MONOSEMY AND POLYSEMY IN BIBLICAL STUDIES: A MINIMALIST BASIS FOR EMPIRICAL ANALYSIS OF THE BIBLICAL LANGUAGES

by

Ryder A. Wishart, B.A.

A thesis submitted to
the Faculty of McMaster Divinity College
in partial fulfilment of the requirements
for the degree of Master of Arts (Christian Studies)

McMaster Divinity College
Hamilton, Ontario
2017

MASTER OF ARTS
(Christian Studies)

McMaster Divinity College
Hamilton, Ontario

TITLE: Monosemy and Polysemy in Biblical Studies: A Minimalist Basis for Empirical Analysis of the Biblical Languages

AUTHOR: Ryder A. Wishart

SUPERVISOR: Dr. Christopher D. Land

NUMBER OF PAGES: xi + 187

ABSTRACT

"Monosemy and Polysemy in Biblical Studies: A Minimalist Basis for Empirical Analysis of the Biblical Languages"

Ryder A. Wishart
McMaster Divinity College
Hamilton, Ontario
Master of Arts (Christian Studies), 2017

The lexical and grammatical tradition within biblical studies leaves the interpretive guidelines for exegesis unformalized. Polysemy provides no direction in addressing this issue, but serves only to blur the distinction between the invariant meaning of linguistic signs and the contexts and co-texts that specify and constrain those invariant meanings. Rather than proliferating senses and functions, the minimalist priority of monosemy provides a better entry point into the task of modelling interpretive protocols, since it better enables empirical linguistic analysis. To this end I outline a robust theoretical basis, survey relevant works in the field, and through a case study of ἐν and its semantic field illustrate and explore the challenges and potential of empirical linguistic analysis of the biblical languages.

Acknowledgements

I would like to thank the staff and faculty at McMaster Divinity College for the valuable educational experience they have provided, as well as numerous opportunities such as editing, publishing, and, most importantly, the opportunity to succeed. Special thanks are due to my defense committee: Stan Porter, Mark Boda, and particularly to my supervisor, Chris Land.

To my parents: thank you for always having lots of books on the shelves—and for reading them to me. I'm thankful for my friendships with both of you.

Thanks be to God for giving me life, conviction, purpose, and salvation in Jesus. It is a joy to grow in my knowledge of his word.

Thank you especially, Jes, for everything. Since this thesis began you have endured long, long hours working at the hospital, buying our first house, having our first child (which means even longer hours now), and yet you have kindly embraced the prospect of my starting another degree in the Fall. Your companionship and love makes every day a blessing, and I dedicate this work to you.

Ryder A. Wishart
April 2017

Table of Contents

List of Figures

List of Tables

List of Abbreviations

BDAG	Danker, Frederick W., et al., eds. *A Greek-English Lexicon of the New Testament and Other Early Christian Literature*. 3rd ed. Chicago: University of Chicago Press, 2000.
CurBR	*Currents in Biblical Research*
JSHJ	*Journal for the Study of the Historical Jesus*
JSJ	*Journal for the Study of Judaism in the Persian, Hellenistic, and Roman Periods*
JSNTSup	Journal for the Study of the New Testament Supplement Series
LBS	Linguistic Biblical Studies
RBL	*Review of Biblical Literature*
RBS	Resources for Biblical Study
SBG	Studies in Biblical Greek
TDNT	Kittel, Gerhard, and Gerhard Friedrich, eds. *Theological Dictionary of the New Testament*. Translated by Geoffrey W. Bromiley. 10 vols. Grand Rapids: Eerdmans, 1964–1976.
TSAJ	Texte und Studien zum antiken Judentum

INTRODUCTION

Charles Ruhl's volume *On Monosemy* includes an interesting passage considering Wittgenstein's famous claim that there is no single attribute that brings together all the things we call "games."[1] Instead, according to Wittgenstein, these games all share family resemblances. He says,

> Consider for example the proceedings that we call 'games.' I mean board-games, card-games, Olympic games, and so on. What is common to them all?—Don't say: 'There must be something common, or they would not be called "games"'—but *look and see* whether there is anything common at all.—For if you look at them you will not see something that is common to *all*, but similarities, relationships, and a whole series of them at that . . . And the result of this examination is: we will see a complicated network of similarities overlapping and criss-crossing: sometimes overall similarities, sometimes similarity of detail. I can think of no better expression to characterize these similarities than 'family resemblances'; for the various resemblances between members of a family: build, features, colour of eyes, gait, temperament, etc. etc. overlap and crisscross in the same way.—And I shall say: 'games' form a family.[2]

All of the various things we call games, claims Wittgenstein, simply cannot be boiled down to essential attributes or diagnostic components. However, Ruhl points out an underappreciated fact: "We need also to emphasize what Wittgenstein doesn't mention but seems to assume," says Ruhl, "that *game* is a unified notion because English says it is."[3] In other words, all the things we call games have in common specifically the fact that we use the English word to refer to all of them. Whatever "game" means, it really seems to be something like an essential attribute (though a linguistic one) that all of its

[1] Ruhl, *On Monosemy*, 202–3.
[2] Wittgenstein, *Philosophical Investigations*, §66–67.
[3] Ruhl, *On Monosemy*, 203.

uses have in common—each is a "game." There is nothing one can point to in reality that unifies all of them, but that is because the question is about the English language—things referred to with the English word "game"—not about the reality.

There are different games, of course. Looking at Wittgenstein's examples, however, what makes them all different? In fact, at least in Wittgenstein's examples, it is simply the addition of other words. From the perspective of language, the words are behaving exactly as one would expect. *Game*, we are no doubt safe to assume, is contributing the same meaning in each case, and the addition of another word, *Olympic*, *board*, or *card*, modulates this consistent meaning, without ever eliminating the fact that the entity being referred to is being construed as part of the game category. A particular kind of game, but not less than a game. Words, then, are the common denominators that allow speakers to make abstractions about diverse real-world phenomena, and this insight should factor into the development of linguistic models.

The minimalist[4] linguistic approach examined in the following chapters (i.e. monosemy) is therefore an exercise in reasoning from first principles. At bottom, I am operating with the assumption that when we observe a word in an ancient document we should assume that it was put there for a reason; it was a motivated choice. When we observe multiple instances of this word, we should furthermore assume that it was chosen for a reason in every case. From the perspective of language users, there is an infinity of reasons to communicate, but there is presumably one reason to use a particular signal to accomplish a particular communicative task—that is, the meaning of

[4] The terms *minimalist* and *maximalist* in this study are not intended to evoke the Chomskyan Minimalist Program (see Chomsky, "Minimalist Program") or related approaches. *Minimalism* refers, rather, to linguistic analysis that places priority on identifying the common denominator of meaning shared by diverse uses of a single linguistic sign (for this latter kind of minimalist, see Kirsner, "Future of a Minimalist Linguistics"). This approach will be outlined further in Chapter 2.

the word. If a word is not fit to accomplish a task, another word would work better. A word like λόγος is written into a text because λόγος, like *game*, is a sign that enables a speaker to signal something he or she wants to signal. Furthermore, λόγος signals something ῥῆμα does not. If they signalled the same thing, performed the same function, speakers would have stopped using one of them. Monosemy works upwards from this assumption, that each linguistic sign has an explanation.

This approach is also an attempt to analyze a dead language in an empirical fashion. The empirical constraint I have tried to maintain, with varying degrees of success, is this: without a difference in form, there is no reason to assume a difference in meaning. Put positively, differences in form signal differences in meaning. When it comes to a dead language, the meaning variation we can measure is the result of variation in the actual language used. While some will rightly point out that a change in context can change the meaning of a form, I would want to be more specific. To use Columbia School terminology, which I will explain further in Chapter 2, context shapes the *message* interpreted by a reader, but the lexicogrammatical *meanings* of signs are invariant.

Both context and linguistic signs interact in order to produce a *message*, and only then with the help of an interpreter, but the *meanings* of the signs make them useful indicators or hints as to the intended overall message. Context plays a role in the making of a message, even shifting the probabilities of the language system, but this shifting is the instantiation of the system in a particular use. The system itself is ideally a broader abstraction over numerous texts and instances.

Modelling language as a broad abstraction from all different uses in a corpus, even in corpora, is an indispensable step in helping us better understand what is going on in particular instances. This is the argument of my thesis, that focusing on explaining signs in terms of lexicogrammatical meanings (or message potentials) provides a better entry point into analysis of instances, because this approach aims to take the observable signs themselves as the categories of the language. This aim enables formation of descriptive and probabilistic analytical baselines by assuming every sign has an invariant meaning.[5] If one sign has one meaning, and the sign can be measured, then the meaning can be measured too. Porter makes this same principle explicit, saying, "I believe that—especially for ancient languages—one must begin from the dictum that where there is a difference of form there is a difference in meaning or function."[6]

Reasoning on the basis of this principle enables empirical measurement of meaning variation, but it also allows for a thoroughgoing consistency in how linguistic forms are modelled. If the ultimate test of semantic difference is formal differentiation, then we can fulfill Ruhl's "meta-test," which asks of every other test: "Are we applying this test-for-distinction and its reasoning consistently throughout the language, and is there a principled end to the divisions the test finds?"[7] If we begin by drawing distinctions only where we observe distinctions in the signs and their arrangements, and our analytical goal is achieved when the explanation accounts for all the variation within the corpus, then the answer to Ruhl's question is affirmative. Ruhl suggests that, with this meta-test in mind, "The system of unities and distinctions claimed for a language

[5] There may be exceptions, but these must be hypothesized and tested, as they cannot be identified from the outset.

[6] Porter, "Defence of Verbal Aspect," 34.

[7] Ruhl, *On Monosemy*, 137.

should give primary and overriding importance to its system of formal distinctions that the language represents (or does not) on its most abstract levels; these are 'foundational' meanings, the fundamental categories from which additional categories stem."[8] By adopting Ruhl's view of language as an implicational or hierarchical system of semantic fields (see Chapter 2), monosemy is able to approach the task of modelling Hellenistic Greek with the assumption that both its grammar and its lexicon can be analyzed empirically, and in a consistent manner.

The outline of this study is as follows. In Chapter 1, I expose the gap in the lexical and grammatical tradition, insofar as it does not model the interpretive protocols needed to understand the messages of a text. I then propose a distinction between minimalist and maximalist approaches, and survey four relevant works from biblical studies. Each of the studies I survey exhibits a minimalist approach that, in contrast to a maximalist approach, treats linguistic meaning as something that brings together diverse uses of lexical or grammatical classes.

In Chapter 2, I propose and develop the influences and key concepts of monosemy. Both Charles Ruhl and the Columbia School contribute a comprehensive sign-based and bottom-up approach to lexis and grammar. Key concepts include markedness theory, the distributional hypothesis, corpus linguistics, computational linguistics, quantitative analysis, and lexicogrammar.

In Chapter 3, I describe the two-step procedure this theoretical basis entails. Step one is *factor out variation*. In this step, data is examined as broadly as possible, and the various meanings associated with different uses of the linguistic sign or class under analysis are normalized. This step can be thought of as controlling the data for the

[8] Ruhl, *On Monosemy*, 137.

effects of context and co-text. Step two is *hypothesize and test a function* for the linguistic sign or class under analysis. This second step should be approached abductively. That is, the analyst adopts an initial hypothesis that appears to fit the normalized data from step one and then tests this hypothesis empirically. If the test appears to falsify the hypothesis, then the analyst revises his or her formulation and tests again. I also discuss the benefits and limitations of distributional semantics in modelling meaning, and outline an implementation of distributional semantics for corpus analysis, vector space modelling. Finally, I will outline some of the challenges of modelling Hellenistic Greek, and discuss the corpus I use.

In Chapter 4, I critically engage two authors who have drawn on Ruhlian monosemy: Gregory Fewster and Benjamin Lappenga. Neither has made use of Ruhl's methodology, instead adopting something like a value orientation towards meaning—as opposed to a method—that prefers to see meaning as minimal and unitary, rather than maximal and fragmented. I critically analyze the methodologies of these authors, but nevertheless conclude that both have made valuable contributions in their use of monosemy to study the Bible.

In the case study that follows I apply monosemy to analyze prepositions, specifically ἐν. Prepositions constitute a part of speech on the traditional understanding, and are thus located somewhere in the middle of the lexicogrammatical continuum—they are more concrete than systems like NUMBER, but more abstract than nominals or verbals. In order to enable a minimalist analysis, I outline the four morphological categories of Greek: nominals, verbals, particles, and participles. Monosemy facilitates a helpful formulation of the particle ἐν that will contribute to moving beyond

classifications such as "instrumental" or "agent." The explanation I propose accounts for the distribution of ἐν as opposed to both a simple dative form and other prepositions on the basis of its lexicogrammatical meaning, CIRCUMSTANCE.[9]

A few caveats are necessary regarding the use of computational linguistics to provide quantitative data. Given the fact that we still understand very little about distributional semantics and the kind of information being generated by this kind of analysis, my aim is not to provide the final word through my theoretical discussion or case study. Rather, the aim is to spur on a new way of conceptualizing the task of linguistic analysis of the Greek of the New Testament, according to the principles I find implicit in minimalist approaches. Analyzing dead languages presents unique challenges. Traditional exegetical tools have been able to meet some of these challenges, but many questions remain unanswered. Porter argues that traditional exegesis only stands to benefit from a more integrated engagement with linguistics. I take up his challenge in this thesis to, as he puts it, "make the effort." He writes,

> I am troubled by exegesis that shows no apparent awareness of the complex issues involved in the study of the Greek of the New Testament. I do not in any way wish to minimize the complexity of such interpretive problems or pretend that all of them are easily solved simply by invoking a vague notion of linguistics. However, I believe that much more can and should be done in this field—we can never know its usefulness unless we make the effort.[10]

---

[9] The use of small caps is an orthographic convention I have adopted from Columbia School work. My intention is to signal a definition or meaning—one that in some sense parallels the sparsity or indeterminacy of the term being defined—while avoiding the misunderstanding that a meaning like CIRCUMSTANCE is a gloss or translation equivalent for the term being defined. For a Columbia School example, see Huffman, *Categories of Grammar*, 31. Further explanation of "meaning" can be found in Chapter 2.

[10] Porter, *Linguistic Analysis*, 14.

CHAPTER 1. MONOSEMY, POLYSEMY, AND EMPIRICAL ANALYSIS

This chapter proposes that there is a gap in the Greek lexical and grammatical tradition, insofar as the interpretive protocols of exegesis remain unaddressed. In the first section, I argue that (1) the traditional approach does not explain how and why linguistic signs should be classified as they are. I further argue that (2) polysemy constitutes an obstacle in addressing this problem, since it does not decrease the inferential gap faced by the interpreter, but only gives the illusion of increased precision. In the second section, I argue that (3) a minimalist approach, as exemplified in several works from the field of biblical studies, provides a better entry point into the task of modelling interpretive protocols, since it better enables empirical linguistic analysis.

The Categories of Traditional Greek Grammar and Lexicography

In biblical studies, exegesis has typically taken the form of close reading of the biblical texts, traditionally using a historical-critical methodology. Even in analysis of the Greek text, close reading continues to be central to interpretation.[1] One of the drawbacks of close reading, however, is that the justification for particular interpretive decisions may not be spelled out in clarity. An example can be found in Wallace's handbook to Greek exegesis, *The Basics of New Testament Syntax*.[2] He lays out twenty-seven different uses

[1] Porter, *Linguistic Analysis*, 94.
[2] Wallace, *Basics of New Testament Syntax*.

of the genitive case (thirty-three in his larger volume, *Beyond the Basics*).[3] Many of these meanings, he notes, overlap with the meaning(s) of the English term *of*. He explains, "Unlike the nominative and vocative cases (whose structural clues are generally sufficient to show which usage is involved), the genitive case typically requires a nuanced examination of context, lexical meanings of the words involved . . . and other grammatical features (such as articularity or number)."[4] In practice, however, each category is given a "*Key to identification.*" To identify a genitive of material, "Replace the word *of* with the paraphrase *made out of* or *consisting of*."[5] To identify a possessive genitive, "Instead of the word *of* replace it with *belonging to* or *possessed by*. If this paraphrase fits, then the genitive is probably a genitive of possession."[6] In other words, the key to identification is glossing. Furthermore, one can identify the category by asking whether or not the translation "fits." Whether it fits or not, however, is the very question that a key to identification is supposed to be answering. Most genitives are relatively easy to categorize, but some are not. To account for these hard cases, Wallace includes "catch-all," "drip pan," or "black hole" categories.[7] Several examples include "Genitive after Certain Verbs," "Genitive after Certain Adjectives (and Adverbs)," "Genitive after Certain Prepositions," the "Plenary Genitive," which describes examples that seem to fit either a subjective or objective genitive without contradicting one another, and the "Descriptive" or "Aporetic" genitive, which is, Wallace states, the last place of exegetical "solace."[8] Evidently, the implicit goal of such exegesis is

---

[3] Wallace, *Beyond the Basics*, 72–136.
[4] Wallace, *Basics of New Testament Syntax*, 43.
[5] Wallace, *Basics of New Testament Syntax*, 50.
[6] Wallace, *Basics of New Testament Syntax*, 47.
[7] Wallace, *Basics of New Testament Syntax*, 45. These words are used to describe the descriptive genitive category.
[8] Wallace, *Basics of New Testament Syntax*, 45.

classification. To be fair, Wallace claims that what might appear "at first glance to be microscopic hair-splitting is governed by the principles of *semantic reality* and *exegetical significance*."[9] In other words, the genitive is used in diverse cases with real semantic differences, and these differences make significant exegetical impact.

Wallace is aiming to provide a rough-and-ready classification scheme that highlights important distinctions. Nevertheless, it is unclear what constraints there are on deciding between different categories. Close reading, even with extensive classifications, must at some point contend with the assumptions of the interpreter. Biblical studies has usually done so by turning to hermeneutics.[10] Another way, pursued in corpus linguistics, is to frame the data in such a way that it is allowed to guide our intuitions according to certain principles and probabilities. I adopt this latter approach in this thesis. However, I argue that a full account of the constraints on meaning variation requires a preliminary investigation into the invariant meaning associated with linguistic signs.[11] Outlining the invariant meaning of a sign provides the interpreter with an inductive control. Whatever interpreted message is associated with a genitive form, the message never means less than the invariant meaning of the genitive case and the invariant meaning of the lexeme. Rather than asking whether a gloss "fits," we should

---

[9] Wallace, *Basics of New Testament Syntax*, 45.

[10] For an introduction and survey of key figures and topics, see, for example, Thiselton, *Two Horizons*; Porter and Robinson, *Hermeneutics*; Schneiders, "From Exegesis to Hermeneutics"; Vanhoozer, "Exegesis and Hermeneutics."

[11] By *invariant* I am referring specifically to the identifiable semantic core of meaning associated with a linguistic sign. This terminology is drawn from the Columbia School. However, for further discussion see Tobin, *Invariance*, 41–43. Tobin identifies three schools of thought regarding "invariant meaning," explaining that "The one common denominator shared by all of them is, of course, the fact that all the systems they postulate are semantic in nature and revolve around the value relationships of the invariant meanings of the linguistic signs postulated within the system" (quotation on p. 43). Thus *invariant meaning* is analogous to *semantic meaning*. However, neither of these terminologies are unproblematic. By *invariant meaning* the reader should understand the relationship between a linguistic sign and the value or meaning associated with that sign. This meaning is invariant in the sense that every instance of a given sign is understood to contribute this meaning. See discussion of monosemy in Chapter 2.

ask how an invariant lexicogrammatical meaning contributes to particular contextual messages, and how.

The problem with Wallace's account is not its accuracy or its representativeness of the contextual messages present in the New Testament. The problem is rather that the interpretive process remains unformalized. One of the motivations for my study is the fact that, to varying degrees, every Greek grammar or lexicon exhibits the same lacuna. Even though lexicons multiply senses, and grammars multiply functions or "uses," the interpretive protocols are not made explicit. Moreover, I argue that they cannot be readily formulated if polysemic analysis comprises the entry point into the interpretive process, because it generates an arbitrary layer of linguistic description that explains neither the linguistic signs nor the interpretive steps taken to understand those signs as indicating a contextual message. As Reid explains,

> If the justification for polysemic analysis is to capture what people operate on psychologically, people clearly need more than a grab bag of possible interpretations for a form; they need an explicit protocol for determining which of its various senses applies on a given occasion. If this cannot be provided, then a polysemic analysis must invoke people's inferential abilities every bit as much as a monosemic analysis. In no way does it bypass the inferential process . . . the conditioning contexts are so diverse, they are not amenable to explicit morphological statement. But if this cannot be provided, then . . . polysemic analysis is as much dependent upon people's inferential abilities as . . . monosemic analysis. Both must appeal to people's ability to make holistic judgments about what interpretation makes most sense in a unique context.[12]

The diverse senses and functions posited by grammars and lexicons, then, do not actually offer more semantic precision than a monosemic analysis does.

Numerous examples could be furnished, but I will mention one that I take up again in Chapter 5. Consider the dative case. Porter and Pitts's monosemic treatment posits the meaning +restriction –extension –specification. Wallace, by contrast, offers a

[12] Reid, "Monosemy, Homonymy and Polysemy," 117.

number of functions, including pure, local, instrumental, and "After Certain Words" uses. Within this broader set of categories, the instrumental category includes, among others, dative of means/instrument and dative of agency.

[1] Instrument: ἐκμάξασα τοὺς πόδας αὐτοῦ ταῖς θριξὶν αὐτῆς
She wiped his feet with her hair.

[2] Agency: οὐδὲν ἄξιον θανάτου ἐστὶν πεπραγμένον αὐτῷ
Nothing worthy of death has been done by him.

These uses are distinguished based on the presence or absence of several nuances of meaning. According to Wallace's explanation, we can say instruments are +concrete and –personal (at least construed as impersonal). Agency is signalled by +personal and +agency. In [1] the text accordingly includes a dative whose referent is something +concrete and –personal, i.e. hair. Hair in real life is an impersonal, tangible, and concrete reality. In [2] the dative instead refers to something +personal (the antecedent of the intensive pronoun) and +agency, implied by the passive verb form, since the doer of the verb is not encoded by the conjugation.

To summarize, in order to identify the distinct senses of the dative, one has to first identify these nuances in the context. If the context did not indicate +concrete and –personal, for example, one is unable to identify the dative as a dative of means/instrument. However, do these two senses of the dative actually help interpret these two instances?

Following a process Reid suggests, which I will call "contextual subtraction," we can see whether Wallace's "polysemic" treatment actually decreases "the inferential gap between meanings and message."[13] The monosemic account posits the meaning +restriction –extension

[13] The following comparison follows Reid, "Monosemy, Homonymy and Polysemy," 120.

–specification for the dative, regardless of context. The polysemic account further specifies this "core" meaning with +concrete –personal or with +personal +agency, depending on context, i.e. if these are features of the dative's referent.[14] The two treatments, then, are as follows:

Monosemic: +restriction –extension –specification

Polysemic: +restriction –extension –specification; +concrete –personal
+restriction –extension –specification; +personal +agency

If we first remove the monosemic analysis from consideration, we can isolate the contribution of the polysemic account, and we are left with:

Polysemic: +concrete –personal
+personal +agency

At this point, it appears that the polysemic account does indeed attribute more specific lexicogrammatical meaning to the dative case. However, to ascertain whether this increased precision actually decreases the "inferential gap" needed to understand a particular usage (i.e. whether it makes interpretation easier) we need to subtract from this difference the total message features that must first be identified in the context in order for the interpreter to arrive at the correct sense.

Polysemic: +concrete –personal
+personal +agency

–[1] +concrete –personal
–[2] +personal +agency

Difference: 0

To use Reid's words, "The greater semantic precision of polysemic [dative] is illusory. Operationally the polysemic analysis offers no more useful semantic substance to the

[14] Wallace (*Basics of New Testament Syntax*, 67) actually begins with four basic meanings. I will assume, however, that polysemic treatments do not imply the incorrectness of monosemic ones, only their relative unhelpfulness in providing such a sparse and/or abstract meaning.

language user than does the monosemic analysis."[15] Once the required co-textual and contextual factors are subtracted from the semantic substance of the different senses, the monosemic analysis offers exactly the same amount of information concerning how to understand the contextual message.[16]

The overspecification of categories in Wallace's grammar is symptomatic of a more general tendency within biblical studies. Nowhere is this tendency towards polysemy more evident than in Greek lexicons. BDAG includes, for example, twelve discrete senses for the lexeme ἐν, and seventeen senses for ἐπί. These numbers actually outdo Wallace's; he assigns ἐπί eight basic uses, and ten for ἐν. Like Wallace's "catch-all" categories for the cases, BDAG also includes means of classifying outliers in its delineation of senses for certain lexemes. For example, the tenth sense for εἰς is labelled "Other uses of εἰς," and the fifth sense of ὅτι is simply "special uses," with subcategories such as "ὅτι w[ith] acc[usative] and inf[initive]."[17] Significantly for this study, the polysemy of Greek grammars and lexicons does not reduce the inferential gap between lexicogrammatical meaning and contextual message. I argue in this thesis what Reid attempts to demonstrate, that polysemy misrepresents lexicogrammatical meanings through overspecification.

There are a number of issues with the polysemic tradition that dominates biblical Greek grammars and lexicons, but the most salient issues are methodological in nature. First, there is an undue reliance on glossing as means of understanding Greek. Glossing

---

[15] Reid, "Monosemy, Homonymy and Polysemy," 120.

[16] Though he does not seem to realize it, Reid's method of contextual subtraction demonstrated here is exactly analogous to Ruhl's monosemic bias, which operates on pragmatic factorization (see Chapter 2).

[17] See BDAG, *s.v.*, respectively.

is, according to Lee, an "intrinsically weak and deceptive" method of analysis.[18] Second, lexical definitions engage in a "clandestine affair" with translations, claims Lee.[19] Lexicons provide the justification for translations—as they should—but translations all too often provide the justification for lexicons. As Wallace's glossing procedures illustrate, the same critique applies to grammars.

A deeper question remains, however, when stepping back to estimate the goals of the lexical and grammatical tradition. Ostensibly, the goal is to help exegetes understand Greek texts, but does the tradition accomplish this goal? By laying out a set of more or less arbitrary categories represented by glosses, the grammar or lexicon helps the exegete translate a text. The exegete's selection of categories, however, is justified on the basis of whether it produces a correct translation. What is assumed but not explained is how the exegete can be assumed to have precise judgement as to what the meaning of the text is in the first place. In other words, the exegete must already know what a text means in order to be able to correctly categorize its component parts—Wallace makes this assumption explicit in his keys to identification.

Within the exegetical process so conceived, polysemy provides an arbitrary level of analysis that uses circular reasoning to affirm the intuitions of the exegete. Rather than simply glossing the genitive and knowing by intuition that the gloss is correct or incorrect, the exegete can add a level of complexity by first classifying the genitive as a particular kind of genitive, such as a genitive of content, and then glossing the genitive with something like *containing*, and then justifying their gloss *a priori* on the basis of whether it "fits." As a result of this pervasive conceptualization, biblical studies is

---

[18] Lee, *History of New Testament Lexicography*, 40–41.
[19] Lee, *History of New Testament Lexicography*, 31.

fraught with debates over genitives that can be glossed either as subjective or objective genitives, or uses of ἐν that can be considered spherical, instrumental, or locative.[20] The methodological problem underpinning these debates, however, lies in the fact that correct classification of a genitive can only be judged on the basis of whether, at the end of the day, the classification "fits."

Biblical studies stands in need of some way to formalize not only the categories of meaning operative in the biblical languages, but also the interpretive protocols that constrain how and when those categories "fit." The way forward is not through more precise polysemic categories but rather through the adoption of a thoroughgoing monosemic approach. Whereas polysemy muddies the waters by introducing an arbitrary and unnecessary level of description, monosemy takes seriously the fact that every instance of a genitive is at bottom a genitive, with at least the invariant meaning of the genitive case. As mentioned above, monosemy makes the inferential gap explicit, and so injects clarity into the discussion by eliminating unnecessary polysemic categories that fall somewhere in between the potential meaning of the linguistic signs and the realized meaning of the interpreted message.

Besides injecting clarity, monosemy also enables empirical analysis. First, monosemy standardizes the units of meaning on the basis of the units of analysis. One sign, on this approach, is modelled as having one meaning, unless exceptional circumstances prove otherwise, in which case the incommensurably different meanings indicate homonymy. Second, standardized units of meaning allow the measurement of meaning. Polysemic senses cannot be objectively counted, but signs can be. If signs serve as signals of meaning, then meaning too can be measured and directly compared

[20] See discussion below regarding πίστις Χριστοῦ. Cf. Campbell, *Paul and Union with Christ*.

or contrasted. The measurement of meaning makes possible the probabilistic modelling of interpretive protocols. The lexical and grammatical tradition has not been able so far to shed light on the inferential gap, but monosemy provides the much-needed means to overcome this challenge by taking exegesis in a more empirical direction.

Monosemy's motivating values, moreover, are already serving to break new ground within the field of biblical studies. In fact, for heuristic purposes, it is possible to differentiate two different ways of analyzing the Greek of the New Testament, maximalist and minimalist analysis.

Maximalist and Minimalist Analysis

Maximalist analysis is an approach that attempts to describe lexicogrammatical meanings by approximating them to stereotypical contextual messages, often relying on traditional syntactic categories.[21] The result of this approach is typically a catalogue of meanings that each comprise a blend of lexicogrammatical meaning and contextual message. One salient example is the distinction between subjective and objective genitives: in each case the genitive is categorized on the basis of its syntactic function, in light of the broader context. *Minimalist* analysis, by contrast, identifies the lexicogrammatical meaning of a linguistic form as the common denominator identifiable in all its contextual messages.[22]

[21] I will discuss the problems with these categories in detail in Chapter 2 (see also Chapter 5 on part-of-speech categories).

[22] The "common denominator" terminology is drawn from Lappenga's (*Paul's Language*, 56) critique of Ruhl (which I discuss below).

To describe these two approaches, I am contrasting two ways of modelling the relationship between linguistic signs and contextual messages. Consider the following instances:

[1] ἐν τῷ ἐρήμῳ (Matt 3:1)	In the desert
[2] ἐν πάσῃ τῇ δόξῃ αὐτοῦ (Matt 6:29)	In all his glory
[3] ἐν δέκα χιλιάσιν (1 Macc 4:6)	With ten-thousand
[4] ἐν τῇ ἐσχάτῃ σάλπιγγι (1 Cor 15:52)	At the last trumpet

The translations offered, while accurate, obscure the fact that ἐν constitutes a common denominator between all of the instances (along with the dative case, singular number, etc.). However, the fact that ἐν is glossed with three different English words does not, I would argue, justify that we posit three distinct senses for ἐν. Recalling the reference to Wittgenstein in the Introduction, these translations actually reveal the distinct way in which the English language draws categories, not the way Greek does.

A maximalist approach attempts to define signs in Greek on the basis of the different contextual messages the signs are used to indicate. Because ἐν is used to construct at least three different "meanings," those meanings then comprise an intermediate level of description. Rather than moving from ἐν to *in*, or ἐν to *with*, a greater common factor can be identified between these two loci of meaning, such that ἐν relates to *in* by means of the locative sense of ἐν, or it relates to *with* by means of the instrumental sense of ἐν. This polysemic analysis is inherently subjective because the different senses of ἐν fully represent neither ἐν nor the contextual messages. The locative sense does not represent the meaning of ἐν in a way that can be generalized to any instance within the corpus. Furthermore, it does not even represent the meaning of *In the desert*, because it only tells us that a location is being signalled, not that it is

specifically a desert location. Thus, I maintain that polysemic analyses are subjective and arbitrary in their representation of the lexicogrammatical meanings of Greek.

From a maximalist perspective, the well-known phrase *the shooting of the hunters* has at least two lexicogrammatical meanings. It encodes *the hunters shoot* in one stereotypical context and *the hunters were shot* in another. However, from a minimalist approach, the lexicogrammatical meaning of the phrase is located at the point of generalization at which the two messages are indistinguishable. *The shooting of the hunters*, from this perspective, has a minimal lexicogrammatical meaning that is the common denominator between both messages, because it does not specify whether the hunters are the agent or patient of the shooting process.

Maximalist approaches tend to be unprincipled and arbitrary in their attempt to maintain proximity between the lexicogrammatical meanings of forms and the contextual messages of actual communication events. Having once started on the approximation of contextual messages, why stop at only two contexts for *the shooting of the hunters*? Why not add more specification? For example, *hunters* can also be taken in multiple ways (are they a basketball team shooting free throws?). Minimalist approaches, by contrast, attempt to consider all contexts and seek to identify a lexicogrammatical meaning communicated in all contexts.

As another example, consider Huffman's description of Smyth's grammar. He claims, "Smyth's (1920) Greek Grammar, for example, lists ninety-nine uses of the dative, most of them clearly reflecting some element in the cited example *other than* the word in the dative."[24] Smyth's approach to Greek grammar is a maximalist approach

[24] Huffman, *Categories of Grammar*, 16.

because, as Huffman notes, "It is clear that Smyth's goal is to uncover the greatest *diversity* possible, not to establish functional *unity*."[25]

At bottom, this disagreement is a matter of orientation toward data. Those scholars who value systematicity and tight semantic descriptions will likely gravitate toward a monosemous perspective, whereas those who value diversity and dynamism are probably not going to find monosemy convincing. Monosemy and polysemy are both products of particular methods of describing meaning. That is, when describing the common denominator of meaning between two linguistic signs, the resulting description will in some sense be monosemous, and the reverse is also the case. Monosemy is a minimalist orientation;[26] polysemy is a maximalist one.[27] While neither approach would claim thoroughgoing polysemy or monosemy within a lexicon—that is, some words will have one meaning and some words will at least be considered homonyms, regardless of the position—each side can be understood as a disposition that tends in either one direction or the other.

Of course, any attempt to subdivide a diverse academic field runs the risk of oversimplification. Nevertheless, I continue to find the distinction between minimalist and maximalist analysis heuristically useful for critically assessing the way we approach Greek grammar. The field of New Testament studies is keenly aware of the indispensable role of context in constructing meaning, but recognizing the need for contextual sensitivity is not enough. When we encounter in a text a grammatical feature like ἐν, before asking how context modulates its meaning, we must first ask what precisely is being modulated by context; we must at least make the attempt to examine

---

[25] Huffman, *Categories of Grammar*, 16.
[26] Ruhl, *On Monosemy*, ix.
[27] Geeraerts, *Theories of Lexical Semantics*, 182.

ἐν before we examine ἐν Χριστῷ. Or, to use another debated phrase, we must first attempt to explain why Paul would choose the term πίστις before we ask how Χριστοῦ modulates its meaning. While there is much more that could be said about the field than the distinction between minimalist and maximalist analysis, my goal is to argue that we are in need of linguistic baselines, standards for comparison. Minimalist approaches provide a way to anchor observations about the modulating role of context by specifying the invariant lexicogrammatical meaning that context modulates.[28] The end goal of analysis for both approaches is the ability to identify, compare, and understand contextual messages, but the place to start, I will argue, is the sign-based formalization of lexicogrammatical meanings.

In the remainder of this chapter, I demonstrate how minimalist approaches have been used already to analyze biblical language. This kind of analysis functions diversely in the analysis of lexis, grammar, and even of social groupings, with examples including, the lexeme Ἰουδαῖος as it pertains to socio-cultural analysis, the case system, the article, and verbal aspect.

Four Examples of Minimalist Analysis

I will use four studies to illustrate minimalist analysis that moves beyond lexical analysis. These examples include David Miller's analysis of Ἰουδαῖος, Porter and Pitts's description of the semantics of πίστις Χριστοῦ, Peters's approach to the Greek Article (in contrast to Daniel Wallace's), and the Porter–Fanning debate regarding verbal

[28] Because we have no access to the rich environmental information needed to formalize the pragmatic patterning of contextual messages, we must proceed cautiously on the basis of observable lexicogrammatical categories. Only through the process of working from the bottom up to identify and formalize the categories of Hellenistic Greek will we be able to begin probabilistically modelling the interaction between lexicogrammatical meanings and contextual messages.

aspect. These studies substantiate the claim that minimalist analysis maintains a principled correlation between content or meaning and lexicogrammatical realization or form.

David Miller and the Meaning of Ἰουδαῖος

David Miller has contributed a three-part survey of scholarship on Ἰουδαῖος and related terms such as Ἰουδαϊσμός, Γαλιλαῖος, Ἰτουραῖος, and *Idumaean* (inhabitants of Ἰδουμαία). In his first article, "The Meaning of *Ioudaios* and Its Relationship to Other Group Labels in Ancient 'Judaism'," Miller outlines the history of scholarship on the relationship between Ἰσραήλ and Ἰουδαῖος. Kuhn's 1938 *TWNT* article argued that Ἰσραηλίτης and Ἰουδαῖος were used by Jews and non-Jews respectively.[29] Tomson reworks this distinction by claiming that the terms reflect, instead, insider and outsider perspectives on the same people group.[30] Elliott adopts a similar approach to Tomson, where the explanation for the use of Ἰσραηλίτης as opposed to Ἰουδαῖος is explained in terms of Paul's audience.[31] In other words, Paul uses the term Ἰσραηλίτης when his audience is fellow Jews, or else non-Jews that he hopes will adopt an insider perspective.

For his part, Miller argues that the insider–outsider distinction is not useful, since it sometimes serves to explain the author's perspective, or the way the author construes the audience, whereas at other times the author's perspective or the makeup of the audience serves to explain the use of the particular term.[32] How can we say that the

[29] Kuhn, "Ἰσραήλ, Ἰουδαῖος, Ἑβραῖος."
[30] Tomson, "Israel and Jew"; Tomson, "'Jews' in the Gospel of John."
[31] Elliott, "Jesus the Israelite."
[32] Miller, "Meaning of Ioudaios," 106.

actual Jewishness of an audience motivates the use of a term, while at the same time observing that an author's desire to construe his audience as Jewish motivates the use of that same term? Goodblatt follows up by claiming that the terms Ἰσραήλ and Ἰσραηλίτης are used in works composed in Hebrew, whereas Greek and Aramaic works tended to use the term Ἰουδαῖος.[33] Miller claims that these various treatments have not considered the most problematic dataset: Jewish use of Ἰουδαῖος.

Having surveyed the most influential positions on the relationship between the terms Ἰσραήλ and Ἰουδαῖος, Miller notes that Ἰσραήλ is indeed an insider term used only by Jews, whereas non-Jews exclusively use Ἰουδαῖος. However, the Jewish use of Ἰουδαῖος is difficult to explain. Miller concludes his first essay by claiming that "*Ioudaios* could function as an overarching label that included Galilaeans within its scope."[34] Γαλιλαῖοι and Ἰουδαῖοι, according to Miller's reading of Josephus, form "a unified group with regional distinctives, whose members shared a commitment to the Jerusalem temple and to a common way of life."[35] The term Ἰουδαῖοι sometimes includes Idumaeans and Galilaeans, but sometimes is contrasted with them. So even though Ἰσραήλ was indeed an insider label in the first century, Ἰουδαῖος also functioned as an insider label.

