should concord be accounted for the same way as argument-predicate agreement (i.e., subject-verb agreement, object-verb agreement, etc.)?
 - b. Is concord licensed by a structural relation (e.g., c-command, spec-head)?

¹⁸ The following review owes much to the discussion of agreement in Chapter 1 of Chung 1998.

The issue raised by (73)a is a classic kind of linguistic problem (in my opinion): should two related phenomena be unified (and thus the grammar simplified) or are they too ‘different’ to justify unification? The question in (73)b is clearly related to the first question, as it can depend on whether argument-predicate agreement is licensed by a structural relation itself. As will be shown in more detail below, most of the work on concord has unified it with argument-predicate agreement, answering ‘yes’ to (73)a, although there is variation as to the extent of the similarities. Accordingly, whether concord is licensed by a structural relation is almost wholly dependent on whether argument-predicate agreement is licensed by a structural relation in the assumed framework.

Within the Principles and Parameters framework, argument-predicate agreement has long been thought to be licensed by a structural relation, often specifier-head, but more recently c-command. Hence, accounts couched in Principles and Parameters tend to think concord involves a structural relation. Analyses that take this perspective include Koopman 2006, who endorses the specifier-head relationship as licensing all agreement (for an explicit statement of this, see Koopman 2006:160). In her analysis of Maasai concord, Koopman proposes that NP raises through the specifiers of all the elements that agree with it. There is also a small body of work on concord framed in early Minimalism (Chomsky 1995) which includes Mallen 1997, Tamanji 2000, Carstens 2000, Sleeman 2002 and Hawkins and Franceschina 2004.¹⁹ In these accounts, concord results from the checking of uninterpretable features on adjectives, determiners, etc. with the corresponding interpretable features on the relevant heads within the DP (sometimes the relevant head is the noun, sometimes it is functional heads like Num for number, K for Kase, etc.). Nominal concord is thus formally identical to argument-predicate

¹⁹ Hawkins and Franceschina (2004) use data from language acquisition to support their analysis. Nominal concord has received a fair amount of attention in the recent acquisition literature, cf. Baauw 2002, Socarras 2003, Correa and Name 2003, and Cornips, van der Hoek and Verwer 2006.

agreement in that it involves feature-checking, which is dependent on a particular structural relation (e.g., spec-head or head-adjunction in Carstens 2000).

Along these same lines, there have been some attempts to account for concord by partially or fully using the later Minimalism relation Agree (Collins 2004, Laenzlinger 2005:661, Baker 2008) . In these accounts, an adjective enters into an Agree relationship with the noun that it c-commands (often under the assumption that adjectives are specifiers of their own projections, and not adjuncts to NP). Finally, Chung 1998 proposes that the structural relation relevant for agreement is the Associate relation: the relation between a specifier and a head, as well as the relationship between a head and its projections. Both DP-internal and argument-predicate agreement are licensed by the Associate relation. In all of these analyses, then, concord involves a structural relation (spec-head, head-adjunction, c-command, and/or head-projections) and is captured using the same mechanism as argument-predicate agreement.

There is a strand of research on concord, however, that takes a different approach: concord is accomplished via similar mechanics to argument-predicate agreement, but is not licensed by a structural relation. The primary proponents of this approach work within Head-driven Phase Structure Grammar (see e.g., Pollard and Sag 1994, Wechsler and Zlatić 2003, King and Dalrymple 2004, Nikolaeva 2005), or a theory similar to HPSG (at least with respect to concord, Anderson 1992). In the HPSG accounts, concord is ensured by feature-transmission conventions on how specifiers and modifiers are combined with a nominal head; it is not licensed by any particular structural configuration (beyond the basic restriction that in order for an element to agree with a noun, it must be a dependent on the noun). Argument-predicate agreement (also called ‘index agreement’) is achieved using the same conventions (combining a verb with its arguments, though), but the relevant features are crucially distinct from the features used in concord. Index agreement features are part of the semantic features of a noun, whereas

concord features are part of the morphosyntactic features (for a detailed exposition of these ideas, see Wechsler and Zlatić 2003, Chapter 1, Nikolaeva 2005). Anderson (1992:106-111) takes a very similar approach, adopting HPSG (or rather, its progenitor, GPSG) feature transmission conventions to account for concord (with some modifications), and arguing that argument-predicate agreement is licensed by a co-indexation (semantic) relationship and concord is not.

How is concord treated within Distributed Morphology, one of the primary frameworks adopted in this thesis? In proto- and early Distributed Morphology (Halle 1990, 1994), adjectival concord was captured by a set of rules that related surface structure to PF and copied (or adjoined) features (on)to the specifiers and adjectives in the noun's "domain." In later Distributed Morphology (Halle and Matushansky 2006), concord involves two rules which both apply during PF: a rule inserting an Agr node (a dissociated morpheme) adjoined to the adjective, and a rule copying features into the Agr node. This is the same mechanism used for argument-predicate agreement (see Marantz 1992, Embick and Noyer 2007: 306ff.), but it has not been investigated whether it is licensed by any structural configuration.

A summary of the analyses discussed so far is in (74).

- (74) a. Should concord be accounted for the same way as argument-predicate agreement (e.g., subject-verb agreement, object-verb agreement, etc.)?
b. Is concord licensed by a structural relation (e.g., c-command, spec-head)?

A = Yes, B= Yes

Minimalist approaches, Koopman 2006, Chung 1998

A = Mostly, B = No

HPSG approaches, Anderson 1992

A = Yes, B = Unclear

Distributed Morphology

Most of these analyses have concord and argument-predicate agreement accounted for via the same mechanism, although in HPSG, concord and index features are differentiated. The question of whether concord is licensed by a structural relation is directly tied to the mechanics of agreement in a particular theory.

3.3 Concord as Feature Sharing : Basics

The GNN analysis leads to specific answers to the questions in (74), namely, yes, concord should be accounted for the same way as predicate-argument agreement and yes, concord is licensed by a structural relation. Specifically, the results of the number and gender chapters suggest that concord relations involve feature sharing (Frampton and Gutmann 2000, Pesetsky and Torrego 2007) and are licensed by Agree (as in Collins 2004, Laenzlinger 2005, Baker 2008). In this subsection, I lay out the evidence for this and then sketch how the analysis would work.

The main evidence that concord involves Agree is from Chapter 3, the chapter on gender. It was observed that when the natural gender and the grammatical gender of a nominal are in conflict, the natural gender ‘wins’ -- any determiners, demonstratives, agreeing adjectives, etc. agree with the natural gender and not the grammatical gender. For example, the nominal *ayt*'

mouse has feminine grammatical gender, but when referring to a male mouse, agreeing elements (like the definite marker in (75)) are masculine.

- (75) ayt'-u
mouse-DEF
the male mouse

The feature corresponding to natural gender was argued to be on *n* in Chapter 3, and *n* is higher in the hierarchical structure of the DP than the root (the source for grammatical gender).

