Words and Paradigms: Peter H. Matthews and the Development of Morphological Theory

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A comprehensive review of linguistic accounts of the structure of words and their relation to one another would of course have to begin long ago, with the work of grammarians in the classical Sanskrit, Greek, Latin, Arabic and other traditions. As a starting point for an understanding of the views on morphology held by linguists today, though, it seems reasonable to focus on the development of this field over the course of the twentieth century, and especially during the last half of that century, when the work of Peter Matthews played a particularly important role.

1 Two Views of Word Structure

Essential to an understanding of the interplay among twentieth century morphological theories is a very basic opposition whose poles were already articulated explicitly at the beginning of the period. One extreme of this conflict is presented clearly in de Saussure 1911. After distinguishing simple words (e.g. French *homme* ‘man’, *grand* ‘large, tall’, etc.) from compounds (e.g. French *porte-plume* ‘penholder’, German *Dampfschiff* ‘steamship’, etc.) and derived words (e.g. French *grandeur* ‘size, height’, *humanité* ‘humanity’), Saussure argues that “il y a deux sortes d’éléments primitifs: les mots-radicaux, tels que: «homme», «grand», etc., et les affixes, tels que: «iste» (dans *violoniste*), «pré» (dans *prévenir*), etc.” However, “[a]u point de vue logique, il n’y a pas de différence essentielle entre un radical et un affixe; […] On peut donc considérer les affixes comme des mots simples, et les mots dérivés au moyen d’affixes, comme de véritables mots composés. Il n’y a plus alors que deux sortes de mots: les mots simples (radicaux, préfixes, suffixes), et les mots composés par combinaison de mots simples.” (de Saussure 1911: 4f.)

On this view, derived words are just a class of compounds. What is important is that affixes are simple sound-meaning pairs, just like simple words. Derived words are no different from compounds: both are composed of two or more atoms in structured

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1: “There are two kinds of primitive element: root words, such as *homme* ‘man’, *grand* ‘tall’, etc., and affixes, such as *-iste* (in *violoniste* ‘violinist’), *pré* (in *prévenir* ‘precede’), etc. From the logical point of view, there is no essential difference between a root and an affix: […] We can therefore consider affixes as simple words, and words derived by means of an affix as real compound words. There are then only two sorts of word: *simple words* (roots, prefixes, suffixes) and *compound words* formed by combining simple words.”
combination with one another. The type example Saussure gives, *violoniste* ‘violinist’, is thus analyzed as a compound composed of two equally basic units, both nouns: *violon* ‘violin’ and *-iste* ‘person, whose profession or habitual occupation is characterized by the root to which it is attached’ with the two parts being parallel simple associations between sound and meaning.

At this point, readers who do not immediately check references as they appear may be struck by the impression that such a position is not really in character with what they thought they knew of Saussure’s views. And indeed, they would be quite correct: the “Saussure” whose position has just been presented is not the one we are accustomed to invoke, Ferdinand de Saussure, but rather his brother René, an engineer and applied mathematician who was also a major figure in the Esperanto movement of his day (Joseph 2012). So far as is known, René de Saussure wrote only one work devoted to questions of general linguistics (de Saussure 1911),

2 but this presents a rather full and explicit theory of word formation. Although the brothers are known to have discussed a variety of issues and to have exchanged some of their writings, neither makes any reference to the other on morphological or other general linguistic matters, and the extent to which either brother might have been influenced by the other in this regard must remain a matter of speculation.

What matters for our purposes here is the fact that René de Saussure (1911) enunciates clearly the view that all morphological elements, roots and affixes alike, constitute parallel atomic sound-meaning pairings. In this regard, such elements are uniformly of the type Ferdinand de Saussure (1916 [1974]) would analyze as *minimal signs*: arbitrary, irreducible associations of expression (sound, gesture, orthography) with content. As pointed out by Matthews (2001), the observation that such associations are characteristic of natural language was by no means completely original with Saussure, but his importance lies in having made them the center of attention in the study of language.

