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How Syntax Relates to Inflectional Morphology: Paradigm-Linkage in a Systemic Grammar Model with Application to Hellenistic Greek

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Abstract: In this article, I explore the descriptive challenges posed by a richly morphological language like Greek by considering a possible alignment between Gregory Stump's paradigm-linkage hypothesis and the Cardiff Grammar's model of syntax and its relationship with semantics and form. I give several minor examples that apply the aligned model to Greek, making the case that Stump's hypothesis clarifies the Cardiff Grammar's notion of realization statements—why there are apparently inconsistent patterns in realization—where functional grammars tend to rely on probabilities. This clarity is instrumental for syntactic theorizing for synthetic languages like Greek. Finally, I suggest some of the implications of this argument for the specification of syntactic categories in Greek, whose semantic and syntactic paradigms are, like its inflectional paradigms, shaped in critical ways by morphosyntactic property sets. (Article)

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1. *Introduction*

The syntax of Hellenistic Greek constitutes a challenging and stimulating domain, in terms of both the theoretical modeling task and the task of practical analysis.[1] A major source of this

1. See, for example, the two recent volumes, Mathewson and Emig, *Intermediate Greek Grammar*; Muraoka, *Syntax*. These volumes cover New

challenge can be traced to the many obvious differences between Greek and the major world languages for which syntactic models are usually developed.[2] However, in this paper I will show that it is not merely the surface idiosyncrasies of Greek that pose a challenge for syntactic modeling, but even more fundamentally the abstract categories of the language.[3] These abstract categories structure all areas of the Greek language, including lexis and morphology, syntax, and semantics.[4] I take it as axiomatic that an adequate model of *Greek* syntax—as opposed to the general phenomenon of syntax—must likewise be structured according to these particular abstract categories. This axiom, that a language is a category-forming and category-employing institution, does not preclude the analyst's imposing his or her own analytical categories.[5] There are many reasons this kind of imposition can be helpful. However, what this axiom precludes

Testament and Septuagint Greek syntax, but are characteristic of the Greek grammatical tradition in general, which has tended to treat syntax as if it were an extension of lexicography with fewer forms to work with. Rather than listing, for example, the five, ten, or fifteen different "senses" of *lexemes* (a practice criticized in Reid, "Monosemy, Homonymy and Polysemy"; Ruhl, "Data, Comprehensiveness, Monosemy"; Ruhl, *On Monosemy*; Wishart, "Hierarchical and Distributional Lexical Field Theory"), these syntaxes simply list the different senses of other grammatical forms, such as the genitive, the dative, the aorist, etc. Syntactic programs aimed at exhaustively cataloguing the syntactic variation in a given document or collection are equally guilty of this lexical-syntax approach. See, for example, Sollamo, "Prolegomena"; Voitila, "Septuagint Syntax." Throughout the paper I will use the term *Greek* to refer to Hellenistic Greek. For further discussion of this diachronic variety of Greek, see Land, "Varieties of the Greek Language"; O'Donnell, "Register-Balanced Corpus"; Wishart and Prokopidis, "Topic Modelling Experiments."

2. Less-major languages are not entirely neglected, but they are routinely assessed in terms of the linguistic models developed for major languages, more often than not English.

3. I have in mind all manner of categories—namely, every value (or *valeur*) capable of being abstracted from observed usage of the linguistic resources of Greek.

4. Cf. Huffman, "Purpose of a Grammatical Analysis," 209; Otheguy, "Saussurean Anti-Nomenclaturism," 381; Porter, *Verbal Aspect*, 12–13; Ruhl, *On Monosemy*, 137.

5. Language is a "principle of classification," according to Saussure,

is the assumption on the part of the analyst that (a) the imposed categories are part of the linguistic data, or (b) that they always work the way they are thought to, or the way they might work in other languages.

These reflections provide the basis of this paper's thesis. I will argue that a model of Greek syntax must be paradigmatic in orientation. By *paradigmatic*, I am referring first of all to the notion of contrasting linguistic choices as modeled in systems, which is the defining characteristic of Systemic Functional Grammar.[6] However, I am also referring to an equally abstract but more specific kind of paradigm, namely the inflectional paradigm. Greek is a synthetic language, which means that it expresses morphosyntactic categories through patterns of change on the level of the word (i.e. through the addition of affixes of various sorts, and also through stem changes). I will argue that the systemic theory I chiefly rely on here, Cardiff Grammar, does not have the theoretical machinery either to analyze inflectional variation or to accord proper significance to inflectional paradigms and the morphosyntactic properties they realize—Fawcett's claims to the contrary notwithstanding. Nevertheless, the Cardiff Grammar model provides a promising platform from which language-specific alterations and modeling can take place, ultimately facilitating a fully systemic and probabilistic model of Greek syntax.

My argument will proceed in the following stages: First, I will introduce the Cardiff Grammar framework, noting what I perceive to be its key contributions or shortcomings for analysis of Greek. I will specifically explore the challenges posed by a richly morphological language like Greek. Second, I will introduce Gregory Stump's paradigm-linkage hypothesis and give several minor examples of its application to Greek. Third, I will make the case that Stump's hypothesis clarifies the Cardiff Grammar's notion of realization statements, and that this clarity is instrumental in the task of syntactic theorizing for synthetic

Course in General Linguistics, 10.

6. Halliday, *Halliday's Introduction*, 49; Thompson, *Introducing Functional Grammar*, 35–38.

languages like Greek. Finally, I will suggest some of the implications of this argument for the specification of syntactic categories in Greek. I will ultimately seek to demonstrate that Greek's semantic and syntactic paradigms are, like its inflectional paradigms, shaped in critical ways by morphosyntactic property sets.

Additionally, I must note that while Systemic Functional Grammar is *functional*, and Stump's paradigm-linkage hypothesis is highly formal, a thoroughgoing functional annotation of any language necessitates formalizing the functionality that takes place through language. No speaker (at least not this one) thinks in terms of functions, rule blocks, and complex algorithms in order to do things with language. However, neither is any speaker completely random in their use of language. Patterns can and must be identified. While the analytical framework I employ here is in many ways formal, it assumes a functional explanatory framework. Indeed, the morphological patterns we see in Greek and many other languages must have a functional basis, but, as I demonstrate in this paper, interest in more abstract matters of context, discourse, and semantics do not get one off the hook when it comes to adequately describing morphology—and it is at this point that systemic-functional grammars tend to be weakest. Cardiff grammar is road-tested with real language data, and, as they have discovered, the very process of formalizing exposes gaps in our thinking and allows us to refine our understanding in order to make use of better, more consistent, and more thorough functional models.