In his second essay, "Ethnicity Comes of Age: An Overview of Twentieth-Century Terms for *Ioudaios*," Miller argues that the terms *race* and *ethnic group* were distinguished already in the 1930s, but there was a gradual move away from *race*. However, *nation* served as an intermediate term between *race* and *ethnicity*. In other words, the shift was not directly from racial to ethnic language in the wake of World

[33] Goodblatt, "From Judeans to Israel."; Goodblatt, *Elements*.; Goodblatt, "Conflicted Identities."
[34] Miller, "Meaning of Ioudaios," 122.
[35] Miller, "Meaning of Ioudaios," 122.

War II. The current use of *ethnicity*, though not entirely evading anachronism, does include cultural and geographical aspects that *race* does not. However, the modern term *ethnicity* does not necessarily include aspects that we would deem religious, which is why, in my opinion, the term continues to be problematic, especially for analyzing a term like Ἰουδαϊσμός. One of the problems with Miller's analysis—which is otherwise thorough—is that he includes no theory of inter-linguistic cognates, though his paper is presented as an analysis of Ἰουδαῖος and other cognates in Latin, Hebrew, and Aramaic. Accordingly, his approach ends up being an analysis of Ἰουδαῖος as a concept, and it does not consider the term as part of the system of Greek.

In his final essay, "Ethnicity, Religion and the Meaning of *Ioudaios* in Ancient 'Judaism,'" Miller claims that discussions of Ἰουδαῖος suffer from complicated ancient data and scholarly disagreements regarding methodology, especially regarding the avoidance of distortion and anachronism. He argues that the categories we use should be demonstrably useful—not just assumed—and should reflect the object of inquiry. He argues for a minimalist but flexible concept of ethnicity, because too closely constraining the meaning of Ἰουδαῖος—that is, overspecifying its lexicogrammatical meaning—leads to major interpretive problems. Those to whom the term Ἰουδαῖος was applied had distinctives as well as similarities to other ἔθνος. And these distinctions, argues Miller, indicate that religion—defined as "a cluster of ideas and practices related to the divine that made the group stand out as distinctive in comparison with the typical qualities of other ancient groups"—was an emerging category in Second Temple

Judaism and that religion was "what ancient people regarded as distinct about *Ioudaioi*."[36]

What is significant to my own work here is that Miller argues for a minimalist meaning of Ἰουδαῖος. That is, the term contributes to a number of contextual messages, but the variety of uses implies that its meaning is more general in nature than any of the particular messages. Miller writes:

> If we assume, for the sake of argument, that ancient readers were aware of distinct meanings of *Ioudaios* which correspond exactly to our English terms 'Jew' and 'Judaean', we must remember that there was no simple way of conveying this distinction in Greek. The same word would have had to do duty for both, and the result would sometimes have been ambiguity . . . Ancient readers need not have drawn conceptual boundaries where modern readers do.[37]

Thus, anachronism becomes a problem when sense distinctions are drawn between what are, from a modern perspective, different concepts (like religion and ethnicity or race). In Miller's own words:

> The variety of meanings ascribed to *Ioudaios* is also cause for concern. To be sure, it is possible that *Ioudaios* bore different meanings in different contexts, and that ancient readers would readily discern these distinct meanings from the context. This is the way language works. Modern scholars frequently map these meanings onto separate English words, with the religious meaning assigned to 'Jew' and the ethnic or geographical meaning assigned to 'Judaean' . . . But it is important to avoid reifying these categories, imagining that ancient readers asked whether a particular occurrence of *Ioudaios* meant 'Jew' or 'Judaean'. With *Ioudaios* as the only label, ancient readers had no verbal way of distinguishing these meanings, and there is no necessary reason why they would define their categories the way modern readers do.[38]

In summary, Miller offers something of an axiom that concisely describes the minimalist orientation I am arguing for in this chapter, saying, "Occam's razor would

---

[36] Miller, "Meaning of Ioudaios," 255.
[37] Miller, "Meaning of Ioudaios," 99.
[38] Miller, "Meaning of Ioudaios," 119. "Distinguishing translation from meaning," Miller explains (p. 99), "also avoids the misunderstanding that can ensue when scholars disagree about the modern meanings of 'Jew' and 'Judaean'."

suggest that, all other things being equal, explanations of *Ioudaios* that posit fewer meanings are more likely to be correct."[39]

Porter and Pitts on Πίστις Χριστοῦ

With the aim of addressing the πίστις Χριστοῦ debate on a linguistic level, Porter and Pitts discuss: 1) the role of lexical semantics for disambiguating senses; 2) the Greek case system; 3) the relevance of lexis and case for the debate; and 4) the results of this linguistic approach. They claim, first, that the case system restricts or narrows the nominal idea expressed by a nominal. Secondly, they argue the case system encodes the following lexicogrammatical meanings:

–restriction (nominative/vocative); +restriction +extension (accusative); +restriction –extension +specification (genitive); and +restriction –extension –specification (dative). They argue that case frames, particularly lexical frames, create implicatures for more specific "case meaning." Thirdly, they argue that the categories of the πίστις Χριστοῦ debate—objective and subjective genitive—are inadequate for analyzing the semantics (or lexicogrammatical meaning) of the genitive. Lastly, they conclude that, since anarthrous instances of πίστις are always abstract ("faith" and not "faithfulness"), and since the article and use of a genitive pronoun accompany instances of a specified individual's faith, the phrase in context likely refers to abstract faith with Christ as its object, unspecified for a source of faith (a conclusion now supported by Peters's monograph on the Greek Article).[40] They argue that these linguistic considerations should take precedence over exegetical and theological ones.

---

[39] Miller, "Meaning of Ioudaios," 119.
[40] Peters, *Greek Article*.

Regarding monosemy, Porter and Pitts note that "in order to disambiguate lexemes along these lines, it is necessary to observe how co-textual features realize particular meanings in unambiguous cases in order to develop criteria for assessing cases that are ambiguous."[41] Before asking how the genitive—whether a subjective or objective genitive—modulates or restricts the meaning of πίστις, it is necessary to first analyze the sense of πίστις through collocation analysis.

In their analysis of case, they note that, as the least marked case, the nominative is "unmarked cognitively in that its meaning is the most conceptually basic of the cases." Moreover, "The nominative also exhibits morphological simplicity and regularity," and this morphological simplicity "accounts for its potential to be used in a variety of contexts."[42] Porter and Pitts claim further that the genitive is the most heavily marked case, and thus it is "more rich (i.e. determinate) in meaning than the accusative or dative."[43] It is also the most heavily marked both morphologically (due to irregularities in its paradigm) and distributionally (in comparison to the unbounded nominative, it is the most restricted or bound). Regarding the dative, they note that "the dative often limits a relation (e.g. it grammaticalizes, at times, a local relation), but this specificity is gained through various implicatures and is not inherent in the meaning of the case form. When the dative specifies or extends, this feature is gained solely from context and therefore is not part of its semantic meaning."[44]

---

[41] Porter and Pitts, "Πίστις with a Preposition," 37.

[42] Porter and Pitts, "Πίστις with a Preposition," 43. I will not engage directly with their conceptualization of the cases. However, see my discussion below on the role of markedness in determining "basic" members of a paradigm.

[43] Porter and Pitts, "Πίστις with a Preposition," 44.

[44] Porter and Pitts, "Πίστις with a Preposition," 44–45.

Regarding traditional grammars and their treatments of case, Porter and Pitts note, "A systematic distinction between semantics and pragmatics, or the meaning of the form and what is meant when the form is used (e.g. through implicature), however, is not maintained or elucidated."[45] They continue in the same passage, saying, "Traditional approaches often begin their analyses with lists of usage or, in other words, at the pragmatic level of text rather than at the semantic level of linguistic code." In their estimation, "This model of analysis seems to blur the line between semantics and pragmatics instead of letting the semantic level of code govern the usage of the form. This procedure results in the imposition of entire contexts onto the meaning of individual case forms."[46] Just as I have been arguing, they likewise point out that the attempt to reproduce the full import of a form's usage in context as internal to the form's lexicogrammatical meaning results in the kind of stalemate represented by this particular debate. Furthermore, they continue by noting the issue of imposed categories, saying,

> Such an approach also fails to respect authorial status, with regard to what Paul may have been contemplating when he used the genitive. It is highly unlikely that he was working with notions of subjective or objective genitive, or corresponding categories, as he made linguistic choices.[47]

Referring to Halliday's work, they note, "Grammatical categories are ineffable—unless language is viewed as a system in which each choice implies a distinct meaning."[48]

Even though Porter and Pitts argue that case should be treated, not as an inflectional paradigm with meanings attached to it, but rather as a semantic paradigm with forms that realize it, which might imply a top-down methodology, their claim is simply that semantics or lexicogrammatical meaning is realized by lexicogrammar.

---

[45] Porter and Pitts, "Πίστις with a Preposition," 38–39.
[46] Porter and Pitts, "Πίστις with a Preposition," 39.
[47] Porter and Pitts, "Πίστις with a Preposition," 39.
[48] Porter and Pitts, "Πίστις with a Preposition," 40.

Therefore, theirs is a minimalist approach in that it is a bottom-up approach to meaning.[49] This much is implied in their negative evaluation of the terms of the debate: "There seems to be an attempt to describe the semantic relations ("faithfulness of Christ" or "faith in Christ") through syntactic categories (subjective or objective), which distorts the issue—quite apart from the fact that the syntactic categories being used are inaccurate."[50] The question of whether Paul intended a subjective or objective genitive, they point out, is misguided: "The reality is that this question—or a corresponding first-century version of it—probably never crossed Paul's mind."[51]

Peters (and Wallace) on the Greek Article

A third example of the difference between minimalist and maximalist analyses can be seen in the work of Ronald Peters on the Greek article and in the response from Daniel Wallace.

Peters shows that unstated assumptions about Greek have made a unifying hypothesis of the Greek article impossible. For example, it has been assumed that Greek nouns are automatically "substantives." At the same time, it has been generally recognized that the article had a substantivizing function. These two notions have left analysts puzzled about the difference between an articular and an anarthrous noun. What becomes of the article's substantivizing function when it modifies something that is already a substantive? According to Peters, this "observation" assumes that nouns are

[49] The approach is bottom-up so long as the semantic categories are initially derived from analysis of Greek lexicogrammar as it is expressed in forms. The degree to which they succeed in doing so is up for debate, and further research should test their claims empirically.

[50] Porter and Pitts, "Πίστις with a Preposition," 48.

[51] Porter and Pitts, "Πίστις with a Preposition," 48.

"of course" substantive already.[52] Peters has demonstrated that the operative categories of traditional grammar in this and other cases constitute unfounded assumptions and serve primarily to convolute the grammar of the article.

The lexicogrammatical meaning of the article is, according to Peters, a concretizing function. That is, it construes its head term as concrete rather than abstract, and thus ὁ λόγος is more concrete than λόγος on its own. This insight is strikingly similar to the effect of adding Χριστοῦ to πίστις.[53] Without explicitly making a case for it, Peters has demonstrated the effectiveness of monosemy.

Wallace's estimation of Peters's approach is decidedly negative. Not only does he attempt to edge out Peter's volume on the basis of some bibliographic "lacunae"—although it is unclear what specifically in the arguments of these missing volumes he finds indispensable to the discussion—he also maintains, in his own words, a firm stance *against* Peters's minimalist approach. He claims a unifying semantic hypothesis for the article is unwarranted, saying,

> Indeed, some linguists have explicitly seen the article's functions to have increased in their complexity due to the long history of usage in Greek; so Steven Runge, de Mulder and Carlier, Greenberg; in other words, they recognize that grammatical forms, like lexemes, do not necessarily maintain a unifying idea.[54]

In effect, not only does he argue that Peters's account of the article is wrong, but actually grammatical forms in general should not be seen as maintaining "a unifying

---

[52] According to Peters (*Greek Article*, 179), "To say that the article can turn almost any part of speech into a noun provides no insight into how it functions in the majority of instances when it occurs," i.e., with nouns.

[53] In fact, given that the article is by far the most frequent sign in Greek, it is likely that it constitutes a major semantic field within the language, and that all nominals or nominalized forms occupy this same semantic field as hyponyms. Thus the addition of *any* sign to a nominal group concretizes the group, but all other additions are more specified than the superordinate sign, the article. Every sign that is hyponymous to the article fulfills a more specific function within the semantic space of the article, which involves concretizing.

[54] Wallace, "Review of Peters," 4.

idea." He further argues that, in highlighting the morphological similarity between the relative pronoun and the article, Peters is actually engaging in the "root fallacy" identified by James Barr. (Wallace makes this point, despite having noted earlier in the paper that most studies of the article identify the article's etymological genesis in the demonstrative pronoun—his own study included.) Wallace digs in further, however, arguing,

> My point is not a mere quibbling over words. Peters seems to strongly link morphology to meaning for more than just the article. For example, on more than one occasion he enlists Porter's definition of the semantics of the genitive as essentially that of *restriction* (213 and passim). Yet this definition of the genitive's semantics is adequate only for the eight-case system. The five-case system (which Porter embraces; Peters does not tell us which approach he takes) involves the idea of separation as well. Regarding the article, Peters links morphology to semantics in such a way that he assumes the necessity of a unifying notion for the article's meaning.[55]

Something is being missed here. As we have seen, Porter and Pitts's account of the genitive is certainly not operating with an eight-case system, something Wallace even notes. Why then is Porter's account of the genitive "adequate only for the eight-case system"?[56] Why assume that "restriction" cannot subsume "separation"? Wallace, moreover, denounces Peters for seeming "to strongly link morphology to meaning for more than just the article." Indeed, this is precisely what Peters does, but, as this thesis argues, that is not a stroke against his work, but a methodological choice. Wallace claims, "Yet on numerous occasions [Peters's arguments are] demonstrably false (as in cases of anaphora as well as par excellence and monadic articles)."[57] In other words, the semantic categories "par excellence" and "monadic"—which are merely a given in

---

[55] Wallace, "Review of Peters," 4.

[56] Peters refers to Porter's description in Porter, *Idioms*, 92. which is essentially the same as the description in the article mentioned above.

[57] Wallace, "Review of Peters," 5.

Wallace's view—are part of the linguistic data itself, despite the fact that there is nothing about the article itself that distinguishes these assumed categories.[58] Wallace, in his turn, demonstrates not only that traditional categories continue to be merely assumed, but also that these categories have been reified as actual, observable data in the text. As Otheguy puts it,

> The red Kool Aid of the traditional observations is frozen hard in linguistic analysis, but we learn nothing about ice by finding it to be red, because the redness had already been introduced long before it was ice. It is as part of linguistic analyses that the traditional categories must ultimately be evaluated. Yet these analytical units that should derive their legitimacy from rigorous examination in fact escape scrutiny by getting into the analysis, at the earlier stage, as unexamined units of observation.[59]

In other words, Wallace sees the categories of traditional grammar in the texts because they have been assumed before he actually examines the texts themselves—texts which do not distinguish morphologically between the categories he assumes. In a statement that leaves me scratching my head as to what "prescriptive" means, Wallace concludes regarding Peters that "his overarching prescriptive approach prevented him from truly observing the text."[60] The irony is that the reverse is apparently the case.

Peters's analysis is minimalist because, as Wallace perceptively notes, Peters seeks at every point to correlate form and function. Wallace's own position, by contrast, is maximalist, in that he wants to assert more about the semantics of the article than its formal realization would indicate.[61]

---

[58] That is, there is no formal, systemic realization of these semantic differences in the inflectional patterns of Greek. Distinctions like "monadic" and "par excellence" are not *explicitly* realized in the lexicogrammar.

[59] Otheguy, "Saussurean Anti-Nomenclaturism," 381.

[60] Wallace, "Review of Peters," 9. For Peters's response to Wallace, see Peters, "Response to Dan Wallace."

[61] See Peters's evaluation of Wallace's flow chart of possible functions for the article (Peters, *Greek Article*, 182). Cf. Peters's response to Wallace's review (Peters, "Response to Dan Wallace").

Porter and Fanning on Verbal Aspect

In his analysis of verbal aspect in Hellenistic Greek, Porter advocates clear grammatical category names based on the morphological realization of those categories.[62] Despite debate among systemic linguists as to "whether formal categories convey meaning," Porter claims that in the case of Greek "it is all the more important to stress the relationship between the two [form and function]."[63] Porter notes that "The concept of meaning as choice also serves to bridge the gap between form and function," because, he says, "to differentiate semantic categories without formal realizations undermines not only the principle of form/functional relation but principled means for differentiation."[64] That is, it is challenging to differentiate between diverse meanings for a form if there are no formal features that actually realize those differences.[65] When context allows us to distinguish between different uses of a single form, the context is providing the means of differentiation—and, in keeping with monosemy, difference in meaning should be assigned where the difference actually occurs. Thus Porter distinguishes semantics, which he calls code meaning, from pragmatics, which he describes using the term implicature.[66]

Porter's study takes a minimalist approach. First, he correlates form and function. Second, his hypothesis about the lexicogrammatical meaning of verbal morphology in Greek aims to cover all uses of the forms. "Many grammatical models can adequately treat a reasonably large number of common instances in a given

---

[62] Porter, *Studies in the Greek New Testament*, 44–48.
[63] Porter, *Verbal Aspect*, 11.
[64] Porter, *Verbal Aspect*, 12–13.
[65] As demonstrated above, polysemous meanings of functions require that contextual information must first be identified, and then imported into the semantics of the form.
[66] Porter, *Verbal Aspect*, 15.

language," notes Porter, "but the difficult instances prove which is the most effective model and go the furthest to making the best grammatical rules."[67]

It is at this point that Porter and Fanning—whose dissertation on verbal aspect appeared the year after Porter's—part ways. As Carson explains, "The issue between them can be simply put. Porter argues that aspect and only aspect is grammaticalized in the tense-forms of Greek, in all moods," except for the morphologically distinguished future and aspectually vague verbs.[68] Fanning, on the other hand, argues that the semantics of the tense form itself depends on lexis and context; as Carson puts it, "He is not saying merely that the sentence or the discourse carries this additional meaning, but that the verbal form itself takes it on board."[69] According to Carson, "All the points of dispute between Porter and Fanning turn on these fundamentally different perceptions as to what meaning is conveyed by the verbal forms themselves."[70]

For his part, Fanning claims that analysis of aspect is incomplete without analysis of *Aktionsart*, noting, "I think one of the weaknesses of Porter's treatment is that he does not pursue the meaning of aspect much beyond the most general or primary level."[71] Probably what he means is that Porter focuses on lexicogrammatical meaning or semantics without delimiting the scope of contextual messages or pragmatic deixis/implicature.[72]

Fanning says, "The point to be stressed is that a competent grasp of verbal aspect requires an interpreter or linguist to work on both levels of meaning [i.e. the semantic

---

[67] Porter, "Defence of Verbal Aspect," 34.
[68] Carson, "Introduction to the Porter/Fanning Debate," 22.
[69] Carson, "Introduction to the Porter/Fanning Debate," 23.
[70] Carson, "Introduction to the Porter/Fanning Debate," 23.
[71] Fanning, "Approaches to Verbal Aspect," 52.
[72] Pang (*Revisiting Aspect and Aktionsart*, 229) has described this as a "two-level understanding of aspect."

and the pragmatic] but at the same time to be aware of the distinction between the two."[73] Fanning claims that Porter's merely outlining the semantics of the tense-forms is inadequate. In fact, "Attention to this sort of thing [i.e., *Aktionsart*] is *essential* for giving an adequate account of aspectual function."[74] While I can appreciate that Fanning is trying to describe the contextual messages associated with contextualized uses of particular aspects, I have to agree with Porter that the place to start is the lexicogrammatical meanings formalized by the aspects, not the contextual messages that are a product of a myriad of factors.

Fanning's values are evidently not aligned with Porter's: "I think," he says, "that in several important areas he [Porter] has stopped short of a truly helpful or complete analysis of aspectual usage along this line."[75] In other words, Fanning's analysis is a maximalist approach: he begins with tense forms and attempts to attribute as much of their contextual messages as possible to their lexicogrammatical meanings in order to be "truly helpful." In practice, he attempts to approximate the lexicogrammatical meaning of the tense forms as closely as possible to actual instances of use. This is a maximalist approach, because in effect he asks: What does the meaning of the tense form in this instance have in common with the actual process it denotes or even refers to in an instance? He attempts, then, to find the greatest common factor of meaning between the form and its use in context.

The upshot is that Porter's is a minimalist approach that asks what a form always brings to its context. Fanning's, by contrast, is a maximalist approach that aims to

---

[73] Fanning, "Approaches to Verbal Aspect," 52–53.
[74] Fanning, "Approaches to Verbal Aspect," 54, emphasis added.
[75] Fanning, "Approaches to Verbal Aspect," 59.

explain particular instances and attempts to correlate the lexicogrammatical meaning of the form as closely as possible with its instances.

Summary

Minimalist and maximalist approaches differ in that the former maintains a principled correlation between lexicogrammatical meaning and lexicogrammatical realization. Miller's analysis of Ἰουδαῖος demonstrates why the anachronistic imposition of categories such as race, ethnicity, or national identity are problematic. He advocates a flexible and relatively imprecise definition for Ἰουδαῖος that corresponds to the diverse uses and conceptions evidenced in the texts. A definition that posits less meanings, he claims, is likely more accurate. Porter and Pitts demonstrate that πίστις Χριστοῦ is best analyzed by starting with the invariant lexicogrammatical meanings of the case forms and the particular lexemes. Peters exemplifies a minimalist analysis in that the Greek article is assessed in terms of its invariant meaning. Wallace objects on the basis of a maximalist approach, explicitly rejecting the attempt to outline an invariant meaning. Porter and Fanning, likewise, diverge in their conclusions because Porter's aim is to identify the common denominator always signalled by aspect, whereas Fanning wants to consider aspectual meaning in terms of its enrichment with cotextual and contextual information.

Minimalist approaches in New Testament studies have generated data and conclusions of long-term value that not only move beyond the shortcomings of traditional grammar, but also push the conversation forward into new territory.[76]

[76] Wallace actually displays the same positive trajectory in his defense of the five-case system rather than the eight-case system. He says, "Since the genitive and ablative have the same form, we shall

Maximalist approaches, by contrast, cannot provide the basis for empirical analysis because they choose not to focus on either the invariant meanings of the forms or on the contextualized meanings of the interpreted messages, opting instead to generate an intermediate level of description that incorporates both loci, with neither receiving a rigorous explanation. Maximalist analysis cannot be generalized to every feature of a language, but minimalist approaches can, because the units of analysis are observable linguistic signs.

Conclusion

The lexical and grammatical tradition within biblical studies leaves the interpretive guidelines for exegesis unformalized. Furthermore, polysemy provides no direction in addressing this issue, but serves only to blur the distinction between the invariant meaning of linguistic signs and the contexts and co-texts that specify and constrain those invariant meanings. Rather than proliferating senses and functions, the minimalist tendency evident in the works of Miller, Porter and Pitts, Peters, and Porter provides a better entry point into the task of modelling interpretive protocols, since it better enables empirical linguistic analysis.

Even though monosemy still entails an inferential gap between lexicogrammatical meaning and contextual message, monosemy makes the gap explicit. If the field of biblical studies is ever to reach the point of modelling the interpretive protocols that its lexical and grammatical tradition has so far been unable to fully

---

consider them both as *one* case ('case' being defined as a matter of form rather than function) . . . Another way to view the genitive case is to see all uses, both adjectival and ablatival, generating from one idea" (Wallace, *Basics of New Testament Syntax*, 44).

address, then I argue that we need to first develop a robust means of accounting for the lexicogrammatical meanings of the biblical languages, which is the aim of this thesis.

For the remainder of this thesis, *monosemy* or *monosemic analysis* will refer to a minimalist approach. Likewise, *polysemy* will refer to maximalist approaches, including lexical polysemy (positing multiple senses for a lexical item), and grammatical polysemy (positing multiple exclusive[77] functions or uses for a grammatical item).

[77] Multiple functions may be performed by a sign that participates in a grammatical interlock, but these functions are not mutually exclusive, and they are part of the sign's invariant meaning (see Chapter 2).

CHAPTER 2. THEORETICAL FOUNDATIONS OF MONOSEMY

The goal of this chapter is to provide a theoretical foundation for minimalism or monosemy. To this end, I will consolidate influences and concepts that theorize the principles of monosemy. The first influence, Charles Ruhl, delineates lexical monosemy, but does not address what a minimalist approach to grammar might look like. Columbia School linguistics, the second influence, presents a minimalist approach to grammar, but does not generally address lexical analysis. In light of these theoretical considerations, I will propose a procedure for monosemic analysis based on the priorities and inclinations of monosemy, which can be applied to any lexicogrammatical feature.

Theoretical Influences of Monosemy

Charles Ruhl

Charles Ruhl's work on lexical monosemy comprises the first theoretical influence, as his is the first attempt to theorize a programmatic explanation of lexical monosemy.[1]

[1] See the following two key works for a representative account of his work: Ruhl, *On Monosemy*.; Ruhl, "Data, Comprehensiveness, Monosemy." The minimalist priority represented by monosemy has an unclear origin. While Ruhl was the first to publish a significant monograph with the word *monosemy* in the title, he was not the first to approach linguistic analysis as a minimalist. Two others are worth mentioning. First, William Diver's approach—which I will outline later in this chapter—attempts to discover a consistent or invariant meaning that accurately describes each linguistic sign in a language. Diver began to work out his theoretical approach in the 1960s, and thus the school of thought he originated constitutes a precursor to Ruhl's work. Ruhl at one point mentions the meaning–message distinction in reference to several Columbia School proponents. See Ruhl, *On Monosemy*, 33. For an

According to Ruhl's theory of monosemy, the lexicogrammatical meaning, or meaning potential of a sign, is a generalization of its meaning in all its contexts. I take "meaning in context" to be the sign's apparent contribution to the contextual messages it contributes to. If one generalizes what is common to all contextual messages that include a sign, so Ruhl articulates, one has identified the lexicogrammatical meaning of the sign, because the sign is the common denominator between all of its uses in a corpus. Ruhl describes this insight as the comprehensiveness principle:

> The COMPREHENSIVENESS PRINCIPLE: The measure of a word's semantic contribution is not accuracy (in a single context) but comprehensiveness (in all contexts).[2]

Providing a method to actualize this comprehensive approach, Ruhl's hypothesis in *On Monosemy* is twofold: (1) "A word has a single meaning," and (2) "If a word has more than one meaning, its meanings are related by general rules."[3] As he explains, "An initial presumption of monosemy does not question the existence of multiplicity; rather, it implies that current analyses find too much multiplicity too easily, and so provides a means for testing each particular claim."[4] This initial presumption Ruhl terms a "monosemic bias."

---

outline of Diver's theory, with a description of his originality, see Huffman, "Linguistics of William Diver." The second minimalist linguistic analysis has already been mentioned, Stanley Porter's *Verbal Aspect in the Greek of the New Testament: With Reference to Tense and Mood*. Porter's approach seeks to explain the formal features of the Greek verbal system. For Porter (*Verbal Aspect*, 7), "formal" features are morphologically-based. Porter (*Verbal Aspect*, 13, 75) thus identifies morphological categories, and attempts to explain as much data as possible with little to no exceptions by postulating a single, consistent meaning for each grammatical form. *Verbal Aspect* was published in the same year as Ruhl's *On Monosemy*, and thus these works both represent important though apparently independent advances in minimalist linguistics. Furthermore, while Ruhl addresses lexical monosemy, Porter's work focuses on grammatical monosemy. Though Diver had originally analyzed part of the Greek verbal system, Porter's analysis has—unlike Diver's—stood the test of time. See discussion of Diver's analysis in Reid, "Quantitative Analysis." Ultimately, while I will focus on Ruhl's work on monosemy, particularly his accounts of comprehensiveness and abstraction, his work was not unprecedented.

[2] Ruhl, "Data, Comprehensiveness, Monosemy," 172.

[3] Ruhl, *On Monosemy*, 4.

[4] Ruhl, *On Monosemy*, 5.

While the term *bias* seems to imply that monosemy is a theoretical position, a predisposition toward the data—and there is some truth to this—what Ruhl actually advocates is a method of identifying a word's semantics. "This Monosemic Bias," he explains, "implies a priority of research: a full detailed exploration of a word's variant range before considering its possible paraphrase relationships with other lexical items."[5] The bias he speaks of, then, is actually a method of analysis: "Assume that any meaning that is not present in all contexts of a word is not part of the word's inherent meaning; if this fails, assume distinct meanings are figuratively related."[6] That is, Ruhl argues that lexical analysis should proceed from the assumption of monosemy, attempting to explain observed variations in meaning by positing pragmatic mechanisms at work in actual utterances.[7] An example will be useful.

Pragmatic Factorization of Ἀρχή

The noun ἀρχή is assigned seven senses in BDAG:[8]

> 1. The commencement of something as an action, process, or state of being, *beginning*
> 2. One with whom a process begins, *beginning*
> 3. The first cause, *the beginning*
> 4. A point at which two surfaces or lines meet, *corner*
> 5. A basis for further understanding, *beginning*
> 6. An authority figure who initiates activity or process, *ruler*, *authority*
> 7. The sphere of one's official activity, *rule*, *office*

---

[5] Ruhl, *On Monosemy*, 4.

[6] Ruhl, *On Monosemy*, 234.

[7] For Ruhl, the term *pragmatic*, like *semantic*, is a moving target. At times, he seems to be saying that semantics is concerned with invariant meaning at some rank (word, word group, sentence, paragraph, or discourse), whereas pragmatics concerns meaning beyond the rank being analyzed. At other times Ruhl describes semantics as intralinguistic meaning and pragmatics specifically as extralinguistic meaning. See Ruhl, *On Monosemy*, 17.

[8] Ruhl frequently uses the treatments of dictionaries as an entry point into finding a common denominator.

Each of these senses can be tentatively related to a general sense of INITIATION,[9] whether that be temporal as in one, spatial as in four, or mental as in five. These uses show that ἀρχή does not carry within itself the more concrete distinctions of spatial–non-spatial, temporal–atemporal, mental–physical; rather, ἀρχή can relate to any of these, but only by virtue of co-text and context. Moreover, the senses offered in BDAG exhibit several notable uses of metonymy. Senses two through three can be understood as metonymic specification, more concretely specifying the beginning as the entity who causes the beginning. The metonymically-shifted meaning of the causative entity can be further metonymized to refer to the role associated with the entity—the office or rule. According to the nuances reflected in senses two and three, furthermore, this beginning is not marked as either *the* beginning or simply *a* beginning. In the spatial beginning of four we see a similar imprecision: the corner appears to the observer to be the place where something begins; it is *a* beginning, while not necessarily constituting the only or first. Thus, these observations can be restated as pragmatic mechanisms:

> a) SPATIALITY CONDITION: ἀρχή does not semantically distinguish between spatial and non-spatial meaning. Whether the term refers to a spatial meaning is determined pragmatically.
>
> b) TEMPORALITY CONDITION: Context is also required to distinguish between temporal and atemporal meaning. The temporality of the sense is determined pragmatically.
>
> c) PHYSICALITY CONDITION: ἀρχή must be contextually modulated to distinguish between mental or physical senses. Mental or physical meaning is determined pragmatically.
>
> d) ἀρχή can be metonymically extended to refer to the causative entity who initiates a process, or further generalized to the causative entity's role. These figurative extensions are determined pragmatically.

[9] On the use of small caps see p. 6, n. 9.

What I am doing is simply noting the variation in meaning that is evidenced among the various senses and describing those variations as pragmatic effects. The rationale behind this move is simple: if ἀρχή can potentially mean any of these various senses, it does not convey any one of them specifically; rather, the variation is best explained with reference to pragmatic conditioning—that is, the effect of co-text and context—or to figurative extensions of more concrete senses.

An important question, at this point, is where the pragmatic conditions come from, and how many one is allowed to posit to explain the data, and why. Ruhl offers an explanation:

> By now, some readers may have the uneasy feeling that pragmatic rules are beginning to proliferate without restraint. A good theorist is likely to wonder where it will end. But linguists who expect to find a limited number of pragmatic rules, or rules typically with only a few options, are mistaking the task; they are trying to make pragmatic rules into semantic rules. Listing pragmatic rules may be an infinite task: all knowledge of the world can be included. In dealing with language, we are used to expecting only a few possibilities; but pragmatic rules can be much more various, since our full knowledge is much more various. This difference between semantic and pragmatic (between what is relatively closed and what is relatively open) is a key part of this book's argument. A pragmatic rule is justified if it accounts for data, and as fully as possible.[10]

The first step in Ruhl's method is to outline the variation—even the polysemy—of a word as it is actually used in utterances: what kind of variation in meaning can be observed? Here I have assumed that BDAG offers a relatively thorough account of the variation ἀρχή exhibits, though it is likely that BDAG has underestimated the amount and scope of this variation.[11] The boundaries between senses are subjectively assigned, but the semantics of the word, according to Ruhl's minimalist notion of semantics, are

---

[10] Ruhl, *On Monosemy*, 36.

[11] As Ruhl (*On Monosemy*, 173) says, "I am arguing that we cannot discover the sense(s) of a word without fully gauging its applications. Dictionary definitions, especially of common words, highlight a few applications, which implicitly deny a unified sense, and thus underestimate the full range of applications."

more objective—though not totally objective, of course—by virtue of the fact that one must identify those pragmatic effects that are not common to "all" contexts of a word. One cannot be objective when identifying the contextually modulated message of an utterance, because there are too many variables to consider, and the reader brings numerous assumptions to the text. Only after this diversity in meaning is noted can a line be drawn between a word's semantics and its pragmatic modulations. As Ruhl explains, "the boundary of semantic and pragmatic cannot be drawn generally in advance, but must be discovered, word by word, phrase by phrase, even sentence and discourse by sentence and discourse. No reasonable theory can evade or postpone this necessity."[12] As for ἀρχή, perhaps INITIATION does capture the semantics of the word; perhaps it does not. What it does attempt is the identification of a unifying factor that draws together all of the various senses of ἀρχή without overspecifying or resorting to etymology or "original meaning." I leave it to the reader to evaluate the preliminary semantic definition offered in this brief example.

To summarize: Ruhl ascertains a lexeme's semantics by pragmatic factorization.[13] Pragmatic factorization explains variation, rather than simply recording it. By positing pragmatic mechanisms, Ruhl attempts to account for how a stable semantic core of meaning is modulated by context.

Abstraction in Ruhlian Monosemy

Along with this method of analysis, Ruhl offers a well-developed theory of abstraction in language. Not only are words characterized as more or less abstract in their semantics,

[12] Ruhl, *On Monosemy*, 71.

[13] Ruhl, *On Monosemy*, 71. I have introduced the description "pragmatic factorization" for clarity. Ruhl calls this method a monosemic bias.

but the entirety of a language is one continuous cline from abstraction to concretion—a lexicogrammatical system that stretches from the semantics of syntactical and grammatical classes down to the concrete and pragmatic word and phrase classes, and even beyond to sentences and discourses. According to Ruhl, "The problem is that we have never clearly understood what we mean by 'abstract.' We think of it as the opposite of 'concrete,' but in fact it is also the superordinate."[14] Thus concrete words are subordinately related to abstract words; lexical classes are subordinately related to grammatical classes, and so on. This equation of abstraction and superordinality has several implications for Ruhl's notion of monosemy, including (1) the systematicity of language, (2) the closed–open continuum, (3) intralinguistic semantic fields as the structure of a language, (4) the syntax–semantics–pragmatics continuum, and (5) the modularity of meaning.

First, on Ruhl's view, language is thoroughly systematic. Language is a hierarchical system of systems. These systems are similar to the structuralist conception of paradigms. At the bottom of the hierarchy, the systems are "weak" systems. That is, they are more subject to change and often interact with other weak systems. In weak systems, the individual units that make up each system are usually relatively concrete words, such as proper names. Understandably, it is difficult if not impossible to outline a paradigm of the relevant choices for proper names in any language, because, as Ruhl argues, this paradigm is a weak system and is relatively open and mutable, especially between different speech communities or speakers. The systems that comprise the top of the hierarchy are more abstract systems. These can more easily be outlined as paradigms of choices, and they are less mutable than weak systems (though certainly not

[14] Ruhl, *On Monosemy*, 71.

immutable). An example would be the Greek verbal aspects; there are only three aspects, and the selection of one implies the non-selection of the others. This type of systematic perspective is useful for monosemy, as it allows the postulation of a hierarchical structure to language.

Second, this hierarchical system of systems, for Ruhl, exhibits a continuum from closed to open classes.[15] Strong systems near the top of the hierarchy are realized by closed classes. At the very top of the hierarchy are the most abstract classes of the language—this is where Ruhl locates syntactical categories. A closed class, in other words, is a restricted category in the language, including only a small number of linguistic signs. Members of closed classes are related by clearly distinguishable paradigmatic values (think again of the three aspects in Greek). By contrast, relatively open classes occupy the bottom of the hierarchy. Open classes also have paradigmatic value, but this value is less clearly delineated. Louw and Nida's semantic domains represent relatively open systems, since the paradigmatic contrasts between members are substantiated on the basis of extralinguistic knowledge, not by observable features such as a shared inflectional paradigm. Accordingly, open sets are difficult to substantiate insofar as they are relatively mutable and engage subjective judgements about semantic information.

Third, Ruhl conceives of the structure of a language as comprising a set of intralinguistic semantic fields.[16] This point is one of Ruhl's most intriguing

---

[15] Ruhl is certainly not alone on this point. For example, see Halliday and Matthiessen, *Halliday's Introduction*, 64.

[16] Ruhl's view appears to be closely related to Jakobson's views. As Battistella, *Markedness*, 19. explains it, "Language is a hierarchically organized system of signs structured both by general principles of sign systems and by specific principles of linguistic sign systems," with a primary division between phonology and semantics, and semantics being divided into grammar and lexis. However, Jakobson's

contributions. I will use Ruhl's own example, colours in English.[17] Ruhl argues that "a superordinate and its hyponyms is [*sic*] a SEMANTIC FIELD."[18] The word *colour(ed)*, for example, is a semantic field. It only potentially refers to any particular colour. The hyponyms of *colour(ed)* include at least the following terms: *black*, *white*, *red*, *yellow*, *green*, *blue*, *brown*, *pink*, *purple*, *orange*, *grey*, *maroon*, *violet* . . . *cinnamon*, *lime*, etc. In other words, if an English speaker calls something *colour(ed)*, they might mean any colour. Yet these hyponyms, claims Ruhl, actually constitute, within the semantic field, a continuum "ordered by superordinality, from the most abstract to the most concrete."[19] *Black* and *white* cover the entire spectrum of the field *colour(ed)*. The primary colours are more specific and cover less of the field per term. The secondary colours, in turn, are likewise more specific than the primary colours and, while still covering essentially the entire field, cover less of the field per term. The idea is that more specific terms in a semantic field represent more specific ways of cutting up the semantic substance of the superordinate term. However—and this is the key to my appropriation of Ruhl's idea—each semantic field is an observable sign or morphologically related set of signs in the language.[20] "The full vocabulary of a language is a semantic field," explains Ruhl, "rooted in closed (minor, grammatical) classes. Each open (major, lexical) class of

---

linguistic classes do not appear to be the vocabulary and syntactic classes of a particular language, as I read Ruhl.

[17] See Ruhl, *On Monosemy*, 175–77.

[18] Ruhl, *On Monosemy*, 174. In Ruhl's terminology, the hyponym–hypernym distinction is the same as subordinality and superordinality.

[19] Ruhl, *On Monosemy*, 177.