Where the brothers part company is in the more general analysis of words. For both, simple words (e.g. *arbre* ‘tree’) are minimal signs, but where René saw derived words like *violoniste* ‘violinist’ as simply combinations of such units, Ferdinand presents a rather different view. For him, words that are not simple are also signs — of a type he refers to as *relatively* or *partially motivated*. That is, the sign relation between form and meaning obtains here, too, but in such cases it is not completely arbitrary: part of the relation is motivated by the relation between this sign and others: “Une unité telle que *désireux* se compose en deux sous-unités (*désir-* *-eux*), mais ce ne sont pas deux parties indépendantes ajoutées simplement l’une à l’autre (*désir*+*eux*). C’est un produit, une combinaison de deux éléments solidaire, qui n’ont de valeur que par leur action réciproque dans une unité supérieure (*désir*×*eux*). Le suffixe, pris isolément, est inexistant; ce qui lui confère sa place dans la langue, c’est une série de termes usuels tels que *chaleur-eux, chanc-eux*, etc. À son tour, le radical n’est pas autonome; il n’existe que par combinaison avec un suffixe; dans *roul-is*, l’élément *roul-* n’est rien sans le suffixe qui le suit. Le tout vaut par ses parties, les parties valent aussi en vertu de leur place dans le tout, et voilà pourquoi le rapport syntagmatique de la partie au tout est aussi important que celui des parties

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2I am indebted to Prof. Louis de Saussure of the University of Neuchâtel for access to a copy of this work, uncovered in the library of his late father Antoine de Saussure (nephew of René and Ferdinand). This item appears to have gone unnoticed by linguists of the time or of ours, although it contains a number of interesting ideas, some of which prefigure later proposals. A new edition of René de Saussure’s monograph is presently in preparation.
entre elles” (de Saussure 1916 [1974]: 176f.).

The point to focus on here is that for Ferdinand, as opposed to René, a suffix in a derived word does not have value in and of itself as a minimal sign, but rather it obtains its significance from the fact that words of similar form are related to one another. Elsewhere in the Cours he gives the example of poirier ‘pear tree’. This is obviously related to poire ‘pear’, but the meaning of poirier is not just a compound of two meanings ‘pear’ and ‘tree bearing fruit specified by the root to which it is attached’ (in the way René analyzes the meaning of violoniste). Rather, it arises because the relation between poire and poirier is similar to that of other pairs in the language: cerise ‘cherry’ / cerisier ‘cherry tree’, pomme ‘apple’ / pommier ‘apple tree’, etc. Complex words thus get their sense from their place in a constellation of relations among words.

This picture is quite different from the view presented by René, who explicitly rejects such an account: “Il n’est donc pas besoin d’établir des règles de dérivation reliant l’un à l’autre le sens des mots d’une même famille (comme «homme», «humain», «humanité»; «couronne», «couronner», «couronnement»), car on crée ainsi des liens artificiels entre des atomes qui devraient rester indépendants et interchangeables comme les différentes pièces d’une machine.” (de Saussure 1911: 8).

We can categorize the difference between the views of the two Saussure brothers, at least roughly, in terms of two useful dimensions of theories as distinguished by Stump (2001: 1). On the first of these, theories can be Lexical, and treat all form-content associations as listed; or they can be Inferential, in treating form-content relations in complex words as more holistic.

**Lexical** theories are those where associations between (morphosyntactic) content and (phonological) form are listed in a lexicon. Each such association is discrete and local with respect to the rest of the lexicon, and constitutes a morpheme of the classical sort.

**Inferential** theories treat the associations between a word’s morphosyntactic properties and its morphology as expressed by rules or formulas.

Independent of this distinction, theories can be Incremental, with elements of content associated in a one-to-one fashion with elements of form, or Realizational, in which the relation is less direct, such that a single element of content can be associated with one element of form, or several, or none at all, and vice versa.

**Incremental** theories are ones on which a word bears a given content property exclusively as a concomitant of a specific formal realization.

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3. A unit such as ‘desireux’ is composed of two sub-units (desire+ous), but these are not two independent parts simply added to one another. It is a product, a combination of two linked elements which only have their value by their reciprocal relation within a larger unit. The suffix, taken in isolation, does not exist: what gives it its place in the language is a series of words like chaleureux ‘warmth-ous, warm’, chanceux ‘fortune-ous, lucky’, etc. In its turn, the root is not autonomous: it only exists through its combination with a suffix. In roulis ‘rotation’, the element roul- ‘roll’ is nothing without the suffix that follows it. The whole has value through its parts, the parts also have value through their place in the whole, and that is why the syntagmatic relation of the part to the whole is as important as that of the parts to one another.

