

# 17 Morphology as Component or Module: Mapping Principle Approaches

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## 1 Introduction

It is common to speak of one or another theory of grammar as being modular. What is meant by a modular theory, of course, is one in which the well- or ill-formedness of an expression is determined not by a single monolithic set of rules, but rather by a set of modules (or components), each formally independent of the other, and each with its own set of rules or principles that must be satisfied. The best-known example of this view of grammar is the so-called Principles and Parameters approach to syntax, which has its origin in the modular Government Binding (GB) theory of Chomsky (1981).

To take a familiar example of how a modular system of grammar is supposed to work, consider a sentence such as (1a), which has a structure roughly like that shown in (1b), on a traditional GB view:

- (1) (a) Mary seems to be intelligent.
- (b) [Mary<sub>i</sub> seems [t<sub>i</sub> to be intelligent]]
- (c) \*It seems Mary to be intelligent.

Example (1a) is well formed because it meets the requirements of a number of different modules. For example, it satisfies the Case theory in that the NP *Mary* appears as the subject of an inflected verb (*seems*) and is therefore in a Case-marked position, as is required of overt NPs: non-Case-marked overt NPs are not 'visible', and are ruled ill-formed by a visibility requirement. We see from the structure in (1b) that *Mary* does not appear on the surface in its D-structure position; rather, it has been moved from the position of the subject

of the lower clause into the matrix subject position. This movement is licit since (among other things) the relationship between *Mary* and its trace satisfies the Binding theory: in classical GB a trace is an anaphor (functioning like a reflexive such as *herself*, and not like a pronoun like *her*), which must be locally bound by an antecedent in an argument position; the relationship between *Mary* and the trace happens to satisfy this constraint. Finally, *Mary*, being an NP, must be assigned a theta-role by a V or VP. The verb *seem* does not assign a theta-role to its subject (its notional subject is really semantically empty), so *Mary* cannot get one from there. However, since *Mary* is the antecedent of the trace *t*, which is in the subject position of the subject-theta-assigning VP *be intelligent*, *Mary* is able to inherit a theta-role from its trace, and thus the construction satisfies theta-theory. Thus, the construction is ruled in, because it satisfies a set of independent criteria for well-formedness.

Contrariwise, a construction is ill-formed when principles of one or more of the modules are violated. Take the case of (1c), for example. In this case, theta-theory is satisfied since *Mary* appears as the subject of the VP *be intelligent*. Binding theory is simply irrelevant here, since there are no anaphoric relations – at least under simpler versions of GB or Principles and Parameters theories. What is violated relates to Case theory: the overt NP *Mary* is the subject of an infinitival VP, which in English is a non-Case-marked position.

Examples such as those in (1) are typical of the interactions of purely syntactic modules in the determination of the well-formedness of a sentence. However, utterances can obviously be unacceptable for reasons that are not syntactic. For example, one of the words in the sentence might be simply morphologically ill-formed, as in (2a) (cf. 2b):

- (2) (a) \*John edwant to go.  
 (b) John wanted to go.

The source of the ill-formedness in (2a) is, obviously, that the English past-tense affix *-ed* is a suffix rather than a prefix, and as such must attach at the end of its base, not the beginning. This restriction is morphological – or at least morphophonological (see section 3).

Now, obviously, anybody's theory of morphology must provide some account of why one cannot say \**edwant* in English, and there is therefore a sense in which any morphological theory could be said to function as a module of the grammar, much as the syntactic modules that we have just discussed. However, in many morphological theories, the interaction between morphological principles or rules and the types of syntactic modules described above is not particularly direct. In a typical Lexical Morphology approach, for example, (2a) would be ruled out by simply not allowing the morphology to generate words like \**edwant*. So, the sentence in (2a) would not be generated, simply because \**edwant* would never be inserted into the sentence. There are, by contrast, views of morphology where morphological principles interact with other principles of grammar in a much more explicit and direct way: broadly

speaking, these are theories in which morphology, syntax, and other modules of the grammar have an ‘interlocking independence’, as Baker (1988b) puts it.

