What is a Morpheme? A View from Construction Grammar
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What is a Morpheme?
A View from Construction Grammar

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Preliminaries.[1] Fifteen years ago Aronoff, in his watershed monograph, *Word Formation in a Generative Grammar* (1976), argued that morphemes do not exist, or to the extent that they do, they are epiphenomenal. Aronoff, addressing examples of derivational morphology, argued that rather than morphemes there are only rules for turning one word into another. More recently in various works including one presented to this society, Anderson, addressing examples of inflectional morphology (1977, 1984, 1985, 1988, 1990, 1992), has argued that morphemes don't exist as representations but only as rules. In this paper I want to address the issue of what, if anything, a morpheme is. My approach will be to examine these two representative challenges to the traditional view of the morpheme, and draw out of them an overview of the class of phenomena that must be mapped together to account for the correlations between sound and meaning within the class of constructions that are traditionally called words, and suggest that it makes sense to call such mapping complexes MORPHEMES. The second point of this paper is more of an advertisement. I will point out that the correlations just mentioned have properties similar to the basic units of construction grammar and I will briefly survey the application of the basic notions of construction grammar to the basic problems of morphology. In line with the survey nature of this paper, I will not be attempting to give compelling arguments as to why one MUST use a constructional approach to morphology, rather I will show how to apply a constructional approach to morphology and show that certain useful, pre-theoretical notions in morphology have natural definitions in a constructional approach.

Let us start with a discussion of Aronoff. Some of the key points I want to make about morphology lie hidden in the assumptions behind his argument. Of course I need also to note that where a truth-value semantics might lead to his conclusions, a conception of semantics incorporating an understanding of the role of frames, categorization, and analogical reasoning, more widely called as metaphor, leads to quite different conclusions.

Aronoff's famous argument against the existence of the morpheme was based on the problems with the minimal sign approach commonly assumed by linguists from Saussure on. The basis of his argument is semantic. He rejects the morpheme as a mapping between form and meaning because of various problems in assigning meanings to forms. The first problem is that morphemes of a single occurrence can only be assigned a semantics circularly. The second is that idiomatic uses of morphemes cannot be assigned single meanings. And the last is that there is a class of morphemes in English of which he claims "there is no way in which members of this class can be said to have any meaning at all..." (pg. 7). But there are serious questions regarding his premises. For example, in order for the arguments based on his first two reasons to go through, one has to assume strict compositionality—a position relatively easy to argue against in light of current work on semantics, especially that on metaphor (Reddy, 1979; Lakoff and Johnson 1980; Lakoff, 1987; Lakoff and Turner, 1989). Assigning meanings to hapax legomena and idiom chunks is not a problem (cf. Brugman, 1983). But Aronoff's third argument regarding a class of putatively meaningless English morphemes is

instructive enough to warrant some closer examination. He presents the following paradigm.

(1) (= Aronoff's (5), pg. 12)

X=fer	*X=mit*	*X=sume*	*X=ceive*	*X=duce*
refer	remit	resume	receive	reduce
defer	demit		deceive	deduce
prefer		presume		
infer				induce
confer	commit	consume	conceive	conduce
transfer	transmit			transduce
suffer	submit	subsume		
	admit	assume		adduce
	permit		perceive	

In this aggregation of data he argues that one cannot find a common meaning for the morphemes at the head of each column, in spite of the fact that they show consistencies in allomorphy, as suggested by the corresponding forms in (2).

(2)

X=fér	*X=mit*	*X=sume*	*X=ceive*	*X=duce*
X=ference	*X=mission*	*X=sumption*	*X=ception*	*X=duction*
reference	remission	resumption	reception	reduction
deference	—		deception	deduction
preference		presumption		
inference				induction
conference	commission	consumption	conception	conduction
transference[2]	transmission			—
—	submission	subsumption		
	admission	assumption		—
	permission		perception	

The assumption behind his argument is that consistency in formal properties, in this case allomorphy, shows that there is a linguistic entity of some sort. But, he reasons, because there is no semantic analysis available, the entities do not involve any sort of mapping and therefore cannot be morphemes under a "minimal sign" definition of morpheme. But such an argument is flawed. First because of the fact that under modern semantic analysis, there *is* plenty of reason to think that each of these latinate roots and prefixes in (1) has a consistent meaning. For example, Sweetser (1987) presented an analysis to this society in which she showed how, at least in historical terms, it is sensible to think of *=fer* as meaning 'bear, carry', *=mit* as meaning 'send', *=ceive* as meaning 'take', and so on. I would argue it is also true synchronically. Second, independent of semantics there are consistent groupings of properties, phonological, morphological (as Aronoff explicitly notes in the case of allomorphy), and syntactic. These groupings are implicit in his organization of the paradigm repeated here as (1), most noticibly in his use of the = boundary.