2. *Systemic Functional Grammar in the Cardiff Framework*

The Cardiff Grammar framework has both similarities to and differences from the more widely known approach to Systemic Functional Grammar (henceforth SFG) developed by Michael

Halliday.[7] As for its similarities, they are captured succinctly in a diagram used by Fawcett to represent the common core of SFG.

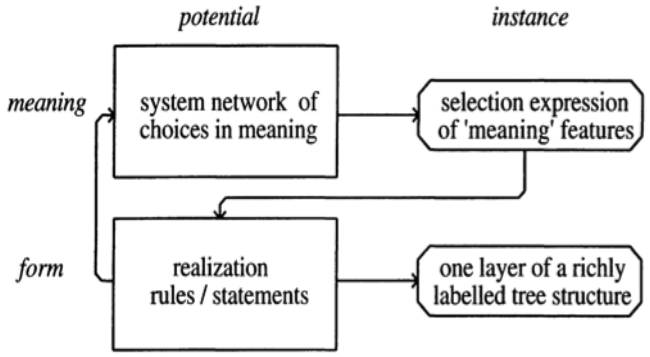

Figure 1. The main components of SFG[8]

Figure 1 depicts two cross-cutting categories corresponding to the Saussurean distinctions between sign and signifier (*meaning* and *form* in the diagram) and also what we might call *langue* and *parole* (*potential* and *instance* in the diagram). The left side of the diagram indicates two kinds of potential that a language has, both a potential for meaning and a potential for form. The right side indicates two kinds of output these potentials are capable of producing—two kinds of instantiation of their respective potentials. Thus, the meaning potential is instantiated in a particular set of meanings, and the form potential is instantiated in a particular set of forms. The output on the level of meaning, moreover, provides the input on the level of form.

One can imagine a speaker who intends to describe some sort of event using language: they end up producing patterned wordings. Reverse engineering this result (as opposed to the mental processes and experiences that it involves) requires a

7. For the "founding document" of Halliday's approach—though with important differences from the current approach which are exploited by Cardiff Grammar—see Halliday, "Categories." For an overview of its most popular, though not its only, line of development in its current state, see Halliday, *Halliday's Introduction*.

8. Fawcett, *Theory of Syntax*, 36.

formalized description of why certain patterns do what they do in context. As a result, we speak of the speaker 'opting' (*choosing*, in a logical sense) to describe a situation with an aorist process and third person participant (to simplify matters). From their language's potential for meaning, they generate (according to this reverse-engineering description) a selection of semantic features {clause:process:aorist;third-person, etc.}.[9] This selection feeds into the form level of their language,[10] and a set of forms from the inventory of form potentials is correspondingly 'activated,' and then subsequently 'realized' as actual spoken text (which could be analyzed as a *tree structure*, as the diagram notes) according to a set of realization rules.

In other words, the basic theory can be summarized in this way: On the level of meaning, which is called semantics in systemic grammars,[11] *system networks* for *semantic classes* (specifying the potential meaning of a given class) produce semantic *feature selections* (instances of meaning). On the level of form, *realization statements* spell out the rules of exponence for the feature selections. This is, Fawcett claims, the heart of a

9. Throughout this paper I will follow Stump's notation (see below) and place properties or features in curly brackets. The names of grammatical systems and lexemes will be denoted by small capitals. The relationship between properties and features will be discussed further below.

10. It bears clarifying in the strongest terms that this is fundamentally a *logical* description of the "process" of producing language in such a way that the paradigmatic possibilities can be systematically contrasted. The actual processing of language by the human brain, conscious or unconscious, is not in view here.

11. The use of the term "semantics" as referring to the meaning potential of a language is typical of SFG. Fawcett (*Theory of Syntax*, 38) explains that this is an adequate use of the term, because "it is one way of expressing the theory's important claim that all of the different types of meaning covered by the system networks have to be included in any adequate theory of 'meaning', if only because the various sub-networks of TRANSITIVITY, MOOD, THEME and the others are partially interdependent on each other. SFL offers a particularly rich and powerful way to model the level of 'meaning' in language, and I have always felt it right to refer to this level of language by the term 'semantics'."

SFG model, the dual contrast between form and meaning, potential and instance.

What can we make of these various key terms in Fawcett's model (those italicized in the previous paragraph)? *System networks*, we can note, are central to SFG, hence the *systemic* in its name. They represent choices between different meanings in the language as sets of logical options in a kind of flow chart. The starting point of a system is called its *entry condition*, and the result of a fully traversed system network is a set of *semantic features*.

There are several important things to note here, along with pertinent questions. All of these reflections taken together help to specify the nature of these theoretical categories in relation to Greek. (1) System networks represent the grammatical distinctions made within a language. That is, all languages (probably) have a system for {number}. Some of these languages offer two options, and some more. That is, within the system of {number}, some languages will distinguish between the options {number:singular} and {number:plural}, whereas others may introduce another option such as {number:dual}. The kinds of options represented in the grammar are therefore language-specific. The question we need to ask is: What are the systemic distinctions made in Greek and how do we find out? (2) The output of a system is called a feature selection, and it comprises a set of features such as {number:singular, person:third, etc.}. What, we might ask, are the feature sets selected for Greek? (3) The system networks relevant for syntax each have an entry condition that is a semantic *class*. That is, in the larger system network of the language, certain features will comprise types or classes of semantic units. Typical examples would be clause or group, such that the feature selection output will be a feature selection for a specific semantic class. We must also ask the question, What are the semantic classes of Greek, and how do we know them?

A final term that requires elucidation is *realization statement*. For Fawcett, a language's set of realization statements is its form-level correspondent to the system networks on the level of meaning. That is, the potential for a language to produce forms

for its meanings is represented not as another set of system networks, but rather by a set of rules specifying how the features from the feature selection (which the form component takes as its input) are realized as concrete forms. The 'loopback' in the diagram between the realization statements and the system networks indicates that certain statements will specify that an element can be "filled" by, for example, another clause, or a group, or a word, but to select another clause, group, or word, one needs to re-enter the system network at precisely that point (at the entry condition of clause, group, or word). In regard to realization statements we should ask, What is the nature of Greek's realization statements, and how might the Cardiff Grammar approach model them?