In this chapter, I discuss morphological theories, such as those proposed by Marantz (1984a), Sadock (1985, 1991), and Baker (1985, 1988a, b), in which morphology functions as a module on a par with other modules of the grammar. I will concentrate in particular on the Autolexical Syntax theory as developed by Sadock. Some aspects of this theory will be outlined in section 2. As we shall see, on Sadock’s theory, a sentence’s morphological structure always differs from, and may actually be nonisomorphic to, the structure assigned by the syntax. There must, therefore, be a *mapping* between the two levels of structure, and this mapping must obey certain principles. Thus the relationship between the morphological component and the syntactic component(s) is rather like the relationship between the S-structure and the Logical Form components in GB theory, which (often) assign nonisomorphic analyses to a given sentence, these analyses to be related by the rule of Quantifier Raising.

So principles of morphology may be viewed as comprising a separate module, and this module, along with assumptions about mapping between modules, is consulted as part of the determination of a sentence’s well-formedness. This view can be turned around, however: instead of having separate morphological principles that help determine the well-formedness of sentences, might one not instead assume that the well-formedness of *words* is derivable from principles of *syntax* and other components of the grammar? This opposite view has been argued for by Sproat (1985, 1988), and subsequently by Lieber (1992), and I will outline a few aspects of such approaches in section 3. As we shall see there, despite the oppositeness of such theories in certain respects to that of Sadock, there are also some striking similarities.

## 2 Sadock’s Autolexical Syntax

### 2.1 Cliticization in Autolexical Syntax

To begin with, let us consider a simple case of cliticization in English, involving *’d*, the reduced form of the auxiliary *would* (cf. Sadock 1991: 52ff). From a purely syntactic point of view, *’d* is a separate word, on a parallel with the full form *would*. This consideration would lead us to posit a structure roughly like (3a) for the sentence *He’d have done it*. From a purely morphological point of view, however, *’d* would appear to be attached to the preceding word, namely *he*. This would motivate (3b) as the structure of the sequence *he’d* from a purely morphological point of view, where the subscript *w* indicates that the sequence counts as a single morphological word:

- (3) (a) [He [<sub>VP</sub> ’d [<sub>VP</sub> have [<sub>VP</sub> done it]]]]  
 (b) [<sub>w</sub> he’d]

The situation with 'd is typical of clitics (cf. Halpern, CLITICS). As Sadock notes, clitics are associated with an array of properties, including being morphologically *bound* morphemes at the same time as being syntactically independent. (Indeed, these two characteristics might be taken as the defining property of clitics.)

In Sadock's approach, 'd is represented as a lexical entry with two components as follows:

- (4) (a) morphology = [<sub>w[-2]</sub> X[-1]\_\_\_\_]  
 (b) syntax = [<sub>VP[FIN]</sub> \_\_\_\_VP[BSE]]

The morphological entry in (4a) states that the clitic attaches to a full word (bar level -1 in Sadock's model), and forms a "somewhat larger" than full-word constituent (cf. the "clitic group" of other theories, such as Nespor and Vogel 1986) – bar level -2 in Sadock's model. The syntactic entry simply states that the clitic subcategorizes syntactically for a VP headed by a bare verb.

So morphological structure may be nonisomorphic with syntactic structure. But just how different may the two structures be? Put another way, given a lexical entry such as that for 'd in (4), and the requirement that a sentence in which such a morpheme occurs must satisfy both the morphological and the syntactic specifications, what is to stop the morphological and syntactic structures from being arbitrarily nonisomorphic with each other? For example, what is to rule out the sentence *\*John'd would prefer mole poblano and I prefer it too*, where both the syntactic and morphological requirements of 'd are satisfied, as indicated by the following structures?