To counter Aronoff's position let me start with the most prototypical case of what we would, prior to Aronoff, have unblinkingly called a morpheme. Let me show what other properties there may be which must be associated with the

phonologico-semantic mapping that constitutes the traditional definition of a morpheme.

In the most prototypical case are found four cooccurring properties that any theory must be treat as part and parcel of the same entity, E, regardless of what one calls E.

(3) (a) **Phonology**: Some phonological material.
(b) **Semantics**: Some semantics and/or pragmatics.
(c) **Internal syntax**: Considerations of how E fits in the construction of a whole word.
(d) **External syntax**: Considerations of how the presence of E affects the class of constructions into which whole words containing E may fit.

Consider the English word *lighten* 'make (s.t.) less heavy'. In traditional morphological analysis it consists of two mappings, given in (4).

(4)

	light	**-en**
phonological part:	***layt***	***ən***
semantic part:	'light (of weight)'	'(causative-)inchoative'

But the claim of this paper is that (4) gives only half the picture. Each of these entities consists not of two parts, phonological and semantic, but of the four parts shown in (3) as exemplified in (5).

(5)

	light	**-en**
phonological part:	***layt***	***ən***
semantic part:	'light (of weight)'	'(causative-)inchoative'
internal syntax:	*adjective stem*	*suffix on adjective stems*
external syntax:	*adjective*,frame:*patient*	*verb*, frame: (*agent*)

For exposition's sake I have simplified the facts within each entity here slightly. For example the *-ən* complex can only be added to obstruent final stems and there are further subtleties about the class of words to which it can be suffixed. None of these details affect the argument. All four types of information must be mapped as a single linguistic unit, regardless of whether one takes Aronoff's or Anderson's position and calls such mapping complexes rules or whether, as the present author prefers, one uses the traditional term *morpheme*. My choice to use the term *morpheme* also stems from substantive considerations. In a rule based approach, either a Halle/Aronoff type word formation rule (WFR) in derivation or an Andersonian morpholexical rule in inflection, there are inherent deficiencies. Primarily, I would argue as did Selkirk (1982) and Di Sciullo and Williams (1987), that below word level there exist constructions independent of individual WFRs or morpholexical rules. Any adequate theory will have to recognize this syntax and a rule-based theory is hard-pressed to do so. Beyond that, the conditions on internal syntax can be much more complex than either the proponents of WFRs or morpholexical rules seem ready to concede. In particular, the kinds of notations used by Anderson or Stump (1991, 1992) are inadequate to handle conditions that appear in the internal syntax which go beyond simple major word class information and include morphological classes, phonological conditioning, and even semantic

even semantic or pragmatic information. Two examples should suffice to demonstrate what I mean.

First, the English plural does not go on just any noun. It only goes on common, count nouns. Where it appears on nouns that are lexically either proper or mass the meanings of those nouns are distinct from that in their use as proper or count nouns respectively. Although semantically based, these are syntactic properties of nouns that need to be indicated in their lexical entry. To show this it should be sufficient simply to recall that the modern English count noun *pea* is descended from the early modern English mass noun *pease* of the same reference. A summary of the facts of English pluralization is given in (6).

(6)

	[- proper, + count]	[- proper, - count]	[+ proper, + count]
sg	car	milk	Philadelphia
pl	cars	*milks	*Philadelphias

But neither a WFR type notation as in (7a), nor a morpholexical rule notion like those in (7b) and (7c) have an obvious place to include this crucial information.

(7) (a) WFR $[N+s]_N$

(b) Morpholexical rule (Anderson) $/X/ \rightarrow /X+s/$ [+pl]

(c) Morpholexical rule (Stump) $MLR_{I,[NUMBER:plural]}([_N x]) = def[_N[_N x] \text{ -s }]$

The point of (7) is not to demonstrate that it would be impossible to incorporate this kind of information into a rule-based theory, after all Halle talks about the operation of WFRs as adding syntactic properties like [+abstract], but simply that syntactic information outside of major word class was believed by the developers of such theories to be so completely beside the point that the formalisms they developed have no place for most of the syntactic information that governs word structure.