Before attempting to answer each of these questions, let us consider some further specifications of Fawcett's model. The Cardiff Grammar model includes three units: classes, elements (and their places), and items. Classes are classes of units, or types of units. Whereas in Halliday's rank scale the units comprise ranks of smaller and smaller units that 'make up' or 'compose' the larger units as elements within them, Fawcett does away with the rank scale almost entirely. He explains, "the Cardiff Grammar's approach to the concept of 'class of unit' in syntax is to recognize that each such class exists to express the specific array of meanings that are associated with each one of the major classes of *entity* in the semantics."[12] In other words, classes are identified based on the internal structure of units. The model is more insightful, he claims, when you "treat the *internal* structural patterns of a unit as the defining ones . . . One must operate with either internal criteria or external criteria (the latter being in operation in the unit next above on the 'rank scale'), because the two are often in conflict."[13] So, while not relying simplistically on part-of-speech labels, Fawcett has turned away from extrinsic definitions of classes in favour of an intrinsic one. Each unit, in turn, is made up of elements or functional components (as they also are in the rank scale), and the elements

12. Fawcett, *Theory of Syntax*, 193.
13. Fawcett, *Theory of Syntax*, 198.

are assigned "place" in the default ordering of the unit. These elements, in contrast to the classes, are defined extrinsically, based on their function in the unit which they help to compose. Items, finally, denote non-syntactic realizations. That is, every class is assigned a componence of elements, the elements are filled, often by new units, but eventually every element is filled with an item, which is not assigned componence and thus ends the current iteration cycle of the realization statements. As Fawcett puts it, "syntax only ends when elements are expounded by items."[14] This notion of items as atomic elements is problematic for synthetic languages, as we will see momentarily.

The model also includes three kinds of relationship between the three categories. We have already seen the relationships of *componence* and *filling*, whereby a unit is assigned componence into elements which are subsequently filled by realization statements, sometimes triggering recursion back into the system network with a given feature as entry condition. The final relationship is *exponence*, whereby an element is realized by an item, ending the realization phase. One kind of exponence, however, is conflation, whereby certain features trigger the realization rule "conflate this element with the Subject," or some variation thereof. This last relationship allows elements of the final text to be multifunctional—a necessity for a SFG.

In order to consider how this model might apply to Greek, I will return to the questions I have posed and take them each in order. (1) What are the systemic distinctions made in Greek and how do we find out? I would argue that the systemic distinctions in Greek are fundamentally related to formally-derived properties. This argument requires some clarification and also some justification. First, while there are certain features that are purely semantic in the sense that they logically precede all of the syntactic entry conditions, such as the clause, these features have not been systematically mapped in English, let alone in Greek. Within the syntactically relevant systems, however, the picture is slightly different. Consider the second and third questions: (2) What are the feature sets selected for Greek? and (3) What are

14. Fawcett, *Theory of Syntax*, 226.

the semantic classes of Greek, and how do we know them? I would argue that these two questions are inherently intertwined, particularly within the Cardiff framework. First, the internal structure of Greek's syntactic units is characterized by the same morphosyntactic properties that those units realize in text (e.g. nominals realize the distinctive properties of {case, gender}, whereas verbals realize {aspect, voice}, etc.). In turn, the feature selection sets that instantiate the potential of the system networks are features corresponding to those same morphosyntactic properties, as I will exemplify below. Morphosyntactic properties thus constitute both the input to the form level and the output of the semantic level of Greek, insofar as these levels concern syntax.

What is crucial to note here is that morphosyntactic properties are not formal phenomena in language. They are realized through forms, but they are themselves abstract grammatical distinctions. Consider, for instance, the fact that a Greek verbal cluster, which I will refer to simply as a clause (though I will clarify this relationship below), inflects for, at minimum, precisely those morphosyntactic features that verbals inflect for. Taking the morphosyntactic property sets of nominals and verbals (and particles and participles—though these differ from the first two in significant ways) as the defining characteristics of semantic classes thus ensures that the selection features for a syntactic class will allow for precisely those realizations needed for Greek's observable syntactic formations. While there may be other selection features realized in the final syntactic output, these other features are the result of a re-traversing of the network triggered by something in the initial realization (whether a lexeme, or a particular semantic configuration of features realized by satellite components).[15] As we will see below, the

15. Note, however, that it would make just as much sense to introduce these new aspects of meaning as after-the-fact classifications based on the realization of these syntactic classes. There is a considerable amount of information I am leaving out at this point. The crucial point is that the semantic classes should be outlined on the basis of morphosyntactic properties that co-occur in sets.

role of morphosyntactic properties is not only syntactic, nor is it merely morphological. I believe this formulation of the semantic classes and feature selections accords with Fawcett's claim that "the syntactic categories . . . are those . . . needed to state with the greatest economy the realization rules that express the options in the semantics."[16]

Turning to realization rules, I have posed the question, (4) What is the nature of Greek's realization statements, and how might the Cardiff Grammar approach model them? Realization statements provide a kind of anchor to the model. As Fawcett explains, "The way in which a SF grammar keeps 'contact with the ground', is to ensure that it has explicit realization rules that are capable of generating a full range of realizations in structures, items, intonation and punctuation at the level of form (while conforming to certain agreed limitations on their complexity)."[17] But in light of the way items are modeled on this approach, can Cardiff Grammar achieve this goal? If one were to go about writing "explicit realization rules . . . capable of generating a full range of realizations in structures [and] items," what would that list look like? We have a hint in the examples provided by Fawcett, and it is here that I find his model lacking due to his underdeveloped notion of inflectional morphology in general, and the handling of semantic features through realizations more specifically. To take one example from his toy grammar (his terminology) of nominal groups, Fawcett notes the following variation in the deictic determiner's realization. In the case where the feature {near} is selected, "The rule states that, if either [singular] or [mass] is also chosen, the realization is that the deictic determiner (dd) will be expounded by the item *this,* but that if the feature [plural] is co-selected it will be expounded

16. Fawcett, *Theory of Syntax*, 162. Quoting from Fawcett, "Some Proposals," 4–5. Fawcett's reasons for preferring not to use parts of speech as semantic classes (he says [*Theory of Syntax*, 230], "a term such as 'noun' or 'adjective' is used merely as a useful *label for the set of items that expound some element of structure*") do not hold up for Greek given a morphosyntactic part-of-speech categorization.

17. Fawcett, *Theory of Syntax*, 59.

by *these*."[18] This example purports to be the direct "filling" of an element with an inflected form, in this case inflected for number. The only case in which such an approach would be feasible (though not more correct for it) is when applied to an analytic language like English, with minimal inflectional morphology. In another example, he states that the realization of {goose} + {plural} as *geese* is a "portmanteau realization."[19] This second example is telling of a serious flaw in Fawcett's conception of realization, namely the treatment of lexemes as having the same status in the realization statements as any other feature. In the system networks, lexemes are indeed semantic features selected just as morphosyntactic properties are. However, on the level of realization the lexeme operates in a different manner, triggering first the realization of a particular stem and a mapping of the properties to that stem based on its inflection class, and only then triggering the realization of the word form. Fawcett has not taken into account the complexity of inflectional paradigms, with the result that a consistent application of his approach, if it were made to work, would quite literally require millions of realization rules for capturing even a respectable portion of the verbal lexemes in Greek.