- (5) (a) Syntactic:  
 John would prefer mole poblano, and [I ['d [prefer it too]]]  
 (b) Morphological:  
 [John 'd]

One principle that Sadock makes use of is the Cliticization Principle, which is stated as follows (Sadock 1991: 105):

- (6) Cliticization Principle  
 If a lexeme combines with an inflected word in the morphology and with a phrase in the syntax, its morphosyntactic association will conform to at least the Weak Linearity Constraint.

The Strong and Weak Linearity Constraints are given as follows:

- (7) (a) Strong: The associated elements of morphological and syntactic representations must occur in the same linear order.

- (b) Weak: The associated elements of morphological and syntactic representations must occur in as close to the same linear order as the morphological requirements of the lexemes allow.

(Sadock's Cliticization Principle is similar in spirit and in predictive power to the Mapping Principle of Sproat 1985, 1988, which I describe later on.) Given this, it is clear why (3) is acceptable whereas (5) is not: in (3) 'd obeys the Cliticization Principle since, although the word to which 'd attaches (*he*) is not part of the phrase for which 'd syntactically subcategorizes, it is immediately adjacent to 'd, to its left. In this case, the mapping satisfies the Strong Linearity Constraint. Obviously, the same situation does not hold of the intended pairing of (5a) and (5b); not even the Weak Linearity Constraint would be satisfied here, since the phrasal position of 'd and its morphological position can hardly be said to be 'in as close to the same linear order as the morphological requirements of the lexemes allow'.

## 2.2 *Incorporation in Autolexical Syntax*

In Sadock's theory, cliticization is merely one instance of morphology/syntax mismatch – *morphosyntactic mismatch*, as Sadock terms it – which comes about as a result of morphology and syntax being separate modules, with their own principles. Another instance is incorporation. Sadock presents several arguments that noun incorporation in some languages must be viewed as involving nouns which are syntactically separate words, but which are morphologically part of a verb word; thus Sadock's treatment of incorporation is similar in this regard to the approach of Baker (1988a), and differs from that of Mithun (1984) or Di Sciullo and Williams (1987).

Like cliticization, incorporation is governed by three sets of considerations. First, the incorporated element must occur syntactically in a position wherein its syntactic requirements can be met. Secondly, its morphological requirements and the morphological requirements of the other morphemes in the construction into which it is incorporated must be met. Thirdly, the mapping between the syntactic and morphological representations must be licit; in particular, it must obey the Incorporation Principle, as given below (Sadock 1991: 105):

- (8) If a lexeme combines with a stem in the morphology and with a phrase in the syntax, its morphosyntactic association will conform to the strong Constructional Integrity Constraint.

The Strong Constructional Integrity Constraint is stated as follows:

- (9) If a lexeme combines with a phrase P in the syntax and with a host in the morphology, then the morphological host must be associated with the head of the syntactic phrase P.

Consider, as a simple example, the Greenlandic sentence given in (10a) (Sadock 1991: 94). Following Sadock, in addition to the surface form of the morphologically complex words, I also give the underlying morphological analysis and a morpheme-by-morpheme gloss:

- (10) (a) Marlunnik ammassattorpunga.  
 marluk-nik ammassak-tor-punga.  
*two-instrumental/pl. sardine-eat-indic./3sg.*  
 'I ate two sardines.'
- (b) Ammassannik marlunnik nerivunga.  
 ammassak-nik marluk-nik neri-vunga.  
*sardine-instrumental/pl. two-instrumental/pl. eat-indic./3sg.*  
 'I ate two sardines.'