4. There is thus no need to establish rules of derivation linking to each other the senses of words belonging to the same family (such as homme ‘man’, humain ‘human’, humanité ‘humanity’; couronne ‘crown (n.)’, couronner ‘(to) crown’, couronnement ‘coronation’), because that would create artificial links between atoms that must remain independent and interchangeable like the different parts of a machine.”
Realizational theories are ones on which the presence of a given element of content licenses a specific realization, but does not depend on it.

The two dimensions are logically independent, and Stump identifies examples of all four possible combinations of values. By and large, though, most theories are either Lexical and Incremental or Inferential and Realizational. The first class sees the locus of form-content relations as a set of something like Saussurean minimal signs, identifiable generally with the classical understanding of the morpheme. Inferential/Realizational theories, in contrast, see the form-content relation as rather more diffuse, and in practice continue the distinct classical tradition of “Word and Paradigm” analysis.

In those terms, we can categorize the Saussure brothers’ views of the nature of a complex word like *poirier*: René sees this as the combination of two independent lexical elements, where each part of the meaning is associated uniquely with a specific, independently listed element of form. His theory is thus a Lexical/Incremental view, and the components of a complex word are essentially what would later be called morphemes.

Ferdinand, in contrast, sees the complex meaning as arising from a relation that has a status in the language. It is this rule relating *poire* and *poirier* (and also *cerise*/*cerisier*, etc.), not the suffix -ier itself, that yields the meaning ‘pear tree’. His is an inferential theory, and while this example does not serve to make the point, from other sources (such as discussions of Gothic, Greek and Latin morphology in his courses on these languages) we can say that it is realizational rather than incremental.

In the difference between the two, we can see the origins of a basic contrast between theories of morphology. In practice, however, this contrast was not very apparent for some time. René saw the decomposition of complex words into combinations of simplexes — their analysis as structured concatenations of minimal signs — as transparently obvious, a simple matter of logic, and the rest of his little book develops this picture in some detail, discussing the logical/grammatical types of simple words that we find, and the varieties of combination of these atomic units that exist (in French, at least).

The contrast between these somewhat different views does not seem to have attracted much attention at the time, although it represents what has historically been the basic opposition in morphological theory. René’s story is an early version of what we can call a morphemic theory, one that takes internal components of complex words as the basic locus of meaning. These are combined by an extension of the syntax, and the resulting structures are compositional functions. Ferdinand’s story, in contrast, is a version of what would later be called a word and paradigm theory, where whole words are the locus of meaning and an understanding of their content, as well as their form, comes from an analysis of their place in a network of relations to other words.

Reaching back into antiquity, we can see some precedent for the morphemic view in the Sanskrit grammatical tradition, whereas the Word-and-Paradigm picture is what we associate with the descriptive methodology of traditional grammars. In its most general sense, as Matthews (1965: 139) puts it, “The term Word-and-Paradigm grammar may be used of any grammar which preserves the traditional distinction between morphology and syntax.” That is, Word-and-Paradigm differs from morphemic views most fundamentally in treating the analysis of words as different from that of phrases: where the syntax treats words as basic units of the syntax, rather than just smaller domains of syntactic structure, the morphology describes these words in terms of their connections to one another in form and content.

More specifically, “In the ancient model the primary insight is not that words can be split into roots and formatives, but that they can located in paradigms. They are
not wholes composed of simple parts, but are themselves the parts within a complex whole. In that way, we discover different kinds of relation, and, perhaps, a different kind of simplicity.” (Matthews 1991: 204) This approach to word structure is opposed to the morphemic picture, which is somewhat more familiar as the fundamental premise of much modern linguistics, but that familiarity is in large part a consequence of history, the result of a path of development that has been increasingly questioned in recent years.

2 AMERICAN DESCRIPTIVIST MORPHOLOGY AND ITS DESCENDANTS

In the early years of the development of modern linguistics in the twentieth century, attention was focused largely on phonological (“phonemic”) problems, and it is hard to find much explicit theorizing about morphology. To the extent the views of linguists of the time on such matters can be discerned, it seems clear that the sort of picture of the nature of words and their relations we can identify in the work of Ferdinand de Saussure was largely neglected. Morphology as a serious branch of linguistic theory did not receive much attention, though, until its appearance in the American descriptivist tradition in the 1930s.