There is a final problem with Fawcett's approach to inflections, however, which reveals the source of his confusion. Contrary to what I have been saying, he claims,

> I should make it clear that the more complex grammatical morphologies of agglutinating languages—such as Japanese, Mohawk and Swahili—are also explicitly provided for in the theory, as also are inflectional languages. Indeed, in such languages morphemes function as direct elements of the clause . . . In a description of [such a language] that uses the present theory of

18. Fawcett, *Theory of Syntax*, 66. Fawcett uses square brackets which I have made curly for consistency.

19. Fawcett, *Theory of Syntax*, 254. A 'portmanteau' realization is a single morph that represents two morphemes. But *geese* is an inflected form, and not the same as portmanteau forms such as *smog* ('smoke' + 'fog') or *brunch* ('breakfast' + 'lunch').

> syntax, then, *morphemes* . . . would be treated as expounding directly the elements of the *clause*.[20]

The deeper problem evident in this passage is Fawcett's conception of inflectional morphology as an incremental system whereby words "add on" snippets of information in the form of morphological affixes. Suffice it to say that this is not how inflection works (and may not even be the way particles or free morphemes work either), as evidenced by the fact that aspect, the central feature of the Greek verbal system, is realized not by a particular affix but by the selection of a stem (governed by the possibilities of a particular lexeme), and then by the addition of affixes, with some being added only under certain circumstances, such as the augment in aorist or imperfect indicatives.[21]

In summary, the Cardiff Grammar model provides a conception of language as succinctly depicted in Figure 1. Language has a meaning level and a form level, which relate by means of realization. Language also has system and instance levels, which relate by means of instantiation. Syntax is conceived within this framework as the selection of semantic features (primarily including the selection of semantic classes) which are realized in syntactic structures on the level of form. Despite the problematic nature of Fawcett's attempt to account for inflectional morphology, this model of syntax holds potential for developing a paradigmatic model of Greek syntax insofar as system networks and realization statements play a critical role in this model. In the next section, we will see that morphosyntactic properties not only serve to specify the entry points into the

20. Fawcett, *Theory of Syntax*, 227.

21. Significantly, the Greek augment is a source of debate insofar as some seem to think (as Fawcett appears to) that the addition of individual morphemes indicates the agglutination of semantic properties, such that it becomes automatically significant of a specifiable property—usually assumed to be 'past time'; see Porter, *Idioms*, 35; Porter, *Verbal Aspect*, 208–9. I will argue below that this view is mistaken insofar as it is the word form as an integrated whole that bears all of the properties of its cell in the paradigm. *Derivational* morphemes can be analyzed as independently meaningful, but it is not correct to analyze each *inflectional* morpheme as independently meaningful, and the augment is an inflectional morpheme.

system network relevant for Greek syntax, but they also serve as the interface language between semantics, syntax, and morphology, thus spanning the entire model of a language from semantic potential to realized word forms.

3. *Inferential-Realizational Morphology and Paradigm-Linkage*

Gregory Stump's paradigm-linkage hypothesis comprises a specification and more fully developed version of his previous work in inflectional morphology. In his previous work, he proposed that "paradigms are not the epiphenomenon that they are often assumed to be in other morphological frameworks, but are central to the definition of a language's inflectional system."[22] Stump explains that "In any language exhibiting inflection, each inflected word in a sentence carries a set of morphosyntactic properties."[23] It is not that each morpheme carries a property. Rather, each inflected word carries a *set* of properties. Stump notes four different ways the significance of this inflectional morphology is understood. These four ways are represented in Table 1.[24]

	INCREMENTAL	REALIZATIONAL
LEXICAL	lexical-incremental	lexical-realizational
INFERENTIAL	inferential-incremental	inferential-realizational

Table 1. Models of inflectional morphology.

Lexical theories of inflectional morphology list the associations between inflectional affixes and properties in the lexicon (as opposed to the grammar). *Inferential* theories, by contrast, relate these associations by means of formulas or rules. *Incremental* theories of inflectional morphology treat inflectional affixes as incrementally adding meanings to a stem, such that each new morpheme adds a new piece of meaning. *Realizational*

22. Stump, *Inflectional Morphology*, xii.

23. Stump, *Inflectional Morphology*, 1.

24. See Stump, *Inflectional Morphology*, 2–3 for examples of each approach.

theories instead view each final inflected form as the realization of some morphosyntactic property set in its totality for some specific lexeme. Stump, who advocates an inferential-realizational approach, offers compelling evidence of the inadequacy of the other theories due to their inability to consistently handle mismatches between a lexeme's paradigmatic contrasts and the contrasting word forms that realize them. As he explains, there are two "fundamental facts" favouring the inferential-realizational approach: underdetermined properties and extended exponence.[25] Underdetermined properties are instances where contrasting syntactically and semantically significant property sets are not distinguished in the inflected word forms (for example, in many Indo-European languages the nominative and accusative neuter forms are identical). Extended exponence refers to the fact that sometimes one property (such as aspect in Greek) is signalled by multiple morphological features. For example, stative aspect in Greek is signalled by reduplication of the stem and by a lack of connecting vowel.[26] He notes,

> Realizational theories are fully compatible with the widespread incidence of extended exponence: in realizational theories, there is no expectation that a given morphosyntactic property will be realized by at most one marking per word; on the contrary, the possibility is left open that the same property may induce (or may participate in inducing) the introduction of a number of distinct markings. In incremental theories, by contrast, it is customarily assumed that a given morphosyntactic property has at most one affixal exponent . . . Thus, incremental theories deny that instances of extended exponence actually arise and must therefore resort to extraordinary means to accommodate those that do.[27]

Facts such as these constitute misalignments from what Stump proposes is a canonical ideal. Postulating a canonical

25. Stump, *Inflectional Morphology*, 3–9.

26. There are better ways to describe inflections, specifically theme and distinguisher in Stump's terminology, whereby *theme* is a shared component between cells and *distinguisher* is what distinguishes cells in the realized paradigm.