In (10a) the noun *ammassak* 'sardine' is morphologically incorporated into the verb. At the same time, it functions as the head of the object noun phrase meaning 'two sardines'. The syntactic structure of (10a) is thus effectively identical to the syntactic structure of (10b), where incorporation of *ammassak* 'sardine' has not taken place, and where the noun functions as a separate word both syntactically and (modulo case/number affixes) morphologically. The syntactic requirements of *ammassak* are thus satisfied in (10a), in that it is functioning as a head of an NP in the syntactic representation, a perfectly legal thing for a noun to be doing. At the same time, the complex verb *ammassattorpunga* is morphologically well formed: in particular, the morpheme glossed as 'eat' in this example, *-tor*, while it functions syntactically as a verb, is morphologically an affix that is marked to attach to nouns. Since *ammassak* is a noun, the morphological construction is licit as far as the morphological requirements on those two morphemes are concerned. Finally, we have to consider the mapping between the two levels of representation, which must satisfy the Incorporation Principle. Clearly the Strong Constructional Integrity Constraint, and thus the Incorporation Principle, is satisfied in this instance, since syntactically *ammassak* functions as the head of an NP, which is itself part of a VP of which *-tor*, the morphological host of *ammassak*, is the head.

The cliticization and noun incorporation examples that we have seen illustrate how, in Sadock's theory, morphology functions as a separate module of the grammar in determining grammatical well-formedness. The syntactic representation of grammatical constructions must satisfy various syntactic principles, and the – possibly nonisomorphic – morphological representations must satisfy morphological principles; and whatever nonisomorphism there may be between the syntactic and morphological representations must obey certain mapping constraints, as we have discussed.

It is important to note that Sadock's model is essentially tripartite, in that in addition to autonomous sets of syntactic and morphological principles and

levels of representation, an important role is also played by an autonomous semantic module. Thus, Sadock also argues that one finds mismatches between semantic representations and the other levels of representation; this conclusion is perhaps a little surprising, at least on a compositional semantic theory such as the classic model-theoretic approach presented by Dowty et al. (1981). One instance of a morphology/semantics mismatch is what Sadock terms *morphosemantic incorporation* (Sadock 1991: 170–8). Sadock presents arguments that a Greenlandic example like (11), where the morpheme meaning ‘appear, seem’ is *morphologically* attached to the morpheme meaning ‘love’, but where *semantically* ‘seem’ has scope over the entire phrase headed by ‘love’, should be considered to be a case of morphosemantic mismatch:

- (11) Kaali-p Amaalia asa-gunar-paa.  
*Karl-erg. Amaalia(abs.) love-appear-indic/3sg.*  
 ‘Karl seems to love Amaalia.’

(Sadock argues against the alternative analysis that this example should be analyzed as a form of verb incorporation (Baker 1988a), and thus should be counted as *morphosyntactic* mismatch, with the semantics reading directly off the syntactic structure. The reader is referred to Sadock’s discussion for details.)

### 2.3 Summary

To reiterate: Sadock provides a model in which morphology constitutes a separate module of the grammar, where morphological structure may be nonisomorphic with syntactic (or semantic) structure, and where the degree of nonisomorphism is governed by a set of what may be termed *Mapping Principles*.

One assumption that, at least on the face of it, Sadock would appear to subscribe to is that words have but one structure, from a purely morphology-internal point of view. In the next section, I describe relevant aspects of the approach to morphology espoused in Sproat (1985, 1988), where the assumption is made that the representation of words is distributed over different components of the grammar, and thus that the words have more than one structure. Multiple structures for words suggest the possibility of nonisomorphism between those structures, and such nonisomorphism is argued, in fact, to exist. As with Sadock’s theory, nonisomorphism is constrained by a Mapping Principle. As we shall see, although the theory to be described starts with a rather different set of data and assumptions than does Sadock, both approaches end up giving a somewhat similar treatment of clitics. On the other hand, the conclusion that words have multiple structures spread across various components of the grammar led Sproat (1985) to argue that there is in fact no specifically *morphological* component, in direct opposition to Sadock’s view.