Therefore, the observation above can be phrased as “the highest gender feature is the agreeing gender” and this was referred to as the Gender Principle.

The ‘highest gender’ winning is not unique to Amharic. In Somali (Lecarme 2002), recall that each plural affix is a *n* and has its own gender feature. This gender can conflict with the natural gender of the noun that it is attached to, e.g., a feminine plural affix can be added to a masculine noun. Lecarme (2002) assumes that each plural affix is a *n* and that there is also gender on N, i.e., below the plural affix in the structure. Crucially, the gender of the plural affix is always the agreeing gender (Lecarme 2002:133) -- the highest gender feature ‘wins.’

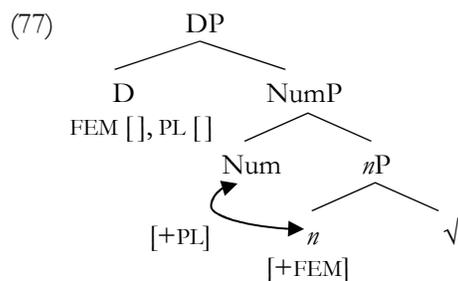
The fact that the hierarchically highest gender feature is the agreeing gender in Amharic (and Somali) strongly suggests a view of agreement where a definite marker, demonstrative, adjective or quantifier probes downwards into its command domain for a goal with which to agree in gender. The first goal it would see would be the highest gender feature. In other words, it suggests that DP-internal agreement is accomplished using the Minimalist relation Agree, which involves the structural relation of command and is standardly used for argument-predicate agreement.

This accords with results from Chapter 4 on number. In that chapter, feature sharing (which has Agree as a precondition) is used to account for the complex interaction of idiosyncratic and regular number inflection. It would be less elegant (and somewhat odd) if two different mechanisms for agreement were used within the nominal phrase (cf. Chung 1998). The number results thus suggest that Agree is involved as well, and more specifically, that feature sharing is how concord is accomplished.

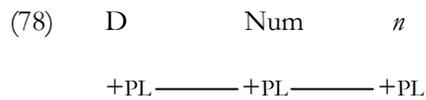
To be a bit more detailed, a definite determiner, for example, would enter the derivation with a valued definiteness feature, but unvalued number and gender features.

- (76) D
 +DEF
 FEM []
 PL []

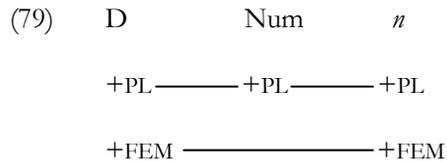
Suppose that it merges with a Num[+PL] which is sharing the plural feature with a *n* (feature sharing is indicated by a double-headed arrow in (77)). The *n* itself also has a [+FEM] feature, and let us assume that the root has no gender feature (I omit the definiteness feature from the representations below for simplicity).



Since D has unvalued features, it is a probe (as discussed in Chapter 3). It searches downward into its command domain, and first encounters the head Num which has a valued [+PL] feature (shared with *n*). Num and D enter into an Agree relation and the [+PL] feature is resultingly shared between D, Num and *n* (cf. Frampton and Gutmann 2000: 6ff. where multiple heads share features).



The gender feature remains to be valued, and so D remains a probe. The closest (and only) head in its command domain which has a valued gender feature is *n*. D therefore enters into an Agree relation with *n* and the gender feature is shared between them.



D thus has all its unvalued features valued and will be realized as a feminine plural determiner (morphologically, the feminine plural determiner is *-n* since all plural nominals take *-n* regardless of gender).

The feature sharing analysis works in much the same way for demonstratives, quantifiers and adjectives, assuming that they are all above *n*, i.e., they c-command a goal which has valued gender and number features. Demonstratives are either in D or the specifier of some

intermediate projection between D and *n*P, as discussed in Chapter 2. It is not immediately clear where the quantifiers are located (some of them may be adjectives), but it would be highly improbable for them to be within *n*P. Finally, the adjectives are either adjoined to *n*P or the specifier of some functional projection between NumP and *n*P. In all of these cases, the demonstrative, quantifier or adjective may probe downwards into its c-command domain and find at least the goal *n* (and sometimes first the goal Num) which has valued versions of the relevant features.

In terms of the morphosyntax, it was seen in Section 3.2 that while determiners and demonstratives always agree, quantifiers and adjectives only do so under certain conditions. I assume that in general adjectives and quantifiers always enter the derivation with unvalued features and participate in the Agree relation syntactically. Morphologically, though, the realization of the subsequently valued features is restricted in some way. This is similar to English subject-verb agreement where it is assumed that T and the DP enter into an Agree relation in the syntax but this relationship is almost never realized morphologically.

In Section 3.2, it was also shown that adjectives and certain quantifiers agree in number only when the nominal is definite; whether a morphological restriction is appropriate to account for this asymmetry remains unclear to me. However, for gender agreement, it is easy to envision how in the general case the gender feature on an adjective or quantifier is realized as a null morpheme. For other adjectives that do agree in gender, there would be contextually specified vocabulary items that state that gender agreement on an adjectives is realized as a *-t* suffix in the context of *-awi* adjectives, *kaddus* 'holy, etc.

It is not accidental that I have not written out the vocabulary items in full here. Although the feature sharing analysis seems relatively straightforward so far, it raises questions

about exactly how shared features are realized morphologically. In Section 3.4, I address some of these questions, in particular sharpening the ideas about feature resolution that were proposed in Chapter 4.

3.3.1 Digression : Gender Features

First, though, it is necessary to address a problem concerning gender features that is raised by the feature sharing analysis of concord. In Chapter 3, it was shown that certain kinds of DPs lack a gender feature entirely. There are two such cases: inanimate nominals where the root is not feminine (e.g., *bet* ‘house,’ *alga* ‘bed’) and animate nominals where the gender is unknown. For the inanimate nominal, *n* has no gender feature because inanimates do not have natural gender. Also, since gender is privative on roots, the root lacks a gender feature entirely. This is depicted in (80)a. For the default gender animate nominal, *n* has no gender feature because the natural gender is unknown. Thus, if this occurs in the context of a root that lacks a gender feature (e.g. *tämari* ‘student’), there will be no gender feature in the DP. This is shown in (80)b.



The lack of a gender feature is problematic under a feature sharing analysis of concord. Features that are not valued during the syntax will cause a crash at PF -- they will not be able to be morphophonologically realized since vocabulary items contain only valued features. If adjectives, determiners, demonstratives, etc., enter the syntactic derivation with unvalued

features, they will not be able to have them valued in nominals like (80)ab; thus it should not be possible to have (agreeing) adjectives, etc. with such nominals, but this prediction is false (see e.g., (75)).