27. Stump, *Inflectional Morphology*, 4.

ideal for inflectional morphology is a strategy borrowed from typology, whereby an extreme case (or two opposite cases) of some phenomenon is set up as a point of reference for comparison with deviations from that extreme case.[28] In Stump's usage, the extreme case in point is an inflectional paradigm for a lexeme with one stem, realizations for all property sets, zero overlap in terms of word forms, and regularity across lexemes within the same category (a Greek example might be λύω 'I loose'). He in fact finds an example of this canonical case in the Turkish word *adam* 'man.' Nevertheless, he notes,

> If all inflectional paradigms conformed to the canonical ideal . . . there would be no reason to attribute any theoretical significance to them, since each of a lexeme's word forms could be seen as arising through a simple 'spelling out' of its associated morphosyntactic properties. But inflectional paradigms rarely conform to the canonical ideal; on the contrary, there are numerous ways in which content and form may be misaligned in a lexeme's inflectional realization; such misalignments invariably involve patterns defined not over individual word forms but over inflectional paradigms.[29]

In order to account for non-canonical cases, Stump proposes the paradigm-linkage hypothesis. He explains, "The paradigm-linkage theory is built on the assumption that a language's inflectional morphology involves three kinds of paradigms and the relations among them."[30] These three paradigms are "interlocking," in the sense that each implies the others. I will first explain the three kinds of paradigm, and then show how they integrate in the realization of Greek word forms.[31]

First, there is a lexeme's content paradigm. A lexeme *L*'s content paradigm comprises all of the possible feature or property sets (a property set is represented by sigma, σ) that can be co-selected with (or allow selection of) *L*. Content cells take the form of $<L, \sigma>$. Secondly, there is a lexeme's form paradigm. *L* has a set S_L of at least one stem. *L*'s form paradigm specifies

28. Stump, *Inflectional Paradigms*, 31–42.
29. Stump, *Inflectional Paradigms*, 4.
30. Stump, *Inflectional Paradigms*, 252.
31. It is probably helpful to cross reference these definitions with the examples given below.

which feature sets (τ, where τ is a property mapping of σ appropriate for the stem) from *L*'s content paradigm can be realized by which stems (*Z*) in S_L. These form cells therefore take the form of <*Z*, τ>. In the canonical case, τ is isomorphic to σ, but this is not always the case, especially depending on *Z*'s inflection class. Finally, *L*'s realized paradigm is all of the realizations <*w*, τ> where *w* is the word-form output realizing <*Z*, τ>. "Canonically," Stump explains,

> a lexeme's content paradigm is isomorphic to the form paradigm of its stem and to its realized paradigm; but this isomorphic relationship is often disrupted by a variety of disparate morphological phenomena, including defectiveness, overabundance, syncretism, suppletion, heteroclisis, homomorphy, deponency, polyfunctionality and morphomically conditioned inflection.[32]

The paradigm-linkage hypothesis consists of two more specific hypotheses:

> *Irreducibility hypothesis*: "Some morphological regularities are, irreducibly, regularities in paradigm structure."[33]

> *Interface hypothesis*: "Paradigms are the interfaces of inflectional morphology with syntax and semantics."[34]

The first hypothesis accounts for misalignments between a lexeme's content paradigm and its realized paradigm by identifying and formalizing the regularities in paradigm structure across lexemes and inflection classes that account for these misalignments. This process greatly reduces the number of rules required to account for the realizations of multiple lexemes, while simultaneously providing a systematic account of every possible lexeme–property-set pairing. The second hypothesis accounts for the existence of paradigms by identifying them as the point of interaction between syntax and semantics and morphology.

32. Stump, *Inflectional Paradigms*, 2.
33. Stump, *Inflectional Paradigms*, 23.
34. Stump, *Inflectional Paradigms*, 23.

When these three paradigms are aligned, they function as follows:[35]

Content	→	Form	→	Realization
<*L*, σ>	*Stem*(<*L*, σ>) =	<*Z*, σ>	*pm*(σ) =	<*w*, τ>
Semantic inputs from system network	'apply Stem() function for lexeme *L* with property set σ'	*Which stem is used for the lexeme given the property set*	'apply pm() function for stem *Z* with property set σ'	*The final output realized as a property-bearing form (which is subsequently conditioned by phonological context);* τ *is the output of* pm(σ)

Table 2. Stump's model of paradigm-linkage

The input to the paradigm, when viewed as a progression from left to right, is a lexeme with a complete property set (that is, exactly the properties capable of being expressed through realization of that lexeme). The *Stem*()[36] function is applied to this input, which may consist of rules that look something like:

1. *Stem*(<*L*, {aspect:perfective}>) = *L*'s perfective stem *Z* (i.e. this rule stipulates that *L*, with a feature set including perfective aspect, takes the form of a second aorist.)
2. etc.

35. The variation introduced by τ is not a variation in morphosyntactic properties but in the introduction of properties such as inflection class and morphomic (i.e. purely morphological) properties that condition a cell's realization but do not condition the syntax or semantics of the cell. Stump (*Inflectional Paradigms*, 114), explains "τ = *pm*(σ); canonically, *pm*(σ) = σ, but often, *pm*(σ) ≠ σ."

36. Adding brackets after the term is a convention Stump adopts, which is typical in computer programming, where a variable that refers to a function (as opposed to some atomic value or object) is affixed with brackets in order to "call" that function. The input or arguments for the function are then expressed within the brackets. For Stump, the brackets simply distinguish a function graphically.

Then the property-mapping function *pm*() is applied to the property set σ for stem *Z*. This function applies consecutive blocks of rules to *Z* until each rule block is exhausted (see below for an example of such a rule block for genitive plural forms), at which point the paradigm cell now has the form of <*w*, τ>, the final, inflected form.[37]

Here are two example paradigms, sparsely populated, for a verbal and nominal in Greek.[38]

INFLECTIONAL PARADIGM FOR ᾽ΕΡΧΕΣΘΑΙ with: {pres mid ind 1 sg} as *pres* {pres mid sub 2 pl} as *subj* {aor mid ind 1 sg} as *aor* ω as thematic conjugation		
CONTENT PARADIGM	FORM PARADIGM	REALIZED PARADIGM
<᾽Ερχεσθαι, *pres*>	<*Stem*(᾽Ερχεσθαι, *pres*) pm_{ω}(*pres*)> = ἐρχ- {*pres, ω*}	ἔρχομαι {*pres*}
…	…	…
<᾽Ερχεσθαι *subj*>	<*Stem*(᾽Ερχεσθαι, *subj*) pm_{ω}(*subj*)> = ἐρχ- {*subj, ω*}	ἔρχησθε {*subj*}
…	…	…
<᾽Ερχεσθαι *aor*>	<*Stem*(᾽Ερχεσθαι, *aor*) pm_{ω}(*aor*)> = ἐλθ- {*aor, ω*}	ἦλθον {*aor*}

Table 3. Example inflectional paradigm of verb

In this first example, I specify three morphosyntactic property sets by three different variables, and I assign the variable ω to signify the thematic verbal conjugation (i.e. not the μι conjugation).[39] Then below this I specify in the left column the lexeme and property-set pairings. Then in the centre column I

37. I am simplifying Stump's model significantly. For his account of both the three paradigms and the specific functions used to inferentially realize <*L*, σ, *w*>, see Stump, *Inflectional Paradigms*, esp. 104, 114.