Earlier work by American linguists does in fact contain some interesting ideas that prefigure later theorizing, although the concern of scholars such as Franz Boas and Edward Sapir in connection with word structure (see for instance Boas 1911; Sapir 1921) was more with typological matters than with the kind of ontological issue that interests us here. It is worth noting that the descriptive practice of Boas and Sapir does not rest on anything like morphemes, but rather describes word structure in terms of distinct sets of “grammatical processes” and the “ideas expressed by grammatical processes.” These are quite independent of one another and not linked one to one in a way that would produce something like morphemic structure. The resulting system is rather similar to that of Beard (1995), and also somewhat similar to the way Matthews’ (1965; 1972b) theory would later develop.

2.1 American Structuralism and the Rise of the Morpheme

There is very little continuity, however, between the earlier views of Boas and Sapir, on the one hand, and those of later American Structuralist linguists on the other, which are of more importance to present concerns because the latter are what generative linguists inherited in the 1950s and 60s. American linguists in the 1930s were primarily occupied with issues of sound structure and with elaborating the concept of the phoneme, which they considered their primary intellectual achievement. Recognizing that language is more than sound, however, they also developed a theory of morphology.

American Structuralist morphology begins, more or less, with Bloomfield’s (1933: 161) definition of the morpheme as a minimal unit of sound-meaning correspondence, “a linguistic form which bears no partial phonetic-semantic resemblance to any other form” or essentially a Saussurian minimal sign. As Matthews (1993) shows, Bloomfield’s views on this and related topics actually have a rather complex history that can only be understood in light of his earlier work (Bloomfield 1914), but this is the form in which his immediate followers found his ideas, and so it is an appropriate starting point for their development.
Bloomfield’s definition of the morpheme required a certain amount of cleaning up to achieve its goals; this was largely accomplished by Zellig Harris (1942) and especially in Harris 1951, a work that largely codified the formal theory of the period. The basic premise was that morphemes should be minimal units of meaning contrast, parallel to phonemes as the minimal units of sound contrast. In particular, this involved recognizing that the phonological realization of a morpheme might not always be the same, and might involve (multiple) allomorphs. Each morpheme in a word is to be represented by one and only one allomorph; and each allomorph should represent one and only one morpheme. Morphemes of this sort were to be the locus of the sound-meaning relationship, and complex words are presumed to be exhaustively divisible into morphemes.

Once we see that complex words can commonly be divided into chunks of form that are each associated with a chunk of content, this picture appears to be obvious. For American descriptivists, this was greatly reinforced by the fact that they could make the resulting theory look very much like the theory of the phoneme: minimal units of sound contrast vs. minimal units of meaning contrast; variable but specifiable realization of abstract sound units as allophones paralleled by the variable but specifiable realization of abstract meaning units as allomorphs.

The basic truth of this view went essentially unquestioned, although some problems were noticed, ways in which the sound-meaning relation did not always fit nicely into an analysis in terms of a string of morphemes. Charles Hockett (1947), in particular, cataloged a number of these issues, although he did not seem particularly troubled by the fact that after he had enumerated these problematic situations and given each a name, he did not really have a resolution of them in a way that preserved the supposed nature of the morpheme.

2.2 Morphology in Early Generative Grammar

Generative grammar as it emerged at the end of the 1950s marked a fairly radical disconnect with its immediate predecessors in phonology and syntax, but in morphology the structuralist notions were taken over more or less without question. After all, the new approach to phonology promised to incorporate most of what was interesting about allomorphy, and the new syntax would take care of most of the distributional facts formerly treated as morphotactics. What was left, primarily the listing of unpredictable suppletive phenomena, was not really very central in most people’s view, and there seemed no reason to look for an alternative to the inherited notion of the morpheme.

Actually in his earliest work, Chomsky (1979 [1951]) worked within a framework that was quite remote from American Structuralism, and his assumptions about word structure there do not rest on anything very like the structuralist morpheme at all. Later on, though, as he studied with Harris at Penn, he became involved in that project, and his work in that period was devoted in part to finding a way to rationalize Harris’ assumptions and make them work. The view of morphology in Chomsky 1985 [1955-6] is somewhat complicated and fragmented, but it is fair to say there are morphemes there of a sort Harris would have approved of.

