

## Morphemes and morphological structures

Today we look at the sort of structures that go into building words. But are these structures real? Do morphemes exist?

### 1 Morphological structures

- One of the primary contentions of morphology is that the order in which elements are put together is important.
  - The order in which morphemes combine has *semantic* consequences.
  - The order in which morphemes combine is *constrained by the morphemes themselves*.
- The order in which morphemes combine results in their having structure.
  - The central goal for today will be to discuss these structures and the properties that they have.
  - We will look at evidence that morphemes combine to create word-internal structure, how words derive their properties from that structure, and look at some alternatives to morpheme-based theories that deny internal structure to words.

This is sometimes referred to as MORPHOTACTICS.

#### 1.1 An example

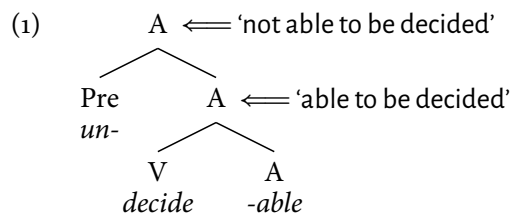
- Take the example from the reading: *undecidable*
  - It is composed of (at least) three morphemes, *decide*, *un-* and *-able*.
  - The prefix *un-* means ‘not’ and the suffix *-able*, when attached to some verb V, means something like ‘able to be V-ed’.
  - Combined, their meaning is something like ‘not able to be decided’
- We could imagine that morphemes in complex words are simply tacked on one after the other, the only thing mattering being the linear order they come in.
  - That would mean that the only thing that should matter in *undecideable* is the order: *un < decide < able*.
- But it is important here that the word does not mean ‘able to be not decided’. The meaning of *un-* must somehow scope over the meaning of *-able*.
  - This suggests that *decide* and *-able* form a unit together that *un-* negates.

The symbol ‘<’ means *precedes*.

In other words, *un-* must negate the meaning of *-able* in this word.

- This coincides nicely with independent facts about these morphemes.
  - While it seems that *-able* can combine with just about any verb, *un-* does not combine with verbs.
  - This means that there is no word \**undecide* – it's not even a **potential word**.
- These facts together suggest the word has a specific structure: *decide* and *-able* combine first, forming a new base to which *un-* attaches.

There is another prefix *un-* that combines with some verbs that signals a reversal of an action denoted by the verb.



We'll talk a bit more about the labels in the tree when we discuss the notion of Head.

- The structure reflects the order in which morphemes have been combined.
  - As in syntax, we represent this structure with a tree diagram.
- These diagrams contain several relevant pieces of information:
  - The root node shows the grammatical category of the whole word.
  - It contains the **HEAD** responsible for determining the category.
  - The word-internal combinations that produce possible words and their meanings.
- As with syntactic trees, we assume that these structures are binary branching; *i.e.*, we combine two elements at a time.
  - It is worth considering why we make this assumption.
- We want to employ simplest way to create morphological structure that respects what we know about those structures.
  - On the assumption that morphology is a combinatory system, it follows that structures must be at least binary branching, otherwise you would not be combining anything.
  - The system is recursive, in so far as the output of one morphological rule can serve as the input to another.
  - As we saw above, the resulting structure is hierarchical.
- It follows that we must be able to combine *at least* two elements in order to create recursive, hierarchical structure.
- But are *n*-ary branching structures possible (for  $n > 2$ )?
  - *A priori* there is no reason we have to be limited to two binary branching structures.

Remember that the **ROOT** is the highest, undominated node in the tree.

The following discussion is based on Hornstein et al.'s (2005, Sec. 6.3.3) discussion of binary branching in syntax.

- But we should try to make do with only the properties that are conceptually necessary to explain linguistic data.
  - Unless we find evidence for structures that can't be explained with binary branching, there is no reason to propose a more complicated operation that combines more than two elements at a time.
- There are a few phenomenon that pose challenges to binary branching, including **PARASYNTHESIS**, which requires two morphemes to attach to a base at the same time.
    - We'll return to this issue when we discuss derivation in a couple weeks.