[20] Actually this is not quite true, due to the exception of syntactical categories. For Ruhl the most abstract classes are the syntactical, and language universals occupy some position of even more remote abstraction. However, given the Columbia School's commitment to sign-based identification of categories discussed later in this chapter, I will not assume that there are syntactical categories, much less linguistic universals at the top of this linguistic continuum.

words roots in primary subclasses."[21] Thus, for example, all verbal classes or processes, for Ruhl, are hyponyms of what he calls the "primary verbs" of English—*be*, *do*, *have*, and *go*. The primary verbs, on Ruhl's view, are hyponyms of the part of speech itself, VERB.[22] "Semantic 'categories'," he claims, "are hyponyms of syntactic categories, and pragmatic categories are hyponyms of semantic."[23]

Fourth, Ruhl posits, likewise, a syntax–semantics–pragmatics continuum. That is, "Syntax and semantics are . . . a linguistic continuum," and pragmatics, which comprises extralinguistic factors, "relates to semantics as a more concrete extension of a continuum."[24] Because co-textual and contextual modulation, i.e. pragmatics, are part of this continuum, the vocabulary is relatively abstract in comparison to the word groups, clauses, and clause complexes that can be constructed in the language. Ruhl claims that larger units, such as "phrases/sentences/discourses will be more concrete" still.[25] In other words, every linguistic unit—whether morphological classes, or even larger units such as syntagms (to use Saussure's terminology), or even the largest units such as discourses—can be located on a scale of abstraction from the most abstract or potentially meaningful units to the most concrete or actually meaningful. While Ruhl sees syntax as superordinate to vocabulary, actual syntactic arrangements of words are more concrete than the words themselves.[26]

---

[21] Ruhl, *On Monosemy*, 236.

[22] Here is another point where I will not be able to assume one of the categories assumed by Ruhl, that is, the category "part of speech." However, I also cannot rule out such a category *a priori*. The hierarchical structure of linguistic classes is intact regardless.

[23] Ruhl, *On Monosemy*, 129.

[24] Ruhl, *On Monosemy*, 183.

[25] Ruhl, *On Monosemy*, 183.

[26] On this point, Ruhl's notion of syntax seems to be that of his transformational-generative leaning. If one adopts the alternative to syntax presented by the Columbia School (see below), then superordinate syntactic classes are unnecessary, and observable signs provide even the most abstract

Fifth, on Ruhl's understanding, meaning is modular, or better yet, intermodular. He sees both lexis and grammar as fundamentally the same kind of phenomenon—linguistic classes. The difference between them lies in the relative abstractness or concreteness of each particular class. Ruhl does not postulate the existence of two different kinds of signs, but rather a gradient difference among all signs. According to Ruhl, while many words in a language will be highly abstract in their semantic content, incapable of being paraphrased, these abstract words occupy the more abstract regions of the language's hierarchy. He explains, "While all words are abstract, remote from the flux of reality, some words are less remote than others. There should be a cline of words from less remote to more remote."[27] Therefore, even within the lexicon, not all words can be defined according to the same principles. He distinguishes, on the one hand, abstract words like *of*, with a high "dictionary status," but a low "encyclopedia status."[28] Such words are highly "systematic" and have meaning only in relation to other words on the same level of abstraction, because they belong to closed classes. These closed-class words have very little, if any, meaning in relation to reality. In other words, you cannot point out an *of* or a *than* while you are walking down the street. On the other hand, some words are less systematic and more concrete: nomenclature words, like *tiger* or *ice*. These words have a low dictionary status, which means they have very little strictly lexicogrammatical meaning, and a high encyclopedia status, which means they can be readily referred to things in the real world. These words are essentially "nomenclature," or names of things.

---

classes. In this case, perhaps the signs that comprise case endings or other inflectional categories constitute the most abstract classes, although more theorizing needs to be done before this claim is made.

[27] Ruhl, *On Monosemy*, 183.

[28] Ruhl, *On Monosemy*, 182.

In essence, what we generally think of as "meaning" is in Ruhl's theory a mixture of both semantic and pragmatic factors. Thus, the lexicogrammatical meaning of a concrete word like *tiger* will more closely resemble the contextual messages it is used to communicate. On the other hand, the lexicogrammatical meaning of an abstract word like *if* will not closely resemble its contextual messages.

Often, a word's specifically semantic contribution, as Ruhl understands it, is so abstract that it cannot adequately be put into words. As Ruhl puts it, "What is semantic is essentially a word's place in its field"—or the system of choices on its level of abstraction, controlled by superordinate terms and grammatical choices—"and the more primary [i.e. abstract, systematic] a word is, the more it will vary accordingly to its varyingly relevant contrast partners."[29] Ruhl's claim, then, is that certain words can, and should be defined, while other words should rather be described in functional terms, or by some other means.

Again, this is because not all words are as general in their lexicogrammatical meaning as some of the specific examples that Ruhl analyzes. While certain verbs he looks at, such as *bear*, as well as, for example, English prepositions, have relatively ineffable lexicogrammatical meaning, some words are less common than prepositions, such as *ice*, which he defines as "water frozen solid." *Antidisestablishmentarianism*, due to its morphological complexity, its infrequent and restricted distribution, its undoubtedly restricted paradigm, and its lack of productivity (or perhaps fully-exhausted productivity), is readily definable because its lexicogrammatical meaning is easily

[29] Ruhl, *On Monosemy*, 179.

referred to some reality that actually occasions the word's existence in the first place.[30] Put differently, without antidisestablishmentarianism, *antidisestablishmentarianism* would not be part of the English lexicon. This is not to say that the word directly mirrors reality, only that it can be readily defined according to pragmatic factors, because it is modulated by a large amount of pragmatic information that is common to every use. Every word exists on a continuum and includes both semantic and pragmatic information when it actually occurs—some more, and some less. This is the intermodularity of meaning; every sign is necessarily associated both with some semantic and some pragmatic meaning, in inverse proportions relative to each sign's place in the hierarchy.

To conclude this section on abstraction, Ruhl's novel theory of language is best captured in his own words. He says,

> I propose that a language is an implicationally ordered system, rooted in highly abstract, closed, strongly (mutually) systematic classes, diversifying into less abstract, more open, weakly (modularly) systematic classes. The (inclusive, more concrete) definition of each word is a mix of semantic and pragmatic information, a combination of both its status within the linguistic system and the 'real world' properties of the word's references.[31]

Appeal for Biblical Studies

In Chapter 1 I argued that monosemy provides a better basis for empirical analysis. There are at least four further reasons Ruhl's method should be appealing for biblical studies. The first is its theoretical flexibility.[32] Ruhl's view of lexicogrammatical

---

[30] The reality that actually occasions a word, however, is actually a diachronic insight, and in most cases is unavailable for an epigraphic language.

[31] Ruhl, *On Monosemy*, 182.

[32] Porter, *Linguistic Analysis*, 1–2; Black, *Linguistics for Students*, 2; Silva, *Biblical Words*, 21–22. Unfortunately, many biblical scholars have been hesitant to adopt the insights of modern linguistics. A typical complaint offered as an explanation for this hesitation among biblical scholars is the number of competing theories. However, to offer this excuse is to assume that there can only be one accurate

meaning is theory-independent as regards monosemy itself. That is, one can attempt to identify what every instance of a lexeme holds in common regardless of the overarching framework within which one works. By contrast, polysemy has been described as "theory-dependent, since it remains unclear how strongly meanings should be allowed to differ so that they can still be considered to be related and vice versa."[33] In other words, the difference between polysemy and homonymy is up for debate.[34] Biblical scholars should welcome Ruhl's proposals, as his view of lexical meaning takes into account a variety of different perspectives. One of Ruhl's themes is that "the subject matter we are considering is so overwhelmingly complex that linguistic approaches/theories/schools that appear sometimes to be irreconcilable (and thus by scholarly obligation at war) may simply be in different places of a huge forest, or at different parts of the elephant."[35]

Second, Ruhl's methodological proposal, the monosemic bias, provides a clear, goal-oriented approach to analyzing linguistic signs. While word studies are notorious for overdetermining the meaning and theological import of specific lexemes, Ruhl's approach directs us to work backwards from the diversity to an underlying, parsimonious semantic unity within words.

Third, Ruhl's approach enables a more circumspect use of the lexical tools already available to biblical scholars by means of pragmatic factorization. When a word entry in BDAG, for example, lists multiple senses, one should first seek to factor out contextual modulations that contribute to the variation of meaning that is being

---

depiction of language, only one useful framework. Contrary to that assumption, multiple perspectives are in fact desirable, due to the complexity of the subject matter, as well as the unique insights that different theoreticians bring to the study of language.

[33] Lappenga, *Paul's Language*, 20. Cf. Pethö, "What Is Polysemy?," 178.

[34] Pethö, "What Is Polysemy?," 181.

[35] Ruhl, *On Monosemy*, 236.

observed. Similarly, when Louw and Nida assign a single lexeme to multiple domains of meaning, as another example, one is clued into the possibility that there may be an explanation of this polysemy within the contexts of a word's usage rather than within the semantics of the word itself. In short, Ruhlian monosemy allows us to approach our existing tools and achievements with a minimalist priority.

Finally, when it comes to studying "dead" languages, mentalistic construals of meaning can only take us so far. Ruhlian monosemy does not exclude the fact that meaning takes place in the mind—in fact, Ruhl assumes as much. But monosemy does not require an analysis of the mind or the mental processes of ancient Greek or Hebrew people in order to describe the semantics of their respective lexicons. Since we cannot ask native speakers what they meant, we can use Ruhl's approach to do the next best thing: we can analyze what was said in an empirically responsible way.

Summary

Ruhl's theoretical development provides a robust approach to monosemy. The standard of lexicogrammatical meaning is comprehensiveness within a corpus. The method of arriving at an invariant meaning from diverse uses of a sign is the monosemic bias, i.e. pragmatic factorization. By positing pragmatic mechanisms to account for the modulation of a sign's invariant meaning, one can factor out the effects of co-text and context. Ruhl's monosemy also incorporates a theory of abstraction that models language as an implicationally ordered hierarchy. On this view, context and co-text serve to specify and concretize the abstract invariant meanings. Unfortunately, Ruhl's work focuses on lexical semantics, without providing an explanation for how to

conceptualize grammatical classes, apart from the fact that they comprise highly abstract linguistic classes.[36]

Columbia School Linguistics

William Diver, the founder of the Columbia School, had a vision of linguistic theory that resembled Descartes's notion of rationality: everything must be built from the ground up without taking anything for granted—at least, so far as descriptive categories are concerned.[37] This bottom-up approach represents a minimalist approach to the formulation of categories for a language. Columbia School theory provides a complementary perspective to the monosemy of Ruhl, by providing a theory of grammar compatible with his lexical theorizing. In what follows I will summarize the main tenets of Columbia School linguistics: (1) observations, orientations and hypotheses; (2) the meaning–message distinction; (3) the paradigmatic and syntagmatic relations of meanings; (4) Saussurean anti-nomenclaturism; and (5) the polemical stance towards traditional grammar.

---

[36] Ruhl claims to fall within the transformational-generative tradition, and thus likely shares its theory of grammar.

[37] However, the richly contextualized messages of actual texts are taken to be more-or-less self-evident by proponents of this school. The analyst cannot truly start from scratch in the sense that no assumptions are made whatsoever about the language. When one reads a specific text, one considers the textual data under the assumption that he or she has rightly understood the message of the text. Typically, when reading a classical language like Hellenistic Greek, a reader brings with them the traditional or received interpretations of texts. Yet sometimes we find that we have misunderstood these texts, and thus the message we interpreted was the wrong message. Consider Diver's description of the hypothesizing process. He says, "Our first hypothesis about the meaning of the morpheme is likely to be based on some small number of fairly obvious examples, and we are likely to be able to see how a single meaning would cover these examples. From there on, we gradually expand the collection and modify the hypothesis as necessary" (Diver, "Theory," 73). When it comes to a dead language, what counts as a "fairly obvious" example? In reality, this obstacle can only be addressed incrementally. Even if certain highly debated texts are misread, the process of hypothesizing and testing meanings on the basis of a sign's comprehensive usage will nevertheless provide a useable starting point for analysis. Recall the fact that hypotheses, in scientific analysis in general, are only deemed laws or theories when they are consistently supported by analysis; there is always, however, the necessity of revisiting a hypothesis in light of new or reconsidered data.

Observations, Orientations, and Hypotheses

According to Diver, the aim of linguistics is to solve problems identified by observation.[38] Every analysis, therefore, begins with observation, and ends with the validation of a hypothesis. When analyzing spoken language, the observations are the sound waves, and when analyzing written language, the observations are the morphemes. Why sound waves? Sound waves provide an inductive control on the observations. The analyst observes the unbroken flow of text and, from the stream of speech hypothesizes units of analysis on the basis of recurring patterns. When analyzing written text, we cannot observe the sound waves, but we can nevertheless hypothesize units of analysis based on observed patterns. In Columbia School thinking, these observations constitute the data of linguistics. Analysis thus proceeds on the basis of questions like, "Why did the speaker use these forms, and why do the forms get distributed in this way?" The problem that requires explanation, on this approach, is the distribution of morphemes. This is admittedly a limited scope of analysis; the goal is not to identify universal aspects of language or the inner workings of the human brain, but rather to furnish testable hypotheses that explain non-random distributions of signs.

In Diver's theory, the explanation of observations is like a coin with two sides. On the one side, the distribution of signs is motivated by extralinguistic factors, which Diver calls orientations. For example, a speaker may be trying to describe a real-life phenomenon, and thus an extralinguistic referent motivates the use of language in a particular way. However, on the other side, there must be something about the signs that, from an intralinguistic perspective, motivates their non-random distribution. The goal of the linguist, claims Diver, is to explain the distribution of signs by hypothesizing

[38] This summary is based on Diver, "Theory."

meanings for those signs that connect the observations to the orientations. The meaning of a sign, therefore, is a hypothesis that explains why it is used to accomplish certain communicative goals.

Linguistics, accordingly, takes the form of bottom-up theorizing. Theories or solutions explain the motivating orientations (which in regard to semantics can be derived from characteristic human behaviour) of speakers.[39] Orientations motivate the distributions of signs identified in the observations, and the two are connected by hypotheses about the meanings of linguistic units. In other words, speakers use linguistic signs to achieve their goals, in accordance with motivating orientations. The analyst, therefore, offers hypotheses explaining why particular linguistic signs and not others are used toward these ends. A message is composed by a speaker using particular signs, which are communicated as phonemes and ultimately as sound waves.

In Diver's theory, therefore, there are *observations*, *orientations*, and *hypotheses*. The orientations motivate the use of particular morphemes, which are the observations, and the hypotheses explain why those morphemes are routinely chosen to accomplish the task. In other words, in Columbia School linguistics, meaning is the vehicle for explanation of the observations.[40] The linguist must ask, "Why does a given morpheme accomplish a communicative goal?" The answer, on a Columbia School view, is "Because of its meaning." The meaning is a causal connection between observations and orientations. However, this meaning is only hypothetical. It is a falsifiable attempt at

[39] It may be worth exploring how "Characteristic human behaviour" in Columbia School theory intersects with Relevance Theory—Relevance Theory describes the motivations for language from the human side. See Clark, *Relevance Theory*. For analysis using both monosemy and Relevance Theory, see Lappenga, *Paul's Language*.

[40] Hence the collection of essays, *Meaning as Explanation*.

explanation. It is a metalinguistic account of the motivations behind the use of a morpheme.

A possible objection is that the hypothesis has no corollary in actual linguistic usage. That is, as Diver observes, "Speakers are behaving as though they are operating with a particular network of particular hypotheses"—that is, Saussure's *langue*.[41] The hypothesized meanings are metalinguistic hypotheses, but something akin to them must be shared among all the practitioners of a language if the morphemes are to accomplish their tasks. This point is not insignificant; the meanings are part of a *shared* semiotic system that is observable by abstraction, not (simply) part of an *individual's* psychological processes. The system itself is something of a fiction, but the fiction can nevertheless be evaluated on the basis of its explanatory power in accounting for linguistic behaviour. The hypotheses—the meanings—claims Diver, are learned patterns of behaviour based on "the performance of others, particularly the relation between what people say and the social context in which they say it."[42]

Meaning and Message

Columbia School linguistics draws a strict distinction between meaning and message. As Huffman explains,

> A meaning is an actual unit of a language, a unit of linguistic *structure*. It is an encoded portion of a semantic domain, associated with a signal. A message, on the other hand, is not part of language; it is merely a *use* of language. It is the product of the hearer's inferring, or jumping to a conclusion about what the speaker's intent is. The meanings signalled by the speaker are only part of what goes into the hearer's calculation. Other information, coming from context and

[41] Diver, "Theory," 113.

[42] Diver, "Theory," 113. This quotation implies that social factors constitute motivating orientations. There is an interesting possibility of interface between Columbia School and Systemic Functional Linguistics here. Insofar as social and contextual factors may be generalized, they may be understood as orientations that motivate particular wordings.

> the hearer's general knowledge, also contributes to the resulting message, and analysis must constantly allow for this.[43]

Lexicogrammatical meanings, in other words, underdetermine contextual messages, because, as Diver explains, language is characterized by "economy of effort; that is, a general avoidance of the use of a greater degree of precision than is necessary for the accomplishment of any given task."[44]

Columbia School analysis, accordingly, only postulates as many signs as are needed to explain the distributions of morphemes. Thus the notion that signs themselves need to be hypothesized in order to provide explanations acts as an inductive control on analysis. As Otheguy explains,

> As soon as the distributions are explained, the motivation for the postulation of signs ceases . . . The positing of signs is thus in the Columbia School not an open-ended activity responding to every grouping that is possibly felt to have an identity of its own. Rather, it is a limited analytical enterprise that ends once the existing distributions are explained. When the presence of units in larger stable groups can be accounted for on the basis of the existing signs, the felt stability of the larger group is not in and of itself a motivation for postulating new signs.[45]

Therefore, a meaning describes an invariant semantic value associated with an observable sign, and serves to comprehensively explain the signs distributional pattern.[46]

The Paradigmatic and Syntagmatic Relations of Meanings

Diver's view of grammar includes two types of grammatical relationship.[47] First, paradigmatic relationships inhere between signs on a systemic level. Grammatical units

---

[43] Huffman, *Categories of Grammar*, 17. Note that Huffman's *meaning* corresponds to my *semantic value*, whereas Huffman's *message* corresponds to, among other terms, *pragmatic meaning*.

[44] Diver, "Theory," 44.

[45] Otheguy, "When Contact Speakers Talk," 233–34.

[46] Polysemic senses are simply an unnecessary elaboration on the underlying explanation, and already constitute an initial inferential jump from the sign to the sense on the basis of co-text and context.

[47] While Diver does not use this structuralist terminology, the categories of paradigmatic and syntagmatic relationships are useful for explaining his understanding of grammar.

form systems of meanings that divide up semantic substances via oppositions of inclusion or exclusion. For example, in Sanskrit, he explains, a semantic substance NUMBER is divided up into three exclusive oppositions, singular, plural, and dual. The oppositions are exclusive because they do not overlap in meaning. The choice of one, such as singular, excludes the others, plural and dual. By contrast, in ancient Greek there is a similar system at work, where a semantic substance NUMBER is divided up into three oppositions, singular exclusive from plural and dual, and plural inclusive of dual. Because the plural includes the meaning of the dual in ancient Greek, the opposition is inclusive. In either case, the choices in the system exhaustively divide up the semantic substance NUMBER. Systems, claims Diver, may also be integrated into interlocks, where multiple systems are signalled by one set of signs. Thus in Greek a single paradigm of case endings signals person, number, and case at the same time. Such interlocks are nevertheless monosemic because the signs in question consistently contribute a consistent lexicogrammatical meaning in every usage. The signs always signal those lexicogrammatical meanings, even when one particular distinction is not particularly relevant to a given contextual message.

Second, syntagmatic relationships inhere between lexical signs and grammatical signs. For Diver, lexical units are unorganized. Signal–meaning relationships are generally consistent for grammar, but not for lexicons. That is, while grammatical units of meaning are almost always monosemous, lexical units, Diver asserts, are almost always polysemous. While I will take issue with this distinction below and attempt to reformulate it on the basis of Ruhl's description of language, the distinction nevertheless figures prominently into Diver's account. On his view, grammatical units form *satellite*

relationships with lexical units, typically as clusters of grammatical units, which correspond to the traditional "part of speech" categories. The idea of satellite relationships provides an innovative means of linguistic analysis. According to this view, lexical units—i.e. "content" words—act like stars at the centre of solar systems, and grammatical units—i.e. "function" words—act like the planets that orbit a star. In *the fox had jumped*, *jump* is a lexical unit, and *had* and *-ed* comprise grammatical satellites that have clustered together around the lexical unit. It is the clustering of *had* and *-ed*, claims Diver, that produces the traditional part of speech category "verb." Thus, a lexical item like *jump* can potentially be either a noun, a verb, or some other part of speech, and only on the basis of certain satellite relationships does it come to have a particular part of speech. In this way, Diver undercuts the entire notion of "part of speech." In the Columbia School, part of speech categories are patterns of satellite relationships. *Walk* and *talk* are only *potentially* "nouns" or "verbs," and thus should not be categorized as one or the other apart from the modulating context of satellite relationships.

Saussurean Anti-Nomenclaturism

The arbitrariness of the sign is fundamental to Columbia School Linguistics. "Saussure's central insight was that a language is not a nomenclature," explains Otheguy. "A language does not simply provide phonological labels for an independently existing set of concepts, but articulates its own conceptual classification as it parses the phonological and semantic continua in its own individual way," and as a result, "No aspect of language can be analyzed starting from antecedently given, universal

categories."[48] In other words, universal categories of analysis, whether those be syntactical or semantic, cannot be assumed to apply to a given language. On this basis, Saussure diverged from the general tradition of grammatical analysis. According to Otheguy,

> Anti-nomenclaturism is at the heart of Saussure's profound and innovative view of language. From it springs Saussure's opposition to the tradition. The 'grammar of the Greeks and the French' is not for him wrong simply, or primarily, because it is prescriptive, but because it assumes so much about the language before studying it. Syntax is not rejected because it is incorporeal but because it relies on an *a priori* set of constructs. The sentence and the associated categories are set aside not because they are traditional but because they are antecedent to analysis and located in the observations.[49]

Semantic categories, then, cannot be assumed but only discovered as they are realized in the lexicogrammar. "Speech," in a Saussurean perspective, "offers the linguist no cross-linguistic units tangible enough to be inspected, much less recognized as intuitively obvious."[50] Rather, these units, these categories of both expression and content, must be discovered from the bottom up.[51]

Traditional Grammar

Columbia School theorists, in light of this Saussurean impulse, often represent their views in contradistinction to traditional grammar and a sentence-based view of meaning. Huffman explains this sentence-based view, saying,

> It is often forgotten that grammatical categories of syntactic analysis—subject, predicate, direct and indirect object, parts of speech, and of course, that most

---

[48] Otheguy, "Saussurean Anti-Nomenclaturism," 373. According to Saussure (*Course in General Linguistics*, 68), "The principle stated above [i.e., the arbitrariness of the sign] is the organising principle for the whole of linguistics, considered as a science of language structure."

[49] Otheguy, "Saussurean Anti-Nomenclaturism," 398.

[50] Otheguy, "Saussurean Anti-Nomenclaturism," 384.

[51] I do not take it that the semantic categories exist from the bottom up, in the sense of linguistic determinism. Rather we can only observe the operative semantic meanings that are signalled in the lexicogrammar, and this is done from the bottom up.

> fundamental of all categories, the Sentence itself—are motivated by a particular theory of language, the theory—whose roots lie in the Aristotelian common-sense view of natural phenomena—that the structure of language reflects the structure of thought, and that the categories of language must therefore correspond to categories of thought. This view has engendered a grammar based on the Sentence, and has encouraged the belief that the essential nature of language can be grasped through introspection about sentences.[52]

This view wrongly assumes, then, that contextual messages should be derivable from lexicogrammatical meanings.

As Otheguy explains, the Columbia School position is that the categories of traditional grammar cannot be regarded as observational categories, and they cannot, then, be "promoted to the status of explanatory constructs in the underlying grammatical system"—at least not in some *a priori* fashion.[53] Rather than treating categories such as "subject," "object," "complement," "agent," or "patient," etc. as testable hypotheses about the language, traditional grammar treats these categories as the units of observation, facts about language that are merely given.[54]

The Columbia School's quarrel, Otheguy explains, "is not with the analytical attempt to find structure, guided by the assumption that there is a structure to be found. The quarrel is with the assumption that a substantial portion of the structure is readily visible, and organized in terms of the constructs of the tradition."[55] Furthermore, while not objecting to the notion that languages may share features, "The objection is to assuming that universal features are there to begin with, and that they are the ones offered up by the Western grammatical tradition."[56] This quarrel motivates the Columbia School rejection of the sentence-based view of meaning, and with it the

---

[52] Huffman, "Purpose of a Grammatical Analysis," 209.
[53] Otheguy, "Saussurean Anti-Nomenclaturism," 374.
[54] As I will discuss in the next chapter, computational linguistics also tends to assume that these "word classes" are merely observations, rather than constructs that require substantiation.
[55] Otheguy, "Saussurean Anti-Nomenclaturism," 380.
[56] Otheguy, "Saussurean Anti-Nomenclaturism," 380.

pervasive polysemic analyses that attempt to account for the richness of contextual messages by attributing the interpreted meaning to the signs themselves.

Summary

Columbia School linguistics conceives of the linguistic task as originating with observations about the non-random distributions of linguistic signs. These signs are distributed on the basis of orientations, which represent the communicative motivations of speakers. Hypotheses serve to connect the observations to the orientations, by proposing meanings for the signs that account for their affinity with a given orientation. Diver proposed both a paradigmatic and a syntagmatic set of relations in which meanings engage. Paradigmatically, related meanings subdivide a hypothesized semantic substance. Syntagmatically, satellite signs cluster together around non-satellites to modulate the meaning of the non-satellite. Saussurean anti-nomenclaturism and a polemical stance towards traditional grammar respectively serve as the justification and foil for the Columbia School's meaning–message distinction. From this point on, I will adopt this distinction, but will refer to *lexicogrammatical meaning* and *contextual message* for clarity.

Conclusion

Columbia School theory presents a bottom-up and sign-based conception of grammar and linguistic analysis that is well-suited to empirical analysis. This approach, furthermore, complements the work of Ruhl, such that each contribute to theoretically grounding a minimalist approach. Ruhl argues that lexicogrammatical meanings can be established by pragmatic factorization. However, monosemy only brings us half of the

way towards an empirical model for linguistics. The Columbia School brings us the rest of the way by arguing that the categories of analysis must be strictly tied to verifiable observations about language.

Key Concepts in Empirical Analysis

In order to further lay the groundwork for an empirical model of monosemy, there are several key concepts that must be discussed. Markedness theory provides principled heuristic indicators for contrasting the meaning of linguistic signs. The distributional hypothesis formalizes the notion of semantic similarity. Corpus linguistics guides the formation of balanced and representative datasets, and computational linguistics allows for new methods of analysis. Quantitative analysis outlines the testing of measurable claims. Finally, based on the notion of lexicogrammar, empirical analysis is not solely applicable to either lexis or grammar, but to all linguistic classes.

Markedness Theory

Markedness theory represents a heuristic for identifying possible structural features of a language. Battistella enumerates three kinds of criteria for determining markedness: (1) distribution of elements, including breadth and frequency of use; (2) amount of structure, including morphological and grammatical complexity;[57] and (3) "elaboration

[57] The relationship between content and expression is arbitrary, but it nevertheless evidences some iconic features. What is important to keep straight is that markedness theory assumes a correlation between complexity, restriction, and markedness, on the one hand, and simplicity, less restriction, and unmarkedness, on the other. In this sense, language is iconic; you can "see" the difference between marked and unmarked terms. However, two qualifications should be noted. First, this correlation is not absolute, and sometimes the opposite is the case. Second, markedness inheres, according to Ruhl's theory of implicational semantic fields, within a semantic field. For example, the various declensions of λόγο- are more heavily marked than the stem, and are consequently more concrete forms (i.e. lower on the hierarchy) than it. However, it is not the case that every word more concrete than λόγο- will be more heavily marked than it. The iconic correlation holds, rather, within specified oppositional paradigms.

in terms of subtypes," which has to do with how the item is enumerated in terms of inflection and conjugation, etc.[58] According to Battistella, "No single diagnostic is a fully reliable indicator of marked/unmarked status for every opposition. We cannot count on all indicators pointing to the same conclusion." Nevertheless these indicators have an "analytic and heuristic (as opposed to algorithmic)" value.[59] Markedness so conceived is, I would argue, a fitting heuristic for empirical linguistic analysis. It is based on a Jakobsonian view of language that is a sign-oriented approach compatible with Ruhl's theory outlined above. Sign-oriented approaches "assume that the meaning of each sign underlies its combination possibilities in language production and contributes a crucial hint to the inferential process of message derivation in language interpretation."[60] Within this sign-oriented view, Jakobson treated markedness as a relational or differential overlay that relates the substantial contents of signs to one another. "In Jakobson's view," explains Gvozdanović, "markedness thus overlays the meaning contents which have been established through abstraction from contextually conditioned variation, as the common denominators of the signs' systematic contributions to the messages communicated."[61]

The notion that adding lexicogrammatical complexity adds content to an utterance can be understood not only in terms of clauses but also of words themselves. I have used the example above of *antidisestablishmentarianism*. Markedness theory, in the general way that I am applying the notion, entails that this word exhibits several

---

[58] Battistella, *Markedness*, 26.

[59] Battistella, *Markedness*, 45. For further discussion see *Markedness*, 26–67. I have left out some of Battistella's own categories for identifying markedness, notably prototypically and semantic indeterminacy.

[60] Gvozdanović, "Remarks on Sign-Oriented Approaches," 169.

[61] Gvozdanović, "Remarks on Sign-Oriented Approaches," 171, 178.

"atypical" features. On the one hand, it exhibits morphological or structural complexity. Each additional morpheme adds complexity and thus content. A corollary is that, on the other hand, the term exhibits distributional restriction. Distributional restriction should be understood as a more nuanced way of describing frequency; raw frequency of occurrence alone is not always an indication of content level, but, in general, less frequent terms are more significant than more frequent terms. Distributional restriction correlates with lower frequency, though two caveats are required: (a) there may be exceptions, and (b) as Battistella explains, "context may have the effect of reversing markedness relations."[62]

Markedness as I am describing it here is in some sense "protean," as Battistella at one point describes it, inasmuch as structural complexity and distributional restriction or frequency may both be made to fit any lexicogrammatical feature as well as larger utterances and even discourses.[63] At the same time markedness seems to be an assumed linguistic universal (i.e. a top-down categorization). However, it is not a top-down imposition on a language for several reasons. For one thing, I am not assuming, insofar as I am able, what the categories of the language will be before hypothesizing them; I am merely assuming that those categories will reflect varying degrees of content that roughly correlates with their structural complexity and distributional restrictedness. This latter assumption, I would argue, follows from the structuralist approach articulated by Saussure. Saussure does not argue that languages exhibit no structure, merely that the

[62] Battistella, *Markedness*, 5. Within a given discourse or corpus, markedness relations will reflect the actual dynamics of the text. For example, even though from a systemic perspective the perfective aspect of Hellenistic Greek is the least-marked aspect, in a given discourse this relationship may be reversed, and the imperfective or stative may become the unmarked aspect in such a context. However, the aim of monosemy is not to model all the variation that can or does take place, but rather to attempt to outline a baseline set of values on the basis of a broad representative corpus, and to account for specific instances in terms of their degree of typicality in relation to the broader systemic probabilities.

[63] See Battistella, *Markedness*, 6.

structure of a language is unique to that language. Markedness as I am using the term, then, is simply an extension of a sign-based approach, where complex signs can be understood as combinations or co-operations of multiple signs, with the obvious implication that multiple signs signal multiple lexicogrammatical meanings. As Battistella puts it,

> Language exhibits a congruence between the markedness of meanings (signifieds) and the markedness of expressions (signifiers). Markedness assimilation, understood broadly as the diagramming of values by values, provides a semiotic organization to the facts of language according to which units and contexts and expressions and meanings are patterned together in a single superstructure. This organizational superstructure supplements and interacts with the rules of grammar and usage and provides a patterning of value, a hermeneutic, which gives linguistic sign systems a sense of order and which provides an overall direction for structure and change.[64]

Markedness relations, as Battistella outlines them, can constitute either privative oppositions (i.e. the choice between the presence or absence of a property) or equipollent oppositions (i.e. the choice between property A and property B, where the choice of one implies the rejection of the other).

Markedness does not annul the arbitrariness of the sign. The sign is ultimately arbitrary: in its arbitrary form, it may be complicated, but it could still have been something entirely different. Hiraga argues that there is a continuum between iconicity and arbitrariness in a language.[65] Hiraga argues that "a difference in form cues a difference in meaning, but it does not cue the nature nor the degree of the difference."[66] In other words, there is some connection between content and expression, but this relationship cannot be predicted apart from the broad generalities that Battistella describes as markedness heuristics; the relationship between a sign and its form is in

[64] Battistella, *Markedness*, 7.
[65] Hiraga, "Diagrams and Metaphors," 19.
[66] Hiraga, "Diagrams and Metaphors," 13.

some sense iconic, but not in all cases. The relationship is arbitrary in that the sign could have been something else, but the relationship is typical—and again, there are certainly exceptions—in its *degree* of complexity and distributional restriction.

The Distributional Hypothesis

The hypothesis that meaning is reflected in distribution is not a new view. In 1954 Zellig Harris claimed, "difference of meaning correlates with difference of distribution."[67] That is, the meaning of linguistic forms is fundamentally entwined with co-text and context. Both intralinguistic (co-textual) and extralinguistic (contextual) factors are indispensable in the production of meaning. Harris's views are similar to Firth's notion of collocation, which has played a significant role in corpus linguistics in general.[68] In fact, Grief and Newman claim that use of corpus linguistics is essentially an exercise in distributional analysis, saying, "Corpus linguistics is inherently a distributional discipline," because, they explain, corpora only offer data regarding the following distributions of linguistic items: frequency and dispersion, collocations, and indexing (i.e. concordance tools).[69] According to this hypothesis, words that occur in similar contexts have similar meaning.

What is semantic similarity (or relatedness of meaning)? On the basis of the structuralist conception of meaning, where meaning is a set of differential values (or *valeurs*, according to Saussure), meaning can be either paradigmatic or syntagmatic. In other words, meaning is not simply an attribute of individual words or linguistic classes;

---

[67] Harris, "Distributional Structure," 156.

[68] Sinclair, "Collocation"; Halliday and Matthiessen, *Halliday's Introduction*, 59–60. Cf. Sinclair, *Corpus, Concordance, Collocation*.

[69] Grief and Newman, "Creating and Using Corpora," 274.

meaning is a product of those words in relation to one another. "Structuralists argued," notes Storjohann, "that language is a unique autonomous self-contained and relational system, with clearly recognisable stable structures exposing inherent semantic properties of lexical items that can be decomposed and described."[70]

Relatedness of lexicogrammatical meaning can therefore take one of two forms: signs sharing paradigmatic interchangeability are similar, and signs sharing syntagmatic proximity are similar. Interchangeability is evident when two signs appear in similar co-textual patterns, but they are not expected to collocate, since they are interchangeable. Co-textual proximity is evident when words do exhibit collocation. I will outline in the next chapter some of the tools for analysing distribution.

Corpus Linguistics and Computational Linguistics

Analysis of an epigraphic language is fundamentally a text-based task.[71] That is, corpus linguistics attempts to formulate or test generalizations about a language system shared among speakers on the basis of actual language usage. According to Porter, "Whatever else New Testament studies consists of, it is a text—and consequently language—based discipline."[72] Corpus data is our only source for linguistic data that native speakers would have found meaningful.[73] With this in mind, monosemy leverages corpus data to drive its claims about the structure of language and the lexicogrammatical meanings of specific signs.

---

[70] Storjohann, "Sense Relations," 249.

[71] Regarding the distinction between corpus-driven and corpus-based approaches, Halliday (*Computational and Quantitative Studies*, 173–74) notes that the distinction is a fuzzy one.

[72] Porter, *Studies in the Greek New Testament*, 51.

[73] Beavers and Sells, "Constructing and Supporting a Linguistic Analysis," 398–99. This fact, furthermore, motivates Porter et al., *Fundamentals*, to use extant sentences for translation exercises, rather than the dubious and often bizarre formulations used in other grammars, which are aimed at reviewing the grammar covered in each chapter, not necessarily at making sense. Cf. Porter, *Verbal Aspect*, 4.

Corpus linguistics demands methodological rigour in linguistic analysis, such that data is the final justification of a linguistic claim. Our introspective opinions about the way Greek functioned in the past might in some instances approximate the intuitions of actual language users, but the only way we can test our intuitions is in relation to corpus data. As Labov explains, "Good practice in the more advanced sciences distrusts most of all the memory and impressions of the investigator himself. As valuable and insightful as the theorist's intuitions may be, no one can know the extent to which his desire to make things come out right will influence his judgment."[74] Continuing, Labov claims,

> We all share a common failing as linguists: we try too hard to prove ourselves right. In this strenuous effort we inevitably overlook the errors concealed in our assumptions, built into our methods, and institutionalized in our formal apparatus . . . A permanent concern with methodology means living with the deep suspicion that we have made a mistake at some crucial point in the investigation.[75]

Labov therefore argues that historical linguistics: 1) must have "referenced and available data" that can be examined by colleagues; and 2) must be based on exhaustive use of these data.[76] "The basic fact that influences the methods of historical linguistics," Labov asserts, "is that they have no control over the selection of their data. Their texts are the results of historical accidents, and the art of the linguist is to make the best use of this fragmentary material."[77]

---

[74] Labov, "Sociolinguistics," 351.
[75] Labov, "Sociolinguistics," 368.
[76] Labov, "Sociolinguistics," 340.
[77] Labov, "Sociolinguistics," 340.

What is Corpus Linguistics?

Corpus linguistics has been described as "the study of language, based on 'real life' language use."[78] The data that corpus linguistics works with is recorded language, whether speech or text. When it comes to an epigraphic (i.e. "dead") language the best indicators of the speech that was used by users of the language is found in the every-day texts such as letters and receipts. However, we are unable to reconstruct the spoken language of the past, and thus must limit our scope of inquiry to written text. Hellenistic Greek offers thousands of extant texts, although these are not all digitized or even published. There is nevertheless enough available to implement corpus methodologies. Corpus linguistics is a natural fit for analysis of a dead language, as O'Donnell observes:

> Given that there are no living native speakers of the language, it is not possible for the linguist either to invent his or her own sentences (introspection) or to interrogate another speaker to produce and make judgments concerning sentences (elicitation). Thus the usual sources for studying linguistic competence are inaccessible, and the results of language use (linguistic performance) must be studied instead.[79]

Furthermore, corpus linguistics enables a bottom-up approach. "In essence," suggests Pang, "a corpus approach to the study of Koine Greek is as close to a bottom-up approach as one can get to theorizing, which I think can serve as a corrective or counterbalance to the top-down approach that is dominant in the study of Greek."[80]

Improving corpora of Hellenistic Greek will enable not only better answers to old questions, but also the formulation of new questions that were previously unimagined. For example, Pang's analysis seeks to explain the relationship between

---

[78] McEnery and Wilson, *Corpus Linguistics*, 1.
[79] O'Donnell, "Register-Balanced Corpus," 256.
[80] Pang, *Revisiting Aspect and Aktionsart*, 121.