I entertain two possible solutions to this problem. One is narrow and Amharic-based, and the other is much broader. The narrow solution is that the assumption that gender is privative on roots is incorrect.²⁰ Instead of lacking a gender feature altogether, all roots that are not [+FEM] are actually [-FEM], i.e., gender is binary on roots. In (80)ab, then, the roots would both have a [-FEM] feature. Any agreeing adjectives/determiners/demonstratives would therefore have their gender feature valued as [-FEM] and this is the correct result morphologically -- elements that agree in such nominals are always the masculine (default) form.²¹

However, this solution does grant grammatical gender a larger role in Amharic. Specifically, it does not capture as well the intuition that grammatical gender is not important for the vast majority of nominals in Amharic and is, in fact, being lost from the language. Moreover, it points up a weakness of the gender analysis where different-root nominals are concerned.

Consider the different root nominals *abbat* ‘father’ and *ʔnnat* ‘mother.’ In Chapter 3, neither of

²⁰ One could also surmise that the gender features on *n* are incorrectly construed. Perhaps instead of the natural gender feature being binary, ([+FEM], [-FEM]), it is tertiary ([+FEM], [-FEM], [0FEM]) with *n*'s like those in (80) having a 0 value for the feature FEM. Crucially, it is not that these *n*'s would be unvalued, but that there is a three-way opposition between having a positive specification for the feature, a negative specification, and no particular specification or being neutral with respect to the feature (cf. the discussion of coindexing in Reinhart 1983:49ff.). This would not have adverse morphological effects because the vocabulary items for masculine agreeing elements are underspecified for gender. Hence, it is predicted that elements with the feature [0FEM] are realized with masculine morphology and this is the desired result for cases like (80)ab.

However, this solution makes incorrect predictions about feminine default nominals like *ayt* ‘mouse’ which have **feminine** agreeing gender when their gender is unknown. Any adjective, determiner, demonstrative, etc. which probes downwards to value its gender features will see the [0FEM] feature on the *n* first, agree with it, and thus will be incorrectly realized as masculine. Since neither of the other solutions make incorrect predictions about the data, I do not pursue this solution further.

²¹ This does not disrupt the analysis of same-root nominals like *tūmari* which can refer to either a male or a female student. These cases simply become exactly case of the ‘feminine default’ animal *ayt* ‘mouse’: the root has a grammatical gender that is overridden when natural gender is present on *n*.

these roots had a gender feature. However, they had strict licensing conditions: *abbat* is only licensed under $n[-FEM]$ and *mmat* is only licensed under $n[+FEM]$. If gender is binary on roots, then it will have to be decided what gender each of these roots have. It seems most natural to see that *abbat* is $[-FEM]$ and *mmat* is $[+FEM]$. However, this leads to redundancy -- the information on the root is repeated on n . More broadly, there would be no direct relationship between gender in root meaning (the fact that the word ‘mother’ has a bit of meaning that says ‘female’) and gender in the syntactic representation, and this seems like a missed generalization. A more nuanced understanding of how these two aspects of gender are related would be necessary to pursue this solution.

The other solution involves broader claims about the nature of agreement, and specifically, how unvalued features cause a crash at PF. Suppose that there are language-specific redundancy rules that could occasionally step in and ‘save’ unvalued features at PF by giving them a default value before Vocabulary Insertion. This kind of rule was shown to be independently necessary (in Amharic at least) in Chapter 4 when a shared plural feature is not resolved to a given head. In that case, the plural feature on n or Num is unvalued, and a redundancy rule steps in to assign it a default value.

(81) **PF Redundancy Rule for the Plural Feature**

$$PL [] \rightarrow [-PL]$$

More generally, these redundancy rules could also be appealed to in order to explain default agreement. Default agreement could be understood as what occurs when an Agree relation is

prevented from happening in the syntax for some reason and a default value for the relevant feature is inserted instead.²²

Under this solution, adjectives/demonstratives/determiners appearing above nominals like (80)ab would simply not have their gender feature valued in the syntax. Just before Vocabulary Insertion, a redundancy rule would fill in the unmarked value (a [-] in this case), resulting in masculine forms which is correct empirically.

(82) **PF Redundancy Rule for the Gender Feature**

FEM [] → [-FEM]

However, care must be taken to keep unvalued features from entering PF in other cases, e.g., when there is a valued gender feature in the DP that could have valued the adjective/demonstrative/determiner in the syntax. If valuation of an unvalued feature can happen in the syntax, it seems that it must happen.

Both of these solutions lead to harder, bigger questions about the nature of gender and the nature of agreement (and what forces agreement to happen). Yet, due to constraints of space and time, this will have to serve as a sufficient promissory note to enable general discussion of the feature sharing analysis to continue.

²² The typical way of dealing with default morphology in Distributed Morphology is through Impoverishment, i.e., the deletion or delinking of features from a particular node (see e.g., Bonet 1991, Halle 1997, Noyer 1997). In the case of default agreement, this approach assumes that agreement has occurred in the syntax but the morphology removes (impoverishes) some of the resulting features. However, default agreement is often discussed in the syntactic literature as resulting from a failure or blocking of Agree in some sense (e.g., quirky case subjects induce default agreement in Icelandic; see e.g., Sigurðsson 1996, Boeckx 2000), in which case redundancy rules like those described above would be necessary.

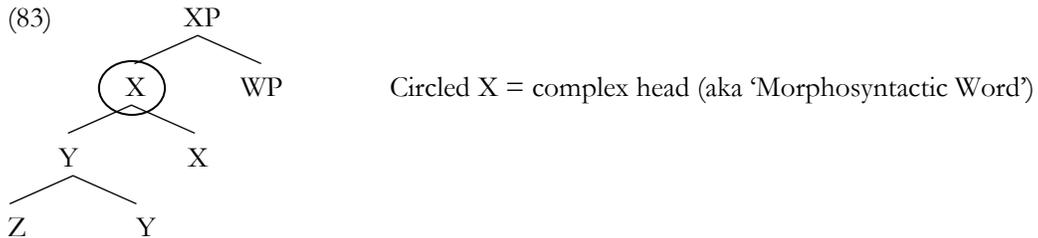
3.4 Concord as Feature Sharing : Feature Resolution

In this section, I return to and carefully spell out assumptions about the PF effects of feature sharing, drawing on the suggestions made in Chapter 4 and bringing in the concord data. I propose specific principles that guide the resolution of shared features at PF and examine their consequences, both within Amharic and from a more cross-linguistic perspective. I conclude that one of the principles may make predictions that are too strong, but it encodes a useful intuition which future work will hopefully clarify. The section closes with some discussion of the impact of the proposals on movement.