The second example of a problem with the formalisms that ignore syntax in morphology is found in the Lakhota verb forms given in (8). The plural marker *pi* appears suffixed to verbs to mark the plurality of either subjects or objects, as in (8a). But in (8b) the plurality of third person objects is marked by *wicha*. When *wicha* is present it blocks the appearance of *pi* to mark object number, but not subject number. Note that in Lakhota the third person is generally zero. Also do not be distracted by the regular ablaut of the word final *a* to *e* in certain verb stems when they appear in simple declarative clauses.

(8) (a)

subject plural		object plural	
kaštake	'he strikes him'	***nikaštake***	'he strikes you *sg*'
kaštakapi	'they strike him'	***nikaštakapi***	'he/they strike(s) you *pl*'
makaštake	'he strikes me'	***makaštake***	'he strikes me'
makaštakapi	'they strike me'	***ųkaštakapi***	'he/they strike(s) us'

(b)

singular subject		plural subject	
wichawakaštake	'I strike them'	***wichųkaštakapi***	'we strike them'
wichayakaštake	'you *sg* strike them'	***wichayakaštakapi***	'you *pl* strike them'
wichakaštake	'he strikes them'	***wichakaštakapi***	'they strike them'

The implications of the data in (8) are that the rule supplying *wicha* cannot be disjunctively ordered with the rule supplying *pi* because both can be present in a single form. Therefore one must use a syntax sensitive device to know when the plurality of the object has been supplied by *wicha*. Anderson's device for encoding structural information by 'layering' features will not handle this problem without writing distinct morpholexical rules for subject plural *pi* and object plural *pi*, and have only the object plural *pi* rule disjunctively ordered with *wicha*, plus invoking the repeated morph constraint (Menn and MacWhinney, 1984) to avoid getting two *pi*'s when both subject and object are plural.

But I cannot simply accept the notion that there is word-internal syntax without at least addressing Anderson's position. In recent work (1990, 1991) Anderson rejects all syntactic structure within words on the grounds of the relative lack of phenomena in morphology which make crucial reference to word internal syntactic structure and on the grounds that there exist well-documented instances in which the apparent word level syntax contradicts either the scope or the morphological properties of the construction, e.g. the so-called bracketing paradoxes. Anderson proposes that this follows if there are only rules and no word-internal syntax. In his system all apparent word internal syntax falls out of the ordering of the rules which supply phonological material in certain morphological contexts. Although it is premature at this point to explain why, from a construction grammarian's point of view, Anderson's arguments are less than compelling, I will point out that both the $\bar{X}$ type of syntactic view of morphology and the rules-only view of morphology are extreme positions, forced on us by assumptions of modularity. Should the entities, whatever you call them, which provide lexical material also provide partial pieces of syntax at the same time, then the grounds of argument change radically. This is exactly what construction grammar does thereby allowing a middle ground between these extremes. Besides even in Anderson's own system he needs a device for encoding structural information by 'layering' features. This is already a backdoor admission of an important role for syntax in morphology.

A quick typology of morphemes. Once we recognize the inherent complexity of a prototypical morpheme, it is easy to find morphemes that are less prototypical in that they lack one or more of the parts shown in (5). The most common case being the lack of a phonological part, traditionally known as a *zero morpheme*. An example is given in (9).

(9)	**burn**	Ø
phonological part:	***bərn***	
semantic part:	'burn'	'causative'
internal syntax:	*verb stem*	*suffix(?) on verb stems*
external syntax:	*verb*, frame: *patient*	*verb*, frame: *agent*

Other analyses for instances of zero morph phenomena are also possible within the type of framework we are considering. And one can make good arguments for the need to distinguish various types of zero morphs, but this is not the time to go into detail. The point is only that because morphemes consist of four potential parts instead of two, it is less clear that one can argue against the existence of the morpheme as an entity by finding a class of morphemes lacking one of the parts. In spite of my vigorous defense of the meaningfulness of English latinate roots against

Aronoff's view, it is not particularly hard to find morphemes which actually do lack semantics. Take theme vowels for example. The -ī- in the Latin example in (10) is a case in point.