Greek aspect and *Aktionsart*, whether they can be systematically related or not. Apart from corpus analysis, answering this question would involve ad hoc and subjective consideration of a handful of examples. But, he explains, "In my opinion, moving towards empirical observations of a larger body of text, although by itself a rather painstaking undertaking, is essential in the study of Koine Greek aspect."[81] Relying on a larger volume of data, Pang is able to infer generalizations about a grammatical feature, aspect, and is able to conclude that *Aktionsart* cannot be systematically formalized on the basis of patterns of usage, at least in the case of telicity. Corpus linguistics thus enables, if not objective analysis (which is merely an unreachable ideal), at least empirical analysis. Pang explains further that "Corpus-based analyses are a welcome remedy to this overdose of subjectivity, since they provide a way to verify claims regarding specific features and patterns."[82]

Corpus linguistics adopts a body (or *corpus*) of texts to analyze. This corpus ideally comprises a representative sample of the language being analyzed. A sample, however, cannot simply be an arbitrary collection of texts. As O'Donnell explains, a corpus is different from an archive: "An archive is a collection of texts with no particular organizational structure or selection criteria for the texts they contain."[83] By contrast, "A corpus . . . consists of a group of texts carefully selected in order to *represent* a specific language or sub-language."[84] O'Donnell further explains, "The content of the corpus is constrained by the desired use of the resulting collection."[85] If one aims to describe something about "Hellenistic Greek," one is describing a particular

[81] Pang, *Revisiting Aspect and Aktionsart*, 121.
[82] Pang, *Revisiting Aspect and Aktionsart*, 121.
[83] O'Donnell, "Register-Balanced Corpus," 262–63.
[84] O'Donnell, "Register-Balanced Corpus," 262–63.
[85] O'Donnell, "Register-Balanced Corpus," 262–63.

idealization that generalizes many different kinds of texts written between 300 BCE—400 CE.[86] "The language population available for sampling," O'Donnell claims, "is simply all the extant documents written in Greek between the fourth centuries of the two eras."[87] However, more specific research questions should focus on a more specified corpus, although the analyst should keep in mind that any generalizations made will always be relative to a given corpus. As long as this point is clearly understood and expressed, there are in theory no limits on the specificity or generality of corpus creation. Everything depends on the analyst's research question.

In order to derive baseline values "that will allow the investigation of the relationship between situational and lexicogrammatical features," biblical studies will need to develop "a representative corpus of Hellenistic Greek, organized according to sociolinguistic variables."[88] The size of such a corpus is not the central issue for many analyses.[89] As Pang explains, "it matters only that the corpus maintains its representativeness in terms of balance and diversity, meaning that the corpus includes enough material for each genre and language variety without over-representing particular combination(s)."[90] Representativeness is of fundamental importance when it comes to statistical analysis. "The basic idea" motivating Pang's compilation of a representative corpus "is to compile a corpus of Hellenistic Greek large enough to permit inferential statistical analyses—i.e. large enough that one can infer the validity of

---

[86] However, there is some debate about these dates. They should not be taken as absolute constraints, but merely a general starting place. See O'Donnell, "Register-Balanced Corpus," 262–63, n. 16.

[87] O'Donnell, "Register-Balanced Corpus," 262–63.

[88] O'Donnell, "Register-Balanced Corpus," 262–63.

[89] However, for many computational analyses, especially unsupervised machine learning—whereby an algorithm is used to automatically detect features in the data—having as much data as possible is critical, and for some applications even more critical than having a representative sample. I will further discuss this tension below in regard to Hellenistic Greek.

[90] Pang, *Revisiting Aspect and Aktionsart*, 121.

a particular hypothesis about Greek from an analysis of the corpus."[91] Pang presents the issue of compiling a balanced and representative corpus as the task of populating a matrix according to two criteria: degree of formality and genre. These two criteria were originally suggested by O'Donnell, due to the problematic nature of specifying external criteria for ancient texts.[92] Essentially, for Pang, these two criteria represent the *x* and *y* values in a table, and the goal is to fill in as many slots as possible without over-representing any particular part of the matrix.[93]

Ultimately, corpus linguistics relies on the idea that if we have enough real-life data, and the means to examine that data, we can derive our grammatical formulations in a more empirical manner. Furthermore, we can begin to imagine entirely new conceptions of grammar. "Now that there is so much language available on record," claims Sinclair, "our theory and descriptions should be reexamined to make sure they are appropriate. We have experienced not only a quantitative change in the amount of language data available for study, but also a consequent qualitative change in the relation between data and hypothesis."[94] Corpus linguistics, then, is a form of common ground between linguistics and more general scientific inquiry. As corpora and corpus theory have developed, however, an entire intermediate discipline has sprung to life in the interstice of scientific inquiry, linguistics, and computer science: computational linguistics. Advances in this field have opened up myriad new possibilities for quantitative analysis of language through natural language processing, as well as entirely new computation-driven models of language, such as vector spaces.

---

[91] Pang, *Revisiting Aspect and Aktionsart*, 121.
[92] O'Donnell, "Register-Balanced Corpus," 262–63.
[93] Pang, *Revisiting Aspect and Aktionsart*, 121.
[94] Sinclair, "Trust the Text," 9–10.

Computational Linguistics

The need for integrating computational methods of analysis into the traditional program of biblical studies is best illustrated by a negative example. Zgusta's *Manual of Lexicography* provides what can only be called a warning:

> Each prospective adept of the discipline should know that it is a decision of great consequence for him . . . The normal situation is that the lexicographer . . . should be fully aware that the realization of a lexicographic project takes many years, frequently some decades, and in the case of really big dictionaries, practically a good part of one's life; and more than that, he should also be aware of the circumstance that during those years, all or nearly all his time and mental capacity will be taken up by lexicography; so much will he be absorbed (sometimes against his own original decision) in the endless sequence of various little riddles presented by nearly each card and every entry not to speak about the endless practical problems connected with organization, money, the staff of excerptors and informants, etc., which arise every day.[95]

Lexicographers are enthusiastic, to say the least, about the possibilities of automated, semi-automated, and even unsupervised methods of lexicography that have become possible over the last few decades through the integration of linguistics and computer science.[96] Lexicography, though, is just one of the many branches of linguistics—applied and theoretical—that stands to benefit from the integrated use of computational approaches. Computational methods serve to accelerate the field by allowing fast implementation and adaptation of theories, methods, and datasets, as well as increasing scalability. As Zuidema and de Boer explain,

> Computers can be used to operationalize linguistic theories by implementing them as computer programs. This is done because linguistic theories may be so complex that their predictions can no longer be derived using verbal reasoning or pen-and-paper analysis. Moreover, turning a linguistic theory into a computer program forces the researcher to make her assumptions explicit. By running the

---

[95] Zgusta, *Manual of Lexicography*, 345–46.

[96] For a discussion of the Perseus "Dynamic Lexicon Project," see Bamman and Crane, "Computational Linguistics and Classical Lexicography." Note, however, that their Dynamic Lexicon relies on glosses from bilingual lexica and translated texts—and thus their paper is largely occupied with the task of word sense disambiguation.

> program, and studying its behaviour under a variety of circumstances, the researcher can test the theory against empirical findings and often discover unexpected consequences.[97]

Aside from faster implementation and increased scalability, computational linguistics, they note, can be used to empirically test hypotheses, due to the quantitative nature of the discipline.

Zuidema and de Boer divide computational models into a paradigm of approaches:[98] *predictive* or *explanatory* models form one axis of contrast, where the model either aims for accuracy in order to predict the behaviour of the real life language, or else aims to insightfully explain phenomena. *Mathematical* or *computational* models form a second axis, where phenomena are either formalized mathematically—as rule-governed phenomena—or else implemented in a programming language in order to be experimentally tested. *Internally* or *externally validated* models form the third axis: internal proof demonstrates that the results follow from the assumptions; external proof compares one model to another model, or to the real world phenomena themselves. Quantitative models also differ in their linguistic representations, with key examples being, in Zuidema and de Boer's terminology, symbolic, memory-based, statistical, and connectionist models.[99]

> 1. Symbolic models represent linguistic features through abstract symbols (i.e., "NP"). These models represent precisely the grammatical acceptability of constructions, but they are inflexible and do not handle variation well.
>
> 2. Memory-based models utilize all observable linguistic information, often mapping data in relation to one another so that semantic similarity is construed as linguistic proximity (i.e., similar words are "closer" to one another). These models can handle variation and large datasets, but it is difficult to model compositional or combinatorial aspects of meaning.

---

[97] Zuidema and de Boer, "Modeling in the Language Sciences," 422.
[98] See Zuidema and de Boer, "Modeling in the Language Sciences," 424–25.
[99] See Zuidema and de Boer, "Modeling in the Language Sciences," 431–33.

> 3. Statistical models track actual usage of language in order to predict and describe the behaviour of particular language terms. These models are more effective when combined with other approaches to provide richer information and better statistical foundations.
>
> 4. Connectionist models, also called neural networks, are modelled after the human brain. They are made up of nodes and connections (representing neurons and the axons that connect them) related by their relatively assigned weights. These networks are capable of incremental learning, and offer a distributed representation of meaning. However, distributed representations of meaning make it difficult to understand the kind of meaning being represented; more highly abstracted models, such as the symbolic, make it much easier to comprehend why certain connections exist in a model, and the significance of those connections.[100]

While parallels can be drawn between these types of computational models and the linguistic theories that motivate them, Zuidema and de Boer argue that "we need to move away from questions about the correct level or correct formalism: there is no single best choice that works for all research questions; rather, we need to compare parallel models and use simplifications that are appropriate for the particular issue we are studying."[101] Researchers, they argue, should pay attention to how their models integrate into other models, utilize these insights to consider whether a collection of models could be used to answer previously unanswered questions, and, ultimately, to approach the ideal linguistic model, which according to Zuidema and de Boer is an *explanatory* model with *external* validation.[102]

Summary

Corpus linguistics focuses attention on the quality and provenance of data being used for linguistic analysis. In order to formulate representative generalizations, the data itself

---

[100] Within this paradigm, vector spaces are both statistical and memory-based.
[101] Zuidema and de Boer, "Modeling in the Language Sciences," 433–34.
[102] Zuidema and de Boer, "Modeling in the Language Sciences," 436.

must first be representative. Computational linguistics enables a much larger scale of analysis. Together, these two tools provide crucial insight into empirical linguistics.

Quantitative Analysis

As Rasinger notes, quantitative linguistics is deductive in that it aims to test hypotheses. Qualitative data, by contrast, is inductive, deriving its theories from the research itself.[103] The key to quantitative analysis is that it enables a researcher to empirically test a hypothesis by generating data and formulating tests that are appropriate to the research questions being explored. Qualitative approaches analyze the structures and patterns in language to induce hypotheses; conversely, quantitative approaches begin with these hypotheses and formulate tests to deduce whether or not the hypotheses hold.[104] Accordingly, Columbia School linguistics, with its insistence on formulating testable hypotheses, adopts a quantitative focus, which requires some discussion here.

Columbia School theory demands empirical validation of hypotheses. As Reid explains, "If the distribution of the signals can be explained in terms of the contribution of their meanings to the messages being communicated, then the grammatical system is supported empirically."[105] This validation primarily assumes the form of quantitative analysis. As Diver explains,

> A hypothesis that a certain signal has a certain meaning, and that that meaning has a certain potential for various exploitations in the composing of messages, leads naturally to an expectation that certain other, closely related, characteristics of messages will appear in the same stretch of text. This in turn leads to the possibility of a quantitative evaluation of hypotheses. That is, it should be

[103] Rasinger, *Quantitative Research in Linguistics*, 10–11.
[104] Rasinger, *Quantitative Research in Linguistics*, 13.
[105] Reid, "Quantitative Analysis in Columbia School Theory," 116.

> possible to establish correlations between the meaning assigned to the signal within a grammatical system and other semantic features of the text.[106]

Within the Columbia School tradition quantitative analysis has undergone several discernible stages of evolution.

Reid traces the development of quantitative techniques within Columbia School analysis in the following way. Diver's original quantitative approach directly correlated meanings and messages. For example, in an analysis of aspect in Homeric Greek, Diver identified an asymmetry between fast-paced narrative and leisurely narrative, which served to support his hypothesis. The process involved the following: (a) Diver postulated a meaning, RELEVANCE, which is signalled by several tense-forms (see Figure 1); (b) Diver identified two different message-level features, fast-paced narrative and leisurely narrative; and (c) Diver measured the correlation between level of relevance and narrative type.

	signal	meaning	
Relevance	(1) aorist active	MORE CENTRAL	(or MOST RELEVANT)
	(2) aorist middle	LESS CENTRAL	(or MORE RELEVANT)
	(3) imperfect active	LESS PERIPHERAL	(or LESS RELEVANT)
	(4) imperfect middle	MORE PERIPHERAL	(or LEAST RELEVANT)

Figure 1. System of relevance in Homeric Greek.[107]

Diver found that a relevance of 1 (aorist active) comprised ninety percent of the relevance signs in the fast-paced narrative, whereas aorist actives comprised only a quarter of the leisurely narrative. Reid summarizes Diver's original quantitative approach saying, "In this first demonstration—which I argue is the purest form of quantitative evidence—Diver presents a direct correlation between particular signals and

[106] Diver, "Theory," 104.
[107] This figure is reproduced from Reid, "Quantitative Analysis," 118.

particular message types."[108] An alternative asymmetry could be identified in the correlations of lexical and grammatical items. For example, one might expect the lexical item *yesterday* to co-occur with the morpheme *-ed*. However, Diver's rationale for these asymmetries assumed that certain meanings were incompatible with other meanings, or else that speakers would always favour logically coherent rather than incoherent messages—neither of which can be sustained, argues Reid. The datum this approach could not explain was the presence of unexpected co-occurrences. In other words, what can account for a co-occurrence of two meanings that are not thought to be compatible. Likewise, why does something other than an aorist active occur in a face-paced narrative? Here Columbia School theory tended to introduce the notion of probability,[109] but a new method of correlation, communicative strategies, has proven to be a more satisfying resolution.

Rather than directly correlating asymmetries in meanings with asymmetries in messages, communicative strategies serve as an intermediate explanation. To explain an asymmetrical distribution, two sets of signals are measured which correspond to the same message fraction. For example, consider the hypothesized grammatical system of DEIXIS in Spanish (Figure 2).[110]

---

[108] Reid, "Quantitative Analysis," 119.

[109] According to Reid, "Quantitative Analysis," 126, "Predictions of statistical skewings are still to be deduced from meanings, but not by assessing their purely logical compatibility; rather, one estimates the likelihood that they will combine to produce a coherent message . . . This revision can now accommodate the fact that speakers sometimes combine meanings that would seem incompatible in the abstract."

[110] The original research can be found in García, *Theory in Linguistic Analysis*; García, "Practical Consequences," reprinted in Garcia, "Practical Consequences (1980)"; García and Otheguy, "Being Polite in Ecuador."

Deixis	*ella/ella*	HIGH DEIXIS	(+ FOCUS)
	le; la/lo		(+ NON FOCUS; + LESS/LEAST ACTIVE)
	se	LOW DEIXIS	(no Activity or Focus meanings)

Figure 2. Deixis in Spanish.[111]

In order to test this hypothesized system, Reid outlines how one moves from a message fraction, that is, part of the message, to a proposed communicative strategy that corresponds to the message fraction. From this proposed strategy, a prediction can be formulated about the skewing of signals whose meanings also correspond to the communicative strategy.

Communicative strategy:	The message parameter sex-of-the-referent is (one) basis upon which Spanish speakers choose between LESS and LEAST ACTIVE. In making this choice, they rely on the cultural stereotype that males are more active and powerful than females.	
Corollary:	To the extent that Spanish speakers choose between LESS ACTIVE and LEAST ACTIVE solely on the basis of the sex of the referent, relying solely on the cultural stereotype that males are more active and powerful than females, they will (always) choose LESS ACTIVE for males and LEAST ACTIVE for females.	
Meaning:	LESS ACTIVE	LEAST ACTIVE
Signal:	*le*	*(lo)/la*
Message parameter:	Male referent	Female referent
Prediction:	*le* will favor male referents over female referents in comparison to *lo/la*, and *lo/la* will favor female referents over male referents in comparison to *le*.	

	Male	Female
le	+	−
lo/la	−	+

Figure 3. Formulating a prediction on the basis of a communicative strategy.[112]

[111] This figure reproduced from Reid, "Quantitative Analysis," 131.

Communicative strategies are thus hypothesized causal factors that account for skewings, and they are tested by means of two separate sets of lexicogrammatical meanings that correspond to the same fraction of the contextual message content (such as the singularity or plurality of focus entities). "At present," says Reid, "a communicative strategy is a principle of choice between meanings, not signals. So without meanings, one has nothing between which to choose."[113] In other words, speakers do not choose between signals because of the signals; rather, they choose between signals because of their lexicogrammatical meanings. A communicative strategy is a claim that lexicogrammatical meanings are more likely to co-occur when they both correspond to the same part of the contextual message.[114] As Reid defines the term, "A *communicative strategy* is a principle of choice between meanings in a grammatical system as their semantic opposition applies to a specific notional parameter of the message."[115]

The idea of communicative strategies represented a shift in Columbia School thinking. As Reid explains,

> the notion 'communicative strategy' made us realize that speakers choose on the basis of some specific notional fraction of the message, not the message as a whole; and whenever a given fraction is operative, speakers choose in the manner dictated by the strategy one hundred per cent of the time. Since meanings relate to skewings via strategies, rather than directly, the assumptions of generalized suitability and coherence are no longer necessary because they do

---

[112] This figure reproduced from Reid, "Quantitative Analysis," 131.

[113] Reid, "Quantitative Analysis," 149–50.

[114] Chi-square testing can be used to discern the significance of skewing, and thus degree of skewing does not matter, only its significance. However, Davis ("The Place of Statistics") clarifies that $\chi 2$ tests cannot be relied on when the entities being compared are not independent variables—and he argues that most linguistic phenomena are dependent variables.

[115] Reid, "Quantitative Analysis," 142.

> not now figure in the move from hypothesized strategy to statistical prediction.[116]

Thus, it is not simply a matter of identifying asymmetries between lexicogrammatical meanings. Since Diver thought that skewing took place among hypothesized lexicogrammatical meanings, he could not explain the presence of unexpected (though statistically insignificant) deviations from the skewing. For example, sometimes the noun *people* will be "pluralized" as *peoples*. Diver assumed that this was due to some kind of incoherence—why pluralize a plural, after all. However, using communicative strategies to explain skewing allows for the fact that sometimes one communicative strategy will override another, depending on the goals of the speaker. What matters, then, is skewing, not absolute co-occurrence.

Communicative strategies enable skewing to be measured despite exceptions, because exceptions will be distributed throughout the table of results, and thus "no matter how often speakers are operating on nonintersecting strategies, the outcome can never obliterate the skewing produced by the strategy being tested."[117] The messages are complex, involving numerous factors. However, because a specified notional fraction of the message is correlated with signal meanings indirectly, one can arrive at a clear answer as to whether the predicted skewing exists in the corpus.

Communicative strategies are a valuable concept for minimalist analysis, since they represent the same explanatory priority as polysemy, except that they allow one to maintain an empirical approach. As I argued in Chapter 1, polysemy introduces an arbitrary level of explanation into the inferential gap between lexicogrammatical meanings and contextual messages. Communicative strategies appear to perform the

---

[116] Reid, "Quantitative Analysis," 144.
[117] Reid, "Quantitative Analysis," 148.

same function, insofar as they represent connections between lexicogrammatical meanings and contextual messages.

The decisive differences between the two approaches consist in the status accorded to the explanation, the connection to the meanings and message, and the possibility of falsification. Polysemy accords different senses a linguistic status, as part of the extensional meaning of signs. It thus connects senses to lexicogrammatical meanings, and it is theoretically unfalsifiable, because the senses are assumed to have psychological reality that cannot be directly tested for speakers of a dead language. By contrast, communicative strategies explicitly present communicative strategies as hypothetical constructs that are justified only insofar as they can assist in testing the validity of lexicogrammatical meanings. These strategies are not connected to or drawn from the meanings, but rather they represent abstractions from contextual messages. Lastly, these strategies are empirically falsifiable. Polysemic senses are represented as though they were part of the linguistic system, when in reality they correspond more closely to communicative strategies that are, as notional fractions of contextual messages, explicitly outside of the system. For example, the instrumental use of the dative has often been construed as part of the dative's lexicogrammatical meaning. I would argue instead that instrumentality is instead a message fraction, which explains why ἐν, διά, and a number of other signs would be associated with this same function.

In summary, quantitative analysis, especially as it has developed within Columbia School linguistics, provides an invaluable concept for the kind of empirical analysis that biblical studies needs if it will at some point be able to model interpretive protocols.

Lexicogrammar

According to Contini-Morava and Tobin, "In one form or another, virtually every linguistic theory makes a distinction between lexicon and grammar, though the basis for the distinction varies from one theoretical approach to another."[118] As we have seen above, this distinction plays a key role in the Columbia School notion of satellite clusters. Diver does not actually substantiate this claim, though, and its status has been questioned in Columbia School theory as elsewhere.

Kirsner claims Columbia School linguistics is characterized by its "search for the underlying unity behind the various separate uses of a form."[119] According to Diver, "What our analysis reveals over and over again is that the contribution of the grammatical meaning is a constant."[120] Diver argues that this consistency is only applicable to grammatical signs, but is not the case with lexical ones. A lexicon is comprised of "essentially unrelated items," whereas grammatical items involve "exhaustive categorization of some semantic substance."[121] Thus, Diver implies that monosemy is simply an inadequate way of analyzing lexical items. This claim is unjustified, however, given the fact that Diver—inconsistently with his own approach—merely assumed the polysemy of the lexicon. Reid explains,

> In class lectures in the late 1960's William Diver, the founder of the Columbia School, proposed that the grammar and the lexicon were structured differently, and that lexical items had a series of related senses that can be linked diachronically but that may have breaks synchronically: in other words, polysemy. This was still his position in the 1990s (Diver 1995: 98–99). However Diver never carried out an actual analysis of a lexical item that would show, for example, how one would distinguish the extension of an existing sense to a new

---

[118] Contini-Morava and Tobin, eds., *Between Grammar and Lexicon*, ix. Cf. Danove, "Theory of Construction Grammar," 122.

[119] Kirsner, "Future of a Minimalist Linguistics," 353.

[120] Diver, "Theory," 97.

[121] Diver, "Theory," 77, 79.

> message (i.e. linguistic creativity) from the emergence of a new sense (i.e. systemic change). His chief interest seemed to be in providing a rationale for indefinitely postponing lexical analysis and maintaining analytical attention on grammar, rather than solving the analytical problems the lexicon presents. By contrast, Columbia School analysts who have attempted lexical analysis have offered monosemic treatments.[122]

In light of Reid's comments, Diver's position notwithstanding, the search for monosemy in both domains of lexis and grammar—lexicogrammatical monosemy—is a methodological starting place that is consistent with the approach outlined by Columbia School linguists. For example, Crupi, in her analysis of *yet*, *but*, and *still*, comes to the conclusion that, "By extending the CS [Columbia School] research model beyond closed grammatical systems, this study demonstrates that forms as ostensibly polysemous as *yet*, *but*, and *still* can be reduced to a single semantic value."[123]

Halliday claims that the lexis–grammar distinction is simply a result of perspective, saying, "In fact lexis and grammar are not different phenomena; they are the same phenomenon looked at from different ends."[124] He elaborates,

> I have always seen lexicogrammar as a unified phenomenon, a single level of *wording*, of which lexis is the *most delicate* resolution. In a paradigmatic interpretation, the 'two' form a continuum: at one end are the very general choices, multiply intersecting, which can readily be closed to form a paradigm . . . and these are best illuminated by being treated as grammar; while at the other end are choices which are highly specific but open-ended, with each term potentially entering into many term sets . . . and these are best illuminated by being treated as lexis. Midway along the continuum are things like prepositions and modals which do not yield a strong preference to either form of treatment. But both lexicographer and grammarian can occupy the whole terrain: 'lexis' and 'grammar' are names of complementary perspectives, like the synoptic and dynamic perspectives on a semiotic process, or wave and particle as

---

[122] Reid, "Monosemy, Homonymy and Polysemy," 122, n. 1.

[123] Crupi, "Structuring Cues," 279.

[124] Halliday, *Computational and Quantitative Studies*, 60. Cf. Halliday and Matthiessen, *Halliday's Introduction*, 24. For the systemic functional linguistics interpretation of lexicogrammar, see McEnery and Wilson, *Corpus Linguistics*, 79–81.

> complementary theories of light, each explaining different aspects of a single complex phenomenon.[125]

Halliday's description indicates that the method of analysis ought to reflect the location of the unit under analysis on this lexicogrammatical continuum.[126] Ruhl's conception of language, I would argue, is particularly helpful here. For Halliday, lexis is at the most delicate end of the continuum. "Delicate" in Halliday's Systemic Functional Linguistics roughly equates to "concrete" in Ruhl's description of language.[127] For Ruhl, "It is a mistake either to think that a language is fully autonomous or that is [*sic*] fully non-autonomous. Rather, it is autonomous in gradient degree."[128] Adopting Ruhl's view of the lexicogrammatical continuum as a hierarchy of closed to open classes, it is theoretically consistent to analyze *any* linguistic sign using the same minimalist procedure.[129]

This point is, I believe, the missing link in the Columbia School conception of lexis. Whereas Diver thought lexical classes were fundamentally distinct from grammatical classes, perhaps requiring a radically different method of analysis, Ruhl's theory is more intuitively satisfying, I would argue, and moreover accords better with other aspects of Columbia School theory, such as a bottom-up approach. One should not

---

[125] Halliday, *Computational and Quantitative Studies*, 64–65.

[126] Cf. Kirsner, *Qualitative–Quantitative Analyses*, 217.

[127] Cf. Halliday and Matthiessen, *Halliday's Introduction*, 55. However, the difference between Halliday and Ruhl lies in the fact that, for Halliday, *wording* is the most delicate stage of a lexicogrammatical system network, and thus a word from an abstract, closed class of the language is more delicate relative to the choices that precede its selection. For Ruhl, words themselves form a continuum of concretion to abstraction, but these differences are due to the dissimilar ways of describing languages as a whole. For Ruhl, language is a system of semantic fields, rooted in grammatical (i.e. syntactic) classes.

[128] Ruhl, *On Monosemy*, 184.

[129] Accordingly, outlining system networks as systems of meaning potentials relates to Ruhl's hierarchical semantic fields in the same way as Halliday has outlined here. That is, system networks adopt a grammatical perspective, and semantic fields adopt a lexical perspective. I suggest that the lexical perspective, because it envisions the semantic substance of a sign as subdivided by its hyponyms, enables one to assign semantic labels to superordinate classes in a principled manner, rather than relying on intuition. System networks model logical choices or value; semantic fields model substance.

assume an exclusive distinction between lexis and grammar unless that distinction can be observed. A gradient distinction allows for the possibility that all linguistic signs are simply signs, with varying probabilities and meanings that correlate with the facts of their distributions.

Conclusion

I have discussed some major theoretical underpinnings for a minimalist approach that has as its aim empirical analysis of an epigraphic language like Hellenistic Greek. Key influences were sought in Charles Ruhl and the Columbia School founded by William Diver. Together, they indicate that minimalist analysis of invariant lexicogrammatical meanings is theoretically defensible. I have also discussed a number of key concepts for empirical analysis. Markedness theory provides a means of contrasting linguistic units. To compare them, the distributional hypothesis provides two distinct forms of semantic relatedness, as well as a principle for measuring this similarity—i.e. distributional similarity reflects semantic similarity. Corpus and computational linguistics serve to specify and process the datasets that provide these empirical measurements, and quantitative analysis formalizes the process of justifying linguistic claims. The notion of lexicogrammar, lastly, indicates how monosemy could be a useful methodology not only for lexical analysis but also grammatical. Empirical minimalist analysis, in light of these influences and concepts, is well situated to both supplement and critically evaluate the traditional maximalist approach of biblical studies.

CHAPTER 3: THE PROCEDURES, TOOLS, AND DATA OF MONOSEMY

Having laid a theoretical foundation, I will next describe (1) a two-step procedure for monosemic analysis, as well as (2) a key tool for empirical analysis, vector spaces. Lastly, I will (3) outline some of the challenges associated with constructing a corpus for Hellenistic Greek, including details about the corpus and archive used in Chapter 5's case study.

Outline of Two-Step Procedure

In this section, I describe two steps for the analyst to follow in a monosemic analysis, employing the insights outlined above. First, as a bottom-up approach, monosemy attempts to identify the semantic categories that are operative in a language without assuming those semantic categories beforehand. Secondly, as a corpus-driven approach, monosemic analysis relies almost exclusively on extant data in the object language and not on untested or as-yet untestable theories about the brain—especially since there are no longer native speakers of Hellenistic Greek. Third, as a sign-based approach to linguistic description, monosemy finds its object of analysis in the system of signs that comprise a specific language. That is, the semantic categories that are hypothesized in bottom-up fashion within the language are strictly tied to the observable linguistic signs, or based on abstractions of these signs. Thus, for example, the notion that Greek conflates the dative and locative cases of Indo-European, as in the so-called "eight case"

view,[1] is fundamentally mistaken in its assumption of what sort of semantic categories are operative in Greek, since there are only 4–5 case forms of Hellenistic Greek.[2]

The two steps for analysis are:

(1) Factor out variation.

(2) Hypothesize and test a function that accounts for the data.

In the first step, the goal is to normalize or control the data for the effects of context and co-text. In the second step, the goal is to formulate a hypothesis about the function or meaning of the sign, and then, by reintroducing the contextual variation in various stages, to ultimately explain why the form is distributed in the way it is. These steps are not strictly sequential. One could formulate a theory after looking at several specific examples, and then proceed to introduce further data. When this data might problematize the hypothesis, (1) any variations introduced by context can be subsequently factored out and (2) a new hypothesis formulated. Thus, this process is cyclical and a hypothesis cannot be truly "proven," only positively or negatively reinforced. A falsified hypothesis can be rejected, but a supported hypothesis can only be further tested.

Step One: Factor Out Variation

The process of factoring out variation follows Ruhl's monosemic bias, which I have described as *pragmatic factorization*. That is, one identifies the variation among contextual messages evidenced in various contexts (one can begin with the senses in a lexicon, as these typically represent the variation among different uses of a term, though

[1] Mentioned by Wallace in Wallace, "Review of Peters."
[2] Depending on whether one includes the vocative as a case.

these senses must be critically re-evaluated throughout the process) and then describes those variations as pragmatic effects. One need not state pragmatic mechanisms, but the process is inherently a descriptive one. This step can be described as normalizing the data or controlling for the effects of context. However, this normalization is not formal or rigorous, but rather heuristic and intuitive, much as the identification of polysemy is for other linguistic models.[3] The rationale is that, if a sign can potentially vary in those ways, then the sign itself does not convey any one of those variations specifically. The standard of comprehensiveness as outlined by Ruhl must apply to whatever corpus is being analyzed, and a monosemic lexicogrammatical meaning is deemed appropriate insofar as it adequately handles all uses in that corpus. Between two competing hypotheses, the hypothesis that admits less exceptions is the more adequate one, but signs must be considered on a case by case basis. A sign can be paraphrased at this stage, *if* appropriate to the relative abstractness of the sign, but it still requires a further description in functional terms. That is, a hypothesis must be formed that explains not only the substance or denotation of the sign, but also what motivates its distributions. Distribution is surmised on the basis of context and co-text in their totality. The kind of distribution that requires an explanation is one that exhibits symmetries and asymmetries with other paradigmatically related signs. For example, ἐν+dative and a simple dative are used in similar contexts, yet often both fomations will occur within the

[3] The relationship between polysemy and homonymy is a matter of perspective, synchronic or diachronic. Simply put, both phenomena describe a single form with multiple meanings. The distinct terminology results from the distinct assertions made about each phenomenon. Polysemy involves one word with multiple meanings; homonymy involves multiple formally-indistinguishable words, with a meaning for each. The difference between related senses—polysemy—and unrelated senses—homonymy—is not immediately clear, nor is it consistently outlined among theorists. This leads Lappenga, for example, to the conclusion that "Homonymy is not wholly distinguishable from polysemy; it is a spectrum" (Lappenga, *Paul's Language*, 57).

same verse. The driving question is, What motivates the use of this sign rather than another sign, and in these ways?

Step Two: Hypothesize and Test

As Contini-Morava explains, "The main distinguishing characteristic of sign based grammatical theory is the principle of one-form–one-meaning. This principle, like the linguistic sign itself, follows from the function of language as a communicative instrument."[4] However, this principle is a methodological assumption that is subject to empirical validation and qualification. Exceptions such as allomorphy and homonymy are accounted for within the theory due to the fact that linguistic signs have both content, which is essentially denotative and *valeur*—or paradigmatic value.[5] Thus, a sign may exhibit allomorphy or variation in expression (such as inflection), yet still contribute invariant lexicogrammatical meaning.

Huffman describes two key questions that can guide the formulation of hypotheses that accord with monosemy. The two complementary facets of lexicogrammatical meaning, content and value, imply two methodological questions for developing hypotheses about a given set of forms: (a) what precisely motivates the use of these forms in the first place? and (b) when one of these forms is used, why is that one rather than another used? Huffman explains, "Question (a) is the question of substance; question (b) is the question of value."[6]

---

[4] Contini-Morava, "On Linguistic Sign Theory," 8.

[5] Recall that, according to Ruhl, closed classes will be characterized by clearly defined value, and open classes will be characterized by straightforward referability to salient extralinguistic realities.

[6] Huffman, *Categories of Grammar*, 162.

Content corresponds with the traditional notion of lexical meaning. Thus, it is easier to paraphrase the content of open-class items, but challenging for closed-class items. Value is a differential aspect of lexicogrammatical meaning, corresponding in part to relational semantics, which analyzed words on the basis of, e.g., synonymy and antonymy. Markedness and distributional analysis both play a role in determining a sign's paradigmatic value, as indicated in the previous chapter.

Once a hypothesis is formulated, Columbia School theory indicates that complexity be reintroduced in order to test the validity and explanatory power of the hypothesis. Testing can be performed either qualitatively, by examining specific instances in detail, or quantitatively, by attempting to establish correlations between hypothesized lexicogrammatical meanings, communicative strategies, and messages, as discussed above. Under a quantitative test, context is reintroduced in large volumes. Qualitative analysis seeks on a smaller scale to explain, among the many possible avenues of inquiry, why the sign is used in a particular instance, what it accomplishes, why another paradigmatically related sign was not used, and how context and co-text modulate the lexicogrammatical meaning of the sign. Thus, qualitative and quantitative analysis mutually inform one another in a form of back-reinforcement, where the results of one analysis are fed back into the beginning of the process. As Reid explains,

> Here we see the complementary relation between qualitative and quantitative analysis. Each is doing something the other cannot. Qualitative analysis attempts to understand what is going on in an individual example; and quantitative analysis tests for the generality of that explanation. Quantitative data show that the explanation for the example is not *ad-hoc*, that it is an established communicative strategy upon which speakers regularly operate. But quantitative analysis does not, to repeat, group together just those examples to which qualitative explanation definitely applies.[7]

[7] Reid, "Quantitative Analysis," 145.

Summary

To summarize, step one is *factor out variation*. In this step, a comprehensive examination of data, within the confines of a corpus, is conducted. The various contextual messages evident in the different uses of a linguistic sign or class are normalized. This step can be thought of as controlling the data for the effects of context and co-text.

Step two is to hypothesize and test a function or lexicogrammatical meaning for the sign or class in focus. This step involves abductive reasoning.[8] That is, one adopts an initial hypothesis that appears to fit the normalized data, tests this hypothesis, and then revises the hypothesis as needed in light of the results. Because a sign's lexicogrammatical meaning is like a coin with two sides—a paradigmatic value meaning, and a content-like semantic substance, the hypothesized lexicogrammatical meaning involves two aspects, value and substance.

Empirical Analysis Through Vector Space Modelling

According to Fewster, "Computer-aided corpus linguistics is an attempt to provide a critical mass of data evidence to allow for sophisticated linguistic description."[9] This sophistication is in many ways the actualization of theories that seemed logistically out-of-reach in decades past. Vector spaces are one example of this actualization, as they execute the necessary quantification of corpora needed to test and utilize the distributional hypothesis, which I will discuss in this section.

---

[8] For discussion on abductive reasoning, see Pang, *Revisiting Aspect and Aktionsart*, 63–64.
[9] Fewster, *Creation Language*, 50.

A cornerstone of corpus linguistics has been collocation analysis. Land has pointed out that, "Ideally, patterns of collocation ought to be analysed statistically across an entire corpus,"[10] yet this statistical analysis remains only an ideal unless some form of automatic or unsupervised collocation analysis on a large scale is available. Usually, both collocations and colligations are identified using a key word in context, concordance search. Moreover, the basic key word in context analysis, while useful for some tasks, cannot tell us about words or constructions that, though they may be similar, never actually occur together in the data. A salient example is the word ἔθος, which as Winger points out, though never occurring in Paul's writings, is likely a closely related word to νόμος.[11] Vector space analysis overcomes this hurdle by examining collocations on a higher order than simply direct comparison using human judgement.

Vector spaces are a computational tool for modelling intralinguistic, structuralist meaning. That is, while some models, i.e. Relevance Theory (to use a generalization), find nearly the entirety of linguistic meaning in the extralinguistic situation as the means of explaining the relevance of the particular language used in an utterance,[12] vector space modelling is agnostic as to the extralinguistic contexts of texts, instead computing text as a sequence of values that may incidentally imply many potential extralinguistic situations. Also, some models aim to explain the psychological, social, and/or cognitive processes that shape and constrain the production and processing of language. Vector spaces, by contrast, are also agnostic as to the cognitive, psychological, or social factors at play. Furthermore, vector space modelling is a quantitative tool, which makes it

[10] Land, *Integrity of 2 Corinthians*, 71.
[11] Winger, *By What Law?* 42.
[12] See especially the examples in Sperber and Wilson, "Mapping."

ideally suited to serve as a means of testing the kinds of hypotheses demanded by Columbia School theory.

While computational methods like vector spaces are not viable replacements for human judgements, but they nevertheless offer new insights into the data that we have at our disposal and so allow us to make subjective, qualitative judgements about empirical measurements. The core idea behind vector spaces is that linguistic units such as words can be directly compared with one another in terms of distribution. Traditionally, the semantic content of a word could not be measured, much less directly compared with the semantic content of another word. Componential analysis, which underlies Louw and Nida's famous lexicon based on semantic domains, and relational semantics, which conversely was not delineated in Louw and Nida's lexicon, both attempt to describe similarity of meaning.[13] The problem with componential analysis is that the existence of these components cannot be verified, much less empirically measured.

While he cannot be credited with the creation or initial implementation of vector space modelling, Magnus Sahlgren moves beyond merely applying a distributional semantic approach to large corpora and attempts to outline the theoretical and motivational substructure of vector spaces.[14] In order to do this, Sahlgren develops a computational model of meaning. This model has two crucial and distinguishing features: 1) the distributional methodology as its discovery procedure, and 2) the geometric metaphor of meaning as its representational basis.

---

[13] See further discussion of this process in Nida, *Componential Analysis*; Nida and Louw, *Lexical Semantics*; Nida et al., "Semantic Domain"; Lyons, "Review of Greek–English Lexicon."