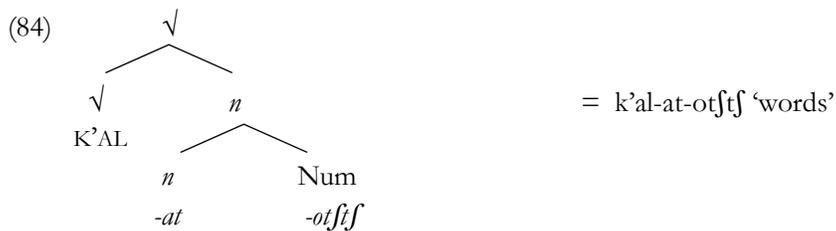
To review briefly, in Chapter 4, feature sharing was used to account for the morphosyntax of irregular and regular plural nominals in Amharic. It was proposed that a plural feature is shared between Num and *n*. At PF, the feature must be ‘resolved’ to one or both of the heads that it is shared between. If it is resolved to Num, a regular plural results (if the plural feature is [+PL]). If it is resolved to *n*, an irregular plural results (for those nominals that have irregular plurals). If it is resolved to both, a double plural surfaces.

If feature sharing is understood as the general mechanism of agreement, though, it is clear that in the majority of cases it is not resolved to only one of the heads involved. In subject-verb agreement, for example, both T and the DP morphologically express their agreeing features (as long as the language has the appropriate vocabulary items to do so). In Chapter 4, I suggested that a shared feature can be resolved on either of the heads it is shared between only when the heads are part of the same complex head (a ‘Morphosyntactic Word’ in the terminology of Embick and Noyer 2001:574, Embick 2007:3). A complex head is the highest head node in a given head position that is not dominated by further head-projection. In (83), the highest X node is a complex head. If, say, two of the heads within this complex head share

features (Y and Z, Z and lowest X, etc.), the claim is that the shared feature can be realized on either or both of the heads.



In the case of Amharic plurals, the vocabulary items that realize *n* and Num are all morphologically dependent (i.e., they are all suffixes or nonconcatenative morphology that needs a host). To find a host, *n* combines with the root and then Num combines with the *n*-root complex. I remain uncommitted about what operation is doing the combining here (I assume that Num and *n* have lowered to the root in (84)), but the end effect is clear.



The root, *n* and Num are all part of the same complex head (see discussion in Chapter 4).

Putting together these results, I propose the following principle for feature resolution.²³

²³ Another issue here is whether the shared features are realized on a separate node, perhaps an Agr node. Agr nodes house agreement morphology and are motivated by the fact that sometimes agreement is realized as a separate piece of morphophonology, e.g., *ityop'p'ɸyawi-t set* 'Ethiopian woman' the *-t* suffix on the adjective realizes agreement (the assumption here is that each morphophonological piece = one node, all things being equal; see Halle and Matushansky 2006, Embick and Noyer 2007 for some examples of Agr node Insertion). Insertion of the Agr node would have to be limited to the probe, though, since goals

(85) **Default Principle of Feature Resolution**

A shared feature must be resolved to each of the heads it is shared between.

In most cases, a shared feature remains part of the feature bundles of all the heads that it is shared between. It can then influence how those heads are realized at Vocabulary Insertion. However, there is a second principle that guides Feature Resolution.

(86) **Complex Head Principle of Feature Resolution**

If a feature is shared between two (or more) heads within the same complex head, it can be resolved to either of the heads.²⁴

This is the observation that heads within the same complex head can optionally **not** realize a shared feature. If a feature is shared between two heads X and Y in the same complex head and another head A that is not in that complex head, the principle still makes the right predictions. Since A is not part of the same complex head as any of the heads that it shares the features with, there is no option to **not** resolve the feature to A.

usually do not realize their agreeing features as separate vocabulary items from the rest of their features (cf. the asterisk notation in Frampton and Gutmann 2000).

Consider also determiners and demonstratives in Amharic, which do not always have a separate ‘piece’ that realizes agreement (e.g., *ḥnāz̥z̥j̥ya* ‘those’ expresses the deictic feature of the demonstrative and the plural agreement feature with one vocabulary item). In these cases, the Agr node and the D or Dem node undergo Fusion, become one node and are realized with one vocabulary item (cf. Fusion in subject-T agreement in English; Halle 1997). Fusion presumably also occurs in the case of feature sharing between Num and *n* -- the plural feature on Num (the probe) is not realized separately from Num’s other features. ²⁴ (86)b is deliberately stated vaguely in terms of how many heads are sharing the feature; it would be interesting to see if the same effect is found if three heads ever share features and end up in the same complex head.

The idea that a shared feature can be resolved on either head only when the heads are part of the same head projection receives some support from the concord facts. Adjectives, demonstratives and quantifiers are not dependent morphologically (they are not suffixes, prefixes, etc.) and are not part of the same complex head as Num or *n*. Since the adjectives, demonstratives and quantifiers are not part of the same complex head as any of the heads they share features with, then, they obligatorily realize the shared features (in so far as there are non-null vocabulary items to realize them).

It receives further support from definite markers as analyzed in Chapter 2. Feature resolution must occur before Vocabulary Insertion since it directly affects how feature bundles are realized. This means that feature resolution occurs when hierarchical structure is still present at PF (and this has a side benefit in that it enables complex heads to be clearly identified). This makes the prediction that any affixes or clitics that are attached after Vocabulary Insertion will **not** be subject to the complex head principle and **must** realize shared features. Confirmation of this prediction can be found in the definite markers in Amharic. Definite markers are dependent morphologically (they are suffixes) and can be part of the same complex head as *n* (an irregular plural suffix in the example below) and Num (a regular plural suffix).

- (87) k'al-at-otʃtʃ-u
 word-PL-PL-DEF
 the words

Nevertheless, they always show agreement. It is not possible for, say, the shared gender feature only to be realized on *n* and not on D.

The analysis of definite markers in Chapter 2 conveniently explains why this is the case. Definite markers attach to their hosts via the operation Local Dislocation, which occurs **after** Vocabulary Insertion. At the point in the derivation where a choice must be made to realize a shared feature or not (i.e., at Vocabulary Insertion), the definite marker has not yet moved to become part of another complex head. Hence, it always realizes gender and number agreement.

So far, I have proposed two principles of feature resolution, and they were shown to be compatible with facts in Amharic. However, the Complex Head Principle makes falsifiable predictions cross-linguistically which may be too strict. It predicts that if a pronominal clitic attaches to a verb before Vocabulary Insertion (through, say, Lowering) that the agreement features shared between the clitic and the verb may be optionally realized on only the clitic or the verb. It predicts contrasts between languages where inflectional markers (e.g., plural morphemes) are dependent elements and languages where they are not in terms of how agreement is realized. It raises questions about polysynthetic or highly agglutinative languages -- would it be more likely for affixes in these languages to optionally not realize agreement?