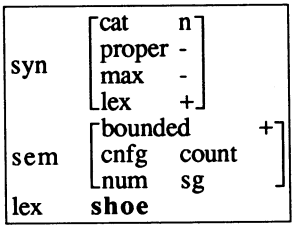
(10) 'serve' (Latin)

	serv	**ī**	**re**
phonological part:	***serw***	***ī***	***re***
semantic part:	'servant'		'PRO subject'
internal syntax:	*noun root*	*verb stem forming suffix on roots*	*nominal word forming suffix on verb stems*
external syntax:	*animate noun*	*verb*, frame: *agent* (*patient*)	*neuter noun*

From the morphologist's point of view morphemes that lack either of the syntactic properties are much less interesting, but they do exist. Morphemes that lack internal syntax are the mainstay of so-called isolating languages, they constitute words which cannot combine with any other forms either in inflection or derivation. And finally, morphemes lacking external syntax would be interjections, which seem not to fit into external constructions at all, or at most in very restricted ways.

A little about construction grammar. Now I would like to turn to a discussion of the similarity that a morpheme like that outlined in (5) has to a lexical construction in construction grammar. In construction grammar, Fillmore and Kay (1993), constructions are made up of smaller constructions, which each contribute properties to the larger construction and whose appearance in the larger construction may be sensitive to the properties of other participating constructions. But since the various types of properties, phonological, semantic, and syntactic are all equally part of a construction, morphemes, in the sense that I am using the term here, constitute entities of the construction type. Fillmore and Kay, themselves, propose that words are constructions. For example in (11) I have sketched the lexical entry for *shoe* following Fillmore and Kay (1993: Chap. 3, pg. 6).

(11)

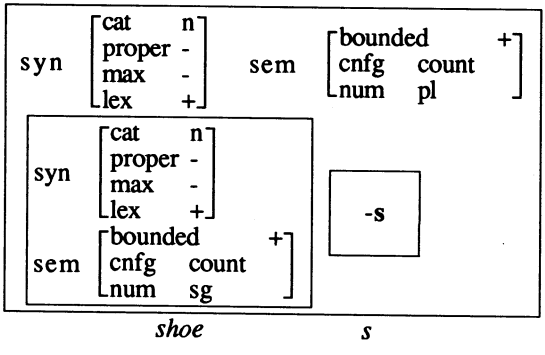


At this point I need to digress briefly to review some construction grammar terminology. The properties of a construction are represented by a hierarchically structured list of attributes and attribute values. As shown in (11) the value of an attribute can be a simple value, +, -, n (=noun), sg (= singular), etc. or it can be another attribute or list of attributes. So in (11) the value of the attribute *syn* is the list of attributes, *cat*, *proper*, *max*, *lex* and their respective values. Such a list of attributes is called an attribute value matrix and is symbolized by enclosure in square brackets. By convention the outermost set of square brackets is omitted and a box is used instead. Also, by convention, attributes are written to the left and their

values to the right. One final terminological note is that the word *shoe* which instantiates the construction in (11) is called a construct.

Kay and Fillmore also give an example of a construction involving morphology below the word level. It is the English plural and is repeated here as (12), (Chap. 3, pg. 9) with the construct *shoes* listed underneath to show how this construction lines up with tokens of phonological material.

(12)

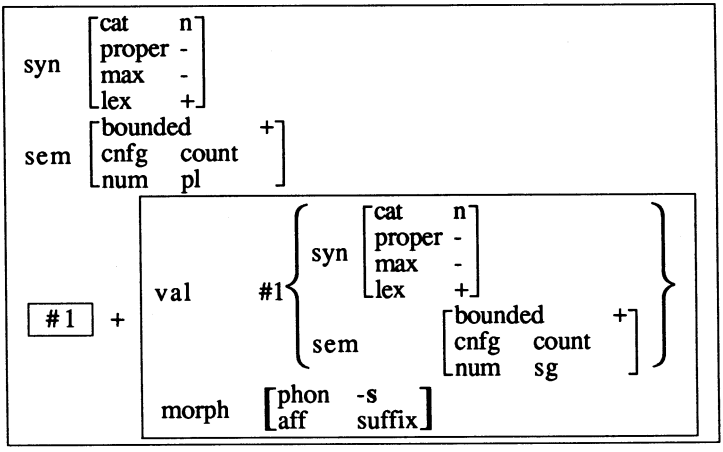


The construction in (12) indicates the syntactic constraints on the plural. The attribute value matrices in the box must match the corresponding attribute value matrices in contructions like that in (11). This matching is accompished by a process called unification. As we get more sophisticated about morphology in a construction grammar, a number of modifications will have to be made, but we will address them one at a time. First the inner box on the left in (12), the one that corresponds to the noun, is in effect the attribute value matrix for the valence of the plural. Henceforth we will so label it. However, there is a reason for putting the valence and the abstract phonological *-s* in boxes. These serve to show that the plural is added to the right of the noun. We will mention more complicated cases involving non-concatenative morphology in a moment, but suffice it to say that because of the existence of non-concatenative morphology, the specification of how morphemes attach to one another is more complex than the simple box notation in (12) can easily accommodate. Therefore we will specify the phonological content and the phonological boundary type (if any) of a morpheme separately from the means of concatenation. With these two revisions (12) becomes (12´) (on the next page).

