

## ABSTRACT

### STRUCTURAL CASE AND AGREEMENT IN ANCIENT GREEK COPULAR CONSTRUCTIONS

This thesis examines case agreement between the subject and predicate of copular infinitives in Ancient Greek and accounts for their variation within the Minimalist framework, particularly the Probe-Goal Agree system as outlined by Chomsky (2000, 2001, 2004, 2008). In contrast to earlier research into case agreement which assumed some mechanism of “case attraction” (Smyth, 1920; Andrews, 1971; Quicoli, 1982), or assumed agreement between subject and predicate with no clear mechanism (Hudson, 2003; Creider & Hudson, 2006), I argue that the operation Agree extended to Multiple Agree by Hiraiwa (2001) is crucial in providing a comprehensive account for the data. Further, an optional difference between predicate nominals and adjectivals will show that adjectives are better formulated as  $-N$ ,  $-V$  than as  $+N$ ,  $+V$  (Baker 2003). In terms of the Probe-Goal Agree system, this is formalized as adjectives lacking values for their full set of  $\Phi$ -features (i.e., they are “radically  $\Phi$ -incomplete”).

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**STRUCTURAL CASE AND AGREEMENT IN ANCIENT  
GREEK COPULAR CONSTRUCTIONS**

by

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**APPROVED**

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## CHAPTER 1: INTRODUCTION

Case agreement between subject and copular predicate<sup>1</sup> in Ancient Greek is a complicated topic. As in many languages, a predicate noun or adjective will agree morphologically with the subject noun in various features such as case, gender, and number. In Ancient Greek, this holds even when the copular verb is infinitival. Furthermore, when the copula is an infinitive, the subject of that copula may appear in any of the morphological cases of Ancient Greek except for vocative. This includes what is often known to classicists as the “accusative plus infinitive” construction where the subject of the infinitive is marked with accusative case. Effectively, this is a name for what is known in generative syntax as Exceptional Case Marking (ECM; Chomsky, 1986). (1) shows an example of ECM in Ancient Greek.

- (1) nomízdoō gār humá̄s emōi ē̄nai kā̄ patrídā kā̄ p̄lōus kā̄ summák̄ous  
‘For I consider you to be for me fatherland, friends, and allies’  
(Xenophon, *Anabasis* 1.3.6)

The ECM marked nominal in (1) is the accusative marked *humá̄s* ‘you (pl.)’ also marked accusative are the predicate nouns *patrídā*, *p̄lōus*, and *summák̄ous*. Ancient Greek, however, also uses inherent case marking resulting in genitive or dative marking. An example of inherent genitive marking can be seen in (2).

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<sup>1</sup> I am using the term predicate here to refer to the nominal or adjectival phrase that is thematically associated with or agrees with the subject nominal.

- (2) autò te Kúrou edéonto hoos prot<sup>h</sup>umotátou pros tòn pólemon genést<sup>h</sup>ai  
 ‘Right there, they begged Cyrus to be most devoted to the war.’  
 (Xenophon, *Hellenica* 1.5.2)

The predicate adjective *prot<sup>h</sup>umotátou* agrees with the inherently genitive marked noun *Kúrou*. Finally, Raising to Subject occurs if the subject of the infinitival verb is the same as the subject of the matrix verb, resulting in nominative case marking. (3) has an example of Raising to Subject with a *pro* subject for both the matrix verb *ép<sup>h</sup>ee* and the infinitive verb *éinai*.

- (3) Pérsees mèn ép<sup>h</sup>ee ēinai  
‘He said he was a Persian’ (Xenophon, *Anabasis* 4.4.17)

The predicate noun *Pérsees* agrees with the unpronounced subject *pro*. This thesis accounts for these data using the current Minimalist framework for generative syntax. In particular, the case marking pattern in the copular constructions of Ancient Greek provides a strong argument in favor of the Probe-Goal Agree system (Chomsky, 2000, 2001, 2004, 2005, 2008, 2013). The analysis presented in this thesis is rather technical, and a detailed explication of the aspects of the theory required to account for the data will be provided; the reader is strongly encouraged, though, to consult the works cited above for a more thorough presentation of the mechanisms assumed here.

## 1.1 Outline of This Thesis

Chapter 2 will review previous research on case agreement in Ancient Greek and outline aspects of current Minimalist theory relevant to this thesis. Chapter 3 will discuss the source and presentation of the data in this thesis.

Chapter 4 will discuss the analysis of the data. Chapter 5 will provide the conclusion.

## CHAPTER 2: PREVIOUS RESEARCH

Although the descriptive facts of case agreement in Ancient Greek have been known for many years,<sup>1</sup> few authors have treated them from a formal linguistic stance. Andrews (1971), working from the basis of transformational rules, argued that the transformational rules of that time were inadequate to account for the Greek data. Quicoli (1982) responded to him arguing that in fact transformational rules were indeed the correct, and only, method to account for the data. Hudson (2003) provides an accurate account of the Ancient Greek data but he lacks a clear mechanism for agreement between subjects and predicates. Most recently, Creider and Hudson (2006) use the data to support their proposal for unreal tokens.

### 2.1 Arguments against Previous Research on Case Agreement

#### 2.1.1 Transformational Accounts

Andrews' (1971) argument against transformational rules as well as Quicoli's (1982) rejoinder on the side of transformational rules can be dismissed by other arguments as the entire framework of Transformational Grammar has been supplanted by the Minimalist framework of syntax. Additionally, their arguments both relied on a process of “case attraction”. That is, the predicate was originally assigned accusative case but because the “true” subject of the infinitive had been deleted or was unpronounced, the case of the predicate was “attracted” to the case of the noun which was thematically associated with the subject of the infinitive. (4) presents an example derivation using this process.

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<sup>1</sup> Smyth noted this at least as early as 1920.