It may be that the application of the Complex Head Principle varies per language -- in some languages (like Amharic), it would apply generally, whereas others may use it only in certain contexts (e.g., within the nominal phrase but not between verbs and arguments). In other languages, it may be that only the Default Principle applies, and features are always resolved to all heads. Nevertheless, the intuition behind the Complex Word Principle is clear -- it concerns economy in terms of what features are realized. The basic idea is that there is no need to realize shared features on both of the heads that share them if the heads are in a local enough relationship (cf. Giusti 2002 on the realization of the functional features of an XP only once, either in the specifier or the head position).

Overall, the concord facts investigated above are compatible with the conclusions reached about feature resolution in Chapter 4, and I proposed some specific principles that guide feature resolution. The feature sharing principles have not been formalized, and they remain to be confirmed in work with a broader empirical scope, but they represent a good (i.e., specific and falsifiable) start to an investigation of how feature sharing affects PF.

3.4.1 Movement

I would like to close with another larger-picture discussion. The proposals here about feature resolution bear some relation to work on how the members of an A'-chain are spelled out (see e.g., Landau 2006 and references therein), and it is worth discussing how the feature sharing principles here impact movement. Movement can be understood as requiring feature sharing, e.g., if movement involves copying or re-merging the moved element in a new position. However, in wh-movement, for example, the bottom copy of the wh-word does not realize the features it allegedly shares with the higher copy of the wh-word. This is not predicted under the feature resolution principles above because it is not in the same complex head as the topmost wh-element. However, some independent mechanism must be used to eliminate lower wh-elements from being pronounced at all, regardless of feature sharing (see e.g., Frampton 2004's Linearization Algorithm which 'omits' linearization of nodes that have a parent outside of the current phase). Since the lower copy has no phonology, it does not matter whether the shared features are resolved to it are not.

The truly telling evidence, though, is what happens in those rarer cases when non-highest copies are actually realized. Are all the shared features present on the lower or intermediate copies? The evidence is interestingly mixed. There are certain languages in which

resumptive pronouns are (allegedly) the phonological realization of a gap left from movement (see e.g., Swedish: Engdahl 1985, Vata and Gbadi: Koopman 1982, 1984). This is surprising under the feature resolution principles above, which predict that a wh-word just like the topmost wh-word should surface. It is also surprising under simply a copy theory of movement, and it requires some arguably ad hoc notion of partial deletion of the (features of the) lower copy in order to predict the facts correctly (see e.g., discussion in McCloskey 2006).

However, intermediate copies of a wh-element are fully realized, as discussed in Alber (to appear) for Tyrolean German. Moreover, there is at least one case where a lowest copy is fully realized: *v*P-Fronting in Hebrew (Landau 2006). In Hebrew, a *v*P may undergo A'-movement (topicalizing) to the specifier of a topic phrase. Since it is just a *v*P and has no tense information, it is realized as an infinitive. Crucially, the lower copy that remains from this movement is also realized, albeit as a fully inflected verb since it combines with finite T.

(88) lirkod, Gil lo yirkod ba-xayim.

to-dance Gil not will-dance in-the-life

As for dancing, Gil will never dance.

(Landau 2006: 32)

Landau (2006:58) suggests that the lowest copy is pronounced in this case because it has combined with tense and tense cannot be realized separately from a verb in Hebrew.

The main question here seems to be: why is the lowest copy usually spelled out in a deficient form (or not at all)? Perhaps in a given structure, it has to be made maximally clear that movement has occurred (or perhaps otherwise movement will not be acquired). It is maximally clear that movement has occurred when there is a gap or a less specific remnant in the original

position where the moved element came from. Formalizing this intuition, though, will require a more nuanced understanding of the phonological realization of what is left behind (a copy? a set of features? are these the same?). The facts here are certainly not predicted under the feature sharing principles, but neither are they predicted under any theory of movement currently (copying, re-merging, multiple mothers, etc.). I leave the task of reconciling these facts with the feature sharing principles when the facts themselves are better understood.²⁵

3.5 Conclusions

This section was intended to give a bird's eye view of the predictions of the GNN analysis with respect to concord and a brief introduction to a feature sharing analysis of concord in general. Much data on Amharic concord was presented, and it was shown how the feature sharing analysis is generally capable of covering the facts (although the definiteness asymmetry in number agreement was deliberately set aside). The main area where the feature sharing analysis ran into difficulties concerned DPs that contain no gender feature, but two potential solutions were proposed that both bear some promise. The discussion of the feature sharing analysis also led to a firming up of the principles that guide how shared features are realized at PF.

The section has focused in particular on a feature sharing analysis of concord, but feature sharing crucially involves the syntactic relation Agree (at least for Pesetsky and Torrego

²⁵Alternatively, the assumption that movement involves feature sharing (in the exact same way as in agreement) could be questioned. There is a fundamental difference between the two cases in the following sense. In agreement, two separate heads agree in any features that they both have. They may have other features which are not shared, and in general the heads are understood as distinct items in the syntactic derivation (e.g., they may undergo movement separately). However, for movement, there is only fundamentally one item involved, sharing all of its features between two positions. It is not immediately clear to me how this difference could be exploited, but it represents an obvious distinction between movement and more typical feature sharing that could cause some of the empirical differences seen above.

2007). The c-command domain works adequately for Amharic as a search space for the probe in concord. However, in languages where nominals precede adjectives (and other agreeing elements), something more must be said. It could be that the nominal is merged below the adjective (or other agreeing elements), and subsequently raises, as in Koopman 2006 or Collins 2004. Another option is found in Baker 2008, where a probe can look upwards or downwards to find a goal. However, these solutions do not satisfy everyone (see e.g., Matushansky 2009) and any cross-linguistic attempt to justify Agree as the mechanism for concord should grapple with these issues.

Overall, the feature sharing analysis of concord works reasonably well for Amharic, and raises many interesting, larger questions about the nature of agreement. It is certainly not a drawback of the GNN analysis that it leads to a feature sharing treatment of concord, and the many loose ends left in this discussion will with luck be settled upon further investigation.

4 CONCLUSION

This chapter has knit together the results of Chapters 3 and 4, referred to collectively throughout the chapter as the GNN analysis. The GNN analysis makes specific, empirical predictions about gendered plurals and about the pluralization of nominals ending in the feminine suffix *-it* in Amharic. All of the predictions were shown to be borne out, providing significant support for the GNN analysis.

The second portion of the chapter examined the predictions of the GNN analysis with respect to concord. The GNN analysis suggests that a feature sharing analysis of concord is the best approach, and it was demonstrated how this would work (and not work, for some data) in Amharic. The discussion was preliminary, and the results tentative, especially considering how

many larger issues are at stake if the claim is made that feature sharing is how concord is done in every language. Nevertheless, the initial results are promising and it is my hope they will hold up under more detailed scrutiny.

In Chapter 2, another kind of concord in Amharic was investigated -- the optional concord in definiteness that is found on non-initial adjectives. In (89), the second adjective has an optional definite marker and I analyzed this as the adjective agreeing in definiteness with D.