A more covert influence on Chomsky’s thought, perhaps, came from the elegance and general appeal of the analysis of the English auxiliary in terms of “Affix Hopping.” This account relies crucially on the notion that syntactic rules can manipulate and reposition

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5See Anderson 2016 for a review of the development of morphological theory in early Transformational Grammar.
elements of morphological structure, for which morphemes are ideal; regardless of how much else has changed in syntax over the past half century, recent remarks suggest that Chomsky himself is still much invested in this analysis. Just as the structuralists needed the classical morpheme because of its parallel with the phoneme, early generative grammar needed the morpheme to serve as a kind of minimal interface between the syntax and the phonology.

3 EARLY ARGUMENTS AGAINST MORPHEMIC ANALYSIS

As Generative Grammar developed, it was not the case that the treatment of word structure in terms of morphemes went completely unquestioned. In fact, at least one argument was presented that explicitly compared a morphemic with a non-morphemic view, and concluded the latter was superior (Chomsky 1965: 170–184). The argument was based on the description of inflection in German, for which two alternative accounts were compared. One of these was described as the method of traditional grammar: a treatment of inflected forms as related to one another within a paradigm.

"a particular Noun would be described in terms of its place in a system of paradigms defined by certain inflectional categories, namely the categories of gender, number, case and declensional type. Each of these categories constitutes an independent “dimension” of the paradigm, and each word has a particular “value” along each of these independent dimensions. Thus the word Brüder would be characterized as Masculine, Plural, Genitive, and belonging to a certain declensional class along with Vater, Mutter, etc."

On this account, the inflectional properties of a form correspond not to distinct, concatenated basic elements, but rather to the dimensions of internal differentiation within the paradigm. This is a fairly straightforward Word-and-Paradigm analysis.

That form of description was contrasted with an analysis in terms of morphemes:

"The characteristic method of analysis of modern linguistics is rather different from the traditional approach that we have just restated in our terms. In place of the traditional categories (our features), this approach would substitute morphemes. Thus Brüder [above] would perhaps be represented [as below] in a completely consistent “item and arrangement” grammar:

Bruder~DC1~Masculine~Plural~Genitive

where each of these elements is regarded as a single morpheme, DC1 being a kind of “class marker.” Rules would then be given that would convert [this representation] into a sequence of phonemes.”

This second approach was correctly referred to as the one preferred by linguists at the time. Such an account of inflected forms sees them as composed of a sequence of individual form-content associations on the lines of the standard theory of the morpheme.

The comparison of these two views seemed clearly to favor the first, non-morphemic analysis:

"For one thing, many of these “morphemes” are not phonetically realized and must therefore be regarded, in particular contexts, as zero elements. In
each such case a specific context-sensitive rule must be given stating that the morpheme in question is phonetically null. But this extensive set of rules is entirely superfluous and can be omitted under the alternative paradigmatic analysis. […] 

More generally, the often suppletive character of inflectional systems, as well as the fact that (as in this example) the effect of the inflectional categories may be partially or even totally internal, causes cumbersome and inelegant formulation of rules when the representations to which they apply are in [the form of morpheme sequences]. However, suppletion and internal modification cause no special difficulty at all in the paradigmatic formulation. Similarly, with morphemic representations, it is necessary to refer to irrelevant morphemes in many of the grammatical rules. […] But in the paradigmatic representation, these elements, not being part of the terminal string, need not be referred to at all in the rules to which they are not relevant. Finally, notice that the order of morphemes is often quite arbitrary, whereas this arbitrariness is avoided in the paradigmatic treatment, the features being unordered.

I know of no compensating advantage for the modern descriptive reanalysis of traditional paradigmatic formulations in terms of morpheme sequences. This seems, therefore, to be an ill-advised theoretical innovation.” (Chomsky 1965: 173f.)

The overall conclusion is somewhat similar to Halle’s (1957) classical objection to phonemic representation. The claim is that morphemic structure requires a certain amount of otherwise unmotivated apparatus: it forces the mapping between content and form to pass through an intermediate level with the specific properties of morphemic representation, and this results in the loss and fragmentation of generalizations. The arguments offered here against the morphemic view are actually very much like those that would be offered by later advocates of word and paradigm analyses. They involve unnecessary zeros, non-affixal markers, arbitrary ordering of elements, etc. Crucially, the conclusion was that this was a bad move, and not just for German: the analysis of inflectional word structure in terms of morphemes was “an ill-advised theoretical innovation.”