- (4). a. He-NOM said [ him-ACC  $\text{be}_{\text{inf}}$  a Persian-ACC]  
 b. He-NOM said [ (him-ACC)  $\text{be}_{\text{inf}}$  a Persian-NOM]

In (4a), the predicate Persian has the same case as the infinitive's subject him-ACC. Using a deletion rule extrinsically ordered prior to a case assignment rule, the infinitive's subject would be deleted; the predicate then would have its case attracted to the case of the matrix subject he-NOM. Although it (weakly) captured many of the descriptive facts, extrinsically-ordered rule based transformations lacked sufficiently restricted predictive power and have been discarded by most current generative approaches. Critically, however, this approach cannot account for those cases in which there is case mismatch between the predicate nominal and the matrix subject, since, presumably, the early deletion rule should apply.<sup>2</sup>

### 2.1.2 Word Grammar

Working from the dependency-based framework of Word Grammar, Creider and Hudson (2006) use the Ancient Greek data as a starting point for their argument for an unreal token to account for unpronounced but necessary arguments in a sentence. They are concerned mainly with examples containing accusative marking on the subject and predicate of the infinitive. Non-accusative case marking is dismissed as “easily accomplished by ‘structure sharing’”, a process by which a nominal can act as both as the subject of the infinitive and as the subject or object of the matrix verb (Creider & Hudson, 2006, p. 5). For both accusative and non-accusative marked subjects of infinitives, they assume that

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<sup>2</sup> This is in fact part of Andrews' argument against rule based transformations that no rule ordering can account for all the cases.

predicate agreement comes free or by an unexplained ‘predicative’ dependency function. Creider and Hudson’s main interest is in sentences like (5).<sup>3</sup>

- (5) hoos sump<sup>h</sup>érei autóis p<sup>h</sup>ílous éinai  
 ‘That it is of interest to them to be friends.’  
 (Xenophon, *Economics*, 11.23)

They analyze this sentence as containing an unreal accusative marked pronoun as the subject of *éinai* with which *p<sup>h</sup>ílous* agrees. Importantly, this unreal pronoun is in every regard the usual type of pronoun except that it doesn’t exist<sup>4</sup> for this sentence and thus is unpronounced. More specifically, they argue that based on a usual separation of types from tokens, it can be stated that concepts (types) have a property “real?” with a value of “yes” or “no”. They state, “When applied to language, this same system allows us to distinguish ‘real’ units, which do have tokens, from ‘unreal’ ones, which do not” (Creider & Hudson, 2006, p. 8). That is to say, types with the value “real?:no” should never be pronounced (have a token) under this system. However, it seems that Creider and Hudson paint themselves into a corner with this analysis because they provide no mechanism for switching the value of “real?” from “no” to “yes” other than by experience. They must appeal to a hypothetical example where the subject of every infinitive is unreal, unlike the actual state in Ancient Greek.

The greatest difficulty in Creider and Hudson’s argument for the property “real?” is that they provide no principled account for when it will be valued “yes” and when it will be valued “no”, leaving all accounts of unreal tokens to be *post*

<sup>3</sup> I present my treatment of this type of sentence in Chapter 4, section 4.2

<sup>4</sup> Or it is virtual, their exact terminology varies slightly as to the status of a token linked to a type marked “real?:no”.

*hoc*. Since it cannot be predicted for a given sentence other than by a statistical analysis, their approach has no advantage here over generative frameworks, in which *pro* must be selected from the lexicon for the derivation. Further because of this *post hoc* property of their analysis, it is difficult if not impossible to find counter-examples to their claim as any element that we expect to find, but is not pronounced can be said to have the property “real?:no” and any element that is pronounced will be said to contain the property “real?:yes”. Thus, their account may be descriptive of the facts, but it lacks predictive capability.

Hudson (2003) in mostly theory neutral paper discusses case agreement in terms of PRO, representing any unpronounced pronominal, and structure sharing, the same term discussed in Creider and Hudson’s (2006) paper but extended to other proposals such as trace analysis. Hudson analyzes Russian, Icelandic, and Ancient Greek. His analysis of Ancient Greek is similar to the analysis I will propose in Chapter 4. Importantly, however, his analysis provides no mechanism for predicate agreement so that predicate agreement must be taken as a given.

## 2.2 A Minimalist Framework

The theoretical basis for this thesis, which seems to provide an adequate and comprehensive account for the data, is the current Minimalist Program (Chomsky, 2000, 2001, 2004, 2005, 2008, 2013). In the current Minimalist framework, there are two operations that apply within the narrow syntax: Merge and Agree. The second of these operations, Agree, provides the main method for case agreement in the data as will be shown in Chapter 4. The derivation in narrow syntax proceeds cyclically with an operation to transfer the derivation to the sensorimotor interface, which we broadly call Phonology, and conceptual-intentional interface, which we broadly call Semantics (Chomsky, 2004, 2005,

2008, 2013) This transfer<sup>5</sup> occurs at phases defined as the phrases headed by C and transitive *v* (2001, 2004, 2008). Specifically, Chomsky defines these as strong phases with all others as weak phases. The operation Agree also occurs at the level of the strong phases.

### 2.2.1 Merge

Merge is an operation in narrow syntax which takes two items  $\alpha$  and  $\beta$  and creates a set from them  $\{\alpha, \beta\}$ .  $\alpha$  and  $\beta$  may be lexical items, words in a loose sense, or sets previously created by Merge, or a lexical item and a set. We might call a set created by Merge a Syntactic Object (SO), a term Chomsky uses in particular to refer to the sets immediately containing the strong phase heads C or *v*. These sets are ordered only hierarchically, not linearly.

Two types of Merge exist: External Merge, which merges two items  $\alpha$  and  $\beta$ , neither of which is contained in the other, and Internal Merge, which merges  $\alpha$  that is already contained in  $\beta$ . Internal Merge thus creates a copy of  $\alpha$  which was already in the derivation contained in  $\beta$ . These copies are what create movement as some rule of the sensorimotor interface pronounces only the highest copy. Using these sets, we can also derive the basic relationship terms, *sister-of* and *contain*. From those, we can further derive *c-command* (=sister-of-contain).<sup>6</sup>

### 2.2.2 Agree

Turning now to the method by which I account for case agreement in Ancient Greek, I lay out a brief description of Agree as originally proposed by

<sup>5</sup> Often known as Spell-Out.

<sup>6</sup>  $\alpha$  is the sister-of  $\beta$  iff it is Merged with  $\beta$ .  $\alpha$  contains  $\beta$  iff  $\alpha$  is a set created from  $\beta$  and  $\gamma$  or  $\alpha$  contains  $\gamma$  that contains  $\beta$  with any number of intermediate contains relationships.  $\alpha$  c-commands  $\beta$  iff  $\alpha$  is the sister-of  $\gamma$  that contains  $\beta$  (Chomsky, 2004).

Chomsky (2000, 2001) and modified into Multiple Agree by Hiraiwa (2001).<sup>7</sup>

Agree is an operation that holds between a head with one or more unvalued syntactic features<sup>8</sup> and one or more heads which have those features valued (Chomsky, 2001, 2004, 2008; Hiraiwa, 2001). We call the head with unvalued features a probe and the head with those same features valued a goal (Chomsky, 2000, 2001).