Notice this is an argument about theoretical parsimony. Here the motivation is about trying to build the simplest theory possible that can explain linguistic data. This is just Occam's Razor.

## 1.2 Ambiguity

- Further evidence that linear order does not determine the meanings of morphologically complex words comes from **MORPHOLOGICAL AMBIGUITY**.
- We might imagine in a case like *undecidable* above that the order does matter and that the English prefix *un-* simply negates everything that comes after it.
- A particularly striking case of this is the Spanish word *inutilizable*, discussed in the reading, which means either 'able to be made useless' or 'not able to be made useful'.

### (2) *inutilizable*

in- útil -iza -ble

un- useful -ize -able

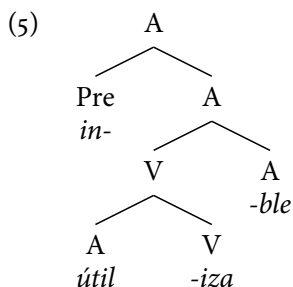
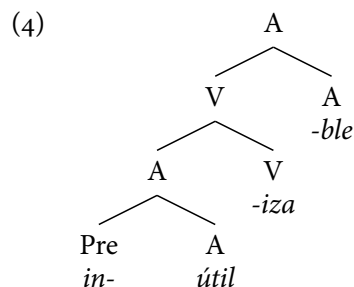
'Not able to be made useful' or 'able to be made not-useful'

- The word is composed of the following four morphemes:

- |        |                      |    |                               |
|--------|----------------------|----|-------------------------------|
| (3) a. | <i>útil</i> 'useful' | c. | <i>-iza</i> 'make Adj'        |
| b.     | <i>in-</i> 'not'     | d. | <i>-ble</i> 'able to be V-ed' |

Notice that for both meanings, the meanings of the individual morphemes must basically be the same.

- In this case, it is the attachment of *in-* that is responsible for the ambiguity.
  - *In-* combines with adjectives to negate them.
  - *Útil* is an adjective, so *in-* may combine with it to create *inútil* 'useless', which may subsequently combine with the prefixes.
  - However, we can also combine *útil* with the other affixes first to create the adjective *utilizable* 'able to be used'
  - Since this is also an adjective, *in-* can combine with it too.
- In other words, there are two possible structures that underlie the linear order *in < util < iza < ble*:

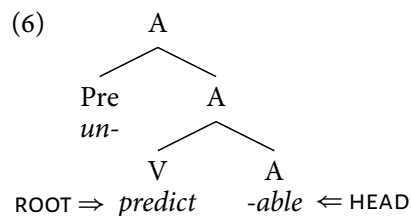


If *in-* weren't a prefix but, rather, a suffix, there would be no ambiguity because the affix would show up in different positions in each word.

- If the linear order of morphemes were what determined the meaning of a word, then there should be only one meaning to this word since there is only one order.
  - Assuming words have internal structure permits us to understand why this word has two meanings.
  - It is, in fact, two distinct words composed of identical morphemes in the same linear order, but combined in different ways.

## 2 Heads

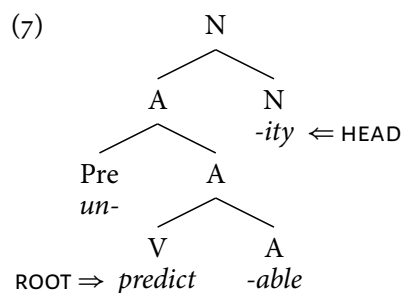
- Another piece of evidence that supports the hypothesis that words have structure is the phenomenon of **HEADEDNESS**.
  - Typically, a single morpheme seems to have a privileged grammatical role within a complex word.
  - This privilege falls out from structural properties of the word.
- Take an example like *unpredictable*. This word is an adjective, and that is determined by the suffix *-able*:



- Notice that the root of this word, *predict*, is a verb.
  - The meaning of *predict* is still apparently contained within the meaning of *unpredictable*.
  - However, the grammatical (*i.e.*, syntactic) properties of *predict* are not the same as *unpredictable*.
  - The morpheme responsible for determining the category of the word is the **HEAD**.