Having established that there are congruences between the demands of morphology and the already extant means of construction grammar, I would like to step back for a moment and consider other ways that construction grammar seems particularly suited to morphology. Construction grammar was developed to deal as well with the linguistics of special cases as with that of general cases. Generalizations in construction grammar are related to special cases via inheritance. But morphology has always been the last refuge of special cases. Even when, in its insatiable quest for generalization instead of "mere facts", the field turned its collective back on the linguistics of the particular, it was still acceptable to acknowledge special cases and irregularity in lexicon. So a theory built to accommodate the syntax of special cases seems tailor made to account for the irregularity that has always been recognized in morphology.

The remainder of this paper will be devoted to exploring facets of morphology in a construction grammar framework to see 1) how to do it, and 2) what theoretical possibilities construction grammar affords morphology.

(12)



Housekeeping. The biggest single question in making construction grammar work in morphology is that of how to get the morphemes in a word to land in the right order. Unlike transformational theories, including those using WFR or morpholexical rules, construction grammar is not derivational. Therefore, the ordering of affixes can only be accomplished by use of the elsewhere condition, by the use of specialized attributes, or by the use of specialized constructions which directly encode morpheme order. In actuality the difference between using specialized attributes and developing specialized constructions is that specialized constructions require obligatory affixation in a way that attribute ordering systems don't. And because in many aspects construction grammar is a have-your-cake-and-eat-it-too theory, it is entirely possible to have all three approaches to morpheme order even within a single language. For the purposes of this brief paper, I will have to assume that elsewhere case analyses as a type are sufficiently familiar that I need not discuss them in the short time I have here. Similarly, since specialized constructions are theoretically trivial, I will pass over them with a mere mention and concentrate on the specialized attribute approach to morpheme order.

Although not widely acknowledged, there exists a cognitive mechanism that groups linguistic entities into units. Let me call this mechanism the GLOMMER. In construction grammar the action of the glommer is expressed through the values of a series of attributes, *lex*, *max*, and *hsbj* (=has subject) which mark the degree of inclusiveness of linguistic units, as shown in (13).

(13)

words	phrases	clauses
syn [max -, lex +]	syn [max +, lex [ ]]	syn [hsbj +, max +, lex -]

What I propose to do is simply to extend this approach below the word level. We will use attributes like *root*, *base*, *stem*, and *word* and put them in an attribute value

matrix as the value of *lex*. To show how this will give a slot-sequence effect in a language with multiple slots, consider the following forms from the Lakhota transitive verb paradigm.

(14) Lakhota transitive verbs

kaštake	'he strikes him'	*ų́kaštakapi*	{ 'we strike him' / 'he strikes us' }
***wa**kaštake*	'I strike him'	***ų́ya**kaštakapi*	'you strike us'
***ya**kaštake*	'you strike him'	***ų́ni**kaštakapi*	'we strike you'
***ma**kaštake*	'he strikes me'	***wicha**kaštake*	'he strikes them'
***ni**kaštake*	'he strikes you'	***wicha**wakaštake*	'I strike them'
***maya**kaštake*	'you strike me'	***wicha**yakaštake*	'you strike them'
***chi**kaštake*	'I strike you'	***wichų́**kaštakapi*	'we strike them'

In a slot-sequence diagram these facts could be summarized as in (15).

(15) Lakhota transitive verb prefixes

Slot A	Slot B	Slot C	Slot D
		ya '2 subj'	
wicha '3 pl obj'	*ų́* '1 pl participant'	*ni* '2 obj'	
	ma '1 sg obj'	*wa* '1 sg subj'	stem
		chi '1 sg subj on 2 obj'	

In actuality there are a few more complications than are evident here, some of them rather nasty.[3] But this will suffice for the purposes of demonstrating the use of attributes to encode morpheme order. Leaving out all the other attributes, the attribute value matrix for the morphemes in each of these slots is given in (16).