38. For a version of this kind of chart in Stump's work (using Sanskrit verbs), see Stump, *Inflectional Paradigms*, 216.

39. A fuller account would also specify which set of endings are employed (i.e. primary or secondary).

have entered <*Stem*(῾Ερχεσθαι, *pres*) pm_{ω}(*pres*)>. This statement can be interpreted as: "Apply the *Stem*() function to the lexeme and property set in the content cell corresponding to this form cell to retrieve the proper stem for this lexeme with this property set, then apply the *pm*() or property-mapping function for the ω conjugation of this stem given the property set *pres* (which stands for {pres mid ind 1 sg}). These two functions generate the realized form ἔρχομαι with property set {*pres*}.

In the second example I have applied the same process. However, this time the form is a nominal, and thus the property-mapping function accords with the inflectional class traditionally called the second declension (subscripted "2" in Table 4). Below this example I have also stipulated what a property mapping consists in, by offering an example of the property mapping in any declension (a rule that would occur on the innermost block of rules, capable of being overridden by a more specific rule in an outer block)[40] given the property set that includes {genitive} and {plural}.

INFLECTIONAL PARADIGM FOR ῞ΑΝΘΡΩΠΟΣ with: {nom masc sg} as *nom* {dat masc sg} as *dat* {gen masc pl} as *gen*		
CONTENT PARADIGM	FORM PARADIGM	REALIZED PARADIGM
<῾Ανθρωπος, *nom*>	<*Stem*(῾Ανθρωπος, *nom*) pm_2(*nom*)> = ἀνθρωπ- {*nom*, 2}	ἄνθρωπος {*nom*}
…	…	…
<῾Ανθρωπος *dat*>	<*Stem*(῾Ανθρωπος, *dat*) pm_2(*dat*)> = ἀνθρωπ- {*dat*, 2}	ἀνθρώπῳ {*dat*}
…	…	…
<῾Ανθρωπος *gen*>	<*Stem*(῾Ανθρωπος, *gen*) pm_2(*gen*)> = ἀνθρωπ- {gen MFN pl, 2}	ἀνθρώπων {*gen*}

Table 4. Example inflectional paradigm for noun

40. According to Panini's principle, whereby more specific rules override less specific rules. Cf. Stump, *Inflectional Morphology*, 22.

The *pm*() or property-mapping function for Ἄνθρωπος, and in fact for all Greek nominals, includes the following rule:

> Where *c* is the inflection class associated with any declension pattern (in Table 4 above the inflection class was 2):
>
> $pm_c(\{\text{gen masc pl}\}) = pm_c(\{\text{gen fem pl}\}) = pm_c(\{\text{gen neut pl}\}) = pm_c(\{\text{gen MFN pl}\})$

Essentially, the property mapping for any gender and genitive plural exhibits the influence of the morphomic pattern MFN (which is short for Masculine-Feminine-Neuter). This pattern is *morphomic* because it does not condition a word form's syntax or semantics, but only its morphology. According to this property-mapping rule, then, *pm*({gen masc pl}) = {gen MFN pl}. As this final example demonstrates, Stump's theory is capable of handling the many kinds of mismatches between content and form through the use of what are essentially realization statements. In a sense, therefore, we might say that realization statements are at the heart of an inferential-realizational model of morphology.

In summary, Stump's theory demonstrates the essential nature of inflectional paradigms in specifying the process of realization that takes place in a synthetic language. Specifically, the paradigm-linkage hypothesis states that, first, "Some morphological regularities are, irreducibly, regularities in paradigm structure," that is, they cannot be explained with reference to content alone or form alone, and second, "Paradigms are the interfaces of inflectional morphology with syntax and semantics."[41] Furthermore, these regularities facilitate the interface mechanism by means of three corresponding paradigms for every lexeme, the content paradigm, the form paradigm, and the realized paradigm. If paradigms are essential to defining a language's inflectional system, then they are of crucial importance for any model of the realization statements of

41. Stump, *Inflectional Paradigms*, 23.

Greek, since inflection plays a pivotal role in the realization of almost all Greek semantic features.

4. *Clarifying Realization Statements*

In this section, I will make the case that Stump's paradigm-linkage hypothesis clarifies the Cardiff Grammar's notion of realization statements. In this way, I will make the proposal that the integration of the paradigm-linkage hypothesis into the framework of Cardiff Grammar will prove instrumental in the task of syntactic theorizing for synthetic languages like Greek. I will make three specific points: (1) there is suggestive parallelism between the two approaches; (2) lexemes and semantic/syntactic classes have the same status as semantic features; and (3) both Stump's and Fawcett's conceptions of the "form paradigm" need to be integrated into a more precise notion of the form potential of Greek syntax.

It is not hard to find parallels between Stump's model and the Cardiff Grammar framework. For example, consider the following parallel between Stump's model of realization and Fawcett's:

PARADIGM LINKAGE				
Content	→	Form	→	Realization
$\langle L, \sigma \rangle$	*Stem*($\langle L, \sigma \rangle$) =	$\langle Z, \sigma \rangle$	*pm*(σ) =	$\langle w, \tau \rangle$

INSTANTIATION, REALIZATION				
Semantics	→	Features	→	Form
<Class>	*Instantiation*	*<Class*, σ*>*	*Realized by*	$\langle w, \tau \rangle$

Table 5. Comparison of Stump's and Fawcett's realization models

Each model has a purely semantic phase, a non-isomorphic linking of semantic features to form potentials, and a rule-based realization of form potential as form. Seen in this light, the pivotal role of morphosyntactic properties is made even clearer. Morphosyntactic properties are present not only in the realized forms, but also in the content or semantics (class is, after all, just

a feature in the system network). Morphosyntactic properties represent abstractions of syntactic–semantic features. Because these properties are only realized in particular sets through forms which inflect for them, whether lexical or syntactic, they provide the semantic rationale for these forms. In both models, the constant feature is the morphosyntactic property set, which thus provides us with a grounding link between the forms and the semantics that underlie them.