This line of argument was never explicitly retracted or seriously rebutted, and one might conclude that Chomsky had decided to abandon the morphemic tradition he had inherited from Harris, but that would be a mistake. Rather remarkably, this compelling argument seems to have been forgotten only a couple of years later, in the assumptions underlying Chomsky & Halle 1968. In that work, Chomsky and Halle describe the output of the syntax, which forms the basic input to the phonology, as a hierarchically structured sequence of morphemes (called ‘formatives’ here because it is only the form side of the morpheme that is of interest to the phonology).

They offer an analysis of past tense forms of the English verbs mended and sang as \( [v\, \text{mend}_v\, \text{past}_v] \) and \( [v\, \text{sing}_v\, \text{past}_v] \), respectively. These are related to surface forms as follows:

“past is a formative with an abstract feature structure introduced by syntactic rules. The readjustment rules would replace past by \( d \) as a general rule, but in the case of sang, would delete the item past with the associated labeled brackets, and would add to the \( i \) of sing a feature specification indicating that it is subject to a later phonological rule which, among other things, happens to convert \( i \) to \( e \).” (Chomsky & Halle 1968: 11)
Such a treatment of inflectional features as concatenated morpheme sequences, rather than as paradigmatic features, is just what Chomsky had argued shortly before was ill-advised. This return to a morpheme-based analysis was, as Matthews (1993: 93) puts it, “a remarkable tribute to the inertia of ideas.” Chomsky and Halle had been largely trained in the traditions of Harris and Jakobson, where morphemes were taken to be axiomatic basic units of linguistic structure, and they simply reverted to this view as the default without examining its fundamental adequacy.

Interestingly, in the same year that Chomsky (1965) presented the argument above for the superiority of a traditional, non-morphemic analysis, another paper appeared that also argued for a word and paradigm approach to inflectional systems rather than an account in terms of concatenated morphemes. Hockett (1954) had in fact alluded to the possibility of such an alternative to the “item and arrangement” and “item and process” models of morphemic structure on which he focused his attention, and this was taken up and explored in a classic paper by R. H. Robins (1959). The proposals there were further developed and integrated into an overall theory of grammar by Matthews (1965), who works out a genuinely morphological treatment of the form of those words whose shape varies with their syntactic function: that is, with their inflectional properties as members of a paradigm, as is true for nouns, verbs and adjectives in Latin.

The key component of this view that distinguishes it from the morphemic account is, as mentioned before, a separation of the responsibilities of morphology and syntax. Syntax deals with the functions of the various inflectional variants of a lexical item, and with the distribution of these variants in larger structure. Morphology, in contrast, specifies the shapes to be associated with these inflectional variants. Syntax does not deal with the internal analysis of words: morphology is the bridge between the syntax and the phonology. A “Word and Paradigm” description can be implemented in many ways, but this is the most essential distinction: the separation of the description of word form from that of syntactic function. In treating morphemes, basic form-content associations that are components of word form, as elements in the syntax, morphemic models do not make that distinction.

Matthews’s (1965) paper points out some basic problems with models of inflectional structure based on morphemes. In part these overlap with Chomsky’s (1965) arguments, but develops them more explicitly and extends them. A basic problem is with morphological markers that do not have the neatly segmentable form of an affix: various types of replacements or apophonic markers, including ablaut, umlaut, consonant mutations, etc. As both authors point out, identifying such signals when they appear in word forms as the realization of morphemes leads to artificial and unintuitive analyses.

Matthews (1965) also lays considerable stress, here and elsewhere, on the fact that one form within a paradigm can be based on another, where the two are associated with unrelated or incompatible properties. This is the problem of ‘parasitic’ or (as Matthews puts it) ‘Priscianic’ derivation. He cites the example of the Latin future participle (e.g. amaturus) which is built on the basis of the form of the past participle (amatus), despite the fact that its analysis does not support the presence of a morpheme PAST. Other examples include the presence of unmotivated nominal morphology in English forms like lengthen, strengthen (cf. shorten, weaken); or the formally feminine bases of productively formed Romance adverbs such as French franchement, généreusement, etc.