It's probably possible to break down *predict* into *pre-* and *-dict*, but that's tangential.

- If we add the suffix *-ity*, the word becomes a noun, inheriting the properties of the suffix *-ity*.
  - The word ceases to be an adjective and becomes a noun.
  - Thus, the head of this word is the suffix *-ity*, and *-able* is no longer the head.



- Some students find this notion of head confusing when coming from syntax, but the term has a similar use across disciplines.
  - In both cases, the head determines the grammatical properties of some linguistic element.
    - In syntax, this element is the phrase.
    - In morphology, this element is the word.
  - It's important to remember that the **ROOT** does not determine the grammatical properties of a word when there is a distinct head.
    - The root and the head *can* be the same element in some cases.
    - In derivationally simplex words (words without derivational suffixes), the root and the head will be the same element.
    - As we will see below, some prefixes don't change category, so when one of these is the only affix, the root will be the head.

In both cases, the head determines the category.

This is where I think the confusion comes from. The root can feel intuitively like the centre of a word and often occurs deeper in the structure like a syntactic head.

## 2.1 Properties of heads

- Heads do three things in a word:
  - (i) It determines the category, as discussed above.
  - (ii) It determines the semantics of the word.
  - (iii) It determines the inflectional properties of the word (in many cases).
- We've seen of (i) so far; see (6), (7), but also (1), (4), and (5).
- Property (ii) is just the property of derivational affixes that they impart meaning. The head plays a key role in determining the semantic properties of a word.
  - For instance, both *selectable* and *selective* are adjectives derived from *select*.
  - However, each has different meanings, presumably do to the different semantic properties of the affixes *-ive* and *-able*.

You should recognize (i) and (ii) as being related to the properties of derivational morphology.

- The third property has to do with the inflectional properties of the word.
  - Take, for instance, the English verb *do*, which has an irregular verb conjugation paradigm.
  - When this verb is the head of a more complex verb, like *redo*, the irregular conjugation carries over into the complex verb.
  - The same can be seen in a pair like *go/forego*.

(8) *Irregular conjugations of do and redo:*

	<i>do</i>		<i>redo</i>	
	Irregular	Regular	Irregular	Regular
<b>Past</b>	<i>did</i>	* <i>doed</i>	<i>redid</i>	* <i>redoed</i>
<b>Past participle</b>	<i>done</i>	* <i>doed</i> /* <i>doen</i>	<i>redone</i>	* <i>redoed</i> /* <i>redoen</i>

(9) *Irregular conjugations of go and forego:*

	<i>go</i>		<i>forego</i>	
	Irregular	Regular	Irregular	Regular
<b>Past</b>	<i>went</i>	* <i>goed</i>	<i>forewent</i>	* <i>foregoed</i>
<b>Past participle</b>	<i>gone</i>	* <i>goed</i> /* <i>goen</i>	<i>foregone</i>	* <i>foregoed</i> /* <i>foregoen</i>

- This is true of compounds, too:

- (10) a. *child* + PLURAL → *children* / \**childs*  
 b. *schoolchild* + PLURAL → *schoolchildren* / \**schoolchilds*

I represent abstract morphemes here and below with small caps.

- Inflectional properties are, in fact, more reliable than semantic properties.

- Recall from last time that derivational morphology can lead to words with non-compositional meanings.
- For instance, a case like *understand* does not seem to contain any of the meaning of its head *stand*.
- However, *understand* has the same irregular past tense conjugation as *stand*, indicating that *stand* is the head.

This is true across Germanic; cf. German *stehen/verstehen* and Swedish *stå/förstå*.

*Give* and *forgive* are also comparable here.

- The position of inflection also tells us about what the head of a compound is. If compound is inflected, it is the head that is typically inflected:

- (11) a. *schoolchild* + PLURAL → *schoolchildren*, \**schoolschild*, \**schoolschildren*  
 b. *dropkick* + PAST → *dropkicked*, \**droppedkick*, \**droppedkicked*

I got a surprising 230 hits when I searched 'droppedkicked' on Google

- As you might have inferred from this discussion, inflectional affixes are never themselves the heads of a word.
  - A head determines the category and semantics of the word it's the head of.
  - Since inflection doesn't determine category or semantics, and since inflection is determined by the head, inflectional affixes cannot be heads by definition.