- (89) tɨllɨk'-u t'ɨk'ur(-u) bet
 big-DEF black(-DEF) house
 the big black house

It was argued in Chapter 2 that this kind of concord is best analyzed as **not** involving the Agree relation. Among other problems, the goal (definite D) c-commands the probe (the adjective). Definiteness concord in fact seems different in many ways from the phi-feature concord examined in this chapter. It involves different features (definiteness), different locality conditions, and different targets of agreement (just adjectives). The definite marker on the second adjective also reflects gender distinctions (e.g., it is *-wa* when the nominal is feminine). This seems to indicate that definiteness concord involves a wholesale copying of all the features under the D node, and that this occurs fairly late in the derivation (after D has already agreed with the nominal). For all these reasons, it seems best to keep definiteness concord as post-syntactic Feature Copying (as it was analyzed in Chapter 2), and not attempt to integrate it with the phi-feature concord seen here that involves syntactic Agree. It is mysterious why the two types of concord would use different mechanisms (is definiteness concord somehow more

morphological? less syntactic?), but the facts point that way and perhaps a reason for the difference will be found further along the path of this research.

To return to the GNN analysis, it is proposed there that *n* has both a gender and a number feature for many nominals. This result seems intuitively satisfying in that inherent phi-features are a large part of what distinguishes nominals from other categories (e.g., verbs, adjectives), so it makes sense that when a root is nominalized, the nominalizing head carries the phi features (cf. Kihm 2005, Ferrari 2005, Lowenstamm 2008 for specific discussion that *n* nominalizes a root by providing gender features). However, a closer look at the GNN analysis reveals that phi features are in fact distributed throughout the DP: Num also has a plural feature, *n* has both a plural and gender feature, and the root has a gender feature. This proliferation of phi-features is a far cry from having a nominal head N carry all the phi-features at once, as it is sometimes abbreviated in the syntactic literature. However, this aspect of the GNN analysis fits in with some recent research on phi features in which it is claimed that certain phi-features are located on multiple heads in the DP (see e.g., Steriopolo and Wiltshcko 2008 on gender, Acquaviva 2008a on number). Moreover, the presence and specific location of each of these features has been carefully motivated empirically. The consequences for linguistic theory that follow from the presence of multiple gender and number features have been delineated, and these consequences are interesting and relevant for the further development of the theory of natural gender and the theory of feature sharing.

CHAPTER 6:

CONCLUSIONS

1 INTRODUCTION

In Chapter 1, I introduced the two broad sets of questions that have guided the dissertation: (i) questions about the proper description and analysis of DPs in Amharic, and (ii) questions about the interaction of morphology and syntax with respect to cyclicity, phi features and agreement. In this final chapter, I review how these questions have been addressed and what issues remain open for future research. I focus on discussing the issues from a cross-chapter perspective, knitting together the results from definite marking, gender, number and agreement (for detailed summaries of each individual chapter, see Chapter 1, Section 4). The chapter closes with some brief reflections on how the dissertation supports a view of grammar where there is no centralized lexicon.

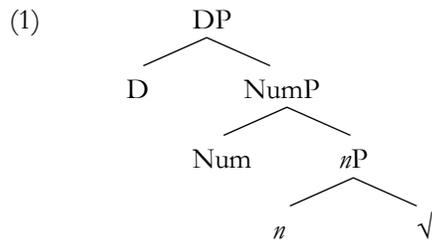
2 THE AMHARIC DP

The main results of the thesis with respect to the Amharic DP are that the definite D is a second position clitic (when obligatory), that *n* has a plural feature and may have a natural gender feature (if the nominal is animate), that roots may have a grammatical gender feature, and that feature sharing is the mechanism used for DP-internal agreement. Taken together with some key ideas about how the grammar works (there is phase impenetrability at PF, a root and its category-defining head combine in an idiosyncratic manner, etc.), these assumptions generate

the broad range of data examined here, from definite marking with adjectives, relative clauses, numerals, free relatives and compounds to how gender agreement is determined to how double plurals are generated. In this section, I do not review each analysis in detail, but discuss the results from a broader perspective. I show first that the analyses of each phenomenon do not require that Amharic has a DP structure different than other languages. Instead, the Amharic-specific portions of the analysis are in areas where we expect cross-linguistic variation. I proceed to discuss the results of the thesis with respect to other DP-internal phenomena that were not the central focus of the investigation (e.g., possessors, relative clauses) and with respect to the head-final (or not) nature of Amharic as a whole.

2.1 Language-Specificity

The main empirical focus of the dissertation can be summarized as the properties of terminal elements within DPs: definite markers (D's), plural markers (Num), the nominalizing head (*n*) and roots. At first glance, the empirical phenomena that involve these heads in Amharic seem to be at odds with what we know about DPs from better-studied languages. Consider the complex distribution of the definite marker, the nominals where plural is marked twice, or the 'overriding' of grammatical gender with natural gender. Nevertheless, I have argued that these phenomena can be fully accounted for assuming a completely conventional syntax for the DP, as in (1).



The quirks of the Amharic DP are not due to alterations in the basic hierarchical relations in (1), but instead to variation in parts of the grammar where we would expect language-specificity, e.g., how dependent elements attach to their hosts and what features are associated with syntactic heads.

For example, I argued in Chapter 2 that the definite marker when obligatory is the realization of a D head. Functional heads like D are very likely to be morphologically or phonologically dependent (see e.g., Giusti 2002). Phonological and morphological dependence can take various forms (various types of affixation and cliticization in conventional terms; the complex heads that are the result of Lowering, Raising, Local Dislocation, etc. in terms of Distributed Morphology), and we expect that languages will vary in terms of what kind of attachment they use for a particular functional head. In English, a definite D requires a host to its right and straightforwardly ‘leans’ rightwards on whatever follows it (i.e., is a ‘simple clitic;’ Zwicky 1977). In Amharic, the definite marker simply requires a host on the opposite side (the left) and must undergo a switch in linear position to acquire one (i.e., it undergoes Local Dislocation). During the syntax, though, the two languages are the same in terms of having a definite D as the head of DP -- the variation is contained within the morphology in language-specific requirements about the feature bundle D, [DEF].

In Chapter 4, I argued that regular, irregular and double plurals are best accounted for if there is a plural feature on *n* that agrees with the plural feature on Num. It has been

hypothesized that the content of the feature bundles manipulated by syntax is one of the main sources of language variation, an idea also known as the Chomsky-Borer Hypothesis. The fact that *n*'s in Amharic contain a [+PL] or [-PL] feature as part of their bundle and that this accounts for the existence of double plurals, the lack of competition between regular and irregular plurals, and many of the other Amharic-specific aspects of the plural system, completely in line with the Chomsky-Borer Hypothesis.