### 3 Bracketing paradoxes and the mapping principle

#### 3.1 Bracketing paradoxes

Let us start with what is in some ways possibly the simplest (but at the same time probably the most controversial) kind of structural mismatch that has been argued to support multiple structures for words: namely, the kind of *bracketing paradox* exemplified by the words *uneasier* or *unwiser*. As Pesetsky (1979, 1985) first observed, such words are paradoxical in the following way. The English comparative affix *-er*, as well as the superlative affix *-est*, has a phonological restriction on its distribution. Thus, while it may affix to adjectives that are monosyllabic such as those in (12a), or to trochaic disyllabic adjectives such as those in (12b), it does not generally attach to adjectives that do not fit into these categories (12c):

- (12) (a) redder, sadder, wiser, kitscher  
 (b) easier, happier, manlier  
 (c) \*ecstater, \*contenter, \*speciouser

At first glance, given the above considerations, adjectives like *uneasier* or *unwiser* would appear to be unproblematic: although the adjectives *uneasy* and *unwise* do not have the right phonological properties to allow for the attachment of the comparative suffix, their bases *easy* and *wise* clearly do. This would lead us to propose the following structures for these two cases:

- (13) [un [easy er]]  
 [un [wise er]]

But there is a problem here: with these structures the adjectives could not possibly receive the correct interpretation, at least under the most straightforward assumptions (but see e.g. Stump 1991 for a theory under which such structures are not a problem). Pesetsky (1985) noted that structures like those in (13) ought to have the interpretations in (14):

- (14) [NOT [MORE EASY]]  
 [NOT [MORE WISE]]

Now, the argument is actually a little trickier than that originally presented by Pesetsky. As Sproat (1992) points out, following Horn (1988), *un-*, when attached to scalar adjectives, does not have the contradictory interpretation implied by NOT, but rather the contrary reading OPPOSITE OF. With the examples in (13), however, the difference is of little consequence for the general form of the argument: with Sproat's (1992) considerations taken into



account, *uneasier* should mean roughly the same as *harder*, and *unwiser* should mean roughly the same as *more foolish*. Yet the adjectives patently do not have these interpretations. Rather, they are interpreted as the comparative forms of the (idiomatically interpreted) base adjectives *uneasy* and *unwise*. This, in turn, suggests that the structures for these words must actually be as in (15):

- (15) [[UN EASY] ER]  
 [[UN WISE] ER]

Thus we appear to require two opposing structures for these words. Pesetsky (1985) was the first to suggest that such cases could be viewed as a mismatch between the structural representation of the words at two different levels of the grammar. In his model the two levels were S-structure and Logical Form. As Pesetsky observed, the considerations that force the structures in (13) are basically phonological in nature, since they relate to prosodic restrictions on the affixation of the comparative suffix. Since the so-called Phonetic (or Phonological) Form component in GB syntax was supposed to “read off” S-structure, Pesetsky proposed that the structures in (13) were the S-structure representations of these words. On the other hand, the considerations motivating the structures in (15) – leaving to one side for the moment the question of what *forces* these structures – would clearly appear to be semantic. Since semantic interpretation is computed from LF, Pesetsky proposed that these were the LF representations of the words. The mapping between these two structures was accomplished by Quantifier Raising, applying to the affix *-er*, to raise it out of its internal position in (13) to the position it occupies in (15). There are a number of problems, however, in interpreting the mapping between the two structures as involving QR; there is no space to go into the details here, but the reader is referred to Sproat (1985) and Hoeksema (1987).

Sproat (1985) took a slightly different tack from Pesetsky. Following some earlier suggestions of Marantz (1984b), Sproat proposed that the structures in (15) were actually the (*word-*) *syntactic* (say, S-structure) representation of the words, whereas those in (13) were the (*word-*) *phonological* (say, PF) representations of the words. Each of the two structures was licensed by principles applying at the relevant level in the grammar, much as under Pesetsky’s proposal, and the two representations were further constrained to be related by what Sproat termed the *Mapping Principle*.