If we separate the description of word shapes from a one-to-one association between components of form and components of content, we can avoid these difficulties. Describing related forms of variable words in terms of their inter-relations of shape rather than as
combinations of individually meaningful sub-parts (morphemes) avoids these and other problems.

Matthews (1965) provides, in extremely compact form, an explicit model for describing inflectional paradigms. This involves enumerating a set of operations on word form, reminiscent of Boas’ and Sapir’s sets of ‘grammatical processes’, and then specifying various stem forms within the paradigm in terms of composition of these operations in association with relevant morphosyntactic features (effectively, the ‘ideas expressed by grammatical processes’ of Boas and Sapir).

4 THE RESPONSE

Although Matthews’ arguments are cogent and the overall model could have fit well into theories of grammatical structure of the time, it must be admitted that the paper had very little direct influence, at least on primary figures in the field. Part of the reason for that was the fact that the attention of those figures (and their students) was elsewhere at the time. Many were in fascinated attendance at the funeral of structuralist phonology and the phoneme: note that the paper was immediately preceded in the same volume of the Journal of Linguistics by Chomsky and Halle’s (1965) reply to Householder, a paper generally felt to have settled matters definitively in favor of the emerging theory of Generative Phonology. Those who were not preoccupied with that were focused on the emergence of exciting work in syntax. As a result, there was very little interest to be spared for morphology per se in the 1960s. It is probably also true that the rather complex and, it must be said, somewhat opaque formalism presented in the paper did not conduce to its drawing people’s attention attention away from other parts of the field.

Given the seriousness of the arguments offered by Matthews (1965), it would be understandable if he had gotten a bit impatient with the lack of enthusiasm the field showed for a proper understanding of how morphology should be done. But in a more constructive spirit, he proceeded to develop his argument in considerably more detail, in Matthews 1972b, a major book based on material from Latin, as well as in a shorter and more accessible form of the presentation (Matthews 1974) built as a textbook (later reworked and updated as Matthews 1991, and still widely used). Especially as supplemented by specific studies of languages other than Latin (Matthews 1967, 1972a) that showed the general applicability of his major points, these presentations gained considerably more traction.

Matthews (1972b) develops the argument from what we now tend to call “non-concatenative” morphology, and from the presence in forms of morphological material that properly belongs to other (semantically incompatible) forms — parasitic or ‘Priscianic’ derivations, as mentioned above. To these arguments he adds others, including the fact that a single element of form can correspond to more than one independently justified element of content, and vice versa, and the fact that some elements of form appear to reflect no part of the content, while some elements of content are not overtly represented in the form at all. Morphemic analyses are based on the notion of a one-to-one relation between parts of a word’s content and parts of its form, but collectively, these arguments show that, in the general case, the relation is actually many-to-many and not bijective (that is, all elements of one type do not necessarily have correspondents of the other, in either direction). Examples of these sorts abound in the literature; for a review of the arguments, see Anderson 2015.
Largely prompted by Matthews’ work, the last half century has seen the development of serious alternatives to the morphemic view along lines generally falling within the class of word and paradigm theories in the general sense described above — even if these have not tended to engage the attention of phonologists and syntacticians. Interest in morphology had begun to re-appear in the early 1970s for a variety of reasons, as represented in work by Europeans like Bierwisch (1967), the aptly named Wurzel (1970), and Kiefer (1970), and in America in the work of Aronoff (1976). Matthews’ own arguments, and their consequences for an adequate theory of morphology, were explicitly acknowledged and pursued (to choose some examples almost at random) in work of the present author (Anderson 1977), Beard (1995), Spencer (1991), Stump (2001), Zwicky (1985) and others. No attempt will be made here to distinguish these theoretical frameworks, but all have in common a rejection of the classical morpheme.

As a consequence, while introductory courses in Linguistics still tend to spend time getting students to decompose words into component morphemes, it does not seem unreasonable to say that the dominant position among those who focus their attention on morphological issues today is one that rejects the classical morpheme in favor of the kind of analysis that falls within Matthews’ broad definition of word and paradigm.