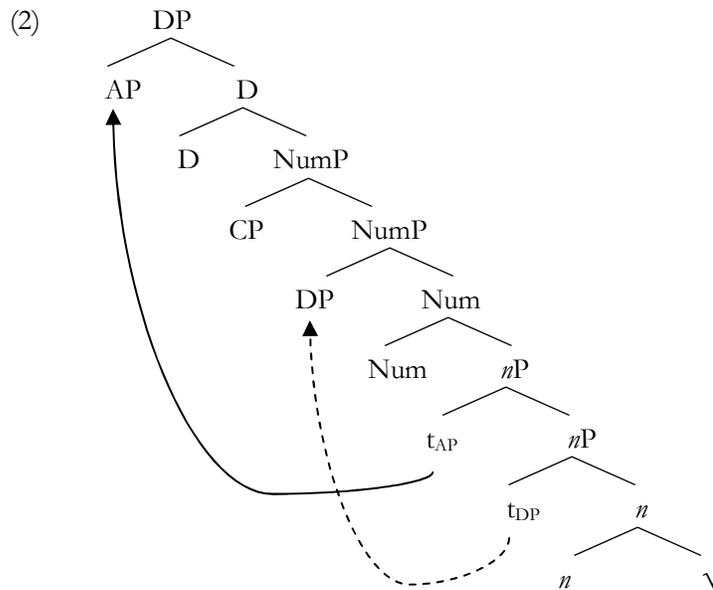
It should be noted that the situation is slightly different for gender. In Chapter 3, I tentatively suggested that the gender system necessary for Amharic (natural gender on *n*, grammatical gender on the root) is capable of accounting for better-known gender systems as well. In other words, the purported quirkiness of Amharic leads to a better understanding of gender in general. However, it remains the case that the proposed analysis made more explicit the features and feature bundles that syntactic heads are associated with but did not fundamentally alter the structure of the DP.

In general, it is a positive consequence (I believe) that the dissertation maintains that Amharic has the same DP-internal structure as other languages, and that its differences can be wholly derived from the idiosyncratic properties of particular heads.

2.2 Larger Phrases and Head-Finality

Looking beyond the properties of particular heads, I have argued less extensively in the dissertation for a specific positioning of possessors, relative clauses and adjectives within the Amharic DP. In Chapter 4 (Section 4.1.1), I showed how (at least) three levels of projection are required in the Amharic DP: one to host focused adjectives, one for relative clauses and possessors, and one for non-focused adjectives (and the nominal itself). I argued that these

projections are best identified as DP, NumP and *n*P both to bring Amharic into accord with work on other Semitic languages (e.g., Ouhalla 2004) and to maintain the analysis of definite marking developed in Chapter 2. The resulting structure of the DP is in (2).



APs are adjoined to *n*P but, when focused, move to Spec, DP. Possessors are merged as specifiers to *n*P but raise to the specifier of NumP. Relative clauses are adjoined to NumP.

A clear extension of the research in this dissertation would be to find further evidence for the structure in (2), perhaps by investigating the properties of the phrases involved in more detail. The structure of relative clauses and possessors in particular has been one of the few fertile areas of research in Amharic syntax (see e.g., Fulass 1972, Halefom 1994, Demeke 2001, Ouhalla 2004, den Dikken 2007). Although the assumptions about definite-marking made in some of these accounts are untenable (see Chapter 2, Section 3.1), it would be worthwhile to see if the insights behind them are compatible with the view of the DP that this dissertation leads to. Moreover, several syntactic phenomena involving adjectives have popped up a few times

throughout the dissertation, but have not been significantly explored, including the focus movement of adjectives to Spec, DP (mentioned directly above) and *n*P ellipsis which can strand an adjective (see e.g., Chapter 5). Further exploring the properties of these phenomena would no doubt help to fill out (and hopefully, confirm) the basic DP schema in (2).

It is worthwhile to briefly consider the headedness of the projections within DP, given that Amharic was described in Chapter 1 as a predominantly head-final language. It is clear that the DP projection itself is head-initial -- in Chapter 2, it was shown how this enables a second position clitic analysis of the definite marker (and how pronouns precede nominals in Amharic, as in English *we students*; Postal 1969). However, for Num, *n* and the root, it does not matter to the analyses of number and gender that I have proposed whether they are head-initial or head-final. The hierarchical relations will ensure that the Vocabulary Items are combined in the proper order, regardless of headedness. I have represented these projections as head-initial throughout the dissertation just for the sake of uniformity (both with other accounts of Amharic and with accounts of similar phenomena in other languages). Whether Amharic can be classified as a head-final language or not seems to be more a matter of typology than morphosyntax, at least in so far as the present phenomena are concerned.

2.3 Summary

This dissertation took as its starting point a rich set of data about the Amharic DP. It has been shown throughout how the data sorts itself into patterns and generalizations, and how these generalizations can be captured using well-supported assumptions about the structure of the DP combined with a few key assumptions about the properties of D and *n*. Questions remain, especially about the nature of larger phrases within the DP, but it is my hope that the

thesis has provided a firm foundation for future work on DPs in Amharic, other Ethio-Semitic languages, and all types of languages that exhibit similarly challenging and beautiful phenomena.

3 THE SYNTAX-MORPHOLOGY INTERFACE

The empirical topic of the dissertation is (clearly) the DP in Amharic, but the dissertation also concentrates on a broad area of research within linguistic theory: the syntax-morphology interface. As discussed in more detail in Chapter 1 (the Introduction), the syntax-morphology interface has not been researched as much as other interfaces, partially because morphology has been undeservedly treated as a lesser subfield. However, Distributed Morphology (which syncs well with Minimalist syntactic theory) has renewed investigations in this area and provided an explicit framework to ask syntax-morphology questions. Key topics within the syntax-morphology interface include the effects of cyclicity in the syntax and the morphology, the featural content and (post-)syntactic manipulation of terminal nodes, and empirical phenomena that have both morphological and syntactic aspects (e.g., agreement, case). In the dissertation, I have shown how several central phenomena of the Amharic DP have significant consequences for the syntax-morphology interface, specifically with respect to cyclicity, the manipulation of feature bundles, and agreement. In this section, I review the findings of the thesis on these topics, concentrating on pulling together the results across the chapters.

In Chapter 2, I argued extensively that phase impenetrability holds at PF, i.e., that morphological operations cannot operate on material within previously-spelled out phases. It was also demonstrated that a previously spelled-out phase, although opaque, is not invisible. It is treated a like a simple head -- a single unit of material with no internally accessible structure, but

the ability to host other heads at its edges. This is an important, novel constraint on the application of morphological operations, and future work will hopefully find additional empirical domains where its effects can be observed (one possible area to investigate would be accusative case-marking in Amharic since the accusative case marker has a distribution very similar to the definite marker).