(16) Lakhota transitive verb prefix constructions

stems

$$\left[\text{syn}\left[\text{cat } \text{v};\ \text{lex}\left[\text{stem } +;\ \text{word } +\right]\right]\right]$$

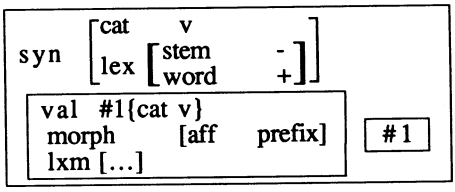
Slot C prefixes

$$\left[\text{syn}\left[\text{cat } \text{v};\ \text{lex}\left[\text{stem } +;\ \text{word } +\right]\right];\ \left[\text{val } \#1\left\{\text{cat } \text{v};\ \text{lex } [\text{stem } +]\right\};\ \text{morph } [\text{aff } \text{prefix}];\ \text{lxm } [\ldots]\right]\right] \quad \boxed{\#1}$$

Slot B prefixes

$$\left[\text{syn}\left[\text{cat } \text{v};\ \text{lex}\left[\text{stem } -;\ \text{word } +\right]\right];\ \left[\text{val } \#1\left\{\text{cat } \text{v};\ \text{lex } [\text{stem } +]\right\};\ \text{morph } [\text{aff } \text{prefix}];\ \text{lxm } [\ldots]\right]\right] \quad \boxed{\#1}$$

Slot A prefixes



Morpheme order in this system comes about by manipulating a list of attributes set aside for the purpose. In this case only one attribute is required, *stem*. The innermost layer of prefixes, Slot C prefixes, go on simple stems yielding a stem. The Slot B prefixes go on stems but return non-stems. The outermost layer, the Slot A prefixes, go on any verb construction and yield non-stems. So any of these prefixes can attach directly to a simple stem as shown in (14). And *wicha* '3 pl obj', the only Slot A prefix can go on any other combinations of stem and prefix, but since no other affix can go on non-stems, it always ends up as the outermost prefix. On the other hand Slot B affixes, *ɥ* '1 pl participant' and *ma* '1 sg obj', can go next to the simple stem or on the construction of a simple stem plus Slot C prefix because that combination is still a stem. However, Slot B prefixes cannot appear closer to the simple stem than a Slot C prefix, because the construction of a Slot B prefix with any V construction yields a non-stem to which Slot C prefixes cannot attach.

Notice that what is done here is to shift the syntax onto the morphemes. In effect each morpheme carries the relevant pieces of its syntax with it, thus avoiding many of the problems that Anderson (1990, 1992) and Stump (1992) attribute to syntactic theories of morphology over against morpholexical rules.

Morphology/phonology interface. Once we have recognized that constructions can carry phonological information along with syntactic and semantic information, some interesting possibilities open up. For example, ever since Halle's seminal paper (1973) it has been recognized by morphologists that morphemes (or the rules that spell out those chunks of phonology traditionally called morphemes) can carry extra phonological information in the form of boundaries. However the formalisms in use did not allow much more. In a constructional approach some very attractive possibilities become available. For example consider the fact that in Attic Greek noun inflection the *a* stems have an ablauted theme vowel in the singular, or that in Latin noun inflection where, except for *i*, the theme vowels are characteristically long wherever the sound pattern of Latin permits, the non-front theme vowels are irrationally short in the nominative and accusative singular. These two patterns are illustrated in (17). The theme vowels are given in boldface.

(17) (a) Attic Greek

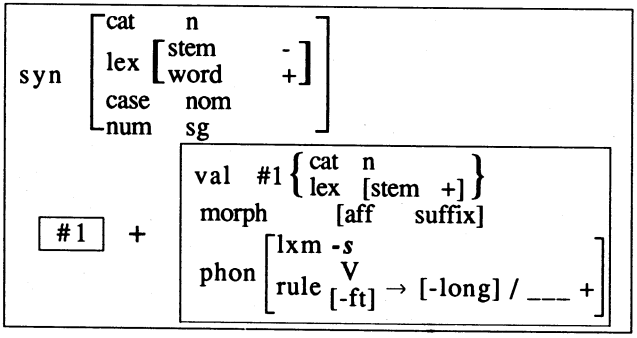
'town'	singular	plural
nominative	*kōm**ē***	*kōm**ay***
genitive	*kōm**ēs***	*kōm**ōn***
dative	*kōm**ē**(y)*	*kōm**ays***
accusative	*kōm**ēn***	*kōm**ās***