[14] Sahlgren, "Word-Space Model." Theoretical analysis of the information captured by vector spaces is lacking. For further discussion see Hanks, "Do Word Meanings Exist?"; Church and Hanks, "Word Association Norms"; Landauer et al., "Introduction"; Kintsch and Mangalath, "Construction of Meaning." Sahlgren's work is the most directly concerned with explaining the distributional hypothesis, though Kintsch and Mangalath describe a compelling approach to assessing distributional meaning using multiple metrics.

Implementing the Distributional Hypothesis

Vector spaces allow one to measure distribution, and thus similarity of meaning, empirically. A vector space model can only measure co-text, not context, and thus this model can be used to generate semantic (or intralinguistic) values for linguistic forms based solely upon their distribution within texts.

By only taking texts into consideration, the object of analysis is not "meaning" in all of its extralinguistic fullness (i.e. contextual message), but rather language as an autonomous system. Vector space modelling, therefore, is useful when answering questions about the object language itself within a structuralist conception of language. Because vector space models do not consider, for example, questions of extralinguistic reference, Sahlgren cautions, "It cannot be stressed enough that the word-space [i.e. vector space] model is a computational model of meaning, and *not* a psychologically realistic model of human semantic processing. The only information utilized by the word-space model is linguistic context [i.e. co-text]."[15]

Vector space modelling, therefore, is intralinguistic in its orientation; it is agnostic about the context in which language appears, strictly computing the values of linguistic items in relation to one another. The computed intralinguistic meaning, then, can be modelled syntagmatically or paradigmatically by specifying either syntagmatic or paradigmatic contexts in the generation of context vectors (i.e., values). Whereas instance-based analyses examine particular instances of language (usually produced in order to illustrate a given hypothesis) in order to draw conclusions about the structural semantics of words, a computational approach is thoroughly descriptive in that it relies

[15] Sahlgren, "Word-Space Model," 134–35.

almost entirely on corpus data—though this data, which itself is subjectively arranged and selected, still requires further interpretation.

For example, in the model I used to run the tests below on νόμος, the top 5 hits (i.e. distributionally similar terms) for διδάσκαλος are:

ῥαββί
σώζω
ἐπιτιμάω
φαρισαῖος
ψυχήν[16]

Thus, with no input other than a corpus of texts, the model inferred semantic similarity from only distributional information. It is important, however, that these terms are (at least in this example) probably best described as conceptually similar. It is not possible at this point to generate a purely paradigmatic model, nor a purely syntagmatic model. A purely paradigmatic model would include only words that are, in theory, paradigmatically interchangeable—σώζω is evidently not interchangeable with διδάσκαλος, though it is "semantically similar" in some sense. Again, I will emphasize that vector spaces do not model meaning, but rather distributional similarity.

The key to vector space modelling is the amount of information that is taken into account. As Schütze explains, "Lexical cooccurrence can be easily measured. However, for a vocabulary of 50,000 words, there are 2,500,000,000 possible cooccurrence counts to keep track of."[17] An important issue in the implementation of vector space models of corpus data, then, is the question of how the data is to be represented or described in a

[16] This final term illustrates the need for further refinement of the lemmatizing software I am using to preprocess my texts—i.e. ψυχήν is not properly lemmatized. Better and larger corpora, as well as further advances in annotating capabilities, will only improve the use of computational analysis for Hellenistic Greek.

[17] Schütze, "Word Space," 896.

meaningful way, one which allows an interpreter to infer useful generalizations. The answer, according to Sahlgren, is the geometric metaphor of meaning.

Geometric Representation of Meaning

The geometric metaphor for representing meaning, like the distributional hypothesis, is not unique to Sahlgren's work.[18] Rather, this representation is operative in semantic domain or field theories.[19] According to the description of Hinrich Schütze, "Vector similarity is the only information present in Word Space: *semantically related words are close, unrelated words are distant*."[20] In other words, vector spaces capture semantic relatedness and represent it as spatial proximity. Again, Schütze explains, "Proximity of vectors in the space (measured by the normalized correlation coefficient) corresponds to semantic similarity."[21] This representation of similarity as proximity raises two questions, however: 1) how is similarity/proximity computed, and 2) what kind of meaning is represented—what is semantic relatedness?

Vector space analysis, as will be shown below, allows a direct comparison of these terms as they appear in the corpus, because the words do co-occur in the vector space (or "word space," elsewhere "distributional semantic matrix").[22] One can think of a vector space model as a large network of connections, which is a matrix of extremely high dimensionality (essentially a table with thousands of columns and hundreds of

---

[18] For a discussion of semantic field and frame theories, see Kittay and Lehrer, *Frames, Fields, and Contrasts*, 3–5.

[19] Geometric representations of semantic meaning are not limited to computational approaches. For example, (Kittay and Lehrer, *Frames, Fields, and Contrasts*, 3–5) claim, "Semantic relations and field or frame structures seem to be operative in the mental lexicon."

[20] Schütze, "Word Space," 896.

[21] Schütze, "Word Space," 896.

[22] Geeraerts, *Theories of Lexical Semantics*, 174–76. For a general introduction to the word space approach (specifically latent semantic analysis) see Landauer et al., "Introduction."

thousands of rows). By turning words into "context vectors," they can be meaningfully compared to one another. *Meaningful* comparison is the key that unlocks the vector space model. According to Sahlgren,

> The principal feature of the geometric metaphor of meaning is not that meanings can be represented as locations in a (semantic) space, but rather that similarity between (the meaning of) words can be expressed in spatial terms, as proximity in (high-dimensional) space.[23]

A matrix of extremely high dimensionality, in other words, is incomprehensible for the interpreter. By contrast, rendering words as context vectors allows them to be understood as coordinates on a graph (although more properly as vectors, which have magnitude, or coordinates, as well as direction on the graph), thus enabling their coordinates to be compared.[24]

Within this high-dimensional matrix, each word is like a point or node in the network, and each word is related to each other word; every word is connected to every other word in the network. In this network, each word is treated as a vector, that is, a value with magnitude and direction. By vectorizing words, they can be meaningfully compared to one another. There are a wide variety of variables in vector space models, including: (1) type of matrix; (2) method of weighting the data; (3) method of reducing the dimensionality of the matrix; and (4) method of comparing the resulting vectors.[25] I will briefly explain each of these variables, corresponding to the steps involved in such an analysis.

(1) The first step in generating a vector space is creating a word-by-feature matrix. This is essentially a table where rows represent individual words, and columns

---

[23] Sahlgren, "Word-Space Model," 33.
[24] Geeraerts, *Theories of Lexical Semantics*, 174–76.
[25] For an overview, see Geeraerts, *Theories of Lexical Semantics*, 174–76.

represent "features." These features can be words, documents, contexts or search proximities (such as sets of ten adjacent words), or even dependency relationships. Each word is counted based on its occurrence within each context. Different features are used for different purposes. If one wants to summarize a document based on its key concepts, a word-by-document matrix works best.[26] If one wants to analyze the relationships between lexemes, a word-by-context matrix can provide the needed data.

(2) The second step involves weighting the data. Common methods include an analysis of the term-frequency in relation to the inverse-document-frequency (TF-IDF), when using a word-by-document matrix; and pointwise mutual information (PMI) when looking at the relationships between words. What these methods accomplish is the assignment of a value to the words; tabular word counts are turned into statistical probabilities.

(3) The third step is to reduce the dimensionality of the matrix. In such a large analysis, using perhaps thousands of documents and tens of thousands of words, there are bound to be numerous blank spaces in the table—that is, the matrix is sparse. In order to isolate the most relevant or significant information, the matrix must have its number of dimensions reduced. This can be accomplished in a number of ways while still maintaining the integrity of the data in the matrix, for example using singular value decomposition (SVD).

(4) Now that the data has been reduced to a manageable size, the values of each word, the vectors, can be compared using a variety of methods. The most popular method is calculating the cosine relationship between the two vectors. Imagining the vectors as lines on a graph, the angle of their relationship is the relationship between the

[26] Landauer et al., "Introduction," 19–20.

words in the word space. The more similar the number, the more similar the contexts of the words, and thus the more similar the words themselves according to a distributional view of meaning.

Table 1 represents an example of a word-by-word matrix based on the first eight words of 1 John 1:1 (Ὃ ἦν ἀπ’ ἀρχῆς ὃ ἀκηκόαμεν ὃ ἑωράκαμεν). Each co-occurrence is counted, within a context window of one position before and after the word in question.

	Ὃ	**ἦν**	**ἀπ’**	**ἀρχῆς**	**ἀκηκόαμεν**	**ἑωράκαμεν**
Ὃ	0	1	0	1	2	1
ἦν	1	0	1	0	0	0
ἀπ’	0	1	0	1	0	0
ἀρχῆς	1	0	1	0	0	0
ἀκηκόαμεν	2	0	0	0	0	0
ἑωράκαμεν	1	0	0	0	0	0

Table 2. Co-occurrence matrix for 1 John 1:1a.

A vector is represented as a series of values. Thus, within this text (the half-verse), the context vector of ὅ, given a context window of one position before and after, is (0,1,0,1,2,1). That is, collocations are counted for words that occur immediately adjacent to one another. The words of this text are thus used to create an eight-dimensional matrix. However, when analyzing a full corpus of words, the dimensionality is far higher, numbering in the tens or hundreds of thousands. This high-dimensional vector, then, is compressed in its dimensionality through matrix transformations such as singular value decomposition, so that terms can be queried based on their shared semantic range.

In summary, the distributional hypothesis of meaning claims that similarity of context indicates similarity of meaning. Using a vector space, similarity of context can be computed and measured empirically.[27]

Integration with Monosemy

Vector space modelling is a key tool for empirical analysis, especially as it actualizes the priorities of monosemy. Monosemy treats every sign as having a consistent contribution to an utterance; every time a sign occurs, it is assumed to contribute a consistent input to a message. This input, the "meaning" of the sign, is essentially the reason it was chosen to fulfill a given communicative task. Monosemy furthermore attempts to model this consistent input by factoring out the variation that occurs. Vector spaces model meaning in a similar fashion by treating the meaning of a token or sign as the totality of its distribution, that is, a token's meaning is mathematically abstracted from all of its uses in the corpus.

According to Columbia School theory, the meaning of a sign is both a relational or differential value and a substantial content. Vectorizing a sign within a corpus, while it cannot indicate the substance of the sign, its content, can provide an empirical account of its differential value. In simpler terms, vector space modelling cannot tell you what a word means, but it can tell you how similar its distribution is to other words.

Furthermore, Ruhl's vision of language as increasingly concrete units of analysis (e.g. a clause is more concrete than a clause component), indicates how vector space

[27] Sahlgren ("Word-Space Model") argues that word spaces model structural meaning, which is either syntagmatic or paradigmatic. Whether the analysis is syntagmatic or paradigmatic depends on what kind of context is measured for the words. Context is usually measured in terms of a context "window." In Chapter 5, I use context windows of two; that is, co-occurrences are counted two words to the left and two words to the right of every single word in the corpus. This is according to Sahlgren's claim that a smaller context window tends to produce more paradigmatic rather than syntagmatic information.

analysis can be used to directly compare larger units of discourse. A message is greater than the sum of its parts. However, the signs that make up a message shape one another so that the message as a whole can be thought of as a vector whose direction is different from but influenced by the vectors of its component parts. Vector spaces compute the meaning of a sign as the average of all its contexts in the corpus. Accordingly, the meaning of a clause can be computed as the average of all of its component vectors. This form of generalization is more nuanced than a typical compositional approach to meaning, because a clause is represented not as the sum of its parts, but as the average of its already averaged parts. As Diver explains,

> The message that results from the collection of hints [i.e. words] bears considerable resemblance to a vector resultant, where there have been a number of different forces involved as input (the various morphemes in the utterance), and the output produced in the message as a whole is not identical to any of the inputs. In consequence, there is often relatively little correspondence between any components of the complete thought, or message, and the meanings of the individual morphemes involved.[28]

Nevertheless, vector spaces allow the direct comparison of clauses or larger units of discourse, and even entire documents or genres.[29] The minimalist linguistics represented by the Columbia School can, as my model demonstrates, be integrated with computational approaches such as vector space modelling and machine learning. This integration may provide the kind of external cooperation—that is, not solely tied to one theoretical framework—needed to demonstrate the plausibility of minimalist semantics.[30]

---

[28] Diver, "Theory," 74.

[29] Composed vector meaning can be modelled either as a bag-of-words, or else by taking into account internal structure through, for example, dependency annotations. Using OpenText's annotations, one could conceivably compare directly clause components and other functional groups.

[30] See Kirsner, "Future of a Minimalist Linguistics," 347.

Corpus Considerations

The corpus I use roughly follows O'Donnell's suggested corpus.[31] The total length of this corpus is 1.75M tokens. For words like prepositions with high frequency, a corpus of this size is adequate, at least for some initial soundings. However, lexical analysis is best attempted with a corpus of at least 20M–100M tokens. English language corpora are much larger. For example, the English Gigaword contains 5B tokens in 9.8M documents.[32] In order to evaluate the frequency information derived from my corpus, therefore, I performed several frequency counts based on all of the texts in the TLG database from the third century BCE to the third century CE, comprising approximately 20M words.

O'Donnell (non-truncated)	**SBLGNT**
Plutarch (CE 1-2)	**New Testament (CE 1)**
Cato Minor: 17031 words	Matthew: 18556 words
Philo (BCE 1—CE 1)	Mark: 11424 words
On the Creation: 31852 words	Luke: 19696 words
New Testament	John: 15763 words
(see SBLGNT)	Acts: 18687 words
Diodorus Siculus (CE 1)	Romans: 7199 words
Bibliotheca Historica: 417681 words	1 Corinthians: 6895 words
Strabo (BCE 1—CE 1)	2 Corinthians: 4542 words
Geographica: 298655 words	Galatians: 2255 words
Cassius Dio (CE 2-3)	Ephesians: 2457 words
Historiae Romanae: 379170 words	Philippians: 1645 words
Josephus (CE 1)	Colossians: 1597 words
Life: 16224 words	1 Thessalonians: 1500 words
LXX (BCE 3—CE 3)	2 Thessalonians: 831 words
Judges: 16324 words	1 Timothy: 1617 words
2 Esdras: 13618 words	2 Timothy: 1264 words
Tobit: 7421 words	Titus: 682 words
Polybius (BCE 3-2)	Philemon: 342 words
Historiae: 326081 words	Hebrews: 5054 words
Pseudo-Apollodorus (CE 1-2)	James: 1765 words
Bibliotheca: 28249 words	1 Peter: 1709 words

[31] O'Donnell, *Corpus Linguistics*, 164–65. My data has several differences from O'Donnells: I do not include any papyri or inscriptions, and I have not truncated the length of the historical works. Retaining the full length of these works does skew the data towards historical genre and literary style, but the overall statistical frequencies of the prepositions are unlikely to be dramatically affected. Ideally, future research will utilize a larger corpus.

[32] For a description of the corpus, see Parker et al., *Gigaword*.

Epictetus (CE 1-2)	2 Peter: 1121 words
Dissertationes: 78165 words	1 John: 2160 words
Didache (CE 2)	2 John: 249 words
2241 words	3 John: 222 words
Shepherd of Hermas (CE 2) 27819 words	Jude: 465 words
Ignatius (CE 1-2)	Revelation: 9918 words
Ephesians: 7956 words	
Total: 1808102 words	**Total:** 139615 words[33]

Table 3. Corpora, centuries, and word counts.

There are two key limitations that I have encountered that need to be documented. First, I so far have not been able to acquire access to numerous texts that remain locked behind paywalls. The challenge of copyright is an interesting and ongoing problem. While I do not consider copyrighting intellectual material to be an *a priori* problem, the situation with ancient texts that have merely been digitized should raise eyebrows. It is unclear whose intellectual property is actually being copyrighted in such cases—surely not the modern "owners" of the texts—and some have suggested that such copyright is very likely indefensible.[34] Until these issues are resolved, however, analysts are in the unfortunate position of having limited access to texts. Despite this limitation, there is enough Hellenistic Greek text available in the public domain to enable researchers to at least begin to lay the groundwork for further and better quantitative analysis.

A second problem is the need for preprocessing the texts. Two important preprocessing steps include the removal of punctuation and other erroneous tokens ("cleaning" the text) and the tokenization of the corpus. Despite preprocessing, in constructing a vector space I ignore unique word forms, as these often comprise errors that simply generate noise in the data. Better corpus annotation tools, which are being

[33] Word counts of the NT will vary more than other ancient texts due to the proliferation of critical editions and the large number of extant manuscripts. The word counts here include book headings and several other miscellaneous insertions, thus skewing the total by several hundred tokens. These tokens are ideally lemmatized or else filtered out after post-processing as having the POS tag "NONE".

[34] Porter, *Linguistic Analysis*, 17–28.

developed, will allow for more sensitive analysis of less and less common words.[35] Tokenizing involves accounting for each unique token in the corpus, and assigning each occurring term an index that corresponds to the list of unique tokens. There are a number of other steps that can also be taken. However, each step in preprocessing and tagging the text involves assumptions about how this should be done. Corpus data, like sound and graphic configuration in actual usage, can be, on a Columbia School view, "observed and described without problematic assumptions about the nature of linguistic structure or, more importantly, without assuming in advance the identity of linguistic categories."[36] According to Reid,

> In confronting a language, one does not know in advance what its structural, grammatical, morphological and semantic categories will be; all one has to go on is the expectation of a regular pairing of form and meaning. In practice, this means the analyst must wipe his mental slate clean, setting aside all the familiar categories of the grammatical tradition . . . and look for categories that stand in the most regular relation to form.[37]

However, steps like lemmatization (the replacement of each word-form with its lemma) and part-of-speech tagging (the tagging of each word-form with part of speech information) are not pre-theoretical, but are driven by assumptions. For example, λόγον should be lemmatized as λόγος. However, what should ἦλθον be lemmatized as? The traditional lemma is ἔρχομαι, and the change in tense-form is explained as a stem change. This might be the correct decision, but it actually depends, as so many factors do, on the scope of the research question. In some cases, it might not be ideal to formalize so-called "stem changes." But ἦλθον also exhibits a difference in voice.

---

[35] To annotate my corpus, I used MarMot+Lemming, which is a predictive approach to lemmatization and morphological tagging (Müller and Schuetze, "Robust Morphological Tagging"; Mueller et al., "Efficient Higher-Order CRFs"). For a rule-based approach (harder to create but more thorough), see the ongoing work of James Tauber (https://github.com/jtauber/greek-inflexion).

[36] Reid et al., eds., *Signal, Meaning, and Message*, xiii.

[37] Reid et al., eds., *Signal, Meaning, and Message*, xiv.

Alongside the traditional explanation of the relationship between these two forms, it is equally possible to model them as different lemmas entirely, though with related meanings. In fact, from a monosemic perspective, ἦλθον is just as accurately described as a hyponym of ἔρχομαι, which itself is plausibly a hyponym of other, more general verbal forms.

Monosemy, in conformity with Columbia School theory, requires that categories be demonstrated rather than assumed, based on their lexicogrammatical realization in the text itself. Even where the data seems to indicate that a category is operative, it maintains a falsifiable status. Before lemmatizing such forms, it is better to identify where such assumptions are at play. A term like λόγον shares a stem with λόγος, and so there is a morphological basis for lemmatization. Part-of-speech tagging, moreover, is even more suspicious from the perspective of monosemy, since Columbia School theory explicitly argues that the parts of speech are actually patterns of usage, not inherent properties of words (see discussion in Chapter 2). However, while I have pointed out the assumptions at play in preprocessing steps like lemmatization, I have nevertheless been limited in the tools that I could use to normalize the corpus data. I used a prediction-based lemmatizer (MarMot + Lemming) which is trained on a set of annotated "training data" including morphological or part of speech tags, as well as token–lemma pairs. The resulting lemmatizer model required further postprocessing, continues to produce numerous errors regarding the less-frequent tokens in the corpus (such as incorrect lemmatization), and will ideally be replaced in the future with a rule-based stemming tool, rather than a predictive tool.[38] Ultimately, the lemmatization process was satisfactory for the analyses I performed. The accuracy was 85.54%. That is, when

[38] For more information, see Wishart and Prokopidis, "Topic Modelling Experiments."

comparing my lemma counts for the terms νόμος, γραφή, γράμμα, δικαίωμα, ἐντολή, ἔθος, and παράδοσις, my lemmatized corpus contained approximately 86% of the hits that came up in TLG.[39] While 14% may seem like a lot of tokens to miss, almost all of the missed tokens will have been unique errors, such as "νόμος:" or "νόμοι....." due to the orthographic idiosyncrasies of different texts. Unique tokens such as these are filtered out during modelling. While this is, therefore, not a bad result, it must be stressed that these analyses can be described, as I put it above, as initial probing into the possibilities and challenges of quantitative analysis of Hellenistic Greek using natural language processing tools and computational models.

Both the limitation in data volume and the limitations in preprocessing tools present challenges for quantitative analysis of Hellenistic Greek at this point, but a plethora of open-source language processing tools already provides numerous avenues for research. One of the primary tools I use is the Word2Vec collection of algorithms created by Google and implemented in Python through the GemSim software package.[40] In order to generate visualizations of the data I used Gephi.[41] GenSim is available as an open-source library, and Gephi is freely available user-friendly visualization software. Word2Vec follows the basic principles of a vector space in that it is a method of unsupervised learning of features in a corpus which represents tokens as distributional vectors.

---

[39] TLG evidently has a token–lemma dataset that would identify 100% of the lemmas identified by TLG (although even this archive is likely not 100% accurate by human standards).

[40] See, respectively, Mikolov et al., "Efficient Estimation of Word Representation"; Řehůřek and Sojka, "Topic Modelling with Large Corpora." Find GenSim's GitHub repository at https://github.com/RaRe-Technologies/gensim.git.

[41] Gephi can be found on the web at https://gephi.org.

Word2Vec is a set of shallow neural network algorithms (see description of "connectionist models" above) for describing word "embeddings," which can be thought of as the contexts in which words appear. Word2Vec models can be of two types in the way they represent these embeddings, either "skip-gram," or "continuous bag-of-words" (or CBOW). To simplify the difference, a skip-gram method tries to predict each word on the basis of its context, whereas CBOW tries to predict a word's context on the basis of the word.[42] While Mikolov et al. claim the skip-gram architecture provides better results than CBOW, I found more consistent results for CBOW for the queries I used. For example, using CBOW with context windows of 2 and 15 provided results that were all within 0.024 of each other.

Conclusion

In light of the need for empirical linguistic analyses in biblical studies, vector space modelling is intuitively fitting and productive for analyzing Hellenistic Greek. Vector space modelling presents biblical researchers with a new mode of analysis that has many exciting applications to explore. However, both natural language processing and machine learning are still underdeveloped in their application to studying epigraphic languages. Moreover, the kind of meaning—if any—being captured by vector spaces is still not well understood. As will be seen in Chapter 5, this means of representation is evidently capable of automatically extracting, without supervision, a relatively high degree of paradigmatic information from a corpus. What the long term results of utilizing computational linguistics in biblical studies will be has yet to become apparent.

[42] See Mikolov et al., "Efficient Estimation of Word Representation."

While this approach may or may not generate revolutionary results, it will certainly provide the evolutionary development needed to push the discipline further.

CHAPTER 4. MONOSEMY IN BIBLICAL STUDIES

Even though the dominant trend in the lexical and grammatical traditions within biblical studies has been towards polysemy, there are dissenting voices in biblical studies.[1] Stanley Porter, Gregory Fewster, and Benjamin Lappenga argue that the variation observed is not inherent in the semantics of words themselves but rather a function of the context within which words occur. In other words, they agree with Ruhl and the Columbia School that variation arises from contextual modulation, and that words themselves have a much more unified core of semantic information.[2] In this sense, these three proponents of monosemy describe their position as a "monosemic bias."[3] In this chapter, I will assess and critique both Fewster and Lappenga's monograph-length studies incorporating monosemy, concluding that their work indicates some of the intriguing possibilities for future development, despite drawbacks apparent in their appropriation of Ruhl.

Fewster's *Creation Language in Romans 8* (2013)

Gregory Fewster's work, exploring the ramifications of analyzing Paul's use of "creation language," especially the noun κτίσις in Romans 8, constitutes the first major monograph dedicated to exploring the impact of lexical monosemy in New Testament

[1] For discussion and references, see Porter, *Linguistic Analysis*, 51–53.

[2] Though none of them, to my knowledge, makes reference to the Columbia School, the shared insistence on monosemy indicates that all operate with a minimalist priority.

[3] Porter, *Linguistic Analysis*, 53; Fewster, *Creation Language*, 36; Lappenga, *Paul's Language*, 27, 29.

studies. Fewster's work deserves careful attention, as he presents a Systemic Functional Linguistics (SFL)-based approach to lexical analysis, an area of biblical studies that has exhibited widespread and systemic problems.[4] Here I will offer an overview of Fewster's model for lexical analysis, which he calls "corpus-driven systemic-functional monosemy."[5] Second, I will take issue with two aspects of Fewster's study: (1) his dismissal of Ruhl's model of monosemy as simply a "cognitive" approach, and (2) his method of analyzing metaphorical or figurative word meanings, which is less adequate than the method proposed by Ruhl.

Summary of Fewster's Corpus-Driven Systemic-Functional Monosemy

Fewster's goal is to "describe and defend of [*sic*.] a robust lexical semantic methodology."[6] He accomplishes this task in three ways, by creating a study that (1) covers a general theory of words, (2) analyzes a particular word by means of corpus data, and (3) introduces a nuanced account of a "lexicogrammatical metaphor theory."[7] Each of these steps will be summarized in order.

Systemic Functional Monosemy

Of primary importance to Fewster's modelling of Paul's language is the systemic nature of language.[8] SFL, according to Fewster, views language as a "social semiotic," realizing social realities by means of language functions that are constrained by a

[4] Fewster, *Creation Language*, 13–17; Lappenga, *Paul's Language*, 10–13.
[5] Fewster, *Creation Language*, 73.
[6] Fewster, *Creation Language*, 17.
[7] Fewster, *Creation Language*, 83.
[8] Another important feature is the functional nature of language, but I will deal with this below in my critique of Fewster; here I will focus on the systemic aspect.

language-specific system of choices.[9] In other words, the book of Romans is a social interaction between Paul and his readers, and this interaction is *realized* or constituted by the language functions Paul performs in the letter. The meaningfulness of the functions Paul performs—the meaning of what he says—depends on what he could have said instead. The meaning of one language choice depends on the other choices that were available to the speaker.[10] Therefore, the meaning of Paul's creation language in Romans 8, on Fewster's SFL-based model, should be analyzed in comparison to the systemically-constrained choices available to Paul, and the mutual realization that takes place between the context of situation and the language involved.[11]

Corpus-Driven Analysis

When it comes to the data Fewster chooses to incorporate into his analysis, he uses a corpus-driven approach. He explains, "Sound conclusions require, first and foremost, a reasonable and balanced environment for observation."[12] This environment is provided by a corpus of texts. That is, instead of focusing solely on a small sample text, such as Romans, he compiles a corpus of representative documents.[13] He goes on to clarify, "A corpus is used to provide statistically relevant data based on patterns in language

---

[9] Fewster, *Creation Language*, 39.

[10] For example, when a new mother is handed her baby immediately after birth—and assuming the sex of the baby was hitherto unknown by the mother—the social situation has a direct impact on what the midwife will most likely say: either "It's a girl!" or "It's a boy!" If the midwife said something else, departing from what is expected (such as "No reason to panic, but . . ."), the mother will likely attach heightened meaning to what is being said.

[11] It should be pointed out that this view of language is not fundamentally at odds with other approaches to language, such as relevance theory (which is the framework of choice for Lappenga's analysis; see below). Contra Clark (*Relevance Theory*, 359), the difference between these approaches is simply the locus of analysis. Where SFL considers the bidirectional impact of language on context and context on language, relevance theory chooses instead to focus on the (more or less) unidirectional impact of language upon the reader's mental state.

[12] Fewster, *Creation Language*, 53.

[13] See "Appendix One: Outline of Specialized Corpus," in Fewster, *Creation Language*, 175–76.

instances that can be generalized to the language as a whole, from which specific texts might be compared."[14] Fewster chooses to draw generalizations from a large sample of language in order to better understand a smaller sample, and this approach lends cogency to his analysis.

Lexicogrammatical Metaphor

A third aspect of Fewster's approach is a lexicogrammatical view of words as regards metaphor. That is, whereas traditional grammar represents lexis (word-choice) and grammar as entirely distinct areas of language meaning, Fewster chooses to view lexis as a grammatical choice—that is, lexicogrammar unites the two.[15]

Fewster should be commended for attempting to account for metaphorical word usage using a lexicogrammatical view of language. The idea of lexicogrammar is powerful, even though much work remains undone. For example, we have lexicons of Hellenistic Greek, and we have grammar books—some of these are better than others—but we do not have lexicogrammars of Hellenistic Greek. Indeed, it is difficult to imagine what a lexicogrammar would actually look like. As I have argued above, such questions need to be explored. Fewster's attempt to outline a theory of lexicogrammatical metaphor, I would argue, is on precisely the right track.

Fewster also examines metaphorical usage from the perspective of monosemy. In his model, metaphor involves an atypical usage of a lexeme. However, this atypical usage not only includes the usual tropes like ANGER IS HEAT, or ARGUMENT IS WAR. These kinds of atypical usages constitute lexical metaphors. Lexicogrammatical

---

[14] Fewster, *Creation Language*, 54.
[15] Fewster, *Creation Language*, 44–45. Cf. pp. 82–93.

metaphor also brings into consideration grammatical metaphor—an atypical usage of a lexeme on the grammatical level.[16] An example that comes up in Fewster's study is κτίσις, which typically refers to a created thing, an *entity*, but which can also be used to refer to the *process* of creating. This usage, Fewster argues, demonstrates grammatical metaphor because the process κτίζω is lexicalized as a noun, κτίσις. This kind of grammatical metaphor is called nominalization. Lexicogrammatical metaphor, then, attempts to take account of the fact that metaphors can be lexical or grammatical, or even both at the same time. While I affirm the effort to view lexis and grammar as a continuity, I will outline some issues with Fewster's approach to lexicogrammatical metaphor in the next section.

Critical Assessment of Fewster's *Creation Language in Romans 8*

There are two general issues I want to raise with *Creation Language*. First, Fewster misrepresents key aspects of Ruhlian monosemy. While this misrepresentation is probably unintentional, a clearer account of Ruhl's method would have helped Fewster avoid duplicating some of Ruhl's methodological steps. Second, Fewster's proposed method of analyzing metaphorical or figurative word meaning is weaker than Ruhl's proposed method. In some ways, *Creation Language* prematurely dismisses Ruhl because of a perceived association with cognitive linguistics, and this premature dismissal results in Fewster's missing out on many of Ruhl's insights about how to analyze monosemy.

---

[16] Halliday and Matthiessen, *Halliday's Introduction*, 698–731; Thompson, *Introducing Functional Grammar*, 219–39.

Fewster's Construal of Ruhl

In Fewster's monograph, he adopts Ruhl's theory of monosemy, but with hesitation. He is critical of Ruhl's theory on the grounds that it is, he claims, based in "cognitive linguistics."[17] Fewster explains,

> Ruhl's version of 'extreme monosemy' does have some shortcomings in terms of its utility in the present context. Monosemy is fundamentally a cognitive linguistic theory and in that regard is primarily concerned with a lexeme's semantics as it relates to the conceptual ordering of the mind, and thus shares many of the shortcomings of cognitive polysemy. The theory, therefore, may be unable to adequately address meaning in terms of social interaction.[18]

Several things can be said in response to this claim. First, Ruhl actually self-identifies as a tranformational-generative linguist. To pigeonhole his theory as a "cognitive linguistic theory" is simply unclear. There are aspects of Ruhlian monosemy that can be called cognitive in some sense. For example, generalized definitions, Ruhl argues, best reflect the way we remember words, and his notion of semantic fields, he claims, reflects the structure of the human mind in terms of the way we draw abstractions. However, it is unclear why this "cognitive" element should disqualify Ruhl's arguments without further critique, especially as Ruhl's monosemic bias does not require analysis of cognitive aspects of meaning. Moreover, whereas cognitive linguistics is generally maximalist in its approach,[19] Ruhlian monosemy is a minimalist endeavour.[20] Grouping Ruhl together with cognitivists thus obscures the distinctiveness of his position.

Second, the world is not divided into cognitive and functional linguistics. Rather, cognitive linguistics, a movement that emerged in the 1980s, takes the functional nature

---

[17] Fewster, *Creation Language*, 36–37.
[18] Fewster, *Creation Language*, 39.
[19] Geeraerts, *Theories of Lexical Semantics*, 183.
[20] Ruhl, *On Monosemy*, xi.

of language to be fundamental.[21] So while Fewster is fully justified in adopting SFL as a framework, I would argue that Ruhlian monosemy is compatible with functionalism, including both social and cognitive frameworks. This is an important point to make, because if monosemy is going to have a broad impact on biblical studies, it will need to be, to some degree, framework independent. SFL asks distinctive questions about language instances, but it is not inherently better than cognitive approaches; it is just better at answering the distinctive questions that it asks.

For example, SFL asks *why* particular language is used, and finds its answer in the particular context of use.[22] Moreover, because language is an irreducibly social phenomenon, a particular context of language use is necessarily describable as a social context—and SFL proponents would argue that this is actually the most appropriate way to view the context. Yet I would agree with Fewster that it is possible to adopt a social, functional framework, to ask social and functional questions, and nevertheless to utilize key features of Ruhl's approach to word meaning.

This claim is evident when we consider the building blocks of Fewster's theory and method. Fewster's account is theoretically rigorous. He introduces, independently of Ruhl, a corpus-driven approach, a systemic view of language, and a lexicogrammatical view of language. Yet each of these theoretical and methodological building blocks already demonstrably present in Ruhl's monograph. Fewster explains the merits of SFL over a "cognitive" approach as its systemic view of language choice and meaning, its functional approach to analysis, and the fact that lexis and grammar are treated as ends

---

[21] Geeraerts, *Theories of Lexical Semantics*, 267.

[22] Fewster (*Creation Language*, 39) explains, "Context informs language use, while language use in turn forms and re-forms the social context. Systemic [functional] linguistics, therefore, posits a direct link between a given context and the use of language within that context."

on a continuum. Yet Ruhl *does* view language as a system, adopt a mediating approach between formalist and functionalist approaches,[23] and explicitly treat lexis and grammar as parts of a broader continuum from abstract to concrete.[24] All of these points are in fact crucial to Ruhl's method of ascertaining what words mean. So while Fewster is fully justified in looking to other sources as he examines each of these issues, as I do in this study, the premature nature of his dismissal of Ruhl's monosemy is evidenced by his repetition of some of the theoretical steps necessary to situate a monosemic approach to lexical semantics as though Ruhl's theory does not already address them.

Third, Fewster's method of analyzing lexemes, though developed in detail, lacks the coherence that makes Ruhl's method so attractive in the first place. Ruhl's hypothesis is, very simply, that contextual information can be filtered out of a semantic definition by positing pragmatic conditions that account for the meaning variation that is evident. Fewster may be attempting this kind of pragmatic explanation, but it is unclear how his analysis takes place. He simply presents his findings along with a number of corpus examples and some discussion.

Noting these points, I find it perplexing when Fewster states, "In light of its [Ruhl's theory's] (occasionally unhelpful) cognitive beginnings, I have shifted the notion of the monosemic bias into a systemic functional framework. In this light, abstracted semantic values are understood as meaning potential that is realized in the lexicogrammar of discourse."[25] It is unclear by what procedure Fewster actually arrives at his "abstracted semantic values."

---

[23] Ruhl, *On Monosemy*, 200.
[24] Ruhl, *On Monosemy*, 182–83.
[25] Fewster, *Creation Language*, 167.

Fewster's Lexicogrammatical Metaphor

In addition to these concerns about Fewster's representation of Ruhl, I have concerns about the way that Fewster identifies a metaphorical usage as an atypical or "dynamic" usage of a lexeme that diverges from the "typical" or "congruent" usage.[26] This way of understanding the distinction between literal and metaphorical is underdeveloped at best. Contrary to Fewster's claims, it is unlikely that the literal meaning of a word can be reliably determined based on frequency or "typicality."[27] A metaphorical extension of a word is not just an atypical usage, but a non-literal or figuratively extended use of a word.

I suggest that Ruhl's understanding of metaphor and his method of distinguishing literal from figurative usages are more intuitive and reliable than Fewster's, because of Ruhl's programmatic definition of abstraction as superordinacy. Viewing a vocabulary as a cline of increasing concretion, Ruhl is able to make sense of figurative usage in a way Fewster cannot. This is best illustrated by way of example.

In *On Monosemy*, Ruhl analyzes the noun *ice*. What he finds is that there are at least two meanings of *ice* that are very difficult to relate to each other. On the one hand, *ice* can be defined as "water frozen solid."[28] But, notes Ruhl, this literal meaning does not account for figurative, emotion-related uses of *ice* (i.e. implying fear or horror). On

---

[26] Fewster, *Creation Language*, 88.

[27] I am interpreting Fewster's comments on pp. 88–89, where he says that corpus analysis reveals the most typical patterns of usage, to indicate that typicality is a matter of numerically frequency. This seems the most likely way to read his explanation, although he may have meant something different by statements like "typicality in a corpus" and "the corpus is a helpful tool for measuring congruence"—more akin to Halliday's view of congruent usage as "the most straightforward coding of the meanings selected." Cf. Halliday and Matthiessen, *Halliday's Introduction*, 731. However, neither Fewster's nor Halliday and Matthiessen's actual method of identifying what is congruent is obvious in their discussions. Fewster sometimes describes congruent and typical usages as the same thing, but he also notes that metaphorical uses may be typical. Regardless, my argument in this section is that Fewster would have been better served theoretically by engaging with the means of metaphor analysis already provided by Ruhl.

[28] Ruhl, *On Monosemy*, 192.

the one hand, as "water frozen solid," *ice* is a very concrete word—that is, it is easily referable to an extralinguistic reality. On the other hand, as a sense of fear or horror, *ice* is a more abstract word. According to Ruhl, this is an example of metaphoric extension because the more abstract sense can be understood as a figurative extension of the concrete sense. In fact, if *ice* did not literally mean "water frozen solid," it is unclear how ice as a sense of dread would make sense at all—the sense of dread is like the feeling of ice. The direction of figurative extension here is critical; frozen water is not called *ice* because it is like a sense of dread, but a sense of dread can be called *ice* because it (apparently) reminds us of the feeling of ice. Fewster claims that the more frequent meaning is the literal, and the atypical meaning is the figurative; by contrast, Ruhl demonstrates that the literal meaning is rather the more concrete of the two meanings, the one on which the figurative meaning relies for meaningfulness and comparison. "Water frozen solid" is the ground; fear or horror is the figure. Thus, Fewster's own model of metaphor, while attempting to incorporate the lexicogrammatical perspective Ruhl outlines, nevertheless neglects the programmatic definition of abstraction that makes monosemic metaphor analysis coherent.