## 2.2 The position of heads in a word

- In English and other Germanic languages, there is a strong tendency for the head to be the rightmost derivational element in a word.
- This means that the rightmost derivational suffix or the rightmost element in a compound is usually (but not always) the head.
- The rightward placement of heads has occasionally been promoted as a strong universal tendency, but there are cases where right-headedness is not observed.

See, e.g., Williams 1981.

### 2.2.1 Heads in non-compounds

- One peculiarity of heads in English and many related languages is that they are seldom, if ever, prefixes.
- Although all prefixes in English are derivational, few of them changes the category of the word they attach to.

Though, a LIN102 student pointed out to me last year the example of *en-*, which can derive verbs from adjectives and nouns (*enlarge, entomb*).

#### (12) Some English prefixes:

Prefix	Change	Examples
<i>anti-</i>	N → N	anti-hero, anti-depressant
<i>de-</i>	V → V	de-activate, de-mystify
<i>ex-</i>	N → N	ex-president, ex-husband
<i>in-</i>	A → A	in-competent, in-complete
<i>un<sub>1</sub>-</i>	V → V	un-tie, un-lock, un-do
<i>un<sub>2</sub>-</i>	A → A	un-happy, un-fair, un-intelligent

- One way of looking at these is that, since they don't change the category and don't change the inflectional properties of the words they attach to, they cannot be heads.
- This is why, in the cases above, prefixes have been labeled as 'Pre' in the trees. They don't seem to carry any categorial or inflectional information of their own.

### 2.2.2 Heads in compounds

- Looking at a list of English compounds, for instance, we can see that the rightmost element usually determines the category of the compound.

(13) Adj + Noun – <i>blackberry</i>	(16) Adj + Verb – <i>dry clean</i>	(19) Adj + Adj – <i>red hot</i>
(14) Noun + Noun – <i>bookcase</i>	(17) Noun + Verb – <i>spoon feed</i>	(20) Noun + Adj – <i>nationwide</i>
(15) Verb + Noun – <i>wanderlust</i>	(18) Verb + Verb – <i>dropkick</i>	(21) Verb + Adj – <i>feel-good</i>

- However, some languages and families utilize left-headed compounds. A well-known case are compounds in Romance languages:

(22) a. *English*:

wolfman

b. *Italian*:

uomo lupo  
man wolf

c. *Spanish*:

hombre lobo  
man wolf

d. *French*:

homme-loup  
man-wolf

Interestingly, the 'normal' English word, *werewolf*, from Old English *werwolf* man-wolf is in the Romance order.

- There is also the difficult problem of **EXOCENTRIC COMPOUNDS**, where neither word in a compound seems to function as a head.
- These are especially common outside English; here are some examples from Spanish:

(23) *Exocentric compounds in Spanish*:

a. *lavaplatos*

lava- platos  
wash plates  
'dishwasher'

b. *matamoscas*

mata- moscas  
kill flies  
'fly swatter'

c. *paraguas*

para- aguas  
stop waters  
'umbrella'

- These do not behave like the compounds we see above.
  - In contrast to the left-headed compound in (22c), the leftmost words in these compounds do not contribute their grammatical properties to the compound.
  - In all three cases, the rightmost element is a (plural) noun, but the resulting compound doesn't denote some sort of that thing (*e.g.*, a dishwasher is not a kind of plate).
- But it's clear that these are composed of separate words joined together.
  - The meanings of the words are, in fact, part of the resulting compound.
  - It's just neither one seems to function as the head.

### 3 Alternatives to morphemes

- In our discussions, we have been making the assumption that words can be decomposed into smaller meaningful units called **MORPHEMES**.
  - Theories of morphology that accept the existence of morphemes are classed as **ITEM-AND-ARRANGEMENT (IA)** theories.
  - Morphemes are the items, and the rules of morphology (be they lexical or syntactic rules) arrange the items into words.