(17) (b) Latin

o-stem	'garden'	singular	plural
	nominative	*hortus*	*hortī*
	genitive	*hortī*	*hortōrum*
	dative	*hortō*	*hortīs*
	accusative	*hortum*	*hortōs*
	ablative	*hortō*	*hortīs*
a-stem	'girl'	singular	plural
	nominative	*puella*	*puellae*
	genitive	*puellae*	*puellārum*
	dative	*puellae*	*puellīs*
	accusative	*puellam*	*puellās*
	ablative	*puellā*	*puellīs*
u-stem	'hand'	singular	plural
	nominative	*manus*	*manūs*
	genitive	*manūs*	*manuum*
	dative	*manuī*	*manibus*
	accusative	*manum*	*manūs*
	ablative	*manū*	*manibus*

In a constructional approach it is possible to include these phonological rule-like generalizations in a construction. This allows one to accomplish what Anderson does by ordering his morpholexical rules among the phonological rules. But the constructional approach which can associate rules with particular constructions has the advantage that the fact that such rules are minor rules falls out without the need for any ad hoc theoretical mechanism to maintain their exceptional status. The Latin nominative singular would be sketched as follows:

(18) Latin Nominative Singular (partial)



In actuality the matter is somewhat more subtle because the phonological rules need to be listed separately and referred to. At first blush that looks like a notational variant on exception features. It isn't, however, because just such a mechanism of reference is used in developing inheritance and therefore is freely available to constructions in general rather than being a distinct theoretical entity.

Having taken the step of allowing rules to be referenced by constructions directly we can readily see that this will enable us to manage all morphologically driven phonology, independent of whether phonological stuff is affixed. Umlauts, ablauts, truncations are just one possible regular part of constructional morphemes.

The final step is even more radical. It is well known that there are many types of non-concatenative morphology, beyond those that can be treated as simple phonological rules, for example, the widely discussed templatic morphology of Semitic and Penutian. Our notation, unfortunately, was designed by syntacticians to represent syntax in which there is only concatenation[4]. In principle, the premises of construction grammar make it possible to specify manners of combining chunks of phonological stuff—linking of melodies with templates, creation of new tiers, copying of templates or melodies. Garden variety concatenation is just a special case. It is for this reason that I am including an attribute *morph* which specifies how the phonological material of a construction gets combined with the phonological material of other constructions. Its values will include other attributes to specify kinds of combining like *aff* to specify concatenation, *copy* for reduplication, and *inf* for infixation. These in turn will have values like *aff suff* for suffixes, *copy σ left* for reduplicating initial syllables, *inf o left* for infixing after the first onset, and so on.

The good news about inheritance. One of the most theoretically intriguing properties of construction grammar is inheritance. Inheritance allows for closely related constructions to be treated as belonging to the same general construction type. Each of the specific constructions inherits all of the properties of the more general construction. In this way one can still achieve generalization in spite of needing to list special cases.

This approach to linguistic generalization has two very interesting implications for morphology. The first is that it sheds new light on allomorphy; the second is that it provides a natural grounds for the definition of the important morphological notion of paradigm. I'll discuss allomorphy first.

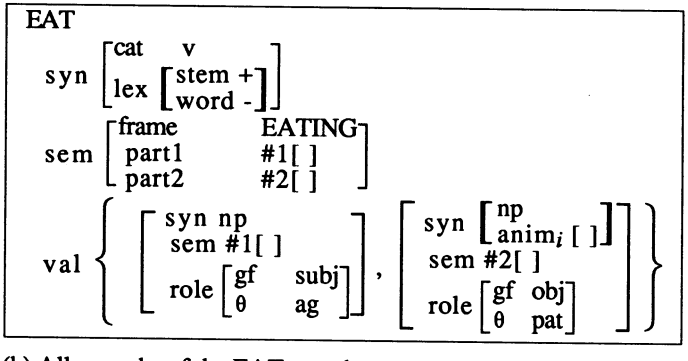
In all previous theories of morphology, suppletive allomorphy, the kind of allomorphy that one chooses not to eliminate by the use of phonology, requires a special kind of treatment—a theoretical extension, in effect. For example, in a structural approach to a statement of the distribution of allomorphs one requires special clauses specifying the phonological content of each allomorph and conditions under which it appears. These clauses are disjunctively ordered among themselves and are linked to the general statement of the morpheme which specifies the semantics and word-internal tactic properties. WFR systems require special allomorphy rules e.g. Aronoff (1973, section 5.3, pg. 98ff). On the other hand a morpholexical rule system like Stump's (1991, 1992) requires no special type of rule to get allomorphy but at the cost of making allomorphy an epiphenomenon, accessible only by reference to the disjunction imposed by the semantics.