I also want to make the point that lexemes and the semantic classes motivating syntactic units have the same status as semantic features. This is an important fact in several ways. First, this view provides strong theoretical motivation for the analysis of lexemes in terms of monosemic semantic potential. Because lexemes are essentially semantic features of the system network at a given level of delicacy, they should be modeled as having a potential that is realized at the level of form in a more concrete way than the lexical semantics itself indicates.[42]

The point of integration between these two models, I would argue, should be the notion of a "form paradigm" (granted the slightly different senses these two theorists employ). In regard to SFG in general, the semantic potential of the language can select for morphosyntactic properties, including semantic classes, in the system network, and it can also select for lexemes. These constitute the input features of both Stump's form paradigm and Fawcett's form-potential component. However, the system cannot select for inflected forms, either syntactic or lexical.[43] The

42. Not only does this viewpoint support Ruhl's theory of lexical semantics and method of abstraction, the monosemic bias, it also lends a new level of coherence to his claims about the hierarchical shape of the lexicon and its relation to syntactic categories (see Ruhl, *On Monosemy*, 178). If syntactic categories—i.e. the semantic classes—are understood as having status on both levels of language, both within the semantic-potential and within the form-potential, then there is all the more reason to treat the entirety of a language's formal resources as an implicationally ordered hierarchy, orthogonally (i.e. perpendicularly) related to the total system network of the language's semantics.

43. Though some choices at a less delicate level constrain more delicate systems' probabilities.

theoretical status of Stump's form paradigm, then, is exactly the same as the form paradigm of Fawcett's model. The input to a form paradigm in either case is a set of systemically coherent, or expressible (what Stump calls "well-formed") semantic features, including syntactic class or lexeme, and associated morphosyntactic properties.[44] We can therefore draw the conclusion that the system network selects for (at least) precisely those features that spell out a lexeme's content paradigm. Insofar as "syntactic lexemes" can be identified—and they have been identified as the classes—their content paradigms are also spelled out by the system.

The crucial feature of this integration is the interplay of probabilities and paradigm functions. Let us assume there are indeed syntactic paradigms made up not of feature-to-form mappings, but rather feature-to-form-to-realization mappings. It stands to reason that just as the lexical paradigms rarely conform to the canonical ideal of complete isomorphism between these paradigms, so syntactic paradigms will not either. At the same time, just as lexical paradigms are not governed by probabilities, but rather by complex patterns—but patterns which are capable of being generalized across lexemes and across paradigms—so it would stand to reason that syntactic paradigms *on the level of form* are not governed by probabilities, at least not in the direct way currently modeled by the Cardiff Grammar approach.[45] In Cardiff Grammar probabilities are assigned in the system—which, I would argue, is primarily where they should be—but they are also assigned in the filling of elements with units. That is, there is a probability to fill any given element with a unit of any given type.[46] I would argue that the dual role of probabilities exemplified in this model has the potential to obscure patterns of

44. Cf. Stump, *Inflectional Paradigms*, 46–47, 118, 124, etc.

45. Which is to say, probabilities are not operative within the canonical case. In non-canonical cases there may be good reason employ the notion of probability to account for these 'deviations.' Furthermore, I am not saying that systems are not probabilistic, but that realizations are not probabilistic in the canonical case.

46. On "filling probabilities," see Fawcett, *Theory of Syntax*, 242.

content to form mapping that may be generalizable across certain classes and across certain paradigms. The problem is that because probabilities are immediately resorted to, it is unclear whether there are more systematic mappings or not.

5. *Some Proposals Regarding Greek Syntax*

There are at least five implications that follow from a paradigmatic approach to Greek syntax as I have described it above. First, in order for a paradigmatic approach to be useful, an inventory of Greek semantic classes needs to be spelled out. Such an inventory should not be based only on the feature sets of individual items within the constructions, but also on the basis of the possible "filling" statements available for each class and the elements within those classes (whether they are smaller syntactic units or else embedded units). The possible filling statements would correspond to the potential structures stipulated in the Cardiff Grammar, but with one key difference. While the Cardiff Grammar approach presents potential structures as ordered slots into which units can be placed, this kind of potential structure is less relevant for Greek than for English. English is a configurational language, because its *ordering* plays a role alongside of filling and componence in determining the syntactic status of its elements. In Greek there are certainly configurational tendencies, but these differ from English's insofar as the Greek case system is the fundamental means of identifying roles (much as the pronominal cases in English perform the same function, and even override the ordering tendencies). Thus, I believe it would be better to consider the ordering function within the realization statements as part of the syntactic paradigm of possibilities, such that, for example, a given clause will have the potential in its semantic paradigm (perhaps based on the lexical selection of the primary process element) for one primary participant, one secondary participant, one tertiary participant, and any other non-core participants or other circumstances—depending on the semantic features of the

clause.[47] The mapping of content to form to realization could also perhaps be formalized to some degree using some kind of equivalent functions to Stump's stem and property-mapping functions. Thus, the output of the form paradigm would consist of <clause, {Pr (process), P1 (primary participant), P2, P3}> according to the following example procedure (leaving out properties not relevant to the example):

Content/semantic paradigm	<*clause*, {process:infinitive, primary-participant, secondary-participant, tertiary-participant}>
equivalent of Stem() function	*clause is realized as verbal cluster with three satellites in the form paradigm due to the interaction between clause and its semantic features in this instance*
Form paradigm	<[*verbal-cluster with 3 satellites*], {Pr:Inf, P1:retrievable, P2:accusative, P3:translated:ὅτι}>[48]
realization statements	*i. componence of unit to create 'slots' based on lexeme (perhaps based on lexeme and transitivity features, or perhaps based on probabilities)* *ii. re-traversal of the network to fill all slots*
equivalent of pm() function	*The property-mapping function maps the properties in the form paradigm cell for each unit according to filling possibilities*
Realized paradigm	<διδάσκειν αὐτοὺς ὅτι [. . .], {Pr:Inf, P1:retrievable, P2:accusative, P3:translated:ὅτι}> (e.g. Mark 8:31)

Table 6. Example of a proposed syntactic paradigm

This loose proposal highlights the fact that the cases of each satellite (which themselves can embed units, as P3 in the example does), rather than directly realizing participant roles, comprise possible filling options for filling decisions made "higher up" the line of decision making in the syntactic

47. It also would be possible simply to rank any participants after the fact, during the re-traversal of the system to select features for the satellites.