The goal must be in the domain of the probe, the domain being the complement of the probe. Thus if we have a phrase [H XP], XP is the complement and thus domain of H. Using the relationship terms outlined in the previous section, it can be seen that the probe must c-command the goal.<sup>9</sup> The operation Agree applies only at the strong phase level C and transitive *v* (Chomsky, 2001, 2004, 2008).<sup>10</sup> It must occur only then because Agree deletes any features which are valued as part of its operation and yet these features must be available for the sensorimotor interface.

The syntactic features that are pertinent for this thesis are the  $\Phi$ -features [Gender], [Number], and [Person], and Structural Case. EPP also plays a role in order to move the goal to the spec of the probe, although it is difficult to determine the “basic” linear order created by the sensorimotor interface due to the prosodic scrambling present in Ancient Greek (Agbayani & Golston, 2010). Despite this

<sup>7</sup> I will use the simpler term Agree for Multiple Agree unless clear specification is required.

<sup>8</sup> Features which enter the derivation unvalued are by definition uninterpretable to Semantics and must be deleted by the time the derivation is transferred to Semantics (Chomsky, 2001, 2004, 2008). In an attempt to simplify discussion I will be using the term unvalued features to refer to uninterpretable features throughout this thesis.

<sup>9</sup> It may be possible for the goal to be the sister of the probe as well. This possibility will be returned to in Chapter 4, section 4.1.2.

<sup>10</sup> Chomsky assumes that intransitive *v* is not a strong phase.

difficulty, I assume that the EPP is active for T and *v*. For this thesis, I will be concerned with probe-goal relationships between nouns and adjectives, nouns and *v*, and nouns and C-selected T (the “C-T complex”)<sup>11</sup>. I assume that these categories have the feature matrices described below.<sup>12</sup> We can refer to heads with Φ-features valued prior to derivation as Φ-complete and heads with one or more Φ-features unvalued prior to the derivation as Φ-incomplete Prior to the derivation, both C-T and transitive *v* have a value assigned to their Structural Case feature -- Nominative for T and Accusative for transitive *v*. Other Φ-features are unvalued for any T or *v*, thus these heads are Φ-incomplete for [Gender], [Number], and [Person].

T(ense)	Transitive <i>v</i>
α Case	α Case
u Gender	u Gender
u Number	u Number
u Person	u Person

Prior to the derivation, nouns are assigned no value for Structural Case. Inherent case may be valued initially in certain circumstances, but it is not necessary for nouns which enter a probe-goal relationship with either C-T or transitive *v*. The Φ-features may be assigned values based the lexical properties of the root such as grammatical Gender as present in Ancient Greek or Number as in *pluralia tantum*. The other Φ-features are assigned values based on referential criteria.

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<sup>11</sup> Although C is the strong phase, it is T which is the primary probe for Case agreement (Chomsky, 2008).

<sup>12</sup> An *α* in the feature matrices indicates a feature that is valued prior to the derivation. A *u* indicates a feature that is not valued prior to the derivation.

Noun
u Case
u Gender
u Number
u Person

I argue for a new claim in this thesis that adjectives have neither Structural Case nor  $\Phi$ -features valued prior to derivation. It is uncontroversial to state that Structural Case is unvalued for adjectives, but the argument that adjectives have unvalued  $\Phi$ -features relies on a proposal by Baker (2003) that adjectives, rather than containing aspects of both nouns and verbs -- defined as +N, +V -- are better thought of as containing the characteristics of neither nouns nor verbs. In particular, for this thesis, adjectives lack the referential nature of nouns and so the referential  $\Phi$ -features are undefined for adjectives prior to derivation. If adjectives behave as Chomsky assumes participles do (2001, 2004), adjectives will lack the  $\Phi$ -feature of Person altogether. However, his reasoning for participles lacking the  $\Phi$ -feature Person rested on preventing an intervention effect for the probe to find the proper goal in the nominal (Chomsky, 2001). If participles, like adjectives, have unvalued  $\Phi$ -features, this problem is obviated.

Adjective
u Case
u Gender
u Number
u Person

Thus, we might call adjectives “radically  $\Phi$ -incomplete” in that they lack value for all  $\Phi$ -features and Case in comparison with other  $\Phi$ -incomplete heads which either lack one or more features altogether or have one or more of those features valued.

## CHAPTER 3: METHODOLOGY

The data in this thesis were collected by searching the Thesaurus Linguae Graecae and from examples presented in previous research (Smyth, 1920; Andrews, 1971; Quicoli, 1982; Creider & Hudson, 2006). The text of the examples was taken from the Perseus Digital Library and the text references refer to the section numbering of that source. All translations from the Greek are the author's. The tree derivation figures were created using ironcreek.net's phpSyntaxTree with modifications afterward by the author. Although the phenomena under examination in this thesis are present in many Greek texts, the data in this thesis are restricted to the Attic author Xenophon in an attempt to avoid any effects of diachronic or dialectal difficulties.

## CHAPTER 4: ANALYSIS

This chapter will provide an account for the forms of agreement in infinitive copular constructions in Ancient Greek using the framework outlined in Chapter 2.

### 4.1 Agreement between Subject and Predicate

Examples (6)-(9) show an instance of each different case marking. Because of prosodic scrambling present in Ancient Greek (Agbayani & Golston, 2010), (6a), (7a), (8a), and (9a) are simplified structures constructed from the attested sentences (6b), (7b), (8b), and (9b).<sup>1</sup> These four examples are representative of infinitive constructions found throughout Attic Greek (5<sup>th</sup>-4<sup>th</sup> cen. BCE).

Additionally, following Chomsky (2013), I assume that the narrow syntax is linearly unordered thus the order presented is merely expository. The underlined words in (6a), (7a), (8a), and (9a) are the subject and predicates of the infinitive construction. The sentence in (6) shows an instance of nominative marking on both the (unpronounced) subject and predicate of *einai*. This results because the subject of the infinitive *einai* is also the subject of the matrix verb *ep<sup>h</sup>ee*.

- (6) a. men pro e-p<sup>h</sup>-ee ei-nai Pers-ees  
PRT NOM PST-say-3.SG be-INF Persian-NOM
- b. Pérsees mèn ép<sup>h</sup>ee éinai  
'He said he was a Persian' (Xenophon, *Anabasis* 4.4.17)

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<sup>1</sup> Abbreviations used in the glosses are as follows: NOM = nominative case, GEN = genitive case, DAT = dative case, ACC = accusative case, SG = singular number, PL = plural number, INF = infinitive, PST = past tense marker, SUP = superlative, PRT = particle. Numbers indicate person agreement on verbs and when used as the root they indicate personal pronouns.