How, then, does the comparison between morphemic and non-morphemic theories of word structure play out in terms of our accumulated knowledge about morphological structure in natural languages? There are some things that seem fairly well established. For one, in the general case, single elements of content can be reflected once, several times, or not at all in the form of a word, and individual markers can reflect one, several, or none of the elements of the word’s content. Furthermore, some markers do not have the form of concatenated affixes, but rather consist of some non-monotonic change in the shape of the base to which a word is related; or may entail a non-monotonic change in the content in association with some additive marker (see Anderson 2013). These observations make it clear that the empirical hypothesis represented by the morphemic view is not correct: real morphologies involve relations that fall outside the formal class of incremental, monotonic affixation operations.

But of course this conclusion is not particularly new: Hockett’s (1947) inventory already made it clear in structuralist times; Chomsky (1965) argued it from a different perspective; and Matthews (1965, 1972b) presented a concrete formal alternative grounded in these considerations, as have others. Nonetheless, a great many linguists (including, for the most part, Chomsky himself) continue to maintain a view of word structure in terms of morphemes.

5 PROSPECTS FOR THE FUTURE

When we ask why syntacticians and phonologists have not been swayed by the arguments for non-morphemic views of word structure, the reasons do not in fact seem very inspiring. One is that from the beginning, generative grammar has been dominated by the view that most interesting structure in natural language is phonological or syntactic. What remains to constitute the field of morphology is just to list the idiosyncratic phenomena, for which the simple tool of morphemic representation might seem perfectly adequate.

Phonologists are attracted to the simple, uniform picture morphemes provide: they prefer to have a coherent, homogeneous object to serve as input, and for this morphemes are ideal. Syntacticians, similarly, like the structural homogeneity of a picture on which
morphemes can be arranged by syntactic rules like any others. They are thus drawn to a picture on which there is really only one component of the grammar that is involved in arranging things, and this picture requires a set of structurally similar units that can be arranged. Morphemes are enough like words or constituents to serve this purpose. And finally, most of the obvious difficulties for the morphemic view arise in languages other than English (at least if we ignore strong verbs, umlaut plurals, and a few other non-concatenative morphological markers in the language). To the extent theoretical innovation builds on issues in the analysis of English, morphemes tend to be “close enough for government work.”

So what is likely to be the outcome of this tension between the results of inquiries into word structure, on the one hand, and the inclinations of phonologists and syntacticians on the other? It is hard to be completely optimistic. It seems likely that syntacticians will continue to be attracted to views on which morphological content is structurally accessible to rules of the syntax, the internal structure of words simply constitutes a smaller syntactic domain than that of phrases, and the status of the word is primarily a matter of concern to phonology. Despite a period of interest in Lexicalist theories in the 1970s and 80s, they tend to revert to accounts rather similar to those of the “Generative Semantics” period, and the assumptions of the morphemic view make that practical.

A view of morphology quite popular among syntacticians, “Distributed Morphology” (Halle & Marantz 1993), plays to that sentiment by claiming to analyze word structure in terms of morphemes which are explicitly said to be organized by rules of the syntax. That theory ends up by dispensing with the essence of morphemic views, however, in allowing the relation between the “morphemes” in question and actual word forms to be essentially unconstrained, invoking operations of duplication, copying, enrichment and impoverishment, etc. in the mapping of content onto form.

Phonologists, who also wish to see morphological structure as simple, pursue accounts on which central problems, especially those posed by non-concatenative morphological markers, go away in the face of a more elaborated phonology. A common device, illustrated by Chomsky & Halle’s (1968) treatment of the relation between sing and sang cited above, is to treat non-concatenative changes as really phonology, although triggered by the presence of specific morphological content (which is often unrealized in any other way). Examining the internal logic of this position, it seems to be a category mistake: if a formal property of a word reflects its morphological content and not merely the phonological shapes of its components, it is “morphology,” not “phonology.” The attempted reduction thus must fail. 6

In the meantime, most working morphologists follow the lead of Matthews, and continue to pursue alternatives to the morpheme based view that take seriously the phenomena that are problematic for that account. It is hard to be hopeful, however, that other parts of the field will see the light and be converted any time soon. The difference of opinion already discernible between the two brothers de Saussure seems like to persist for the foreseeable future.

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6A more sweeping attempt to reduce all non-concatenative phenomena to pure phonology is made in a recent article by Bye & Svenonius (2012). A detailed discussion of this work is well beyond the scope of the present paper, but it seems also to fail because the “phonological” representations and adjustments these authors assume are so abstract as to be unrecognizable as such.
References