Moving through the final chapters of Fewster's monograph, one is left somewhat confused as to the necessity of the monosemous lexical analysis offered earlier on. This confusion arises in part from Fewster's inclusion of an abstracted, monosemic gloss alongside of an account of its metaphorical extension. In the monograph, κτίσις is accorded the gloss "created thing."[29] However, Fewster also contends that κτίσις participates in a semantic domain/chain that interacts with other semantic domains/chains in the construction of a large-scale metaphor about the redemption of

[29] Fewster, *Creation Language*, 146.

humanity—the created things.[30] If κτίσις is a monosemous word that can refer literally to the created human body, its use in Romans 8 is literal, not metaphorical. I would argue that a metaphorical extension of κτίσις (which is defined as "created thing") does not actually occur in Romans 8. Because Fewster combines lexical and grammatical metaphor into one theoretical conception, he attempts to explain a large scale conceptual metaphor (involving multiple lexemes) as no different than a grammatical metaphor, and ends up describing a non-figurative use of κτίσις as a metaphor when in fact the usage of κτίσις in question fits with the monosemous definition he assigns it.

If κτίσις is a monosemic word that is used to refer to created things, including the human body, then its use in referring to the human body is not a figurative extension of its ground usage. Κτίσις in Romans 8 may exhibit grammatical metaphor (if the noun κτίσις is used to describe a process or act, although this usage, too, could be included in a monosemic definition); however, κτίσις does not exhibit lexical metaphor. Fewster's inclusion of grammatical metaphor is important in moving lexical analysis forward for biblical studies, but his theory of lexicogrammatical metaphor—at least in *Creation Language*—ends up misconstruing both lexical and grammatical metaphor as it pertains to κτίσις.

In summary, Fewster's *Creation Language* is an intriguing attempt at incorporating lexical monosemy into biblical studies, tested in regards to κτίσις in Romans 8. Fewster successfully demonstrates both the appeal of the theory and its utility for biblical studies. His analysis is cast in the framework of SFL, yet readers from various perspectives will benefit from his study. While I have outlined several areas that require further development or clarity, *Creation Language* is an important trailblazing

[30] Fewster, *Creation Language*, 123–24.

work that is sure to play a critical role in the conversation about lexical semantics in biblical studies.

Lappenga's *Paul's Language of Ζῆλος* (2015)

The second monograph is Benjamin Lappenga's *Paul's Language of Ζῆλος: Monosemy and the Rhetoric of Identity and Practice*. Discussion of this study will be brief for two reasons: first, Lappenga does not attempt to outline an extensive linguistic method as does Fewster;[31] second, Lappenga's study is an onomasiological rather than a semasiological approach.[32] A semasiological approach begins with (typically) a linguistic sign (or signs) and proceeds to ascertain information about that sign's meaning within a speech community. An onomasiological approach, by contrast, begins with a meaning that occurs and then explores its communication by means of various linguistic signs.[33] In order to explore how Paul talks about Christian social identity and practice, Lappenga examines the concept of *zeal* by means of the ζηλ- word group. Because Lappenga's monograph is not strictly dedicated to linguistic analysis, his account of monosemy is briefer. I will primarily assess Lappenga's comments and critiques about both Ruhl and Fewster's approaches to monosemy, with a brief discussion of Lappenga's alternative method. While I am largely critical of Lappenga's engagement with Fewster and Ruhl, Lappenga's approach to monosemy, which he casts within the framework of relevance theory, presents an intriguing and exciting approach to using monosemy for qualitative lexical analysis.

---

[31] This is not meant to imply a deficiency in Lappenga's study, only that Fewster dedicates much more space to outlining his linguistic methodology.

[32] Lappenga, *Paul's Language*, 66.

[33] As Geeraerts (*Theories of Lexical Semantics*, 23) puts it, "semasiology starts from the expression and looks at its meanings, onomasiology starts from the meaning and looks at the different expressions."

Lappenga's Account of Ruhl and Fewster

Lappenga's proposal for monosemy, while innovative and promising, is unfortunately situated within what I take to be unjustified and highly critical discourse. I will first outline the criticism he levels at Ruhl, and then examine his comments about Fewster.

Lappenga identifies three problems with Ruhl's *On Monosemy*: (1) the "need for more terminological clarity regarding semantics and pragmatics," (2) "overconfidence about our ability to determine what is in fact a 'convention'," and (3) Ruhl's claims about general, abstracted word meaning.[34] Each of these points deserves a response. First, Ruhl, contrary to what Lappenga claims, does offer a nuanced account of the semantics–pragmatics interface. Although this particular issue is mentioned throughout Ruhl's book, Section 7.2, "Semantic–Pragmatic," is particularly notable.[35]

Second, I would question Lappenga's assertion that Ruhl exhibits overconfidence. Lappenga, for his part, takes a highly individualized view of lexical meaning, given that everyone must have an ultimately unique mental lexicon.[36] Ruhl's idea of generalized semantic meaning shared by users of a language, then, would seem to be in conflict with this position. However, one of the key themes of *On Monosemy* is the complex interaction between language as an idealized system of conventional meanings and language as a highly diverse set of events and instances. The following quotation hopefully answers Lappenga's charge of "overconfidence about our ability to determine what is in fact a 'convention'." Ruhl explains that only some linguistic knowledge is conventional or shared among all users of a given language:

---

[34] Lappenga, *Paul's Language*, 29.

[35] Ruhl's alleged lack of clarity is attributed to a few stray comments at the beginning of *On Monosemy*, which Ruhl subsequently elaborates upon.

[36] Lappenga, *Paul's Language*, 44. However, Lappenga attempts to identify mental lexicon entries primarily in regard to the effect of written texts on the readers of that text.

> Some words are common knowledge, while others are not; and, even with a common-knowledge word, some of its contexts are common and some are not. That is, we have both unity among all speakers, and on a fairly specific level, and also diversity, by dialect, idiolect, registers, or otherwise. I am claiming that some knowledge of a language is shared by all speakers of that language. More generally, some highly abstract knowledge will be common to speakers of all languages.[37]

Rather than exhibiting overconfidence, Ruhl simply attempts to make generalizations of the data.

Third, Lappenga notes that "Ruhl's proposal for monosemy moves in the right direction but falls short because of its reliance on a lowest common denominator approach to 'general meaning.'"[38] What Lappenga specifically objects to is the apparent uselessness of a meaning that is abstracted from all contextual usages. He claims, "Even if certain patterns can be detected among the uses of a word, how can such a vague 'general meaning' be useful, particularly to the study of ancient texts such as those found in the NT?"[39] Similarly, he refers to this perspective on semantic meaning as "fruitless abstraction."[40] This point is the most important, as it presents a potentially serious objection to the use of Ruhlian monosemy in biblical studies. After all, if it is useless, then it is unlikely to appeal to those who view linguistics as an interesting but unnecessary stepping stone to biblical interpretation. Because this third critique of Ruhl dovetails so much with Lappenga's critique of Fewster, however, I will address it in connection with the latter's work.

For Lappenga, Relevance Theory is a framework for explaining how words come to have particular meaning in texts, not an explicit method for identifying those

---

[37] Ruhl, *On Monosemy*, 144–45.
[38] Lappenga, *Paul's Language*, 54.
[39] Lappenga, *Paul's Language*, 30.
[40] Lappenga, *Paul's Language*, 31.

meanings.[41] According to Relevance Theory, the most relevant mental items are activated for the lexeme's mental grab-bag. Since he does not rely on Relevance Theory for a method of definition, Lappenga turns to Ruhl's monosemy. Based on his understanding of Ruhl, Lappenga does not attempt to define *zeal*, and actually critiques Fewster for defining κτίσις. Ruhlian monosemy, according to Lappenga, is a theory of the radical underspecification of words; words cannot be adequately defined, hence they should not be defined. Unfortunately, this is a misunderstanding of Ruhl. Using a paraphrase to describe a lexeme is not a problem, because Ruhl does not explicitly rule out paraphrases; he argues only that many, not all, words are incapable of being adequately paraphrased.[42]

In fact, Ruhl explicitly claims the precise opposite of what Lappenga asserts. As noted above, Ruhl actually defines *ice* as "water frozen solid."[43] Lappenga offers the argument that only procedural (i.e. grammatical) but not conceptual words can be paraphrased. Yet Ruhl paraphrases *ice* exactly because it is a conceptual, rather than grammatical word.[44] Contrary to Lappenga's construal of Ruhl, Ruhl actually says, "A literal meaning [i.e. definition] need not be solely semantic, if at all."[45] In other words, a definition should usually include some pragmatic information; the more concrete the word, the more pragmatic information is necessary in order to produce an adequate definition. Though I agree with Lappenga that the way Fewster arrived at his definition

---

[41] Lappenga, *Paul's Language*, 52.

[42] Lappenga (*Paul's Language*, 55) notes that Fretheim's "more helpful" study of monosemy also uses paraphrases, but explains that this is not a problem because Fretheim offers definitions for *procedural* words, rather than *conceptual* words. Cf. Fretheim, "In Defence of Monosemy." Fretheim analyzes four terms, and the last (Norwegian: *med en gang*/*med det samme*) is actually, according to Fretheim, a conceptual word, with an encoded "conceptual meaning" shared, moreover, by the two "synonymous lexical items" ("In Defence of Monosemy," 107).

[43] Ruhl, *On Monosemy*, 200.

[44] Ruhl, *On Monosemy*, 177.

[45] Ruhl, *On Monosemy*, 192–93.

is unclear, it is nevertheless a misrepresentation when Lappenga labels Ruhl's notion of general meaning a "fruitless abstraction" that Fewster "does not move past."[46]

Lappenga also mistakenly critiques Porter and Fewster for merely "paying lip service to Ruhl"[47] and claims, "My approach maintains ties with Ruhl; Fewster's does not."[48] I find this to be a puzzling critique in three ways. First, both parties are manifestly utilizing a monosemic bias.[49] Second, neither party even refers to, much less interacts critically with or "maintains ties with" Ruhl's theory as it is developed beyond the first few chapters of *On Monosemy*.[50] Third, there is no reason beyond utility or coherence to demand strict adherence to one theory—Lappenga should know this, as he proceeds to castigate Ruhl's notion of general meaning while still attempting to utilize a monosemic bias. As long as coherence is achieved by some means, theorists are free to be creative.

Lappenga points out that "Fewster's dismissal of cognitive approaches is far too sweeping, since language-in-use can in fact interact efficiently with a cognitive framework."[51] As noted above, I agree with Lappenga's critique on this point. However, I find Lappenga's dismissal of Fewster to be equally sweeping. "Unfortunately," Lappenga disputes, "by dispensing with the way Ruhl understands monosemy actually to function, Fewster has forfeited any substantive theoretical basis for holding to a monosemic bias."[52] I cannot see why this critique does not cut both ways. It is unclear

---

[46] Lappenga, *Paul's Language*, 31–33.
[47] Lappenga, *Paul's Language*, 35.
[48] Lappenga, *Paul's Language*, 36.
[49] Though their particular take on monosemy differs.
[50] As far as I can tell, neither Fewster nor Lappenga actually makes reference to Ruhl beyond the halfway point of his monograph. Porter (*Linguistic Analysis*, 51–53) engages in a more thorough summary of Ruhl than either.
[51] Lappenga, *Paul's Language*, 37.
[52] Lappenga, *Paul's Language*, 36.

how Lappenga's own particular reading of Ruhl justifies adopting Ruhl's method, much as it is unclear how Fewster's reading of Ruhl condemns Fewster's own appropriation of monosemy. Luckily for both authors, this critique in fact cuts *neither* way. There is no fundamental affinity or dissonance between monosemy and either Relevance Theory or SFL, and whether one framework is closer to Ruhl's than the other is entirely immaterial.

Fewster's definition of κτίσις is also the object of Lappenga's criticism. The latter asks,

> If '*something that has been brought into existence*' is present in all occurrences [of κτίσις], how does Fewster account for instances where the *act* of creation and not a *thing* is in view? . . . Fewster does not consider such questions before arriving at his preferred monosemic value for κτίσις.[53]

This critique is equally puzzling, since Fewster discusses grammatical metaphor at length and explicitly notes that κτίσις exhibits a common pattern of being a nominalization of the act of creation. Thus, notes Fewster, "This nominalized construal functions, first and foremost, to concretize the reader's experience of a creative act, that is to say, a creation always implies a creative act."[54]

In summary, Lappenga's critiques of both Fewster and Ruhl appear to be unwarranted. Thankfully, this does not invalidate Lappenga's own novel approach to monosemy, which I will now briefly describe.

Lappenga's Monosemy-Based, Relevance-Theory-Inspired Analysis

Lappenga's goal is to analyze the development of a concept within Paul's letters. While ζῆλος is assigned multiple senses in the lexicon, Lappenga aims to identify what it is

[53] Lappenga, *Paul's Language*, 36.
[54] Fewster, *Creation Language*, 112.

that semantically bridges Paul's repeated uses of the same ζηλ- stem. Paul's repetition, he argues, is intended to shape the audience's concept of ζῆλος, to modify "the cognitive environment of the hearer."[55] "My argument," he explains, "is that multiple occurrences within a text or corpus do in fact shape one another, and that the appropriate way to account for this (especially for exegetical study) is to endorse a monosemic bias."[56]

Lappenga relies on Sperber and Wilson's Relevance Theory, with its attendant view of meaning: specifically, the meaning of an utterance is underdetermined by the words used to communicate it.[57] An author chooses words that will convey the most meaning while requiring the least effort. Ultimately, this leads Lappenga to construe the ζηλ- word group as a "grab-bag" of ideas and concepts that are variously activated in context according to the audience's assumptions about what is most relevant to Paul's message. "To summarize my proposal," he says, "a definition of ζῆλος might contain some elements that can be communicated with words, but must be conceived of as a single grab-bag of mental items (memories, mental images, pieces of encyclopedic and/or anecdotal information)."[58]

Of course, words can be conceived of in many different ways. Linguistic analysis is not merely the presentation of objective facts about language; it necessarily involves a construal of language. Psychological approaches to meaning analysis are not inherently more suitable than social approaches any more than psychology represents the human experience "better" than sociology does. It is simply a matter of arriving at

---

[55] Lappenga, *Paul's Language*, 41.

[56] Lappenga, *Paul's Language*, 54. According to Lappenga, Paul creates an ad hoc concept of zeal through repetition of the ζηλ- word group. It should be noted that Fewster (*Creation Language*, 116), too, includes a discussion of ad hoc domains.

[57] Lappenga, *Paul's Language*, 41.

[58] Lappenga, *Paul's Language*, 56.

different answers to different questions. Lappenga's Relevance-Theory-inspired approach to monosemy provides a useful tool for discovering what can be made of key concepts in the biblical text. Viewing multiple instances of a lexeme together helps us avoid the mistake of assuming that we cannot infer meaning beyond what is explicitly lexicalized in a given utterance. "Most important," explains Lappenga, "is that the writer will leave implicit everything the reader can be trusted to supply 'with less effort than would be needed to process an explicit prompt.'"[59] Thus the analysis of concepts, in light of Lappenga's study, should not attempt merely to reproduce the explicatures of the biblical text; it should also seek to identify the most relevant implicatures, with the aim that we would read the entire text according to its own implicit and explicit aims, so far as those can be inferred.

Though Lappenga diverges significantly from Ruhl, his analysis of the ζηλ- stem fits well within Ruhl's notion of semantic fields. The stem, on this view, comprises a superordinate category with semantic substance that is subdivided more specifically by its hyponyms. Thus, Lappenga's approach to lexical analysis provides a case study in analysis of lexical items using monosemy.

Conclusion

My primary critique for both authors is the limited sense in which they conceive of monosemy as a methodology. While Ruhl's method involves positing pragmatic mechanisms to factor out contextual modulation in order to identify a word's semantics, neither of the authors attempts an explicit analysis along these lines. When they mention a "monosemic bias" they seem to mean something like a willingness to assume

[59] Lappenga, *Paul's Language*, 48. Citing Green, "Relevance Theory and the Literary Text," 215.

monosemy is more correct than polysemy. Thus Fewster ends up arriving at a definition based on a process that he does not make entirely explicit in his monograph (he outlines many observations, but does not explain exactly how he factors out contextual modulation), and Lappenga decides to avoid providing a definition altogether.

Fewster has displayed the corpus-linguistic use of a monosemic bias within the framework of SFL, and Lappenga has offered an example of how relevance theory can be used in conjunction with monosemy to answer questions about concepts within the biblical text. Both of these authors have helped to set a trajectory for the kind of monosemy-based study that Porter has proposed,[60] and it is to be hoped that others will see the potential as well. Future development should take cues from both these authors, and methodological questions should continue to be raised and answered.

Though I have offered a number of critical remarks regarding both of the monographs mentioned in this chapter, my criticisms do not detract from the value of either the monographs themselves or the role that a monosemic bias plays in these monographs. It is always easier to critically evaluate than to do the hard work of theoretical trailblazing, and all the more so in biblical studies, where traditional methods are heavily entrenched. Both of these monographs have advanced the minimalist trajectory for analyzing the meaning of words, and for that the authors are to be strongly commended.

[60] Porter, *Linguistic Analysis*, 59.

CHAPTER 5. CASE STUDY: THE MEANING OF ἘΝ

Introduction and Research Question

Throughout this thesis, I have maintained that biblical studies is in need of tools and theoretical foundations for empirical analysis. Lexicons and grammar books of the Greek of the New Testament, I have shown, provide insubstantial polysemic descriptions of both lexical and grammatical features. Monosemy, I have argued, provides a way to account not only for concrete lexical classes, but also for relatively abstract grammatical classes.. In order to test this claim, I will pursue a monosemic analysis of a set of prepositions, focusing especially on ἐν.

As a preliminary definition (which I will revisit), prepositions are uninflected particles, similar to adverbs. Prepositional word groups typically function as Adjuncts, modifying Predicators (i.e. the verbal that grammaticalizes a clause's process) in some way. Often, ἐν in a given passage is assigned a function in light of its context, as I have illustrated in Chapter 1. Porter outlines the following five functions for ἐν: Locative, Distributional, Spherical, Temporal, and Instrumental.[1] Wallace lists ten uses.[2] BDAG likewise lists twelve major senses.[3]

Some of ἐν's assigned senses or functions overlap with the functions assigned to the dative case, such as locative or instrumental. The question I will address in this

[1] Porter, *Idioms*, 156–59.
[2] Wallace, *Basics of New Testament Syntax*, 167.
[3] Danker, ed., *Greek-English Lexicon*, 326–30.

chapter is: if a given use of ἐν is instrumental, how can it be distinguished from an instrumental dative? Consider the following example. In Mark 4:2 and 11, Jesus teaches ἐν παραβολαῖς.

> καὶ ἐδίδασκεν αὐτοὺς ἐν παραβολαῖς πολλά . . . (Mark 4:2)
>
> . . . ἐν παραβολαῖς τὰ πάντα γίνεται (Mark 4:11)

However, at the end of the chapter, he speaks παραβολαῖς.

> Καὶ τοιαύταις παραβολαῖς πολλαῖς ἐλάλει αὐτοῖς τὸν λόγον, καθὼς ἠδύναντο ἀκούειν (Mark 4:33)

I want to explore in this chapter what it is that makes the ἐν+dative Adjunct different from a simple dative Adjunct. Consider the following example: in Matt 3:11 and John 1:26, 31, 33, John the Baptist mentions baptism ἐν ὕδατι. In Luke 3:16 and Mark 1:8, however, he mentions baptizing ὕδατι. An instrumental use of the dative would seem to be identical in meaning to an instrumental use of ἐν+dative. If the function is the same, why is there a difference? Why did the authors choose to include ἐν, or not? Wallace acknowledges that the ἐν+dative construction "overlaps with the simple dative uses to a great extent, but not entirely."[4] Furthermore, he claims, "*the use of a particular preposition with a particular case* ***never*** *exactly parallels . . . the use of a case without a preposition*."[5]

In this chapter, I will explore the "not entirely" and "never exactly" aspect of this explanation. Even though Wallace asserts that "one ought not look for some kind of invariant meaning that is always present with the preposition," I will argue that ἐν's invariant meaning is precisely the missing piece of the puzzle that can explain why ἐν+dative is different than merely a dative. This case study will follow this basic outline:

---

[4] Wallace, *Basics of New Testament Syntax*, 167.
[5] Wallace, *Basics of New Testament Syntax*, 164.

(1) I will first consider what we already know about the dative case, prepositions, and ἐν; (2) I will point out some of the problems with the traditional explanation of prepositions and their relationship to cases, suggesting instead that prepositions be considered particles that enter into satellite relationships; and (3) I will conduct analysis using the linguistic insights described in this thesis.

Ultimately, I will demonstrate that a minimalist approach is capable of explaining the difference between ἐν+dative and a simple dative better than a traditional polysemic and part-of-speech explanation. I hypothesize CIRCUMSTANCE as the lexicogrammatical meaning (note: not gloss) of ἐν.[6] Furthermore, I will argue that ἐν, in accordance with the notion of semantic fields outlined by Ruhl, should be understood as a superordinate term that can be further specified by other prepositions, such that other prepositions[7] contribute more than but not less than ἐν's lexicogrammatical meaning.

Preliminary Groundwork

In what follows I will attempt to outline some basic morphological categories within which to frame an explanation of the forms traditionally called prepositions. I first discuss the relationship between prepositions and cases. While I will utilize Porter and Pitts's account of the dative, I will take issue with widely held views of prepositions, their relationship to cases, and the traditional part-of-speech categories. I will explain how the overarching category of particles explains the similarities between adverbs and prepositions.

---

[6] On the use of small caps see p. 6, n. 9.

[7] The full set of hyponyms will remain indeterminate due to the scope of this analysis. However, the most immediately relevant terms will be posited and considered.

Cases and Prepositions

The lexicogrammatical meanings of the cases are an important factor to consider when analyzing prepositions, given that prepositions almost always collocate with nominals. Case meanings, furthermore, correlate with some preposition meanings, despite the fact that, as I will argue below, cases do not govern prepositions. According to Porter's summary,

> Although the correlation is far from exact, most prepositions have a fundamental sense related to being situated in, moving toward or moving away from a location. Prepositions used with the accusative case often carry a sense of motion or direction toward a location; prepositions with the genitive case often carry a sense of motion away from a location; and prepositions with the dative case often carry a sense of rest.[8]

The fact that some general aspects of prepositional meaning can be correlated with the oblique cases, coupled with the fact that most prepositions correlate highly with particular cases, allows us to draw some general parallels between the two systems. The system network Porter and Pitts outline is shown in Figure 4.[9]

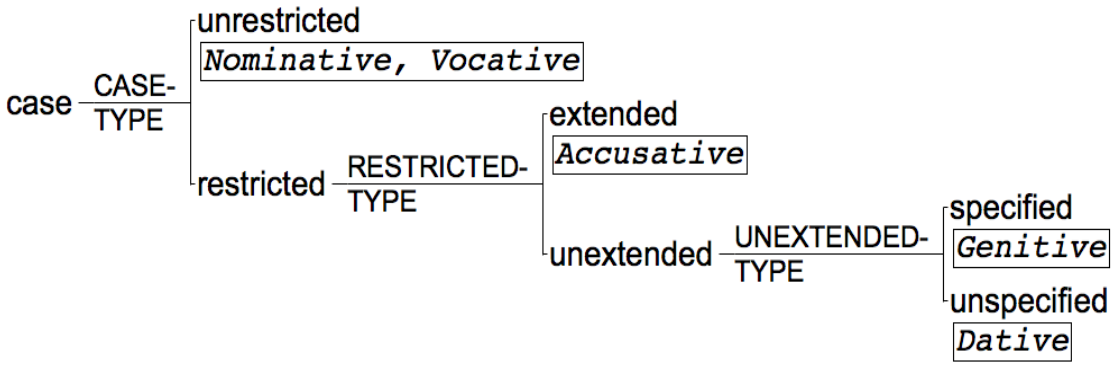

Figure 4. Case system network.

On this model of the case system, the dative grammaticalizes unspecified and unextended restriction. Alternatively, Porter has described the lexicogrammatical

[8] Porter, *Idioms*, 192.
[9] See Porter and Pitts, "Πίστις with a Preposition."

meaning of the dative case as RELATION.[10] As far as I can tell, the difference between these two descriptions lies, in some sense, in the distinction between substance and paradigmatic value. RELATION indicates the substance, whereas the longer description outlines its place within its paradigm. The lexicogrammatical meanings of the prepositions, however, cannot be simply overlaid onto the case system for two reasons. First, the frequencies are misaligned. The dative is the least frequent case, whereas ἐν is the most frequent preposition.[11] Second, many prepositions can be used with more than one case. The distribution of prepositions with nominals is represented in Table 3.

	Genitive	**Dative**	**Accusative**
[One Case]	ἀντί, ἀπό, ἐκ, πρό	ἐν, σύν	ἀνά, εἰς
[Gen + Acc]	διά, κατά, μετά, ὑπέρ, ὑπό		διά, κατά, μετά, ὑπέρ, ὑπό
[All 3 Oblique]	ἀμφί, ἐπί, παρά, περί, πρός		

Table 4. Preposition and case co-occurrence.

The fact that no prepositions seem to co-occur with the genitive and dative but not the accusative, or the accusative and dative but not the genitive, implies that prepositions that occur solely with the dative are either more abstract or more concrete than most of the other prepositions.[12] In regard to ἐν, it correlates with the dative meaning of unspecified and unextended restriction. The lexicogrammatical meaning of ἐν, CIRCUMSTANCE, which I will discuss below, fits this observation. By contrast, εἰς is

[10] Porter, *Idioms*, 97.

[11] For case frequencies see Wallace, *Basics of New Testament Syntax*, 25. There are open questions regarding the relationships between the cases and with superordinate systems. For example, according to markedness, one would expect the dative to be more and not less marked than the other oblique cases, due to its lower frequency (assuming this frequency correlates with restriction on distribution). Also, there is room to question the role of the vocative, especially in light of other highly restricted inflectional paradigms such as adverb suffixes. However, these questions will have to wait for a future project.

[12] Throughout this chapter, I will sometimes refer to the abstract–concrete distinction with the terms imprecise and precise. That is, a more abstract sign has a relatively imprecise lexicogrammatical meaning in relation to signs that share its paradigm or semantic field.

selected when restricted extension is being communicated by the accusative case. Not surprisingly, Table 6, later in the chapter, shows that εἰς is attributed the functions Directional, Extensive, and Purpose, which intuitively fit the accusative case meaning, restricted extension. In light of the Columbia School notion of communicative strategies, it is probably more accurate to describe these functions as notional fractions of communicative messages associated with uses of εἰς in context. Likewise, Porter and Pitts's labels may relate similarly to messages, yet the fact that their labels constitute invariant values makes them suitable for this preliminary investigation. As mentioned previously, hypothesizing and testing meanings is a cyclical or recursive process. We will need to consider the possibilities for a new explanation that can describe the underlying semantic choices indicated by the distributional facts of these forms.

Prepositions generally comprise adverb-like nominal modifiers. It is interesting to note, for example, that the OpenText annotation scheme specifies the clause component *Adjunct* as containing "adverbs, adverbial clauses, prepositional phrases modifying the verb."[13] Porter's explanation of adverbs, furthermore, bears strong similarities to his explanation of prepositions.

> *Adverbs are a class of particles or indeclinable forms often used to modify verbs and other modifying words*.[14]
>
> *Prepositions are indeclinable fixed forms or particles used to enhance the force of the cases when words or groups of words are linked together.*[15]

---

[13] O'Donnell, "Introducing OpenText.org." More specifically, "An Adjunct (A) of a clause is a word group or the word groups that modify the predicate, providing an indication of the circumstances associated with the process. Common adjuncts are prepositional and adverbial phrases (adverbs) and also embedded 'adverbial clauses.' With relation to the process of the clause, adjuncts provide answers to questions of the type 'where?', 'when?', 'why?' and 'how?'." OpenText does treat prepositions and their "head terms" differently, prepositions being "specifiers" and head terms modified by prepositions being "relators," due to the relationships being modelled (whether "up" or "down" to higher or lower ranks).

[14] Porter, *Idioms*, 125.

[15] Porter, *Idioms*, 139.

The key difference between the two is that adverbs are described from the perspective of the Predicator—they modify the verb—whereas prepositions are described from the perspective of the nominal—they modify the nominal group's Head Term. However, from the functional perspective of OpenText, both are typically Adjuncts that can modify Predicators. The picture is also more complicated than this. Both adverbs and prepositional word groups can also modify nominals. Furthermore, prepositions are frequently prefixed to verbals, in which case they are no longer functioning as Adjuncts.

In summary, the dative case grammaticalizes the paradigmatic value of unspecified, unextended restriction (and possibly the substance of RELATION). Prepositions are adverb-like uninflected forms usually modifying a Head Term.

Prepositions, Adverbs, and Categories: A Monosemic Ground-Clearing Exercise

The traditional explanation of prepositions is that they constitute a part of speech, along with other parts of speech such as verbs, nouns, adverbs, adjectives, conjunctions, etc. In keeping with this view, the semantic relationship between a preposition and the nominal it modifies is determined by government.[16] There are three issues I want to raise with regard to the part of speech view. First, no airtight distinction exists between prepositions and adverbs, as they overlap. Second, claiming that prepositions and adverbs (and conjunctions, I might add) are distinct parts of speech could imply that they are distinct to the same degree as nouns and verbs are distinct.[17] Rather, they are all

[16] Even where government is not explicitly tied to the part-of-speech view, this language is routinely used to discuss the preposition–nominal relationship.

[17] I am drawing a possible implication. Porter evades this critique by having highly similar definitions for the two categories, which reflect, as I will argue in this section, their subordinate relationship to the category they both belong to. It is hard to know how Wallace would describe the difference as he does not treat either adverbs or particles more generally under a distinct heading (he does have a section for conjunctions).

better understood as part of a superordinate category, particles. Lastly, the phenomenon of government is wrongly attributed to either prepositions or nominals, and belongs instead to the contextual message level.

Overlap Between Adverbs and Prepositions

As regards the first issue, that there is no airtight distinction between prepositions and adverbs, the relationship between them is complicated. Moule notes that "the distinctive name is only a convenience," and no clear line can be drawn between prepositions and adverbs.[18] According to Wallace, "Prepositions are, in some respects, extended adverbs."[19] As Porter points out, "The adverb is a neglected class of words in Greek grammatical discussion."[20] He adds, "[Prepositions] have proved to be both interesting and challenging to grammarians of Greek, because although they are small, unchanging words, they are often made to perform a number of different functions."[21] Both of these classes, in other words, present the analyst with difficulties. Besides being similarly problematic, though, these two classes likely have a common history. According to Porter,

> Many grammarians note that there is a relationship between adverbs and prepositions. In fact, it is widely thought that prepositions developed from adverbs. Particular adverbs were selected by users of Greek to specify relations between one word or phrase and other words in the sentence, such as a substantive, a verb or a verb phrase. These adverbs became prepositions.[22]

Perhaps, though, the adverbs that became prepositions actually never ceased to be adverbs—or rather, one could argue that they are both fundamentally *particles*. In fact,

---

[18] Moule, *Idiom Book*, 48.
[19] Wallace, *Basics of New Testament Syntax*, 160.
[20] Porter, *Idioms*, 125.
[21] Porter, *Idioms*, 139.
[22] Porter, *Idioms*, 139.

some prepositions, the so-called improper prepositions, are "generally considered adverbs."[23] Take, for example, Matt 11:12, where Jesus says,

> ἀπὸ δὲ τῶν ἡμερῶν Ἰωάννου τοῦ βαπτιστοῦ **ἕως ἄρτι** ἡ βασιλεία τῶν οὐρανῶν βιάζεται, καὶ βιασταὶ ἁρπάζουσιν αὐτήν.[24]
>
> And from the days of John the Baptist until now, the kingdom of the heavens is overcome by force, and the violent overpower it.

Here, ἕως modifies ἄρτι; the line between preposition and adverb is blurred in this case.

I would argue that much confusion can be avoided by maintaining clarity about what level of abstraction is being engaged. Typically, these classes are not considered at an abstract enough level. Ultimately, the names "pre-position" and "ad-verb" betray the fact that syntactic considerations underlie these categories.[25] These classes should not be classified by syntax, because syntax reflects either co-textual enrichment (i.e. structural features) or aspects of the message (i.e. syntactic roles, such as indirect object, etc.). Similarly, from a functional perspective, adverbs and prepositions cannot be discrete categories due to infrequent or exceptional cases. Consider, for example, Matt 25:23:

> ἔφη αὐτῷ ὁ κύριος αὐτοῦ· **Εὖ**, δοῦλε ἀγαθὲ καὶ πιστέ . . .
>
> The lord said to him, "Well, good and faithful servant . . ."

In this verse the adverb, εὖ, stands on its own. The OpenText annotation is as follows:

Matt.c25_79 ↖c25_74	P	C	S
	ἔφη	αὐτῷ	ὁ κύριος αὐτοῦ

Matt.c25_80 ↖c25_79	A	add
	εὖ	δοῦλε ἀγαθὲ καὶ πιστέ

There is, however, no Predicator present. The adverb or Adjunct is not in this case modifying a Predicator. I argue that exceptions such as this may indicate that syntactic

[23] Porter, *Idioms*, 126. Cf. Wallace, *Basics of New Testament Syntax*, 160.
[24] Cf. John 13:19, 14:17; Rev 14:13.
[25] There is, of course, nothing incorrect about syntactical categories. However, I am interested in a question about the function of the dative in relation to ἐν+dative, a question that syntax has not been able to clarify.

or functional definitions, which often result in a list of exceptions to the rules, are less comprehensive than an explanation that follows the Columbia School theory's description of "satellite clusters" mentioned in Chapter 2. Adopting a minimalist perspective, though, does not necessitate that we avoid categorizing linguistic classes entirely, only that we attempt to formulate categories on the basis of observable sign patterns.

Particles

Regarding the second issue, prepositions and adverbs (and conjunctions) might mistakenly be understood as being distinct on the same level as prepositions and nouns, or adverbs and verbs if classified in terms of parts of speech. We can understand the second problem in light of the first: prepositions and adverbs are difficult to distinguish because, I would argue, they are fundamentally the same linguistic class on one level of abstraction. Therefore, I argue that prepositions contribute to contextual messages in the same way as adverbs do. Even though prepositions typically follow a different *syntactic* pattern than adverbs (i.e. modifying nominal groups rather than verbal groups), the *semantic* contribution is not strictly distinguishable between the two classes. It is necessary to begin with morphological–inflectional categories in order to make this affinity apparent, and the significance of this change of perspective will be discussed below. The traditional parts of speech of Hellenistic Greek are summarized next in Table 4:[26]

[26] For discussion about a morphological lexicon, see blog posts at http://jktauber.com

	Gender	Number	Case	Person	Mood	Aspect	Voice
Adverb	?	?	?	–	–	–	–
Preposition	–	–	–	–	–	–	–
Conjunction	–	–	–	–	–	–	–
Intensive	–	–	–	–	–	–	–
Noun	+	+	+	–	–	–	–
Adjective	+	+	+	–	–	–	–
Proform	+	+	+	?	–	–	–
Article	+	+	+	–	–	–	–
Participle	+	+	+	–	–	+	+
Finite Verb	–	–	–	+	+	+	+
Infinitive	?	?	?	–	–	+	+

Table 5. Traditional part-of-speech categories.

As the table indicates, there are two key identifiable clusters in these parts of speech, depending on which inflectional paradigms they participate in. On the one hand, there are forms that realize case, such as nouns, adjectives, and proforms. On the other hand, there are forms that realize aspect and voice, including finite verbs, participles, and infinitives. With only two exceptions, particles (which realize neither) and participles (which realize both), these two sets are mutually exclusive.

The question marks in the table above represent potentially debateable forms; infinitives could perhaps be said to have person, number, and case insofar as they can be modified by an article, and the so-called "personal pronouns," such as ἐγώ, σύ, ἡμεῖς, and ὑμεῖς, could be said to inflect person. Yet, these forms do not reflect any choice regarding the inflectional paradigms in question—there are no other options available. Therefore, these disputable forms should only be classified in terms of the inflectional paradigms they participate in morphologically.[27] This part-of-speech table can thus be rendered more concisely, as in Table 5:

[27] As for the category "adverbs," I am not including those forms Moule (*Idiom Book*, 160) calls adverbs which are simply, for example, neuter nouns. I have in mind here particularly adverbs that are indeclinable forms as specified by Porter, *Idioms*, 125.. Furthermore, since nominal stems can be transformed into adverbs by the addition of the -ως suffix, it seems likely that a combination of the stem and the adverbial partical ὡς—or something similar—results in these forms, and thus there is plausibly an explicit adverbial morpheme being included in these compound forms.

	Case	Aspect
Particle	–	–
Case-form	+	–
Participle	+	+
Aspect-form	–	+

Table 6. Simplified parts of speech.

Based on this sign typology, we can identify four formal distinctions that provide basic categories of linguistic signs that share inflectional paradigms with each other: (1) *case-forms*, or nominals (2) *aspect-forms*, or verbals (3) *participles*, which comprise the overlap of the first two, and (4) *particles*.

Analogous to Ruhl's conception of language as an implicational hierarchy of signs, though with some differences,[28] these formal categories could be ordered based on the semantic space they occupy. At the top of the hierarchy is the set of orthographic signs in the language. These signs are orthographic in the sense that signs such as word order and tone are being set aside, with the focus instead being placed on the morphological categories. The first major subdivision is between the uninflected or fixed forms (particles) and the inflected forms. The inflected forms comprise both nominals and verbals, with participles being subordinate to both of these.

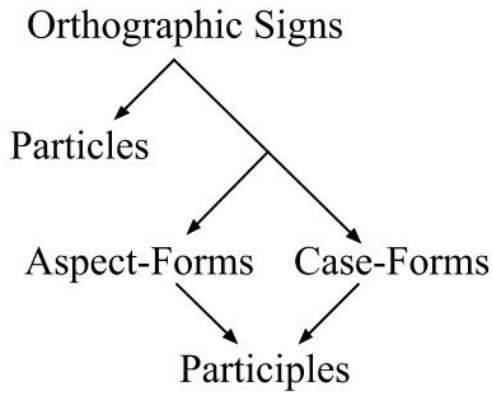

Figure 5. Typology of Orthographic Signs in Hellenistic Greek

[28] Each category is in theory represented by the most abstract sign within the category, with more concrete signs being hyponyms to more abstract signs.