First let us consider the licensing conditions. We have already seen one of these: namely, the prosodic condition that “forces” the structures in (13). This would simply be stated as a prosodic condition on the comparative affix *-er* (and *-est*), and it would be determined in the PF component that the structures in (13) satisfied these conditions. But what principle of (word) syntax might force the (word-)syntactic structures in (15)? Note that these structures were *motivated* on the basis of their meaning. However, a moment’s reflection will confirm that there is nothing theoretically wrong with the alternative meanings that we discussed above, which these words happen, in fact, not to have.

Therefore, while one may believe on semantic grounds that the structures in (15) are correct, those structures do not appear to follow from semantic principles. One common suggestion for why these structures are forced is that while *un-* is a derivational affix, *-er* is apparently inflectional. On the assumption that those affixes that are termed inflectional are affixes that are “relevant to the syntax” in a way that derivational affixes are not, various researchers (e.g. Anderson 1982, Perlmutter 1988) have derived the principle that inflectional morphology must occur outside derivation. In Anderson’s (1982, 1992) approach, this is encoded by having inflection take place in a later post-syntax part of the grammar than derivation, which feeds into syntax. Alternatively, one might take an approach such as that proposed by Fabb (1984), *inter alia*, and assume that *-er* is actually attached in the syntax. However this is handled, it seems as if one might be able to derive the semantically desirable structures in (15) on the basis of properties of the affixes involved and their interaction with syntax. So we have the following:

- (16) (a) The structures in (13) are motivated on (word-) phonological grounds.  
 (b) The structures in (15) are motivated on (word-) syntactic grounds.

In Sproat’s (1985) model, morphemes such as *un-*, *easy*, or *-er* were considered to be pairs of phonological and syntactic entities, much as, in Sadock’s theory, morphemes have both morphological and syntactic (as well as semantic) frames in their morpholexical entries. Thus, *un-*, for example, was actually a pair of elements  $\langle un-, UN_{\langle A, A \rangle} \rangle$ , where the phonological half *un-* was assumed to be labeled as a prefix – in Sproat’s model, notions implying linear ordering such as “prefix,” “suffix,” or “infix” were considered to be relevant only at the *phonological level* of representation – whereas the syntactic half *UN* was marked with various morphosyntactic features, including subcategorization features that mark it as an affix (crucially not a *prefix*) that attaches to adjectives and forms adjectives. The two sets of constraints summarized in (16a) and (16b) apply to representations over, respectively, the phonological halves and the syntactic halves of morphemes.

But, one presumes, there must be some constraints on the relationships between such structures: apparently *uneasier* has two nonisomorphic structures, but surely the nonisomorphism between a word’s phonological and syntactic structures cannot be arbitrarily great. This is where the Mapping Principle, stated in (17), comes into play:

- (17) If A and B are *sisters* in (word-) syntactic structure, and if B is an affix, then the phonological representation of B, denoted as  $\Phi(B)$ , *attaches* to the phonological representation of A,  $\Phi(A)$ .

Phonological attachment is denoted by the *commutative* “phonological attachment” operator \*: thus  $\Phi(A)*\Phi(B)$  means simply that the phonological

representation of B – for example, the entry *un-* in the pair  $\langle un-, UN_{\langle A, AD \rangle} \rangle$  – is attached to the phonological representation of A. For a case like *uneasier*, it was assumed that the (linearly unordered) (word-) syntactic structure was as in (18a) (cf. (15)). The phonological mapping of that structure is as given in (18b):

- (18) (a) [ER [EASY UN]]  
 (b) (-er \* (easy \* un-))