The idea that phase impenetrability holds generally at PF might seem to be questioned in later chapters. The relevant piece of data is when some element agrees in grammatical gender with a root. In (3), the definite marker *-wa* is feminine in agreement with the [+FEM] feature on the root *ayt'* (I assume that the gender of the mouse in question is unknown, so that there is no gender feature on *n*).

- (3) *ayt'*-*wa*
 mouse-DEF.F
 the mouse

In Chapter 5, the agreement between the definite marker and the root was analyzed as feature sharing and involves Agree. The definite marker therefore has an unvalued gender feature and probes downward to find a valued gender feature. The problem is that *n*P, which intervenes between D and the root, has been posited to be a phase (Marantz 2001, Arad 2003, 2005). As part of the spell-out domain of *n*P, the root will have been spelled out, i.e. rendered inaccessible, by the time the definite marker probes downward to find a gender feature. The definite marker should therefore not 'see' the root and should not agree in gender with it.

There are two separate paths that could be pursued as solutions to this problem. The first path is that *n*P is not actually a phase. The phasehood of *n*P (and category-defining heads in

general) was proposed in order to explain the idiosyncrasy of combining a root and category-defining head (see Marantz 2001, Arad 2003, 2005). However, recent work by Harley (2009) and Embick (2008) has shown that the predictions made by this idea are too strong, e.g., the semantic interpretation of a root is not necessarily fixed after the first category-defining head has been merged (see further discussion in Chapter 4, Section 3.2.1). If *n*P is not a phase (and, more specifically, if there are no phases within DPs), D should be able to ‘see’ all the way down to the root.

The other path that could be pursued is that agreement is not sensitive to phase boundaries. This idea was explored somewhat in Chapter 2, where it became relevant in the analysis of definiteness agreement. Definiteness agreement can cross phase boundaries, and although this process was analyzed in Chapter 2 as post-syntactic feature sharing, the parallel with gender agreement is striking. The general idea that agreement is not sensitive to phase boundaries has been independently proposed (in Legate 2005 for post-syntactic feature copying, Bošković 2007 for Agree), and this data can be taken as initial confirmation that agreement may be different in nature from other morphosyntactic phenomena in its ability to ignore cyclic boundaries.

Besides cyclicity, another major syntax-morphology issue that the dissertation addresses is the content and manipulation of terminal nodes. The addition of a plural feature to *n* captures an array of contrasts between irregular and regular plurals in Amharic. Certain constraints on how shared features are realized were shown to be the key to a successful analysis of singulars, regular, irregular and double plurals. The presence of gender features on both *n* and the root led to accurate predictions about gender agreement. This portion of the research shows that, by paying careful attention to the content of terminal nodes and how those terminal nodes are realized, elegant solutions can be found to various thorny morphosyntactic puzzles.

The final major area where the dissertation has an impact is the theory of agreement. A coherent theory of the syntax and morphology of agreement emerges if certain results from across the chapters are put together, and the main tenets are the following (setting aside, for the most part, definiteness agreement; see Chapter 5, Section 4 for some discussion of how it might fit in). Agreement is a syntactic relation, the Agree relation well-known from Minimalist syntax where a head probes downwards into its c-command domain to locate a goal with matching features. I argued in Chapter 3 that only **unvalued** features are probes, not **uninterpretable** features, building on work by Legate (2002) and Pesetsky and Torrego (2007). Presumably, they are probes because unvalued features cannot be realized at PF (no Vocabulary Item contains an unvalued feature) and thus would cause a crash if not valued in the syntax.

In Chapters 4 and 5, though, it was shown how PF redundancy rules that assign an unvalued feature the default value were occasionally needed for plural and gender features, and an important area of future research is the scope of the redundancy rules. They may be independently needed to deal with cases of syntactic default agreement (where an Agree relation is blocked or fails to obtain in the syntax), but they raise questions about how to ensure that agreement occurs at all. If unvalued features do not necessarily cause a crash at PF, why should Agree happen in the first place? Why couldn't redundancy rules give everything a default value at PF? There are two potential solutions to this problem. First, the redundancy rules could be very specific, both to certain languages and to certain contexts. This would prevent their general application and cause most unvalued features to trigger a crash at PF. Alternatively, as discussed briefly in Chapter 5, there might be some kind of constraint that Agree must happen in the syntax if it can, although the formalization of this constraint remains to be worked out.

To continue listing the properties of agreement argued for in the dissertation, it has been shown how the Agree relation involves the sharing of features between the probe and the goal --

this was seen in Chapter 4 for plural nominals and in Chapter 5 for DP-internal agreement in general. This work shows the broad applicability of feature sharing (as originally proposed within Minimalism by Frampton and Gutmann (2000) and developed by Pesetsky and Torrego (2007)). Moreover, in Chapter 5, principles of feature resolution were proposed which describe how shared features are realized at PF. Essentially, shared features are almost always realized on all the heads they are shared among, unless the heads are part of the same complex head. The next step in this line of research is to confirm the cross-linguistic validity of using feature sharing to account for DP-internal agreement and of the specific principles of feature resolution.

In sum, the dissertation makes significant headway in mapping out the syntax-morphology interface with respect to cyclicity, the properties of terminal nodes and agreement. As with the results on the Amharic DP, I hope that the findings here will serve as a springboard to future research on these key issues of linguistic structure.

4 LEXICON OR NO LEXICON

In Chapter 1, I explicitly state that I will not argue against a lexicalist view of morphology within the bulk of the thesis. However, I would like to end the dissertation with some brief discussion showing how, taken as a whole, the dissertation supports Distributed Morphology.

In Chapter 2, I showed that the best analysis of the definite marker will account for the key generalizations about its distribution (e.g., its preference for the leftmost host), and this seems to be best done by appealing to some kind of post-syntactic, linearized representation. This operation is not phonological or prosodic, but operates over linearized strings and is

morphological. Exactly such an operation has been independently proposed within the framework of Distributed Morphology: Local Dislocation.

Chapter 3 develops an analysis of gender, a traditionally lexical topic in that nouns are said to be assigned gender or marked with gender in the lexicon. However, there is no need to appeal to a centralized lexicon to account for gender if grammatical gender is a feature on roots and natural gender is a feature on *n*.

In the latter two-thirds of the dissertation, much mileage is gained from the idea that a lexical category like a noun can be decomposed into a category-neutral root and a category-defining head *n*. The existence of *n* in particular provides ‘space’ -- a syntactic head on which to place the natural gender feature and the additional number feature that both do a lot of work in the analyses. The dissertation can thus be viewed as strongly supporting the Distributed Morphology idea of category-neutral roots combining with category-defining heads.

The dissertation therefore provides, in addition to a thorough analysis of many aspects of the Amharic DP and the mapping out of several key aspects of the syntax-morphology interface, further justification for many of the fundamental assumptions of Distributed Morphology.

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