The sentence in (7) shows an instance of accusative marking on both the subject and predicate(s). This sentence appears to have the default ECM marking (i.e. accusative) as there is no special case marking required for the matrix verb *nomizdoo*.

- (7) a. gar *pro* nomizd-oo hum-aas ei-nai kai patrid-a kai  
 for NOM consider-1.SG 2-ACC.PL be-INF and land-ACC and  
p<sup>h</sup>il-ous kai summak<sup>h</sup>-ous em-oi  
friend-ACC.PL and ally-ACC.PL 1-DAT
- b. nomízdoo gär humáàs emoì éinai kaì patrída kaì p<sup>h</sup>ílous kaì  
 summák<sup>h</sup>ous  
 ‘For I consider you to be for me fatherland, friends, and allies’  
 (Xenophon, *Anabasis* 1.3.6)

The sentence in (8) shows an instance of genitive marking on both the subject and predicate. In Ancient Greek, verbs indicating requests among others require that the person to whom the request is posed be marked with the genitive case.

- (8) a. autou te *pro* e-de-onto Kur-ou genest<sup>h</sup>-ai hoos  
 there and NOM PST-beg-3.PL Cyrus-GEN become-INF as  
prot<sup>h</sup>umo-tat-ou pros t-on polem-on  
devoted-SUP-GEN to the-ACC war-ACC
- b. autóù te Kúrou edéonto hoos prot<sup>h</sup>umotátou pros tòn pólemon  
 genést<sup>h</sup>ai.  
 ‘Right there, they begged Cyrus to be most devoted to the war.’  
 (Xenophon, *Hellenica* 1.5.2)

The sentence in (9) shows an instance of dative marking on both the subject and predicate. The matrix verb *éxestin* is an impersonal verb, which in Greek often has a dative case marked noun to indicate the agent of the infinitive verb.

- (9) a. nuun exes-tin        s-oi    oo    Xenop<sup>h</sup>oon genest<sup>h</sup>-ai    andr-i  
     now   possible-3.SG 2-DAT PRT Xenophon   become-INF man-DAT

b. núùn soi éxestin, óò Xenop<sup>h</sup>óòn, andrì genést<sup>h</sup>ai  
     ‘Now it is possible for you, Xenophon, to become a man.’  
     (Xenophon, *Anabasis* 7.1.21)

#### 4.1.1 ECM and Raising to Subject

Those are the descriptive facts. It still remains to explain these phenomena in linguistic terms. Let us assume for the moment that each of these four examples involves plain ECM. If that is true, we expect that case marking for all four examples would be the same, presumably the accusative. Of course, as we just saw, only example (7) contained accusative case marking on the subject and predicate of its infinitive. As we see in (10), however, the derivation of (6) cannot be ECM but must be Raising to Subject.<sup>2</sup>

- (10)a. [TP T<sub>inf</sub> [VP be [SC *pro Persian*]]]

b. [vP [SC *pro Persian*] v [VP say [TP T<sub>inf</sub> [VP be [SC *pro Persian*]]]]]

c. [CP PRT [TP *pro* T [vP [SC *pro Persian*] v [VP say [TP T<sub>inf</sub> [VP be  
[SC *pro Persian*]]]]]]]

(10a) presents the non-C-selected T  $T_{inf}$  phrase which contains the copular verb *be* and the Small Clause SC consisting of *pro* and *Persian*. I follow Moro

<sup>2</sup> The derivations here and following will be presented as English glosses of the Greek.

(1997) in assuming that the copular verb, *be*, requires no *v*.<sup>3</sup> For reasons that will be shown presently, I assume that there is no Internal Merge (=movement) at this point in the derivation unless the entire Small Clause is Internal Merged.

(10b) shows the first strong phase in this derivation, the *v* phrase. If this *v* is transitive and contains the Case feature [Acc] and if the Case feature of *v* probes *pro* and *Persian* the value of [Acc] must be overwritten when the Case feature of the matrix C-T complex probes *pro* and *Persian* assigning them the Case value [Nom]. That argument fails, however, as the Case feature of *pro* and *Persian* is deleted immediately following transfer at the strong phase *v*. Thus, if the feature is deleted, its value cannot be overwritten even if there is a process for overwriting feature values. Therefore, if *v* has a Case feature, its value must not be shared with *pro* and *Persian*. Nevertheless, both *pro* and *Persian* must be raised to spec-*v* so that they can be probed by C-T. Were either nominal to remain within the domain of *vP*, the Phase Impenetrability Condition (PIC) would block C-T from probing either *pro* or *Persian*.

(10c) shows the final strong phase, C. The C-T complex probes the domain of C for a goal with matching valued  $\Phi$ -features. Under Multiple Agree under which a single probe can seek out multiple goals (Hiraiwa, 2001), C-T probes all available goals, which in (10) are *pro* and *Persian*. Once the probe-goal relationship between C-T and *pro* and *Persian* is established, the unvalued features of each head are assigned values by the other heads' feature matrices and then deleted immediately after transfer to the sensorimotor interface. I assume also that *pro* also moves to spec-T via Agree to satisfy the EPP feature present in C-T. See

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<sup>3</sup> In fact, it should make no difference provided that the *v* selecting *einai* contains Case feature and is not a strong phase (Chomsky 2001).

Figure 1 for a generalized version of the derivation of Raising to Subject from the Small Clause SC.