The phonological structure in (18b) is clearly isomorphic to the (word-) syntactic structure; so how is the nonisomorphic phonologically motivated structure derived? As noted above, in Sproat's 1985 theory it is assumed that properties such as "prefix" or "suffix," which specify relative linear ordering between an affix and its base are purely phonological properties, and it is at the phonological level of representation that considerations of linear ordering become relevant. This is formally encoded by converting the operator \* into the *associative* "linear ordering" operator  $\sim$  whenever the phonological characteristics of particular morphemes dictate a particular ordering. So, from (18b) can be derived (19a), since *un-* is a prefix; similarly, one can then derive (19b), since *-er* is a suffix. Finally, since  $\sim$  is an associative operator, the structure in (19c) is equivalent to that in (19b): hence this is a licit phonological representation of the word, and since, furthermore, this is the structure that is required by the prosodic restrictions on *-er*, this is the *only* licit structure.

- (19) (a) (-er \* (un-  $\sim$  easy))  
 (b) ((un-  $\sim$  easy)  $\sim$  -er)  
 (c) (un-  $\sim$  (easy  $\sim$  -er))

It is important to note that while the Mapping Principle, along with the behavior of the operator  $\sim$ , allows mappings like that exemplified by *uneasier*, not all conceivable mappings are licit. For example, there is no way to derive (20b) from (20a):

- (20) (a) [RE [MIS ANALYZE]]  
 (b) (mis-  $\sim$  (re-  $\sim$  analyze))

Similar views of bracketing paradoxes have been presented by subsequent authors. For example, Cohn (1989) argues that certain bracketing paradoxes in Indonesian are best viewed as a consequence of the assumption that words have separate but parallel word-syntactic and prosodic (metrical) structures. So as not to present a completely biased view of the picture, however, it is important to bear in mind that not all scholars have been convinced that examples such as *uneasier* necessitate dual structures for words. Beard (1991, 1995) has argued against this view, and Stump (1991) has presented a particularly comprehensive model of morphology and semantics in which the

relevant properties of cases such as *uneasier* can be derived by recourse to only one structure.

### ***3.2 Consequences beyond bracketing paradoxes: parallels between words and phrases***

If words have both a (word-) syntactic structure and a (word-) phonological structure (which may furthermore be nonisomorphic), then they are rather like phrases. Work on phrasal phonology – for example, Selkirk 1984, Chen 1987, Pierrehumbert and Beckman 1988, among many others – has largely tended towards the view that prosodic phrasing, while being derivable from syntactic phrasing, is often not isomorphic to it, and that the prosodic representation of a sentence must be considered to be a separate level of representation from its syntactic representation. So just as sentences should be viewed as having representations that are spread over several components of the grammar, including S-structure and PF (where the prosodic representation is presumably relevant), so may words. This particular parallel between words and phrases was implicit in Sproat 1985, and was subsequently made wholly explicit in Inkelas 1990. In that work, Inkelas, like Sproat, argued that words have a (word-) syntactic structure, which is separate from what she termed the “prosodic structure.” In her theory, there are different levels in the word-internal prosodic hierarchy (just as there are usually presumed to be different levels in the phrasal prosodic hierarchy, cf. Pierrehumbert and Beckman 1988), and these levels correspond to the strata of the theory of Lexical Phonology (Kiparsky 1982b; Mohanan 1982, 1986). A word such as *nongrammaticality*, which is formed at two different strata – stratum I for *-ity* suffixation, and stratum II for *non-* prefixation – is represented in Inkelas’s theory as consisting of two prosodic domains, the inner one spanning just *grammaticality*, the outer one spanning the whole word. Thus, in Inkelas’s view, or in the earlier view of Sproat (1985), there are clear parallels between words and phrases.

### ***3.3 Morphology across several components***

So let us assume that morphological structure is correctly thought of as being distributed over several components such that there is a syntax-like – “word-syntactic” – representation as well as a prosodic-phrase-like – “word-phonological” – representation. One is then tempted to ask the question as to whether there is any reason to assume that word syntax is really handled in a separate component of the grammar from phrasal syntax? Similarly, is there any reason to assume that word phonology obeys different principles, and must therefore be separated, from phrasal phonology? Simply put, could word syntax be just (a part of) syntax? And is there any reason to make a categorical split between lexical and postlexical phonology?