However, in constructional morphology one can use inheritance to get allomorphy without either positing a special type of rule or giving up the basic notion. In spirit this approach is like Stump's, but because of inheritance we can, once again, have our cake and eat it, too. Allomorphs are those constructions which inherit the properties of lexical constructions that lack explicit mention of phonological content. One example should suffice. In Ojibwa, as in most Algonquian languages, there are two suppletive allomorphs for the transitive verb meaning 'eat', *amw-* for animate comestibles, and *miiji-* for inanimate. A representation of this allomorphy is given by the general EAT construction,

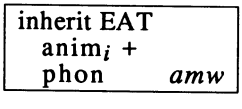
sketched in (19a) from which the two allomorphs, given in (19b), inherit all but their animacy valence.

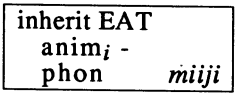
(19) Ojibwa

(a) EAT morpheme (general construction)



(b) Allomorphs of the EAT morpheme

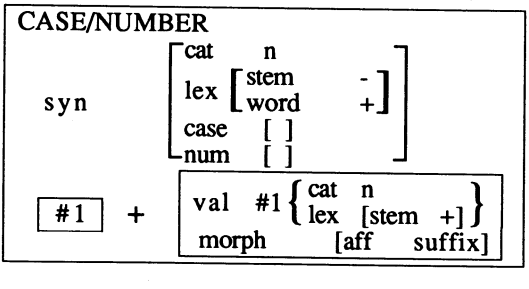




In (19) the two allomorphs of the transitive stem for 'eat' inherit all the properties of the construction EAT, but differ in whether the notional object is animate or not.[5] This approach allows one to say that very straightforwardly.

The second implication of inheritance is that it provides the grounds for the definition of paradigms and subparadigms. A complete paradigm for any lexical stem will consist of all the constructs that simultaneously inherit the properties of that stem and the properties of all the constructions which realize the categories of inflection for the major class that stem belongs to. Thus the paradigm of a Latin noun stem consists of all the constructs containing that stem fulfilling the valence of the construction in (20).

(20)



This example is only a simple case, but it should suffice to suggest how one can define the notion paradigm. Other useful related notions, like that of subparadigm are gotten by simply restricting the class of inflectional categories whose properties a construct must inherit to belong to the set.

Conclusion. In this brief overview I have argued that it is sensible to use the traditional term *morpheme* to refer to linguistic entities. I further showed that the kinds of entities one needs to posit to account for the basic facts of morphology are of the same kind as constructions in construction grammar. Then by examining some of the most basic phenomena in morphology in the light of construction grammar I argued that such an approach provides natural accounts for minor rules, allomorphy, and paradigms.

One final matter, however, should be addressed. The class of constructions that arise out of the analysis of inflection, derivation, and compounding are in all but minor ways identical. This is not surprising, given the radical anti-modular stance of construction grammar in the first place. Many morphologists are likely to be minded to reject a constructional approach out of hand because of this lack of analytic distinction. But let me conclude with this thought. It has long been recognized that the very real distinctions between inflection and derivation and between derivation and compounding are potentially quite fuzzy. If those distinctions arise from formal criteria that fuzziness is hard to account for. But if on the other hand those distinctions arise from other considerations, e.g. semantic transparency, productivity, and the like, the fuzziness is readily explicable. Construction morphology fills that bill.

There are certainly more morphological phenomena than I have covered here. Some of them, like defective paradigms, have very natural accounts in construction morphology (see Rhodes, 1992). Others, like cooccurrence constraints (e.g. Hyman and Mchombo, 1993), do not yet appear to have such clearly natural accounts.

NOTES

[1]I would like to thank Larry Hyman, Pay Kay, Chuck Fillmore, Sharon Inkelas, and Aaron Halpern for the various discussions that have contributed significantly to this paper. The usual disclaimers apply.

[2]*Transfer*, of course, has initial stress and might therefore not strictly be part of this derivational paradigm.

[3]Kay (n.d.) has used instances of rare verbs (cited in Legendre and Rood, 1993) that take two slot B prefixes to argue that a role-based analysis of Lakhota prefixes is more insightful, and the present author is inclined to agree. But for the purposes of exemplification, we will use this analysis here anyway.

[4]Actually there are non-concatenative aspects of syntax, especially in suprasegmental material, which tends to get ignored or treated as if there were no special problem in connecting it to the segmental representation.

[5]There are a number of complications that have to do with the syntax of the so-called inverse forms which I am simply ignoring here.

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