Viewed as a more detailed hierarchy, the categories can be depicted as in Figure 6 (I will elaborate on the PARTICLES category in the next section):

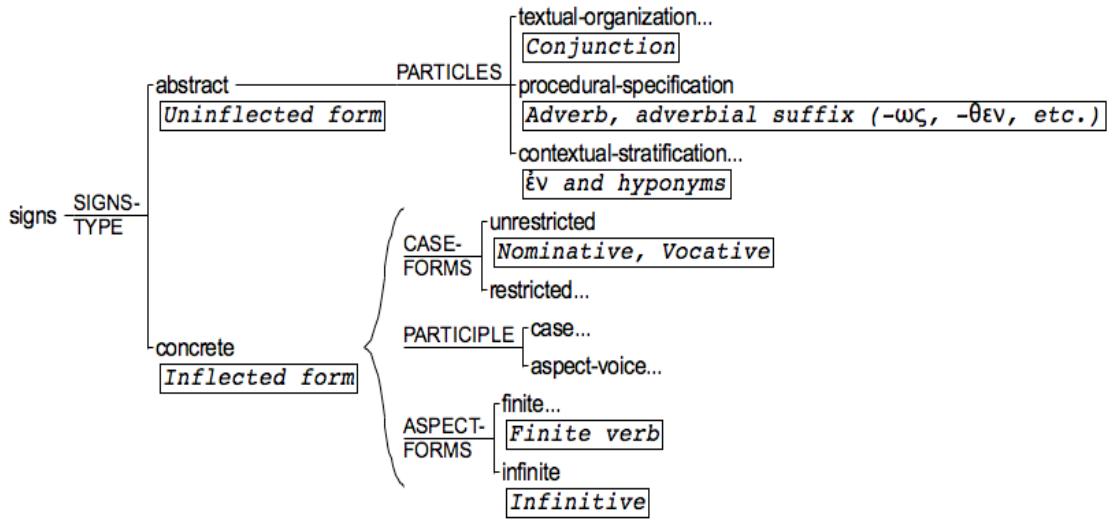

Figure 6. Hierarchy of morphological classes.[29]

Bear in mind that the initial distinction between abstract (realized by uninflected forms) and concrete (realized by inflected forms) is a *relative* distinction. That is, particles are more abstract than inflected forms, though all the signs are abstract relative to the instantiations of these signs in actual usage. This general perspective on some of the most abstract morphologically identifiable categories in Hellenistic Greek will allow us to take a different perspective on the next problematic question, the phenomenon of government.

Government

An enduring question regarding the semantics of prepositions is the question of government. According to Porter, "Prepositions are indeclinable fixed forms or particles *used to enhance the force of the cases* when words or groups of words are linked

[29] The systems depicted in Figure 6 are for illustrative purposes; the focus of this study is on the PARTICLES system, which is the only system I am attempting to model, and only in a limited way.

together."[30] As he explains, "Analysis of prepositions has led many grammarians to say that prepositions govern particular cases."[31] Wallace, for example, takes this view. Porter, by contrast, argues that cases instead govern prepositions. He claims, "A preposition is governed by its case, in some way helping the case to manifest its meaning and to perform more precisely its various functions," However, Wallace, though he allegedly disagrees with Porter, arrives at a similar point, claiming, "Prepositions are used with cases either to *clarify*, *strengthen*, or *alter* the basic case usage."[32] The two views, then, are rather similar. While there are differences, both positions attempt to address the fact that prepositions and nominals exert influence on each other. The metaphor of "government" prompts the question of what determines the function of the prepositional word group. Do prepositions determine the function of the group, or does the Head Term?

The question is actually wrongly stated. Once we see that the generally asserted "functions" are actually being identified at the level of contextual message, not at the level of lexicogrammatical meaning, then the question is meaningless. That is, a dative nominal is "instrumental" in function on the basis of the contextual message it is used to indicate, and an "instrumental" use of ἐν is also identified on the basis of contextual factors. Thus, while these functions could describe communicative strategies, they cannot be attributed either to the case or to the preposition. They are neither general enough categories to account for the lexicogrammatical meanings of any of the involved signs, nor specific enough to account for all of the contextual messages they are associated with. This is almost always the result of a maximalist analysis, because the

[30] Porter, *Idioms*, 139, emphasis added.
[31] Porter, *Idioms*, 140.
[32] Wallace, *Basics of New Testament Syntax*, 163.

analyst attempts to approximate the lexicogrammatical meanings to the contextual messages, and thus ends up formulating a description somewhere in between the lexicogrammatical meaning and the contextual message.[33] Such a description does not explicitly delineate the contextual parameters that justify the identification of the message in an actual instance, let alone the interpretive protocols needed to arrive at that message from the lexicogrammatical meanings of the signs. The unintended result of this kind of analysis is exegetical stalemates between those who see an "objective" genitive and those who see a "subjective" genitive, or between those who see a "Dative of Means" and those who see a "Dative of Agency."[34]

If the polysemic functions (i.e. instrumental, cause, etc.) being asserted are not always part of the lexicogrammatical meaning of either the case or the preposition—but only potentially so—then the lexicogrammatical meaning of prepositions remains unclear, since we are only modelling a few general functions at an arbitrary level of abstraction, rather than the absolute standard of comprehensiveness within a corpus. Adopting the "satellite cluster" view, particles cluster with nominals (or verbals, as in the case of prefixed particles) as satellites orbit stars, and thus particles modify the lexicogrammatical meaning of the star.[35] The particle does not determine the star's "function," since more co-text or context are required to interpret a function.

If prepositions are modelled as morphemes within the particles class, then a number of infrequent instances become less problematic. For example, in 1 Cor 5:12 there are articular adverbs, and in Rev 21:2 ἀνά is used "as an adverb distributively."[36]

---

[33] See Chapter 1 of this work.
[34] Cf. discussion of πνεύματι in Wallace, *Basics of New Testament Syntax*, 76.
[35] Consistent with Porter's position.
[36] Moulton, *Grammar*, 1:105.

Yet neither of these uses clash with the categories established above, as any morpheme, whether a particle, nominal, verbal, or participle can be used as either a "satellite" or as a non-satellite. In theory, essentially any morpheme can modify or be modified by any other morpheme (consider, for example, Paul's "made up" words, such as θεόπνευστος or ἀρσενοκοίτης).[37] The resulting satellite clusters can be understood on the level of contextual message to comprise different part of speech (or syntactic structures). However, these are *a priori* constructs, and thus should be formulated as communicative strategies or in terms of probabilities.

This view also accounts for typical uses, as a morpheme's lexicogrammatical meaning will make it more useful in achieving some communicative goals rather than others. Those morphemes with more abstract meaning will tend to be used more often as satellites, and those morphemes with more concrete meaning will tend to be used more often as non-satellites.[38] This tendency is more traditionally understood as the distinction between lexis and grammar, but according to monosemy it is not a result of the "class" or "part of speech" of the morphemes or lexemes, or else of a fundamental distinction between lexis and grammar, but rather because of the lexicogrammatical meanings of those morphemes.

Summary

Accounting for the distribution of ἐν+dative relative to the dative case involves rethinking the categories we use to approach Hellenistic Greek. Prepositions and

[37] Ultimately there are very few potential combinations actually exploited in the corpus. This is due, however, not to the classes of the morphemes, but rather to (a) the relative abstractness of concreteness of the morpheme, (b) the meanings of the morphemes, and (c) other, more efficient means at the language-users disposal.

[38] I am intentionally avoiding the chicken-or-egg question of how speakers produce *langue* from *parole*.

adverbs, rather than being strictly distinguished as different parts of speech, should both be analyzed in terms of an overarching morphological category of particles. The function of prepositional phrases has traditionally been understood in terms of government. Shifting categories to the Columbia School understanding of satellite clusters enables a clearer picture to emerge. On this view, particles typically enter into satellite relationships with nominals, but can also become stars that are modified by other satellites.

Monosemy and Ἐν: A Look at the Lexical and Corpus Data

In this section, I will try to explain the distribution of ἐν on the basis of its lexicogrammatical meaning. Specifically, I will argue that ἐν+dative differs from the dative precisely by the lexicogrammatical meaning of ἐν. In order to substantiate this claim, I will need to formulate some broad generalizations about other Hellenistic Greek particles as well. Even though a more thorough analysis of other particles is beyond the scope of this chapter, I will formulate some heuristic descriptions for other, closely-related particles. This analysis will provide some helpful first steps toward a rethinking of the particles traditionally referred to as prepositions.

The Lexicogrammatical Meaning of Ἐν

The lexicogrammatical meaning of ἐν has two sides, according to Columbia School theory, both a paradigmatic and a substantial (i.e. both value and substance). Here I will attempt to determine ἐν's most closely-related signs using vector space modelling. Then, I will use existing lexical resources to hypothesize a grammatical substance for ἐν, and

finally I will use computational tools, both vector space modelling and simple frequency comparisons, to hypothesize a paradigmatic value for ἐν.

Ἐν and its Paradigm

Probably the key question that needs answering in commencing with analysis is: What are the signs that comprise ἐν's paradigm? On the one hand, ἐν is paradigmatically related to the other prepositions. On the other hand, this set of prepositions should not be assumed from the outset, but rather hypothesized on the basis of observations and then tested. As a starting place, I will be considering ἐν because it is by far the most frequent item from within the traditional category of prepositions. However, beyond ἐν, it is a challenge to identify what other particles should be considered part of ἐν's semantic field. The parts of speech, to be clear, do outline some syntactic and semantic factors that seem to distinguish prepositions as a sub-set of particles, but the distinctions, as I will argue in the next section, are gradient, not strict, whether considered syntactically or semantically.

Vector space modelling is useful at this point. Using a vector space, the similarities or differences between categories or classes can be measured empirically on the basis of distributional similarity, which is a more comprehensive and consistent measurement than syntax, though the aims of both are similar.[39] In Figure 7, I have created a semantic map using the distributional information captured by vector space modelling.[40] For this semantic map, I queried the corpus for the top 100 near neighbours

[39] Vector spaces model distribution without considering—or setting aside—semantics, because vector spaces count only tokens and types, not word classes. Syntax and vector space analysis could be mutually informing, but appropriate annotations are currently unavailable.

[40] The description "semantic map" is meant to evoke the same notion as "semantic domain," yet with the key difference that my semantic map is based on distributional data, whereas semantic domains,

of each of the terms, the terms being the traditional prepositions (both proper and improper), adverbs, conjunctions, and a small set of nouns included as a control measure (see Appendix 1 for a full list of the terms being compared). The goal behind this analysis was to determine whether and to what degree certain particles cluster together. Rather than directly comparing the similarity of the terms in question, I instead compare the similarity of each query term on the basis of the top-100 words that are most distributionally similar to the term within the corpus I am using. After retrieving this data, each word is plugged into a visualization in which the numerical similarity between each word is translated into a spatial representation.[41] In other words, if the similarity of ἐν to ἐκ is 0.791738218, ἐν pulls on ἐκ with this much force. Every connected word thus "tugs" on its neighbours with a strength proportionate to its distributional similarity. The result is a map of connected nodes where similar terms cluster together. Not only do similar terms directly pull on one another, but if two terms share many "neighbours" (which are too small to be seen in Figure 7), they will be drawn closer together by their mutual neighbours. The effect of this method of mapping similarity is to create clusters of words belonging to a similar class, where words in a class tend to relate to the same neighbouring terms more so than words from another class. The benefit of such a map is that it gives empirical support to claims about whether or not some terms are more "similar" than others without directly relying on syntax or semantics.

---

as in Louw and Nida's lexicon, rely on componential analysis. Cf. Louw and Nida, eds., *Greek-English Lexicon*.; Nida and Louw, *Lexical Semantics*.

[41] For information on the open source software GUI I used, see Bastian et al., "Gephi."; Jacomy et al., "ForceAtlas2."

There are several observations we can make from this semantic map. First, the upper dashed circle represents the space occupied by prepositions. Within this space, the traditional prepositions do not occupy one homogenous cluster. Rather, ἐν, ἐκ, and εἰς are closely clustered together, and the remaining prepositions form two separate clusters. In the top left there is a progression of terms that are connected less and less directly to the other prepositions, in a cluster terminating with χωρίς, which, according to BDAG, is sometimes used as a preposition, and sometimes simply as an adverb. Second, similarly to χωρίς, the terms μέχρις and πέρα(ν) (annotated with solid circles in Figure 7) display some ambiguity. Both of these terms can be used either as prepositions or as adverbs, and both, like χωρίς, situate on the fringe of the "preposition" domain. However, these terms blur the boundaries of the preposition set in different ways: μέχρις can be used as a conjunction, and thus straddles the boundary between conjunctions (the lower dashed circle) and prepositions; πέρα(ν) can be used as an adverb, specifically used to clarify location, and thus it locates between the prepositions and the control nouns that refer to locations (such as μεσοποταμία). Near the bottom I have also circled ἀμφί and μεταξύ, which can be used either as adverbs or prepositions, according to both BDAG and LSJ. These borderline cases demonstrate the fact that the traditional sets, the parts of speech, do not comprise airtight sets, as I have argued above. Rather, these sets are stereotypical categories based on consideration of syntactical and semantic information, blended in each case with the contextual messages associated with these terms. Therefore, the category I have identified, particles, provides a better starting place for analysis of ἐν, since particles are morphologically distinguishable from nominals, verbals, and participles.

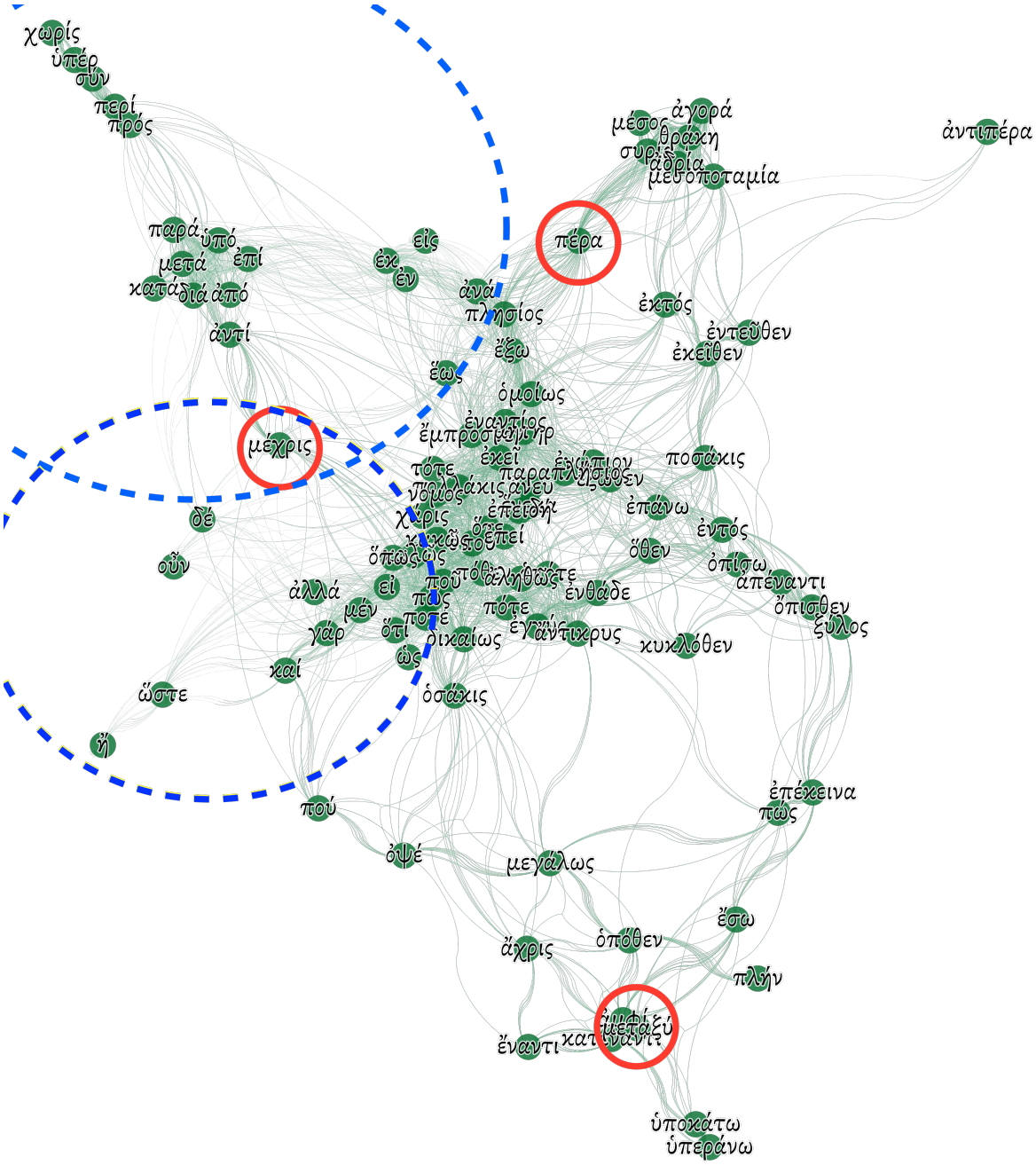

Figure 7. Large-scale semantic map.

In light of this semantic map, which represents the relative distributions of many of the particles of Hellenistic Greek, I will consider of first importance the relationship between ἐν and the terms located in the top left area of the map. Compared to the traditional set of proper prepositions, I will be including μέχρις, πέρα(ν), and χωρίς, but will remove ἀμφί. While ἐν is related to all of the terms in the entire corpus, and more

specifically to each of the particles, I will be limiting my scope of analysis to ἐν and its more immediate hyponyms. I can focus on ἐν most readily because of its high frequency—ἐν is one of the most frequent morphemes in the corpus after the article and καί. Because of its high generality, it can be modelled as a semantic field governing other related forms. Next, I will hypothesize the substance of ἐν's lexicogrammatical meaning.

The Substance of 'Ev

Moulton's often-cited description calls ἐν the "maid-of-all-work."[42] The twelve senses assigned it in BDAG cover, to a large extent, the wide variety of contextual messages ἐν is associated with in context. However, I will contend that this polysemous description, while attempting to capture the diversity of contextual messages, actually does not go far enough. The answer, however, is not to multiply senses even further; we must ask where the principled end-point in this process would be? We could not capture all of the variation without describing a unique shade of nuance for nearly every extant context in which we see the preposition. The problem with this polysemous approach is that it is still aiming to closely approximate the contextual messages—but this is the wrong target. The aim should instead be directed at describing the lexeme itself by means of abstraction. This step, as I have argued in previous chapters, is needed for conducting empirical analysis, with the goal of formalizing a baseline from which to describe or

[42] Moulton, *Grammar*, 1:103. He claims in the same place that ἐν eventually disappeared from the language because it was "too indeterminate." This is something of a puzzling statement—one wonders why the article or the accusative case stuck around. The point is well taken though: ἐν has a highly abstract lexicogrammatical meaning.

measure not only variation but also the inferential protocols to guide interpretation of this variation.

So far I have only outlined a problem—the inadequacy of traditional categories to satisfactorily explain the difference between ἐν and ἐν+dative—and proposed a dataset—ἐν and its distributionally similar terms. What remains now is to provide a monosemic analysis. The first step, as outlined in my discussion of monosemic procedures, is to factor out the variation associated with the term under analysis. In order to outline ἐν's substance, I will use the senses outlined in BDAG, which cover a wide variety of the contextual messages associated with ἐν, and each of these senses will be contrasted in order to factor out those aspects of ἐν's lexical entry that are based on contextual messages and not strictly on ἐν's lexicogrammatical meaning. The reason I am using the lexicon is logistical: it is beyond the scope of this study to qualitatively examine every one of the 18K instances of ἐν in my corpus—not to mention the fact that it is pointless to ignore the achievements of lexicographers so far, as long as one is aware of the attendant shortcomings.[43] While I am using the lexical data as a starting place, I will also continue to use quantitative measures to substantiate my hypotheses, thus following the principle of comprehensiveness demanded by Ruhl, since a form always implies its frequency or distributional facts within a corpus.[44]

Several caveats are in order before I begin. First, I am not aiming to say the final word on ἐν's meaning. I am instead trying to exemplify the process of forming a

---

[43] For a thorough but critical historical treatment, see Lee, *History of New Testament Lexicography*.

[44] However, shifts in a form's frequency or probability likely occur within specific registers. I am aiming to analyze the term as an abstraction from the entire corpus, but this task, the task of monosemy, aims primarily to provide a baseline from which register-related and other kinds of variation can be measured.

constructive hypothesis within the framework of monosemy. Second, this analysis is primarily from the perspective of lexis, in that I am hypothesizing the value of a single token, ἐν. The lexical perspective, however, is incomplete without a corresponding grammatical perspective.[45] This grammatical perspective will be attempted further below, though not exhaustively so. Third, I have already noted at several points the relative inadequacy of my corpus data in that it is not adequately balanced. Further analysis with a more balanced, representative, and considerably larger database will no doubt clarify the picture of ἐν.

With those caveats out of the way, I will draw on three sources for the following discussion: a monosemic treatment of ἐν's semantic substance in light of BDAG's entry, a cross section of the functional categories assigned to the prepositions in Porter's *Idioms*, and statistical data from my corpus.

Substance: Ἐν as a Monoseme

Like the other prepositions, ἐν has traditionally been understood as a polysemic or multi-functional sign. The range of its uses has motivated the postulation of numerous senses for ἐν. For example, it has been assigned 12 senses in BDAG, and at least 21 in Louw and Nida's lexicon based on semantic domains. The problem with these lexical entries is that many of the postulated sense distinctions are actually mutually contradictory. For example, BDAG sense 8 is "Marker denoting the object to which something happens," while BDAG sense 5 is "Marker introducing means or instrument, *with*," and BDAG sense 6 is "Marker of agency, *with the help of*." Which is it? Does ἐν mark the thing that *does* or the thing that is *done to*? This is where Ruhl's monosemic

[45] Halliday and Matthiessen, *Halliday's Introduction*, 64.

bias is a useful tool, as outlined above: if ἐν can can be interpreted as either agent or patient on the message level, then it actually signals neither. Something else in the context creates that distinction, not ἐν. Only the fraction of the contextual messages that ἐν contributes in every instance is attributed to its semantics or lexicogrammatical meaning.

I begin this process using BDAG's entry. In BDAG, ἐν has the following twelve lexical senses:[46]

1. Marker of a position defined as being in a location
2. Marker of extension toward a goal that is understood to be within an area or condition
3. Marker of close association within a limit

These first three uses demonstrate that the word ἐν does not, by itself, distinguish between a focus on *association* within a limit (i.e. being in a location) and *positioning* within a limited area (i.e. close association within a limit). Nor does ἐν distinguish whether the modified sign is being extended toward a goal or not (as in two).

4. Marker of circumstance or condition under which something takes place
5. Marker of a state or condition
6. Marker of a period of time, *in*, *while*, *when*

These three uses can be used to derive similar conclusions about ἐν's lexicogrammatical meaning. Senses four and five show that ἐν does not grammatically encode a distinction between "state or condition" and "circumstance or condition under which something takes place." Whether something is taking place in certain circumstances is provided by contextual enrichment. As well, sense six demonstrates that these circumstances are not marked by ἐν as either spatial or temporal, because ἐν only signals temporal location

[46] I have changed the order of these senses in order to emphasize certain similarities.

when temporal meaning is supplied by the co-text or context.[47] Only context can make this difference clear.

7. Marker of cause or reason, *because of*, *on account of*
8. Marker introducing means or instrument, *with*
9. Marker of agency, *with the help of*

These uses clearly demonstrate that ἐν does not encode the difference between animate or inanimate, agency or instrumentality. In fact, senses eight and nine can be easily understood as having the same function as sense seven, where context, not the word ἐν, includes the pragmatic modulation that may or may not indicate whether something is a direct cause (i.e. the agent), or an indirect cause (i.e. the instrument). Therefore, on the basis of these three senses from BDAG, we cannot state that ἐν semantically encodes anything beyond the meaning of sense seven—and it probably encodes far less than this.

10. Marker denoting the object to which something happens or in which something shows itself, or by which something is recognized, *to*, *by*, *in connection with*
11. Marker denoting kind and manner
12. Marker of specification or substance

Sense ten would seem, in light of the locative sense of one through three, to draw together the sense of association/position with or within a location and the instrumental sense of seven through nine.[48] In fact, circumstances of any kind, unmarked for space, time, animacy or inanimacy, may be understood as a kind of cause on the level of contextual message (e.g. if part of a causal clause) and in this case the more or less

[47] We might posit a pragmatic condition: prepositions are not marked for spatial or temporal meaning; this information constitutes pragmatic enrichment.

[48] According to Porter (*Idioms*, 158), "The label 'instrumental' is given to a range of metaphorical extensions of the locative sense of ἐν. Temporal location can and often does imply the idea of accompaniment, control, agency, cause and even means (price)." While I agree with the generalization between the two normally distinct categories, I understand the generalization as being more similar to the instrumental meaning rather than the locative. This is based on Ruhl's claims that the more abstract usage is basic to prepositions, rather than the more concrete. See Chapter 7 of Ruhl, *On Monosemy*.

adverbial sense of eleven (and perhaps twelve) can be understood as a kind of circumstance.

To summarize so far: ἐν's twelve senses can first be reduced to locative, circumstantial, and instrumental. Both location and instrument provide circumstantial information, and thus ἐν should be understood primarily as a signal of the meaning CIRCUMSTANCE.[49]

This abstracted sense for ἐν, then, can be considered as a preliminary account of ἐν's lexicogrammatical meaning. This contribution makes sense as a minimalist hypothesis. Ἐν is a morphologically uncomplicated form; its distribution is broad (it is by far the most common preposition),[50] and it does not undergo inflectional changes. From the perspective of markedness as it has been outlined in my methodology, ἐν is expected to be relatively sparse in semantic content, and this is just what my monosemic treatment has indicated. CIRCUMSTANCE seems to be the substance of ἐν, but what about its paradigmatic value? For this information we will turn to a cross section of the term's functions according to Porter's *Idioms*.

[49] I have vacillated on this definition, but have kept the definition to CIRCUMSTANCE, rather than CAUSAL CIRCUMSTANCE. Circumstances can be understood as causes—and attributed by an author with a degree of responsibility within a unit of discourse. According to Huffman (*Categories of Grammar*, 302), "Once any entity is asserted to be a *circumstance* of an event, the possibility exists that it may come to have some *responsibility* for the event attributed to it." The example he points to is precisely the use of "ships" in the dative (he does not provide the example in Greek, though he is referring to a Greek example) in the sentence, "They came (in) ships." The ships are both the instrument and the circumstance of the process, arrival. However, causation is observed on the level of contextual meaning. Despite removing causality from the substance of ἐν, I have tried to indicate this potential within its paradigmatic value.

[50] However, ἐν only ever modifies dative nominals, which reflects a distributional restriction. Nevertheless, the case forms do not strictly correlate in frequency, and are arguably more restricted as a class than particles.

Value: Cross-Section of Functional Categories

The preposition ἐν is assigned ten functions in Wallace's intermediate grammar,[51] but only five in Porter's Idioms. By contrasting these functional observations from a monosemic perspective, I will be able to identify key paradigmatic oppositions for ἐν. I am assuming the validity of Porter's observations, even if I am aiming to describe ἐν at a different level of abstraction. In the cross section below, I only use Porter's categorizations for the prepositions, as Wallace's and other treatments seem to over-specify functional categories.

	ἐκ	ἐν	διά	εἰς	σύν	ἀνά	κατά	ἐπί	ὑπό	παρά	μετά	περί	πρός	ὑπέρ	ἀντί	ἀπό	ἐκτός	πρό
Locative	•	•	•				•	•	•			•	•		?			•
Temporal	•	•	•				•	? [52]		•	•		•					•
Instrumental	•	•	•				•		•									
Directional				•		•		•		•		•		•				
Distributive		•				•				•								
Substitutionary																•	•	
Oppositional [53]																•		
Causal			•												?			
Extensive				•														
Purpose				•														
Spherical		•																
Positional								•		•							•	•
Standard										•								
Accompaniment					•						•							
Positional												•		•				
Focal													•					
Beneficial																	•	
Exceptions				• [54]		• [55]	• [56]											

Table 7. Cross section of preposition functional categories.

[51] Two of Wallace's categories are slashed, "Spatial/Sphere," and "Reference/Respect."

[52] For an example of a temporal use of ἐπί, see Epictetus, *Diatr*. 4.5.25. I have included question marks where I expected to see a particular function mentioned.

[53] Porter (*Idioms*, 144) describes the "basic sense" of ἀντί as "facing, against, opposite," though he does not assign an explicit functional category for this sense.

[54] Εις as synonymous with ἐν. See Porter, *Idioms*, 153.

[55] Revelation 21:21 has ἀνὰ εἷς.

[56] Used with a nominative in Rev 1:4.

Several important insights are indicated by this cross section. As the table indicates, Porter assigns the following functions to ἐν: Locative, Temporal, Instrumental, Distributive, and Spherical. By factoring out functions accomplished by multiple forms, the only function in the chart that is unique to ἐν is its so-called Spherical function. This function seems to intuitively fit ἐν's substance, but in reality describes ἐν on the level of contextual message, not lexicogrammatical meaning.

While this does not yet establish ἐν's paradigmatic value, it does indicate that ἐν seems, at least in some cases, to be doing something that other prepositions do not. However, this uniqueness could be due to ἐν's increased precision—it specifies in a way that other particles do not—or else it may be due to ἐν's decreased precision—it generalizes in a way that other particles do not. In order to answer this question, we can reexamine the statistical data.

Statistical Information

According to markedness, frequency provides a heuristic indication regarding the relative markedness of signs within a paradigm. As noted in my section on theory, higher frequency usually correlates with wider distribution, and thus sparser or less-marked meaning. In Tables 7 and 8, I have compiled two sets of statistics. In both tables I have listed frequencies and corresponding percentages relative to the total number of terms measured. In Table 7, I have measured the frequencies of both proper and improper prepositions in O'Donnell's corpus. This category incorporates all "prepositions," proper and improper as traditionally identified.[57] This list was adapted

[57] The difference between proper and improper prepositions consists in whether a given preposition is observed prefixed to verbals as well as un-prefixed.

from all the prepositions listed by Porter.[58] In total there are 142260 occurrences in my corpus.

Preposition	Raw Frequency	% of Prepositions
ἐν	18361	12.90%
εἰς	16214	11.39%
πρός	13721	9.65%
κατά	12983	9.13%
ἐπί	12893	9.06%
ἐκ	10512	7.39%
διά	9858	6.93%
περί	9557	6.72%
μετά	6990	4.91%
ὑπό	5874	4.13%
ἀπό	5763	4.05%
παρά	5575	3.92%
ὑπέρ	1919	1.35%
μέχρι(ς)	1806	1.27%
πρό	864	0.61%
ἕως	707	0.50%
πλήν	707	0.50%
χάρις/ν	671	0.47%
πλησίος/ν	625	0.44%
μεταξύ	593	0.42%
σύν	588	0.41%
ἔξω	515	0.36%
μέσος/ν	513	0.36%
χωρίς	488	0.34%
ἐντός	393	0.28%
ἀντί	372	0.26%
ἐναντίος/ν	362	0.25%
ἐκτός	290	0.20%
πέρα(ν)	280	0.20%
παραπλήσιος/ν	262	0.18%
ἕνεκα	236	0.17%
ἄνευ	226	0.16%
ἐγγύς	211	0.15%
κύκλῳ	152	0.11%
ἀνά	147	0.10%
ἐνώπιον	134	0.09%
ἄχρι(ς)	123	0.09%
ἔξωθεν	115	0.08%

[58] Porter, *Idioms*, 139–80.

ἔμπροσθεν	114	0.08%
ἐπάνω	101	0.07%
ὀπίσω	86	0.06%
ἄντικρυς	59	0.04%
ὀψέ	52	0.04%
ὄπισθεν	38	0.03%
ἐπέκεινα	33	0.02%
ἀντιπέρα	28	0.02%
ἀμφί	23	0.02%
ἔσω	23	0.02%
ὑποκάτω	18	0.01%
ἀπέναντι	17	0.01%
κατέναντι	14	0.01%
ὑπεράνω	13	0.01%
ἄτερ	12	0.01%
ἔναντι	10	0.01%
κυκλόθεν	7	0.00%
παρεκτός	4	0.00%
κατενώπιον	3	0.00%
ὑπερεκπερισσοῦ	3	0.00%
ἅμα	1	0.00%
ὑπερέκεινα	1	0.00%
Total	142260	100%

Table 8. Frequency statistics for prepositions.

In Table 8, I have provided a comparison set of frequencies for the proper prepositions using the archive of 20M words discussed in the previous chapter. When it comes to prepositions, frequencies are often cited, but the grammars make little actual use of these frequencies.[59] One possible explanation is the small sample size provided by the New Testament. While my corpus is significantly larger, it is nonetheless relatively small compared to, as mentioned, the English Gigaword corpus.[60] Table 8 attempts to test whether the proportions observed in my corpus hold up when the input is expanded.

Preposition	Raw Frequency	% of Prepositions
ἐν	226827	17.51%
ἐπί	142915	11.03%
κατά	123324	9.52%

[59] Moulton, *Grammar*, 1:98; Wallace, *Basics of New Testament Syntax*, 161. Porter (*Idioms*, 143, note 1) uses Moulton's ratios.

[60] Parker et al., *Gigaword*.

πρός	123192	9.51%
εἰς	119193	9.2%
διά	112517	8.68%
ἐκ	98840	7.63%
περί	87844	6.78%
ἀπό	80394	6.21%
ὑπό	55153	4.26%
παρά	52547	4.06%
μετά	31364	2.42%
ὑπέρ	16263	1.26%
σύν	10896	0.84%
ἀντί	9142	0.71%
ἀνά	3410	0.26%
ἀμφί	1786	0.14%
Total	1295607	100%

Table 9. Frequencies in 20M-word Hellenistic archive.

When comparing these two data tables, there are some inconsistencies; the frequencies gathered from the two corpora do not align perfectly. However, upon closer inspection we can identify regularities between these two sets. In Table 9 the relative orders of the most frequent prepositions are compared.

Hellenistic Archive	O'Donnell Corpus
ἐν	**ἐν**
εἰς	**ἐπί**
πρός	**κατά**
κατά	**πρός**
ἐπί	**εἰς**
ἐκ	**διά**
διά	**ἐκ**
περί	**περί**
μετά	**ἀπό**
ὑπό	**ὑπό**
ἀπό	**παρά**
παρά	**μετά**
ὑπέρ	**ὑπέρ**
μέχρι(ς)	**σύν**
πρό	**ἀντί**
ἕως	**ἀνά**
πλήν	**ἀμφί**

Table 10. Comparative order based on frequency.

Some regularities can be identified between these two lists, as depicted by the partitions in Table 7. In both cases, ἐν is the most frequent (by nearly 7.5% in the larger archive, a significant jump from the next more frequent). In the second partition, εἰς and ἐπί are switched, and πρός and κατά are switched. However, the order of this group of prepositions within the larger list does not change. In the third partition, διά and ἐκ exhibit the same phenomenon. In the fourth partition, περί, μετά, ὑπό, ἀπό, παρά, and ὑπέρ do likewise. After this point, the lists diverge due to the inclusion of improper prepositions.

Using these partitions, we can hypothesize a semantic field for ἐν where it is a superordinate term with lexicogrammatical meaning that is subdivided by the other particles. As outlined in Chapter 2, Ruhl models words (and other linguistic classes) as semantic fields. Semantic fields provide the operative—and observable—lexicogrammatical categories of a language. Recalling Ruhl's description from above, a semantic field is comprised of a word and its hyponyms. The root term, in this case ἐν, comprises a category that includes each of its hyponyms. Within a semantic field, the root term is the most abstract term in the field, potentially signalling any of the more specific meanings of its hyponyms.[61] Thus, ἐν's semantic field is represented in Figure 8, with the far right category representing the point at which grammatical relation of ἐν to all other, more frequent particles within its domain is no longer helpful. In order to

[61] To use an example from English, *dog* is a hyponym of *animal*. *Animal* can potentially refer to a dog, but this specification is the product of the term *animal* and its contextual modulation—perhaps the context signals that a dog is the intended referent. As a semantic field, then, *animal* potentially signals the meaning of any of its hyponyms—*dog*, *cat*, *moose*, *Tasmanian devil*, etc. Analogously, I am proposing here that ἐν is a semantic field that signals CIRCUMSTANCE, and this signal is more abstract than ἐν's hyponyms, such as εἰς and ἐπί; ἐν can potentially signal the more specific meanings of any of its hyponyms. Thus, for example, ἐν overlaps in meaning with εἰς. According to Ruhl's theory, this overlap reflects a relationship of superordinality: ἐν is more abstract than εἰς; εἰς is more concrete/specific than ἐν.

analyze those less frequent particles, they should be brought into focus in relation to their immediate hypernyms.

					[μέχρι(ς)
					πρό
					ἕως
					ἔσω
				περί	ἔμπροσθεν
				μετά	ἐνώπιον
ἐν	ἐπί	κατά	διά	ὑπό	μεταξύ
	εἰς	πρός	ἐκ	ἀπό	σύν
				παρά	ἔξω
				ὑπέρ	ἀνά
					χωρίς
					πέρα(ν)
					ἀντί
					etc.]

Figure 8. Semantic field of ἐν.

According to this hypothesized semantic field, ἐν is used because its lexicogrammatical meaning, as a signal of CIRCUMSTANCE, helps the language user achieve his or her communicative goals. However, ἐν is highly imprecise as to what kind of CIRCUMSTANCE is being indicated. From a paradigmatic perspective, the language user uses ἐν's semantic field to relate that something is a context or circumstance (whether a person, a place, a time, instrument, etc.).

Bear in mind that, according to Ruhl, the root term of a semantic field does not signal less lexicogrammatical meaning than its hyponyms, but rather less precise meaning. In other words, on the level of contextual message ἐν could be interpreted as having the more specified meaning of any of its hyponyms. Thus, ἐν can be interpreted as "into" in Matt 15:39:

> Καὶ ἀπολύσας τοὺς ὄχλους ἐνέβη εἰς τὸ πλοῖον . . .
> And sending the crowds away he got into the boat

Here, ἐμβαίνω can be taken to refer to Jesus's entering the boat, due to the immediate use of εἰς. In fact, ἐμβαίνω and εἰς are a highly likely pair in the presence of πλοῖον.

Similarly, ἐν can come to be interpreted with a more specific meaning in contrast to one of its hyponyms when they co-occur. Compare John 5:4:

> ἄγγελος γὰρ κατὰ καιρὸν κατέβαινεν ἐν τῇ κολυμβήθρᾳ καὶ ἐτάρασσε τὸ ὕδωρ· ὁ οὖν πρῶτος ἐμβὰς μετὰ τὴν ταραχὴν τοῦ ὕδατος ὑγιὴς ἐγίνετο . . .
> For an angel at a certain time would descend into the pool and stir the water. Therefore the first who entered after the stirring of the water became well

In this instance, ἐν in both cases can be interpreted as meaning "into" due to juxtaposition with the two uses of κατά. Because κατά in connection with βαίνω indicates downward motion in the message, a specific fraction of ἐν's semantic field is intepreted in the contextual message. Because ἐν signals an imprecise lexicogrammatical meaning that can refer to virtually any circumstance, its more precise hyponyms will be used only when the contextual domain or the communicative goals of the speaker require a more specific particle to be used. Thus, if the context does not require a more specific lexicogrammatical meaning to achieve a particular contextual message, then ἐν can be sufficient for the task. These circumstances can be both spatial or directional, instrumental or causal, or else both, since both contextual message potentials increase in specificity by using less-frequent hyponyms of ἐν. Consider Table 10, which attempts to map these two gradient specifities.

↑ Directional Specificity				
	ἀντί	σύν		
	ἀνά	ὑπέρ		ὑπό
	παρά	κατά		ἀπό
		πρός	διά	
	ἐπί	εἰς	ἐκ	
	ἐν			

Specificity of Responsibility →

Table 11. Paradigmatic matrix for ἐν's semantic field.

Since ἐν and several of its hyponyms have been accorded the functions "instrument" and "cause," it stands to reason that ἐν will sometimes be used to hint at this fraction of the contextual message—causality. In other words, CIRCUMSTANCE potentially entails causal circumstances. Thus, ἐν has been observed contributing to causal meaning on the level of contextual message. Accordingly, I propose to test whether speakers indicate message-level causality using ἐν+dative more often as opposed to indicating messge-level causality using simply a dative.