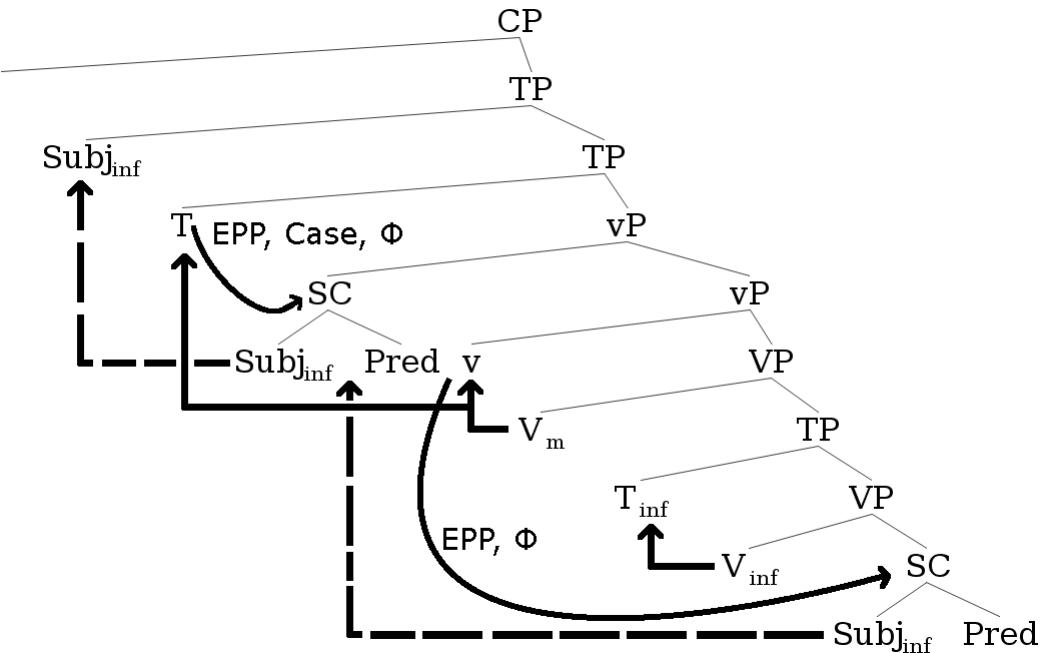


Figure 1. Derivation of raising to subject.

The straight solid lines in Figure 1, and the Figures below, represent head movement. The curved solid lines represent the probe-goal relationship. These relationships are captioned with the features that are relevant to that relationship. The dashed lines represent movement by Internal Merge prompted by the EPP feature of C-T and *v*.

Importantly, in this type of construction in Ancient Greek, Raising to Subject can occur only when the subject of the infinitive verb  $\text{Subj}_{\text{inf}}$  and the subject of the matrix verb  $\text{Subj}_m$  have identity. That is,  $\text{Subj}_m$  must be a copy of  $\text{Subj}_{\text{inf}}$  and not simply coreferential with it. Raising to Subject in this analysis is equivalent to Hudson's (2003) analysis of the "anchor" in the function of subject, where only "structure sharing" is permitted. The analysis in this thesis, however,

provides a mechanism for agreement between the subject and predicate as well as an explanation for why only “structure sharing” is possible. If  $\text{Subj}_m$  is not a copy of  $\text{Subj}_{\text{inf}}$ , ECM rather than Raising to Subject occurs. The ECM version of (6) would be (11).

- (11). men *pro* *ep<sup>h</sup>ee heauton einai Perseen*

‘He said he(=himself) was a Persian.’

In (11), *pro* is the matrix subject  $\text{Subj}_m$  and *heauton* is the subject of the infinitive  $\text{Subj}_{\text{inf}}$ , and while they are thematically associated with each other, they do not have identity. For a fuller explanation of ECM we examine (12), which presents the derivation of (7).<sup>4</sup>

- (12) a. [TP T<sub>inf</sub> [VP be [SC you fatherland]]]]
- b. [vP you [vP *pro* v [VP consider [TP T<sub>inf</sub> [VP be [SC you fatherland]]]]]]]
- c. [CP gar [TP *pro* T [vP you [vP *pro* v [VP consider [TP T<sub>inf</sub> [VP be [SC you fatherland]]]]]]]]]

The derivation in (12) proceeds mostly in the same manner as (10). The primary difference is that the Small Clause nominals are assigned Case by *v* rather than by *T*, so *you* needs to raise only to the (outer) spec-*v* and the predicate *fatherland* need not be raised at all. Following Koizumi (1995), I assume that the matrix subject  $\text{Subj}_m$ , when it is an external argument, begins the derivation at (inner) spec-*v*. See figure 2 for a generalized derivation of ECM type constructions. ECM constructions correspond to Hudson’s (2003) analysis of the “anchor” in object function. His analysis, however, combines accusative marking,

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<sup>4</sup> The sentence has been simplified by reducing the predicate to a single term rather than a conjoined set of terms and removing the adjoined dative marked *emoi*.

which must have agreement between  $\text{Subj}_{\text{inf}}$  and predicate with genitive and dative marking which are treated in the next sections of this thesis.

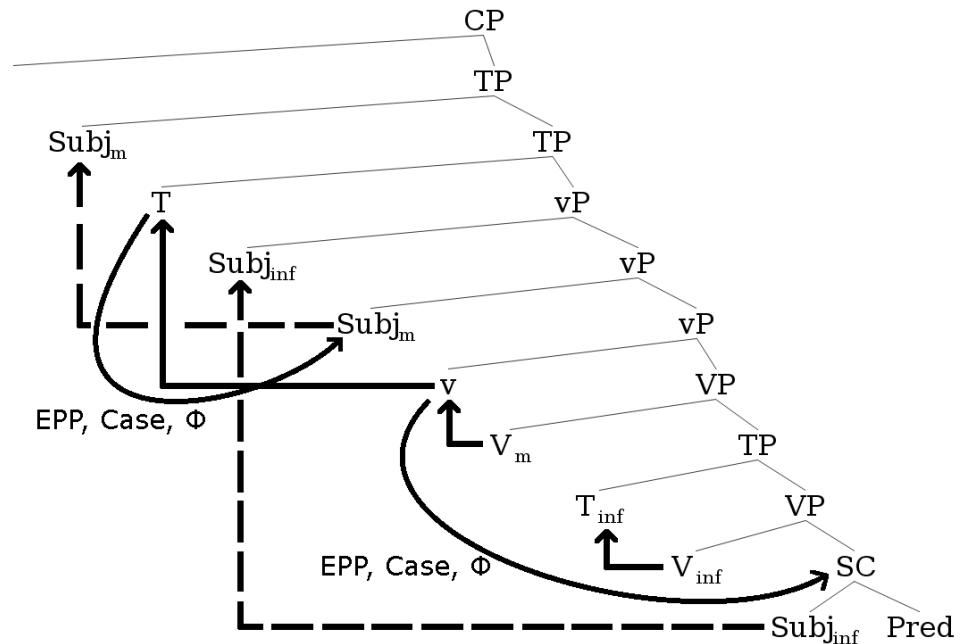


Figure 2. Derivation of ECM

#### 4.1.2 Inherent Case Marking<sup>5</sup>

Raising to Subject and ECM are phenomena that present few difficulties and have been discussed in great length in many contexts. Ancient Greek, however, goes beyond just those two constructions and also allows inherently case marked subjects of infinitives. In Ancient Greek, this can occur with the genitive and dative cases. These occur with copular infinitives in more restricted instances than nominative or accusative marking. Inherent case marking must result from lexical specification as it occurs regularly with certain classes of verbs such as genitive marking with verbs of requests as seen in (8).