48. Here the square brackets are indicating a set of formal items as opposed to the semantic item set denoted by curly brackets. *Retrievable* means the primary participant (i.e. the Subject) can be retrieved from context. *Translated* here means an element of any class may fill this slot, since it is "translated" by ὅτι such that it fills the slot as a nominal cluster/group would.

paradigm. Ideally, each stage would be more clearly delimited, with explicit re-entry points into the network specified, but hopefully this example is enough to give an idea of some of the possibilities for mapping the indirect relationship between features for "higher up" structures and the features selected for component or embedded elements. This approach would allow for a hierarchy of syntactic items while still allowing for the direct or translated embedding of any units within any other units. The point is that there are systematic regularities and patterns that are likely to be at play, but these cannot be discovered if probabilities are prematurely introduced within the form-paradigm (as opposed to just the semantic networks where they apply properly, as I have claimed above).

Second, the significance of using morphosyntactic properties as the unifying feature between semantics, syntax, and realized wordings may seem to contravene a functional approach to language (e.g. such a model may be accused of being too tightly bound to form). Let us consider, however, what the alternative (i.e. using entirely 'functional' categories—as Fawcett does) entails. Consider the following claims by Fawcett. He claims system networks should be "semanticized to the point where there is no need to have a higher layer of networks."[49] He explains, "While the system network models choices between meanings, the early choices are between the generalized meanings such as 'situation', 'thing' and 'quality', which are realized as the major syntactic units of the language."[50] Terms like *situation* and *thing* are, in his view, semantic, rather than syntactic. As he further explains regarding the labels of entry conditions,

> The entry conditions for Halliday's system networks for 'meaning potential' have always had labels such as 'clause', 'nominal group', etc. It is odd to find these terms being used at the level of meaning, because they are the names of syntactic units at the level of form — the outputs from the grammar. This is why, in the Cardiff Grammar,

49. Fawcett, *Theory of Syntax*, 156.
50. Fawcett, *Theory of Syntax*, 176–77.

> the equivalent features have explicitly semantic labels, such as 'situation' and 'thing'.[51]

This relabeling is not inherently problematic, but it strikes me as somewhat misleading to the extent that it is not recognized that the units of syntax are characterized by semantic properties, and thus there is nothing un-semantic about these units. Rather, I believe that labels such as "clause" and "nominal group" are simply less *specific*, though they are functional, or semantic in their own right. Notice this telling explanation for use of the term *head* that Fawcett gives: "Sometimes, when an element serves one of several functions (three at least in the case of the head of a nominal group), a more general—but still functional—label such as 'head' must be used."[52] If the element in question is the nominal primary in a nominal cluster—i.e. the "head of a nominal group"—is it therefore not semantic to label it as "head," given that "nominal primary" indicates the relation of the element to the nominal group as well as the morphosyntactic properties the unit within that element selects for? If the goal is the clear distinction between units and elements, then distinct semantic labels are valuable. However, it needs to be noted that the functions being performed by these units are perhaps more general than typically understood (and thus Fawcett's seventy functional elements of the nominal group may be capable of bearing several stages of abstraction, at which point they may all end up coalescing into one more general function that is modulated by regular contextual and cotextual patterns to realize the many functional varieties spelled out in the Cardiff Grammar). When it comes to automatic recognition of syntactic units—an intensely practical problem—the issue of overly fine-grained distinctions poses a significant challenge, and so it is worth exploring this alternative (i.e. using morphosyntactically defined categories).

There is another reason for preferring my proposal, however, and that has to do with the problem of conceptual categories and ontologies. While I will avoid teasing out this problem in detail,

51. Fawcett, *Theory of Syntax*, 160 n. 2.
52. Fawcett, *Theory of Syntax*, 214.

I will note at least the following claim from Fawcett, who says, "the Cardiff Grammar's approach is as it [is] because of our commitment to relating the elements of the syntactic units to their meaning potential in the system networks—and so to the 'conceptual units' of logical form in the belief system."[53] This may mean that they are trying to lay out conceptual categories, or it may be that the semantic features built into the system networks are indicative of language-specific realizations of cultural conceptual categories. I would opt for the latter, but it is unclear whether Fawcett would. Ultimately, the question is, How many functions are enough? The Cardiff Grammarians have proposed seventy for nominal groups. But how different is this from identifying all the different senses of a lexeme until every single instance of that lexeme has been accounted for in its uniqueness? One's principle of classification in regard to syntax, I would argue, can either be morphosyntactic or else polysemic to a degree that can capture the variation observed in syntax. While it is possible to analyze syntactic structures from numerous perspectives, I believe the paradigmatic perspective—in the strict sense of possible morphosyntactic features—should be formalized and take precedence rather than the 'functional' perspective as Fawcett presents it.[54]

Put more briefly, the other three of the five implications are as follows. Third, following the general thrust of my arguments above, we can propose that any semantic outputs in the system that are relevant for syntax must be either lexemes (selected probabilistically) or features that terminate with morphosyntactic properties, since it is unclear where the necessary inputs for a content paradigm would come from—where else in the model would these be selected? Fourth, the syntactic *units* can and should be identified and marked accordingly in a text analysis regardless of the status of their functional potentials (these include nominals, verbals, and other auxiliary constructions).

53. Fawcett, *Theory of Syntax*, 202.

54. The use of scare quotes here indicates that I do not think the difference between these two methods is formal versus functional as is assumed, but rather intuitive versus empirical, and paradigmatic versus atomic.

This stage of annotation or analysis will prove crucial in the more challenging subsequent tasks of sharpening the description of the syntactic paradigms of Greek. Finally, it is apparent that for such a paradigm to be maximally explanatory while still being flexible enough to handle exceptional formulations, it would be useful to describe this paradigm in terms of default or canonical realization, and deviations thereof. At this point, as mentioned, the use of probabilities should be limited to either an initial exploratory stage—with formalized description to follow—or else to the last resort of description where formalization no longer results in either economical or insightful gain.

6. *Conclusion*

In this paper I have introduced the Cardiff Grammar framework, discussed its key contributions, and pointed out some attendant shortcomings for analysis of synthetic languages like Greek. I then introduced Gregory Stump's paradigm-linkage hypothesis as a better account of the relationship between syntax and realization through inflectional morphology. I claimed then that this hypothesis clarifies the Cardiff Grammar model and that integration between the two theoretical models provides needed insight into the indirect but nevertheless pattern-driven mapping between semantics and form in syntax. Finally, I proposed some of the implications of such an integration. Throughout the paper I have sought to demonstrate that Greek's semantic and syntactic paradigms are, like its inflectional paradigms, shaped in critical ways by morphosyntactic property sets.

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