Testing the Hypothesis

I am hypothesizing that the lexicogrammatical meaning of ἐν is as a signal of the lexicogrammatical meaning, CIRCUMSTANCE. To be clear, ἐν's semantic field can indicate other types of messages. However, whenever speakers are attempting to stratify the causality of circumstances, they arrange causal circumstances by means of the particles within ἐν's semantic field. This hypothesis needs to be tested. I will provide here a quantitative test regarding one potential use of ἐν, as well as some qualitative examples of more complex interaction between multiple members of ἐν's semantic field.

Quantitative Test

If ἐν's semantic field can be used to indicate more or less specific kinds of causality,[62] we would expect that ἐν+dative would occur within causal clauses with a noticable skew as opposed to simply a dative nominal. This is because ἐν's potential is narrower than the dative case, and thus ἐν is more likely to indicate message-level causality. Since I do

[62] That is, ἐν potentially indicates the causality of any of its hyponyms that are used to indicate causality.

not have message-level clause functions annotated in my corpus, I will limit the analysis to ὅτι-clauses, since these sometimes distinctly signal causal clauses. Though ὅτι-clauses are often used to indicate content and not necessarily cause, these instances represent alternative an communicative strategy, and thus they will be distributed between the different cells in the table. Critically, this means that ὅτι-clauses that do not signal cause are not expected to exhibit any asymmetical distribution with regard to ἐν+dative or a simple dative. If my hypothesis is incorrect, then there will be no skewing whatsoever, and an odds-ratio calculation will indicate a value of 1.0. But if a skewing does result, then it supports my hypothesis.

In order to test whether there is an increased probability of seeing ἐν in a ὅτι-clause than simply a dative form without ἐν, I thus counted up occurences within the sample set, and then calculated the odds ratio. For this particular quantitative test I was unable to generate counts on my entire corpus, but only on the New Testament, as I only have morphological annotations for this smaller subset. An odds ratio gives the odds that an outcome (ἐν+dative) will occur given a particular case (ὅτι-clause), compared to the odds of the outcome occurring in the absence of that case, with a control set provided by occurrences that do not include the outcome (dative without ἐν).[63] The results are depicted in Table 11 (expected values are in brackets, with the difference in italics).

	Dative with Ἐν	**Dative Without Ἐν**	***Totals***
Occurrences in Ὅτι-Clause	219 (169) *+50*	174 (224) *-50*	393
Occurrences not in Ὅτι-Clause	1892 (1942) *–50*	2632 (2582) *+50*	4524
Totals	*2111*	*2806*	***4917***

Table 12. Co-occurrence counts for odds ratio.

[63] Several procedural clarifications are necessary: as I did not have a clause annotation to query, I have counted occurrences of both ἐν and dative nominals that *follow* ὅτι up until the next terminal punctuation mark, period, semicolon, or raised period. I have also subtracted from the occurrences of dative without ἐν the datives with ἐν, since both include the dative form. Furthermore, in order to reduce the number of false-positives for the simple dative (since datives tend to cluster together) I have counted the number of verses in which each column-value occurs in the context of each row-value.

The cross product of this table provides the odds ratio, 1.7509. An odds ratio that is greater than 1.0 indicates that the first group (dative with ἐν) is more likely (approximately 1.75x more likely) to occur in a ὅτι-clause than the second group (dative without ἐν). This result supports my hypothesis that ἐν+dative is used more than a simple dative to indicate causality on the level of contextual message, bearing in mind that this responsibility is being signalled by an imprecise term, and one of ἐν's hyponyms would convey a more specific kind of causal connection. These results represent preliminary and tentative support of my hypothesis.

Qualitative Examples

Qualitatively, the notion of complex contextual stratification indicated by Table 10 above bears out in specific examples. For example, this hypothesis explains the difference between ἐν and the simple dative nominal. Compare Mark 1:8 and 1 Cor 12:13.

Mark 1:8	1 Cor 12:13
ἐγὼ ἐβάπτισα ὑμᾶς ὕδατι, αὐτὸς δὲ βαπτίσει ὑμᾶς ἐν πνεύματι ἁγίῳ.	καὶ γὰρ ἐν ἑνὶ πνεύματι ἡμεῖς πάντες εἰς ἓν σῶμα ἐβαπτίσθημεν . . .
I baptize you in water, but he will baptize you with the holy spirit.	For also in one spirit we have all been baptized into one body.

Table 13. Ἐν vs. εἰς.

Mark creates a stratification in attribution by including the preposition ἐν. John baptizes with a dative nominal, but Jesus will baptize with a dative nominal that, in this verse, has more specific responsibility attributed to it. This seems to have the effect of communicating that John does not baptize on account of the water, but when Jesus baptizes, he will do so in some way because of the holy spirit. The holy spirit motivates the latter baptism; water is not attributed the same level of responsibility.

Paul, by contrast, creates a stratification of both directionality and responsibility on the level of contextual message. In 1 Cor 12:13, we are baptized in one spirit; here the spirit is the circumstance (though Paul could have used a simple dative). However, Paul then seems to indicate responsibility in terms of the purpose of baptism, as well as a more delicately indicated value of directionality to being baptized into one body. According to the use of ἐν and its hyponyms, we may be justified in interpreting on the level of contextual message that being baptized into one body is the purpose of our baptism, highlighting the unifying significance of the act. At the same time, while specifying that the circumstance of our baptism is the spirit, though this is an unspecified kind of responsibility, the direction of our baptism, where the process is leading, is into a unity of body with others who have been likewise baptized. In both passages, the relationship between ἐν and its hyponyms helps the author to indicate an organization of the directionality and attribution of responsibility of the contextual features, which narrows the probable range of interpretations open to the reader.

The hypothesis being put forward in this chapter also accounts for the difference between εἰς and ἐν, even in problematic cases. According to Porter, many grammarians have chosen to see εἰς as sometimes functioning synonymously with ἐν.[64] If εἰς were really synonymous with ἐν in these instances, it would be meaningless that εἰς has been used and not ἐν. Consider the following examples of uses of εἰς that are, on the "synonymy" view, apparently meaningless. In both cases, I would argue, the use of εἰς can be explained by the author's use of multiple prepositions within the immediate co-text to establish relative context:

[64] Porter, *Idioms*, 153. Due to the way he formulates this claim, Porter apparently does not agree with these grammarians.

> Mark 1:9
> Καὶ ἐγένετο ἐν ἐκείναις ταῖς ἡμέραις ἦλθεν Ἰησοῦς ἀπὸ Ναζαρὲτ τῆς Γαλιλαίας καὶ ἐβαπτίσθη εἰς τὸν Ἰορδάνην ὑπὸ Ἰωάννου.
>
> And it happened in those days that Jesus came from Nazareth of Galilee and was baptized into the Jordan by John.

In this verse, the argument for synonymy would be that even though Mark used the preposition εἰς, he apparently *meant* ἐν. This assumption is problematic, since Mark could have used ἐν. Semitic interference is unlikely, since Mark evidently used ἐν in the "normal" Greek sense earlier in the very same verse. Matthew 3:5–7, moreover, clarifies the fact that use of εἰς was not arbitrary, because Matthew uses ἐν in describing similar events. In order to understand why Mark used εἰς, more of the co-text needs to be considered, specifically the next verse. Here is Mark 1:9–10 paralleled with Matt 3:5–7:

	5. τότε **ἐξ**επορεύετο **πρὸς** αὐτὸν Ἱεροσόλυμα καὶ πᾶσα ἡ Ἰουδαία καὶ πᾶσα ἡ περίχωρος τοῦ Ἰορδάνου,
9. Καὶ ἐγένετο **ἐν** ἐκείναις ταῖς ἡμέραις ἦλθεν Ἰησοῦς **ἀπὸ** Ναζαρὲτ τῆς Γαλιλαίας καὶ ἐβαπτίσθη **εἰς** τὸν Ἰορδάνην **ὑπὸ** Ἰωάννου.	6. καὶ ἐβαπτίζοντο **ἐν** τῷ Ἰορδάνῃ ποταμῷ **ὑπ'** αὐτοῦ ἐξομολογούμενοι τὰς ἁμαρτίας αὐτῶν.
10. καὶ εὐθὺς ἀναβαίνων **ἐκ** τοῦ ὕδατος εἶδεν σχιζομένους τοὺς οὐρανοὺς καὶ τὸ πνεῦμα ὡς περιστερὰν καταβαῖνον **εἰς** αὐτόν·	7. Ἰδὼν δὲ πολλοὺς τῶν Φαρισαίων καὶ Σαδδουκαίων ἐρχομένους **ἐπὶ** τὸ βάπτισμα αὐτοῦ εἶπεν αὐτοῖς· Γεννήματα ἐχιδνῶν, τίς ὑπέδειξεν ὑμῖν φυγεῖν **ἀπὸ** τῆς μελλούσης ὀργῆς;
And it happened in those days that Jesus came from Nazareth of Galilee and was baptized into the Jordan by John. And right as he came up out of the water he saw the heavens torn and the spirit descending upon him like a dove.	Then Jerusalem, all of Judaea, and all of the region surrounding the Jordan went out to him, and they were baptized in the Jordan river by him, confessing their sins. But, seeing many of the Pharisees and Sadducees were coming to his baptism, he said to them, "Brood of vipers! Who warned you to flee from the coming wrath?"

Table 14. Comparison of Mark's and Matthew's descriptions of John's baptism.

It is interesting to note that the second use of εἰς in Mark 1 is not understood as being synonymous with ἐν. The apparent confusion about the first use likely lies with the use of the typical English glosses "in" and "into" for the words ἐν and εἰς. It seems wrong to an English speaker to say that someone is baptized "into" a river. However, even given the problematic nature of glossing, there is a simple explanation for Mark's using εἰς instead of ἐν. Mark says that Jesus was specifically baptized *into* the water, because he immediately describes Jesus' coming ἐκ the water. By saying that he was baptized εἰς the water, Mark creates the expectation that Jesus must come back out of the water. Had he simply mentioned baptism ἐν the Jordan, as Matthew does, the act of baptism would not raise the expectation of emergence out of the water, and his next line would probably seem abrupt, as his entrance into the water would not have been explicit.[65] Thus, the use of ἐν in conjunction with other, more specific hyponyms of ἐν, effects on the one hand an arrangement of the contextual features. Likewise, while the timeframe ἐν ἐκείναις ταῖς ἡμέραις is presented as the circumstance of Jesus' coming and being baptized, more specific contextual features are stratified in relation to the timeframe by means of other prepositions. For example, Ἰωάννου, the agent of Jesus' baptism, is modified by ὑπό. On the other hand, then, the use of ἐν and more specific hyponyms also stratifies the attribution of responsibility. A key to this analysis is ἐν's role as a semantic field, whereby its hyponyms have more precise, not less precise, lexicogrammatical meaning, providing the reader with numerous cues as to how a contextual message should be framed in light of the lexicogrammatical meanings.

[65] Recall that case meanings correlate with preposition meanings. As Porter mentioned, prepositions used with the accusative (when in a spatial domain of usage, I would want to clarify) generally indicate motion or direction toward something, and the genitive tends to indicate motion or direction away from something.

Conclusion

The argument of this chapter is essentially abductive, in keeping with the Columbia School method of hypothesizing and testing categories on the basis of observations.[66] Observations include analysis of the distributional facts of the language's morphology, and these observations of lexicogrammatical patterning present the analyst with a problem: Why do Greek authors pattern their language as they do? Why would an author include ἐν rather than simply a dative form? Ultimately, I have attempted to answer this question by hypothesizing a meaning for ἐν that explains its distribution not only in relation to the dative case but also to the other particles that cluster together with it on the basis of distributional similarity. The dative case signals an unspecified and unextended restriction, or alternatively the positive lexicogrammatical meaning of RELATION; ἐν signals a highly general circumstance that remains unspecific until other hyponyms of ἐν are included in order to create a stratification or layered relationship between circumstances specific to the broader context and process being modified.

This is a hypothesis that aims to explain the distribution of ἐν. While there are, no doubt, aspects of this hypothesis that will need refining, or perhaps even major restructuring, I am convinced that this kind of grammatical explanation, motivated by the minimalist approach of Ruhl and the Columbia School, is precisely what the field of biblical studies needs. Rather than simply carrying on deeply entrenched debates shaped by the imposed categories of the grammatical tradition, monosemy provides a methodology by which linguistic analysis can strive to be shaped more explicitly by the biblical languages themselves, and more directly accountable to empirical data.

---

[66] For discussion on abductive reasoning, see Pang, *Revisiting Aspect and Aktionsart*, 63–64.

CHAPTER 6. CONCLUSION AND DIRECTIONS FOR FUTURE RESEARCH

This thesis has outlined some significant areas of oversight in the exegetical tradition of biblical studies, problems that are rooted in the lexical and grammatical tradition. In Chapter 1, I argued that within biblical studies we have not formalized the interpretive protocols that constrain how one moves from the lexicogrammatical meanings in a text to the contextual messages they may indicate. In some respects, polysemy and maximalist approaches do not address this inferential gap, and actually provide little more than the illusion of greater precision, despite merely reproducing aspects of context as if they were inherent in the semantics of the lexical and grammatical signs.

Monosemy, which has already begun to make significant inroads in biblical studies, presents an alternative to traditional exegetical methods. Within this minimalist approach, lexicogrammatical meaning and contextual message are clearly distinguished. The net effect of monosemic analysis is that linguistic signs can be analyzed empirically. Because of monosemy's potential for enabling a more thoroughgoing empirical approach to the biblical languages, I have sought to lay out a robust theoretical foundation from which monosemic analysis can proceed.

The trajectory for future research points towards modelling of the interpretive protocols that are missing from the field. However, even though the invariant lexicogrammatical meanings of the linguistic signs can be hypothesized and tested through monosemic analysis, these signs cannot simply be added up to arrive at the

correct contextual message. Columbia School theory maintains, rather, that the signs themselves, even when combined into larger constructions, underdetermine the contextual message. The contextual message can be inferred in the basis of the grammatical signs, but the number of possible contextual messages is in principle unlimited. The inability to strictly delimit the contextual messages that could be hinted at by the signs presents a significant problem that will require future work.

In principle, then, contextual messages can never be fully accounted for on the basis of the linguistic signs employed. Consider again this quotation from Ruhl:

> By now, some readers may have the uneasy feeling that pragmatic rules are beginning to proliferate without restraint. A good theorist is likely to wonder where it will end. But linguists who expect to find a limited number of pragmatic rules, or rules typically with only a few options, are mistaking the task; they are trying to make pragmatic rules into semantic rules. Listing pragmatic rules may be an infinite task: all knowledge of the world can be included. In dealing with language, we are used to expecting only a few possibilities; but pragmatic rules can be much more various, since our full knowledge is much more various . . . A pragmatic rule is justified if it accounts for data, and as fully as possible.[1]

Ruhl observes that reality is so rich and complex that it may be an infinite task to catalogue its influence on language. If messages cannot be accounted for on the basis of the signs, and reality provides too complex a domain to offer any help from the other direction, then is my critique of the unformalized interpretive protocols unjustified?

In his essay, "The Purpose of a Grammatical Analysis," Huffman discusses three kinds of objections to Columbia School analysis, each of which engages this issue in a distinct way. Huffman's responses offer a critical explanation of both the purpose and limits of linguistic analysis. Specifically, he explains that a full account of—i.e. a satisfactory model of—context is theoretically impossible to give, because reality is simply too chaotic.

---

[1] Ruhl, *On Monosemy*, 36.

Huffman outlines three possible objections to the meaning–message distinction of Columbia School analysis.[2] (1) Some object that Columbia School meanings should more closely approximate contextual messages, to which Huffman responds there is no basis for this assumption, given the fact that contextual messages may vary infinitely. (2) Others object that Columbia School meanings are too vague and abstract. Huffman explains that they are, rather, sparse and imprecise, which, unlike vague and abstract meanings, or over-specified meanings, allows for testable hypotheses to be formulated, because the meanings are distinct even though sparse. (3) Still others object that the gap between meaning and contextual message, allegedly bridged by inference, is nothing more than a linguistic black box that does not make the linguist responsible for connecting the meaning with the contextual message. Huffman responds that the testing process proves this objection unjustified. In every instance of a sign, he argues, the analyst does trace the connection between message and meaning, showing how a particular choice in meaning is appropriate for the particular context. He notes that this process

> cannot, however, take the form of a formal mapping or a set of 'inferential rules,' because there is no way to formalize the kinds of situations speakers find themselves in and have to deal with, or the kinds of creativity they may exhibit in deploying their communicative tool. This would be as hopeless a task as trying to formalize any other aspect of human behavior.[3]

Such a formalization, he argues, "would require having control over *all* the innumerable variables feeding into it, something which is quite beyond our capacity."[4]

While Huffman is right, I think, about the hopelessness of the task so formulated, it is only hopeless to model context if a strict or fully determined connection between

---

[2] Huffman, "Purpose of a Grammatical Analysis," 204.
[3] Huffman, "Purpose of a Grammatical Analysis," 205.
[4] Huffman, "Purpose of a Grammatical Analysis," 206.

context and lexicogrammatical meanings is the goal. If, on the other hand, one aims for a probabilistic connection, rather than a strict one, then the notion of context is capable of certain generalizations, and generalized contexts, in turn, can be probabilistically related to lexicogrammatical meanings and/or contextual messages. A case in point would be the probabilistic relation between register variation and frequency of wordings.[5] "For register variation, in fact," claims Halliday, "probability is the central concern."[6]

In response to Ruhl, then, listing the constraining role of context *is* an infinite task. However, because monosemy begins with standardized units of meaning, the probability-shifting effects of context and co-text can be isolated and measured using controlled comparisons. All that is required is that one establish correlations between meanings and co-textual or contextual features. We cannot directly measure the causes and effects of meaning variation, but we can observe it in language, and correlate it with shifts in probabilities. Except perhaps by means of a probabilistic modelling of the relationship between context and signs, I would argue, we cannot formally predict the contextual message from the linguistic signs used to convey that message.

In sum, just as biblical studies has always affirmed, context is indispensable for interpretation that approximates the speakers intention. However, contextual information can only render certain types of messages more probable—it cannot determine the interpreted messages. If biblical studies is to begin to model interpretive protocols, then

---

[5] According to Halliday (*Computational and Quantitative Studies*, 45), "Frequency in text is the instantiation of probability in the system" and "A linguistic system is inherently probabilistic in nature" (*Computational and Quantitative Studies*, 45). Furthermore, he notes (*Computational and Quantitative Studies*, 85), "If we characterize register variation as variation in probabilities, as I think we must, it seems more realistic to measure it against observed global probabilities."

[6] Halliday, *Computational and Quantitative Studies*, 66.

it must do so probabilistically. This thesis has argued that this long-term goal will never be reached without a thoroughgoing empirical and minimalist approach to linguistic analysis.

APPENDIX 1: PARTICLES FROM PART OF SPEECH CATEGORIES

Proper Prepositions:

ἐκ ἐν διά εἰς σύν ἀνά ἀπό ἐπί ὑπό κατά μετά παρά περί πρός ἀμφί ἀντί ὑπέρ

Improper Prepositions:

ἔξω ἔσω ἔως ὀψέ πλήν ἄνευ πέρα ἄχρις χωρίς ἐγγύς ἐκτός ἐντός ἐπάνω ἕνεκα ὀπίσω μέχρις μέσος χάρις μεταξύ ἔναντι ἔξωθεν ἐνώπιον ὄπισθεν ὑπεράνω ὑποκάτω πλησίος κυκλόθεν ἀντιπέρα ἀπέναντι ἄντικρυς ἐπέκεινα ἐναντίος κατέναντι ἔμπροσθεν παραπλήσιος

Adverbs:

πότε ποτέ τότε ὅτε ὁπότε ποῦ πού ἐκεῖ ἐνθάδε ὅπου πόθεν ἐκεῖθεν ἐντεῦθεν ὅθεν ὁπόθεν πῶς πώς ὅπως ποσάκις πολλάκις ὁσάκις μεγάλως ἀληθῶς δικαίως κακῶς καλῶς ὁμοίως

Nouns:

νόμος μήτηρ ξύλος μεσοποταμία συρία ἀδρία ἀγορά θρᾴκη

Particles:

διόπερ, ἐπεί, ἐπειδή, ὅτε, ὁπότε, ὥσπερ, καθάπερ, ὅπως, ὅπῃ, ἦπερ

Conjunctions:

καί δέ μέν γάρ ὡς ἤ ὅτι οὖν εἰ ἀλλά ὥστε

BIBLIOGRAPHY

Bamman, David, and Gregory Crane. "Computational Linguistics and Classical Lexicography." *Digital Humanities Quarterly* 3 (2009). No pages. http://www.digitalhumanities.org/dhq/vol/3/1/000033/000033.html

Bastian, Mathieu, et al. "Gephi: An Open Source Software for Exploring and Manipulating Networks." (2009). No pages. http://www.aaai.org/ocs/index.php/ICWSM/09/paper/view/154

Battistella, Edwin L. *Markedness: The Evaluative Superstructure of Language*. SUNY Series in Linguistics. New York: SUNY Press, 1990.

Beavers, John, and Peter Sells. "Constructing and Supporting a Linguistic Analysis." In *Research Methods in Linguistics*, edited by Robert J. Podesva and Devyani Sharma, 397–421. Cambridge: Cambridge University Press, 2013.

Black, David Alan. *Linguistics for Students of New Testament Greek: A Survey of Basic Concepts and Applications*. 2nd ed. Grand Rapids: Baker, 1995.

Campbell, Constantine R. *Paul and Union with Christ: An Exegetical and Theological Study*. Grand Rapids: Zondervan, 2012.

Chomsky, Noam. "A Minimalist Program for Linguistic Theory." In *The View from Building 20: Essays in Linguistics in Honor of Sylvain Bromberger*, edited by Kenneth L. Hale et al., 1–52. Current Studies in Linguistics 24. Cambridge, MA: MIT Press, 1993.

Church, Kenneth Ward, and Patrick Hanks. "Word Association Norms, Mutual Information, and Lexicography." *Computational Linguistics* 16 (1990) 22–29.

Clark, Billy. *Relevance Theory*. Cambridge Textbooks in Linguistics. New York: Cambridge University Press, 2013.

Contini-Morava, Ellen, and Yishai Tobin, eds. *Between Grammar and Lexicon*. Current Issues in Linguistic Theory 183. Amsterdam: John Benjamins, 2000.

Crupi, Charlene. "Structuring Cues of Conjunctive Yet, But, and Still: A Monosemic Approach." In *Advances in Functional Linguistics: Columbia School Beyond Its Origins*, edited by Radmila J. Gorup and Nancy Stern, 263–81. Amsterdam: Benjamins, 2006.

Danker, Frederick W., et al., eds. *A Greek-English Lexicon of the New Testament and Other Early Christian Literature*. 3rd ed. Chicago: University of Chicago Press, 2000.

Danove, Paul. "The Theory of Construction Grammar and Its Application to New Testament Greek." In *Biblical Greek Language and Linguistics: Open Questions in Current Research*, edited by Stanley E. Porter and D. A. Carson, 119–51. JSNTSup 80. Sheffield: Sheffield Academic, 1993.

Davis, Joseph. "Rethinking the Place of Statistics in Columbia School Analysis." In *Signal, Meaning, and Message: Perspectives on Sign-Based Linguistics*, edited by Wallis Reid et al., 65–90. Studies in Functional and Structural Linguistics 48. Amsterdam: Benjamins, 2002.

Diver, William. "Theory." In *Meaning as Explanation*, edited by Ellen Contini-Morava and Barbara S. Goldberg, 43–114. Trends in Linguistics: Studies and Monographs 84. Berlin: Mouton de Gruyter, 1995.

Elliott, John H. "Jesus the Israelite Was Neither a 'Jew' Nor a 'Christian': On Correcting Misleading Nomenclature." *JSHJ* 5 (2007) 119–54.

Fewster, Gregory P. *Creation Language in Romans 8: A Study in Monosemy*. LBS 8. Leiden: Brill, 2013.

Fretheim, Thorstein. "In Defence of Monosemy." In *Pragmatics and the Flexibility of Word Meaning*, edited by Enikö Németh T. and Károly Bibok, 79–115. Current Research in the Semantics/Pragmatics Interface. Amsterdam: Elsevier, 2001.

García, Erica C. "On the Practical Consequences of Theoretical Principles." *Lingua* 43 (1977) 129–70.

———. "On the Practical Consequences of Theoretical Principles." *Columbia University Working Papers in Linguistics* 2 (1980) 47–92.

———. *The Role of Theory in Linguistic Analysis: The Spanish Pronoun System*. Amsterdam: North-Holland, 1975.

———, and Ricardo Otheguy. "Being Polite in Ecuador." *Lingua* 61 (1983) 103–32.

Geeraerts, Dirk. *Theories of Lexical Semantics*. Oxford: Oxford University Press, 2010.

Goodblatt, David M. *Elements of Ancient Jewish Nationalism*. Cambridge: Cambridge University Press, 2006.

———. "From Judeans to Israel: Names of Jewish States in Antiquity." *JSJ* 29 (1998) 1–36.

———. “‘The Israelites Who Reside in Judah’ (Judith 4:1): On the Conflicted Identities of the Hasmonean State.” In *Jewish Identities in Antiquity: Studies in Memory of Menahem Stern*, 114–38. TSAJ 130. Tübingen: Mohr Siebeck, 2009.

Green, Keith. “Relevance Theory and the Literary Text: Some Problems and Perspectives.” *Journal of Literary Semantics* 22 (1993) 207–17.

Grief, Stefan Th., and John Newman. “Creating and Using Corpora.” In *Research Methods in Linguistics*, edited by Robert J. Podesva and Devyani Sharma, 257–87. Cambridge: Cambridge University Press, 2013.

Halliday, M. A. K. *Computational and Quantitative Studies*. Edited by Jonathan Webster. The Collected Works of M. A. K. Halliday 6. London: Continuum, 2005.

Halliday, M. A. K., and Christian M. I. M. Matthiessen. *Halliday’s Introduction to Functional Grammar*. 4th ed. London: Routledge, 2014.

Hanks, Patrick. “Do Word Meanings Exist?” *Computers and the Humanities* 34.1–2 (2000) 205–15.

Harris, Zellig S. “Distributional Structure.” *Word* 10 (1954) 146–62.

Hiraga, Masako K. “Diagrams and Metaphors: Iconic Aspects in Language.” *Journal of Pragmatics* 22 (1994) 5–21.

Huffman, Alan. *The Categories of Grammar: French* Lui *and* Le. Studies in Language Companion Series 30. Amsterdam: Benjamins, 1997.

———. “The Linguistics of William Diver and the Columbia School.” *Word* 52 (2001) 29–68.

Jacomy, Mathieu, et al. “ForceAtlas2: A Continuous Graph Layout Algorithm for Handy Network Visualization Designed for the Gephi Software.” Edited by Mark R. Muldoon. *PLoS ONE* 9 (2014).

Kintsch, Walter, and Praful Mangalath. “The Construction of Meaning.” *Topics in Cognitive Science* 3 (2011) 346–70.

Kirsner, Robert S. *Qualitative–Quantitative Analyses of Dutch and Afrikaans Grammar and Lexicon*. Studies in Functional and Structural Linguistics 67. Amsterdam: Benjamins, 2014.

———. “The Future of a Minimalist Linguistics in a Maximalist World.” In *Signal, Meaning, and Message: Perspectives on Sign-Based Linguistics*, edited by Wallis Reid et al., 339–71. Studies in Functional and Structural Linguistics 48. Amsterdam: Benjamins, 2002.

Kittay, Eva Feder, and Adrienne Lehrer. *Frames, Fields, and Contrasts: New Essays in Semantic and Lexical Organization*. Edited by Adrienne Lehrer and Eva Feder Kittay. Hillsdale, NJ: Lawrence Erlbaum Associates, 1992.

Kuhn, K. G. "Ἰσραήλ, Ἰουδαῖος, Ἑβραῖος." In *TDNT* 3:359–69.

Labov, William. "Sociolinguistics." In *A Survey of Linguistic Science*, edited by William Orr Dingwall, 339–75. 2nd ed. Stamford, CT: Greylock, 1978.

Landauer, Thomas K., et al. "Introduction to Latent Semantic Analysis." *Discourse Processes* 25 (1998) 259–84.

Lappenga, Benjamin J. *Paul's Language of Ζῆλος: Monosemy and the Rhetoric of Identity and Practice*. Biblical Interpretation 137. Leiden: Brill, 2015.

Lee, John A.L. *A History of New Testament Lexicography*. SBG 8. New York: Peter Lang, 2003.

Louw, Johannes P., and Eugene A. Nida, eds. *Greek-English Lexicon of the New Testament Based on Semantic Domains*. 2 vols. New York: United Bible Society, 1988.

Lyons, John. "Review of Greek–English Lexicon of the New Testament Based on Semantic Domains, Edited by Johannes P. Louw and Eugene A. Nida." *International Journal of Lexicography* 3 (1990) 204–11.

McEnery, Tony, and Andrew Wilson. *Corpus Linguistics: An Introduction*. 2nd ed. Edinburgh: Edinburgh University Press, 2001.

Mikolov, Tomas, et al. "Efficient Estimation of Word Representations in Vector Space." In *Proceedings of Workshop at ICLR, 2013*, 2013:1–12. Scottsdale, AZ, 2013.

Miller, David M. "Ethnicity Comes of Age: An Overview of Twentieth-Century Terms for *Ioudaios*." *CurBR* 10 (2012) 293–311.

———. "Ethnicity, Religion and the Meaning of *Ioudaios* in Ancient 'Judaism.'" *CurBR* 12 (2014) 216–65.

———. "The Meaning of *Ioudaios* and Its Relationship to Other Group Labels in Ancient 'Judaism.'" *CurBR* 9 (2010) 98–126.

Moule, Charles Francis Digby. *An Idiom Book of New Testament Greek*. 1971. Reprint, Cambridge: Cambridge University Press, 2004.

Moulton, James Hope. *A Grammar of New Testament Greek: Prolegomena*. 1908. Reprint, Edinburgh: T. & T. Clark, 1930.

Müller, Thomas, et al. “Efficient Higher-Order CRFs for Morphological Tagging.” In *Proceedings of the 2013 Conference on Empirical Methods in Natural Language Processing*, 322–32. Seattle, WA: Association for Computational Linguistics, 2013.

Müller, Thomas, and Hinrich Schütze. “Robust Morphological Tagging with Word Representations.” In *Proceedings of the 2015 Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies*, 526–36. Denver, CO: Association for Computational Linguistics, 2015.

Nida, Eugene A. *Componential Analysis of Meaning*. Approaches to Semiotics 57. The Hague: Mouton, 1975.

———. “Semantic Domains and Componential Analysis of Meaning.” In *Current Issues in Linguistic Theory*, edited by Roger W. Cole, 139–67. Bloomington, IN: Indiana University Press, 1977.

Nida, Eugene A., and Johannes P. Louw. *Lexical Semantics of the Greek New Testament: A Supplement to the Greek-English Lexicon of the New Testament Based on Semantic Domains*. RBS 25. Atlanta: Scholars, 1992.

O’Donnell, Matthew Brook. *Corpus Linguistics and the Greek of the New Testament*. New Testament Monographs 6. Sheffield: Sheffield Phoenix, 2005.

———. “Designing and Compiling a Register-Balanced Corpus of Hellenistic Greek for the Purpose of Linguistic Description and Investigation.” In *Diglossia and Other Topics in New Testament Linguistics*, edited by Stanley E. Porter. JSNTSup 193. Sheffield: Sheffield Academic, 2000.

———. “Introducing the OpenText.org Syntactically Analyzed Greek New Testament.” (September, 2005) No pages. Online: http://www.opentext.org/resources/articles/a8.html.

Pang, Francis G. H. *Revisiting Aspect and Aktionsart: A Corpus Approach to Koine Greek Event Typology*. LBS 14. Leiden: Brill, 2016.

Parker, Robert, et al. *English Gigaword Fifth Edition*. Philadelphia: Linguistic Data Consortium, 2011.

Pethö, Gergely. “What Is Polysemy?: A Survey of Current Research and Results.” In *Pragmatics and the Flexibility of Word Meaning*, edited by Enikö Németh T. and Károly Bibok, 175–224. Current Research in the Semantics/Pragmatics Interface. Amsterdam: Elsevier, 2001.

Porter, Stanley E. *Idioms of the Greek New Testament*. 2nd ed. Biblical Languages: Greek 2. Sheffield: Sheffield Academic, 1994.

———. “In Defence of Verbal Aspect.” In *Biblical Greek Language and Linguistics: Open Questions in Current Research*, edited by Stanley E. Porter and D. A. Carson, 26–45. JSNTSup 80. Sheffield: Sheffield Academic, 1993.

———. *Linguistic Analysis of the Greek New Testament: Studies in Tools, Methods, and Practice*. Grand Rapids: Baker Academic, 2015.

———. *Studies in the Greek New Testament: Theory and Practice*. SBG 6. New York: Peter Lang, 1996.

———. *Verbal Aspect in the Greek of the New Testament, with Reference to Tense and Mood*. SBG 1. New York: Peter Lang, 1989.

Porter, Stanley E., and Andrew W. Pitts. “Πίστις with a Preposition and Genitive Modifier: Lexical, Semantic, and Syntactic Considerations in the Πίστις Χριστοῦ Discussion.” In *The Faith of Jesus Christ: Exegetical, Biblical, and Theological Studies*, edited by Michael F. Bird and Preston M. Sprinkle Peabody, MA: Hendrickson, 2009.

Porter, Stanley E., and Jason C. Robinson. *Hermeneutics: An Introduction to Interpretive Theory*. Grand Rapids: Eerdmans, 2011.

Porter, Stanley E., et al. *Fundamentals of New Testament Greek*. Grand Rapids: Eerdmans, 2010.

Rasinger, Sebastian M. *Quantitative Research in Linguistics: An Introduction*. 2nd ed. Research Methods in Linguistics. London: Bloomsbury Academic, 2013.

Řehůřek, Radim, and Petr Sojka. “Software Framework for Topic Modelling with Large Corpora.” In *Proceedings of the LREC 2010 Workshop on New Challenges for NLP Frameworks*, 45–50. Valletta, Malta: ELRA, 2010.

Reid, Wallis. “Monosemy, Homonymy and Polysemy.” In *Cognitive and Communicative Approaches to Linguistic Analysis*, edited by Ellen Contini-Morava et al., 93–129. Studies in Functional and Structural Linguistics 51. Amsterdam: Benjamins, 2004.

———. “Quantitative Analysis in Columbia School Theory.” In *Meaning as Explanation*, edited by Ellen Contini-Morava and Barbara S. Goldberg. Trends in Linguistics: Studies and Monographs 84. Berlin: Mouton De Gruyter, 1995.

Reid, Wallis, et al., eds. *Signal, Meaning, and Message: Perspectives on Sign-Based Linguistics*. Studies in Functional and Structural Linguistics 48. Amsterdam: Benjamins, 2002.

Ruhl, Charles. “Data, Comprehensiveness, Monosemy.” In *Signal, Meaning, and Message: Perspectives on Sign-Based Linguistics*, edited by Wallis Reid et al.,

171–89. Studies in Functional and Structural Linguistics 48. Amsterdam: Benjamins, 2002.

———. *On Monosemy: A Study in Linguistic Semantics*. SUNY Series in Linguistics. New York: SUNY Press, 1989.

Sahlgren, Magnus. "The Word-Space Model: Using Distributional Analysis to Represent Syntagmatic and Paradigmatic Relations between Words in High-Dimensional Vector Spaces." PhD diss., Stockholm University, 2006.

Schneiders, Sandra M. "From Exegesis to Hermeneutics: The Problem of the Contemporary Meaning of Scripture." *Horizons* 8 (1981) 23–39.

Schütze, Hinrich. "Word Space." In *Advances in Neural Information Processing Systems 5*, edited by S. J. Hanson et al., 895–902. San Mateo, CA: Morgan Kaufmann, 1993.

Silva, Moisés. *Biblical Words and Their Meaning: An Introduction to Lexical Semantics*. Grand Rapids: Zondervan, 1983.

Sinclair, John M. "Collocation: A Progress Report." In *Language Topics: Essays in Honour of Michael Halliday, I & II*, edited by Ross Steele and Terry Threadgold, 2:319-31. Amsterdam: Benjamins, 1987.

———. *Corpus, Concordance, Collocation*. Oxford: Oxford University Press, 1991.

———. "Trust the Text." In *Advances in Systemic Linguistics: Recent Theory and Practice*, edited by Martin Davies and Louise Ravelli, 5–19. Open Linguistics. London: Pinter, 1992.

Sperber, Dan, and Deirdre Wilson. "The Mapping between the Mental and the Public Lexicon." *UCL Working Papers in Linguistics* 9 (1997) 1–20.

Storjohann, Petra. "Sense Relations." In *The Routledge Handbook of Semantics*, edited by Nick Riemer, 248–65. Routledge Handbooks in Linguistics. London: Routledge, 2016.

Thiselton, Anthony C. *The Two Horizons: New Testament Hermeneutics and Philosophical Description with Special Reference to Heidegger, Bultmann, Gadamer, and Wittgenstein*. Grand Rapids: Eerdmans, 1980.

Tobin, Yishai. *Invariance, Markedness, and Distinctive Feature Analysis: A Contrastive Study of Sign Systems in English and Hebrew*. Amsterdam Studies in the Theory and History of Linguistic Science 111. Amsterdam: Benjamins, 1994.

Tomson, Peter J. "'Jews' in the Gospel of John as Compared with the Palestinian Talmud, the Synoptics, and Some New Testament Apocrypha." In *Anti-Judaism in the Fourth Gospel*, 176–212. Louisville: Westminster John Knox, 2001.

———. “The Names Israel and Jew in Ancient Judaism and in the New Testament.” *Bijdr* 47 (1986) 120–40.

Vanhoozer, K. J. “Exegesis and Hermeneutics.” In *New Dictionary of Biblical Theology*, edited by T. Desmond Alexander and Brian S. Rosner, 52–64. Downers Grove, IL: InterVarsity, 2000.

Wallace, Daniel B. *Greek Grammar Beyond the Basics: An Exegetical Syntax of the New Testament*. Grand Rapids: Zondervan, 1996.

———. Review of *The Greek Article: A Functional Grammar of Ὁ-Items in the Greek New Testament with Special Emphasis on the Greek Article*, by Ronald D. Peters. *RBL* (September 2015) 1–9.

———. *The Basics of New Testament Syntax: An Intermediate Greek Grammar*. Grand Rapids, MI: Zondervan, 2000.

Wishart, Ryder, and Prokopis Prokopidis. “Topic Modelling Experiments on Hellenistic Corpora.” In *Proceedings of the Workshop on Corpora in the Digital Humanities 17*, 39–47. Bloomington, IN: CEUR Workshop Proceedings, 2017.

Wittgenstein, Ludwig. *Philosophical Investigations*. Edited by G. E. M. Anscombe and R. Rhees. Translated by G. E. M. Anscombe. Oxford: Blackwell, 1953.

Zgusta, Ladislav. *Manual of Lexicography*. Janua Linguarum 39. Prague: Academia, 1971.

Zuidema, Willem, and Bart de Boer. “Modeling in the Language Sciences.” In *Research Methods in Linguistics*, edited by Robert J. Podesva and Devyani Sharma, 422–39. Cambridge: Cambridge University Press, 2013.