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<sup>5</sup> The inherent case marking presented in this section corresponds to Hudson's (2003) analysis of structure sharing for non-accusative objects in Ancient Greek.

It was assumed in earlier research that instances of nominative, genitive, or dative case marking on the predicate was an example of “case attraction” (Smyth, 1920; Andrews, 1971; Quicoli, 1982). That is, the predicate was originally assigned accusative case but because the “true” subject of the infinitive had been deleted or was unpronounced, the case of the predicate was “attracted” to the case of the noun which was thematically associated with the subject of the infinitive, either the matrix subject or the matrix object.

Synchronously this cannot be a valid account as it would require an operation to overwrite the already assigned Case value. Such an operation has no empirical evidence to support it. Further, deletion rules, common in Transformational Grammar, have been entirely eschewed in the Minimalist framework where lexical items may be unpronounced but are still present. Instead the subject of the infinitive  $\text{Subj}_{\text{inf}}$  is raised to the matrix subject position for nominative case and inherently marked for genitive or dative case. The predicate will obtain its case from either the same source as  $\text{Subj}_{\text{inf}}$  or from the inherently marked subject itself. See figure 3 for a generalized version of the derivation of inherent case marked subjects of infinitives. If the inherently marked subject of the infinitive is raised to spec- $v$  for any reason<sup>6</sup> the derivation will appear similar to the derivation of ECM except that case will not be assigned to the subject by  $v$ .

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<sup>6</sup> Such as EPP.

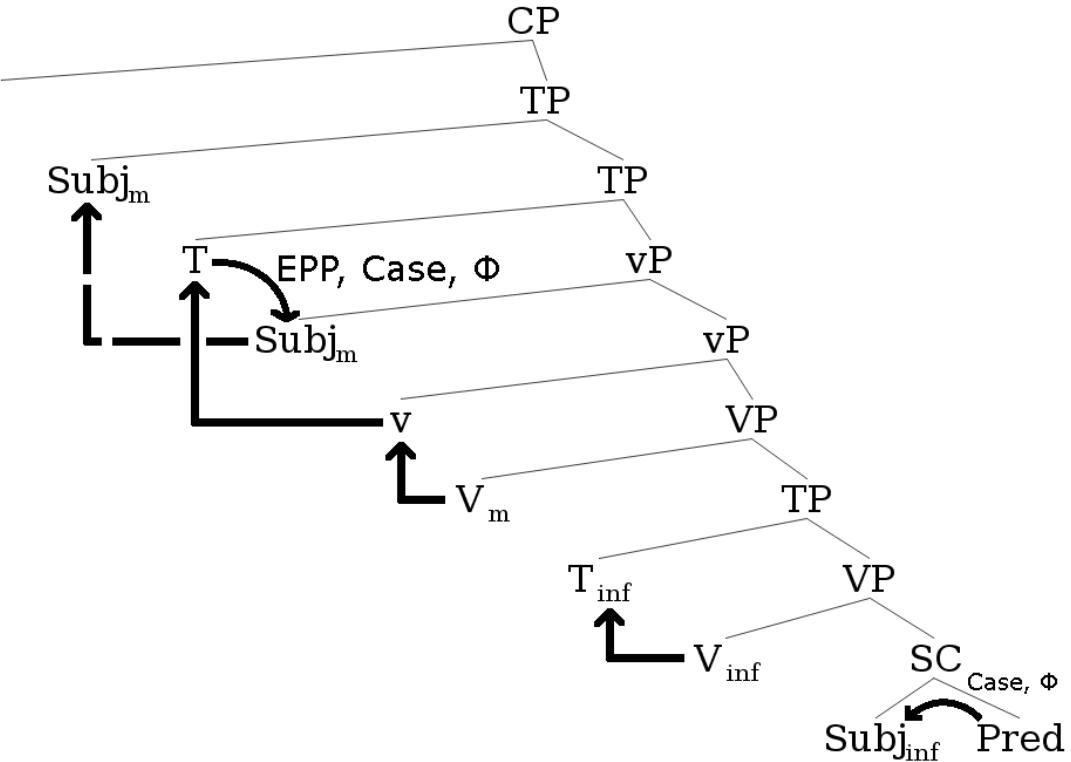


Figure 3. Derivation of inherent case construction

(13) presents the derivation of (8) reduced to the core elements. This derivation assumes that the subject of the infinitive *Cyrus* does not move to spec-*v*. Again, because of the prosodic scrambling present in Ancient Greek (Agbayani & Golston 2010), it is difficult if not impossible to determine whether the narrow syntax raised a given word.

- (13) a. [TP T<sub>inf</sub> [VP become [SC Cyrus most.devoted]]]
- b. [<sub>vP</sub> *pro* *v* [VP beg [TP T<sub>inf</sub> [VP become [SC Cyrus most.devoted]]]]]
- c. [CP [TP *pro* T [<sub>vP</sub> *pro* *v* [VP beg [TP T<sub>inf</sub> [VP become [SC Cyrus most.devoted]]]]]]]]]

The important feature of this derivation is the relationship between *Cyrus* and *most.devoted*. At some point during or before the phase of *v*, because the adjective *most.devoted* is radically Φ-incomplete, it must probe *Cyrus* in order to

value its unvalued  $\Phi$ -features. In doing so, the adjective will also gain the inherent case from *Cyrus*. A similar occurrence is seen in (14) the derivation of (9).<sup>7</sup>

- (14) a. [TP T<sub>inf</sub> [VP become [SC you man]]]
- b. [<sub>vP</sub> v [VP be.possible [TP T<sub>inf</sub> [VP become [SC you man]]]]]
- c. [CP [TP T [<sub>vP</sub> v [VP be.possible [TP T<sub>inf</sub> [VP become [SC you man]]]]]]]

As in (13) the predicate, here the nominal *man* probes the inherently dative marked *you* for case. However, as a noun *man* is  $\Phi$ -complete, and so it does not have the pressure to probe a goal with valued  $\Phi$ -features that the radically  $\Phi$ -incomplete adjective does. For both of these derivations, the probe must be able to seek a goal that is sister-of the probe and not c-commanded by the probe.<sup>8</sup> Further, the predicate nominal must be allowed to probe the subject of the infinitive. As will be shown in the next section, this difference between adjectives and nominals allows for an option on the part of nominals which is generally not available for adjectives.