The major thesis of Sproat (1985), and subsequently of Lieber (1992) (see also e.g. Walinska de Hackbeil 1986), was that the syntax of words is properly a part of syntax, and that there is no reason to draw a categorical distinction between lexical and postlexical phonology. (Note that Fabb 1984 had previously made the somewhat more modest claim that *some* affixation, including derivational affixes such as *-ness*, were added in the syntax, but he stopped short of claiming that all morphology could be subsumed under other components of the grammar.) Sproat attempted to show, for example, that the properties of process nominals such as *destruction* or *categorization*, which had previously been considered to be wholly lexical constructions (cf. Chomsky 1970), could be derived from more general principles of syntax and semantics, given certain assumptions about the properties of the affixes involved. It is fair to say that Sproat's (1985) and Lieber's (1992) views have not gained wide acceptance, though it is equally fair to say that the reasons for insisting that morphology is a separate component from the rest of the grammar have not always been well considered; see my review of Lieber (1992) in Sproat (1993) for some discussion.

(Of course, it needs to be noted that there is a rather basic assumption that must be made before one can even begin to consider a thesis such as that of Sproat (1985): namely, that words can be broken down into morphemes in a more or less item-and-arrangement fashion. Obviously, in a theory such as Anderson's (1992) "A-morphous" morphology, where words are nearly always viewed as being constructed by the application of morphological rules, and where atomic segmentable morphemes have no status, one cannot even begin to make the assumption that word syntax should be considered to be merely a particular type of syntax. The same conclusion follows from Beard's (1995) *Lexeme-Morpheme Base Morphology*: in this model, only content morphemes have separate lexical entries. Function morphemes, including all affixes, lack separate lexical entries, being introduced rather by word-formation rules, much as in previous theories such as Matthews 1972 and Aronoff 1976. By contrast, Sproat's (1985) theory is based solidly upon the assumption that all morphemes, including affixes, have lexical entries, as proposed by Lieber (1980).

### 3.4 Other consequences: clitics

The treatment of clitics in the framework of Sproat (1985, 1988) and Marantz (1988) is quite analogous to their treatment in *Autolexical Syntax*. Let us consider again the English clitic *'d*. In the theory of Sproat (1985, 1988), this clitic would have a representation such as that in (21), where the left-hand portion of the entry says that phonologically *'d* is a suffix, and the right-hand portion claims that syntactically it is a verb:

(21) 'D = <-*d*, 'D<sub>v</sub>>

The same Mapping Principle account as was given for bracketing paradoxes such as *unwiser* also extends to examples such as (3a). The syntactic structure would be essentially the same as that assumed in Sadock's theory, given previously in (3a), and repeated here for convenience in (22a). The Mapping Principle, plus the associative property of the linear ordering operator  $\sim$  allows the desired phonological representation in (22b). Furthermore, since 'd is phonologically specified as a suffix, and therefore must attach to something to its left in phonological representation, the structure in (3b) is actually forced.

- (22) (a) [He [<sub>VP</sub> 'd [<sub>VP</sub> have [<sub>VP</sub> done it]]]]  
(b) [he $\sim$ -d] . . .

So, as we can see, the account given for morphological bracketing paradoxes also extends to clitics. Put slightly differently, simple clitics can be viewed as an instance of the same kind of syntax–phonology mismatch as bracketing paradoxes such as *unwiser*.

## 4 Summary

In this chapter we have considered two approaches to morphology that are at once rather similar, yet quite different. The similarities lie in the fact that both consider interactions between modules of the grammar, and in particular, the mapping between those modules, as crucial for understanding the place of morphology in the grammar. However, on one view the morphology stands as a fully-fledged module with its own set of principles, whereas on the alternate view the morphology is split across other components of the grammar, and is more or less absorbed into them.