#### 4.2 Non-Agreement between Subject and Predicate

So far, in the examples examined, the predicate has agreed with the subject of the infinitive  $\text{Subj}_{\text{inf}}$ . However, as just alluded to, there is an option for a predicate noun<sup>9</sup> to not agree with  $\text{Subj}_{\text{inf}}$  if it is marked with inherent genitive or

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<sup>7</sup> The matrix verb in (10) *exestin* is an impersonal verb, I have assumed no subject for it, although a null expletive may be required for EPP on C-T.

<sup>8</sup> See Chapter 2, footnote 6 for a definition of sister-of and c-command.

<sup>9</sup> According to Smyth (1920), this option is available to adjectives, but less often occurs.

dative case and instead the predicate is marked with accusative case in those instances. (15) shows an example of this non-agreement.<sup>10</sup>

- (15) a. hoos sump<sup>h</sup>er-ei    aut-ois    ei-nai    p<sup>h</sup>il-ous  
           that interest-3.SG    3-DAT.PL be-INF    friend-ACC.PL

- b. hoos sump<sup>h</sup>érei autóis p<sup>h</sup>ílous éinai

‘That it is of interest to them to be friends.’

(Xenophon, *Economics*, 11.23)

It can be seen that (15) is very similar to (9) repeated here as (16).

- (16) nuun exes-tin    s-oi    oo    Xenop<sup>h</sup>oon genest<sup>h</sup>-ai    andr-i  
       now possible-3.SG 2-DAT PRT Xenophon become-INF man-DAT

Each has a dative marked  $\text{Subj}_{\text{inf}}$  and an impersonal matrix verb. The predicate for each of (15) and (16) is a noun. In (15), however, the predicate noun *friends* is marked with accusative case while in (16) the predicate noun *man* is marked with dative case. This appears to be a clear case of optionality as in all other pertinent respects the sentences are equivalent. Why, then, does the predicate agree in Case marking in (16) and not in (15)?

One possibility is that (15) has a derivation like (16) except that the predicate does not probe the subject of the infinitive  $\text{Subj}_{\text{inf}}$ . Since with the exception of a few nouns that are never case marked, all nouns in Ancient Greek must have morphological case marking; the predicate noun with no Case assigned must be assigned a default accusative case, possibly in the morphophonological component. A second possible account is that (15), perhaps also (16), contains a

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<sup>10</sup> As before, (11a) is a simplified structure constructed from the attested (11b). The underlined words indicate the subject and predicate of the infinitive

transitive  $v$ , and this  $v$  probes  $\text{Subj}_{\text{inf}}$  and the predicate assigning its Case value to the unvalued predicate but cannot overwrite the inherently marked  $\text{Subj}_{\text{inf}}$ .<sup>11</sup> A third possibility would appeal to a version of the case attraction analysis.  $\text{Subj}_{\text{inf}}$  may not be the inherently marked noun, but a *pro* thematically associated with the inherently marked noun. If this last possibility is correct, then the derivation of (15) will be along the lines of (17).

- (17) a.  $[\text{TP } \text{T}_{\text{inf}} [\text{VP } \text{be} [\text{sc } \text{pro } \text{friends}]]]$
- b.  $[\text{vP } \text{pro} [\text{vP } v [\text{VP } \text{them} [\text{VP } \text{be.of.interest} [\text{TP } \text{T}_{\text{inf}} [\text{VP } \text{be} [\text{sc } \text{pro } \text{friends}]]]]]]]$
- c.  $[\text{CP } [\text{TP } \text{T} [\text{vP } \text{pro} [\text{vP } v [\text{VP } \text{them} [\text{VP } \text{be.of.interest} [\text{TP } \text{T}_{\text{inf}} [\text{VP } \text{be} [\text{sc } \text{pro } \text{friends}]]]]]]]]]$

(17) proceeds in the same manner as other ECM constructions such as (11), except with an adjunct or spec merged to the VP for the dative pronoun *them*. If this derivation is correct, it may be the diachronic source of the option with “case attraction”.<sup>12</sup> The originally non-core dative or genitive marked noun was reinterpreted as the subject of the infinitive in place of an unpronounced element.

The first and second possible accounts better explain the difference between predicate nominals and predicate adjectives. The radically  $\Phi$ -incomplete adjectives must probe  $\text{Subj}_{\text{inf}}$  to value their  $\Phi$ -features and in the process will gain the Case value of the inherently Case marked  $\text{Subj}_{\text{inf}}$ . The  $\Phi$ -complete nominals do not have to probe  $\text{Subj}_{\text{inf}}$  and so may leave their Case feature unvalued when  $v$  probes the nominals in the SC. The third possibility may account for the

<sup>11</sup> Alternately, under non-Multiple Agree  $v$  probes only the predicate, not  $\text{Subj}_{\text{inf}}$ .

<sup>12</sup> Creider and Hudson (2006) cite Pierre Chantraine (1953. *Grammaire hómérique*, vol 2 Klincksieck) stating that “case attraction” increased in frequency from Homeric Greek (c. 8<sup>th</sup> cen. BCE) to Attic Greek (c. 4<sup>th</sup> cen. BCE).

diachronic source of the inherent case construction but leaves unexplained the difference between predicate nominals and predicate adjectives and in fact cannot account for the predicate agreeing with the inherently case marked  $\text{Subj}_{\text{inf}}$  as in (16). Which of these three possible accounts or other possible accounts is correct will have to be determined by future research.<sup>13</sup>

Also unexplained is why this option of non-agreement does not occur with nominative marking resulting from Raising to Subject. A likely possibility is that if the derivation presented in (10) is correct, then  $v$  cannot assign the Case value [Acc] to either  $\text{Subj}_{\text{inf}}$  or the predicate under a strong version of Multiple Agree, wherein the probe must match all possible goals. The probe would need to assign Case to both which would cause the derivation to crash when the C-T complex, unable to probe either  $\text{Subj}_{\text{inf}}$  or the predicate, fails to value its unvalued  $\Phi$ -features. A weaker or optional version of Multiple Agree might permit  $v$  to probe either  $\text{Subj}_{\text{inf}}$  or the predicate and thus allow for non-agreement in Raising to Subject constructions.

A lack of non-agreement for accusative examples is a trivial problem as it would be impossible to tell whether the accusative marking on  $\text{Subj}_{\text{inf}}$  and the predicate comes from the same or different sources. Furthermore, if accusative case marking always derives from ECM proper, and never from inherent case marking, the optionality should not arise to begin with.

As a final note on case agreement in Ancient Greek with infinitive constructions, note example (18). This shows that case agreement occurs in

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<sup>13</sup> This third possibility does correspond to Hudson's (2003) analysis of a PRO element as the subject of the non-finite clause. Whether that lends any empirical support to this possibility is unclear.

adjuncts as well as complements as the prepositional phrase headed by *ek* cannot be construed as central to the sentence.

- (18) a. de *pro* e-poi-ei      tout-o      ek      t-ou      ei-nai k<sup>h</sup>alep-os  
           and NOM PST-do-3.SG this-ACC out.of the-GEN be-INF severe-NOM
- b. tóùto d' epoíei ek tóù k<sup>h</sup>alepòs éinai  
       'He made this out of being severe.'  
       (Xenophon, Anabasis, 2.6.9)

This is not problematic as long as adjuncts may be merged in at a point in the derivation prior to the point that the C-T complex seeks a goal or if the adjunct is merged with *v*. In this circumstance, the derivation of (18) proceeds much as the derivation of (6).

## CHAPTER 5: CONCLUSION

Case agreement in Ancient Greek infinitive constructions falls into three categories: ECM, Raising to Subject, and inherent case marking. In each of these cases, the data can be accounted for using only the operations of Merge and Agree as outlined in Chapter 2. ECM constructions occur when the subject of the infinitive  $\text{Subj}_{\text{inf}}$  and the predicate are probed by  $v$  which shares its accusative case under the probe-goal relationship thus established. The result is accusative case marking on both the subject of the infinitive  $\text{Subj}_{\text{inf}}$  and the predicate.

Raising to Subject occurs when  $\text{Subj}_{\text{inf}}$  has identity with the matrix subject  $\text{Subj}_m$ . That is to say,  $\text{Subj}_m$  is a copy of  $\text{Subj}_{\text{inf}}$  created by Internal Merge of  $\text{Subj}_{\text{inf}}$ . In this construction,  $v$  cannot assign case to  $\text{Subj}_{\text{inf}}$  or the predicate but must still raise both to its spec so they can be found by the probe of the C-T complex. The result of Raising to Subject is nominative case marking on  $\text{Subj}_{\text{inf}}$  and the predicate.

Inherent case marking occurs when  $\text{Subj}_{\text{inf}}$  is assigned genitive or dative case for lexical or  $\theta$ -thematic reasons. If it agrees with  $\text{Subj}_{\text{inf}}$  the predicate must probe  $\text{Subj}_{\text{inf}}$  for case. In instances of non-agreement between the inherently case marked noun and the predicate, it may be that the predicate does not probe  $\text{Subj}_{\text{inf}}$  and is assigned accusative case by default or by  $v$ , or it may be that the inherently case marked noun is not  $\text{Subj}_{\text{inf}}$  and the predicate does in fact agree with the unpronounced  $\text{Subj}_{\text{inf}}$ .

The overall analysis presented in this thesis improves over previous transformational analyses and the Word Grammar approach of Creider and Hudson (2006). An important innovation in this thesis is in the treatment of adjectives lexically as “radically  $\Phi$ -incomplete” (that is, lacking a value for any  $\Phi$ -

feature and for Case) based on the proposal of Baker (2003) to define adjectives as –N, –V. This treatment of adjectives leads to the conclusion that adjectives must be able to seek nominal goals in order to value their unvalued  $\Phi$ -features.

## REFERENCES

## REFERENCES

- Agbayani, B., & Golston, C. (2010). Phonological movement in classical Greek. *Language*, 86(1), 133-167.
- Andrews, A. D. (1971). Case agreement of predicate modifiers in Ancient Greek. *Linguistic Inquiry*, 2(2), 127-151.
- Baker, M. C. (2003). *Lexical categories: Verbs, nouns and adjectives* (Vol. 102). Cambridge University Press.
- Chomsky, N. (1986). *Barriers*. Cambridge, MA: MIT Press.
- Chomsky, N. (2000). Minimalist inquiries: The framework. *Step by step: Essays on minimalist syntax in honor of Howard Lasnik*, ed. by Roger Martin, David Michaels, and Juan Uriagereka, 89–155. MIT Press.
- Chomsky, N. (2001). Derivation by phase. *Ken Hale: A life in language*, ed. by Michael Kenstowicz, 1-52. MIT Press.
- Chomsky, N. (2004). Beyond explanatory adequacy. *Structures and Beyond. The cartography of syntactic structures*, Volume 3, edited by Adriana Belletti, 104-131. Oxford Studies in Comparative Syntax. Oxford University Press, USA.
- Chomsky, N. (2005). Three factors in language design. *Linguistic inquiry*, 36(1), 1-22.
- Chomsky, N. (2008). On phases. *Foundational issues in linguistic theory. Essays in honor of Jean-Roger Vergnaud*, ed. R. Freidin, CP Otero & ML Zubizarreta, 133–166. MIT Press.
- Chomsky, N. (2013). Problems of projection. *Lingua*, 130, 33-49.
- Creider, C., & Hudson, R. (2006). Case Agreement in Ancient Greek: implications for a theory of covert elements. *Word Grammar*. forthcoming.
- Hiraiwa, K. (2001). Multiple agree and the defective intervention constraint in Japanese. *MIT working papers in linguistics*, 40(40), 67-80.
- Hudson, R. (2003). Case agreement, PRO and structure sharing. *Research in language*, 1, 7-33.

- Koizumi, M. (1995). Phrase structure in minimalist syntax. (Doctoral dissertation, Massachusetts Institute of Technology).
- Moro, A. (1997). *The Raising of Predicates: Predicative Noun Phrases and the Theory of Clause Structure*. Cambridge: Cambridge University Press.
- Quicoli, A. C. (1982). The structure of complementation (Vol. 3). John Benjamins Publishing.
- Smyth, H. W. (1920). *Greek grammar*. Harvard University Press.
- Xenophon. “Anabasis.” Xenophontis opera omnia, vol. 3. Oxford, Clarendon Press. 1904 (repr. 1961).
- Xenophon. “Economics.” Xenophontis opera omnia, vol. 2, 2nd ed. Oxford, Clarendon Press. 1921 (repr. 1971).
- Xenophon. “Hellenica.” Xenophontis opera omnia, vol. 1. Oxford, Clarendon Press. 1900 (repr. 1968).