- This hypothesis is broadly assumed, but there are alternative approaches to morphology that deny the existence of morphemes.
- There are reasons for wanting to do this. It solves problems that IA approaches have trouble with.
  - Remember from last time that one of the criteria for determining whether some phonological string is a morpheme is that it be *isolable*.
  - There are several morphological phenomena where we don't find isolable material.
  - Nonetheless, these phenomena do the same things that morphemes appear to do in other contexts.
- I'll introduce a couple of alternatives below, focusing on inflectional phenomena at first.

I'd reckon it's probably the most common view nowadays.

### 3.1 Item-and-process

- One group of theories that denies the existence of morphemes are *ITEM-AND-PROCESS (IP)* theories.
  - Rather than proposing that the lexicon is a list of morphemes, IP approaches assume that the lexicon is a list of roots called *LEXEMES*.
  - The assumption is that roots are the elements that distinguish one word from another.
- These lexemes are subject to various functions (the processes) that change their forms.
  - On this view, then, affixes are not mappings between form and meaning (*i.e.*, morphemes) but marker that a word has undergone a certain process.
- Take a regular verb like *play*. The past tense form is *played*.
  - We can assume the past tense form is the result of some function *PAST* that operates on the lexeme *play*.
  - The addition of *-ed* is a phonological marker that this operation has applied.

(24)  $PAST(play) \rightarrow played$

- Where these theories do particularly well is in explaining irregular morphology.
  - For example, the past tense of *drive* is *drove* (and not *\*drived*). There is no (visible) past-tense suffix.
  - On an IP approach, we need only specify that marker of the *PAST* function is to change the vowel in the base.

This falls under the rubric of *REPLACIVE MORPHOLOGY*, where some part of the base is replaced with different phonological material.

(25) PAST(*drive*) → *drove*

- Now compare this to what you would have to do on an IA approach.
  - As with the IP approach, we must say something about how and why the vowel changes in the base.
  - Presumably we will still need a past tense morpheme of some sort – but it cannot have the form *-ed* that it has in *played*.
  - Even though there is no isolable past tense morpheme on the surface, we are forced to conclude that *-ed* has a null allomorph (written  $-\emptyset$ ).

(26)  $\sqrt{\text{drive}} + \text{PAST} \rightarrow \text{drove}-\emptyset$

- The oddity here (the thing that some people feel uncomfortable with) is that under the IA approach the vowel change doesn't directly reflect the change in tense.
  - The tense information is encoded by a null affix you never hear.
  - That null affix conditions an allomorphic change in the base, but that is not actually the tense-bearing element.
- That said, we know that verbs can condition the form for the past tense suffix, so it seems fair to assume that some roots could condition a null affix under an IA approach.

This criticism is old; Nida (1948: 415) comments that it seems 'strikingly contradictory to treat overt distinctions as meaningless and covert distinctions as meaningful'.

(27)  $\sqrt{\text{burn}} + \text{PAST} \rightarrow \text{burn}-t$

(28)  $\sqrt{\text{hurt}} + \text{PAST} \rightarrow \text{hurt}-\emptyset$

The *-t* suffix is not phonologically predictable here.

- Furthermore, we know that the past suffix induces changes in the verb root as well:

(29)  $\sqrt{\text{leave}} + \text{PAST} \rightarrow \text{lef}-t$

- It looks (to my eye, anyway) like cases like *drive/drove* are just the result of these individual allomorphic changes happening at the same time.
  - The root *drive* conditions the form of the past tense suffix.
  - The past tense suffix conditions the form of the verb.
- So it is not obvious that IP approaches do better here than IA approaches.
  - IA theories require more mechanics to do the same thing.
  - But those mechanics are independently necessary, anyway.

- It's worth noting that IP theories can handle derivational morphology as well. Anderson's (1992) A-morphous Morphology is a well-known example.

The whole book is available on Jorge Hankamer's website [🔗](#).

- This theory includes derivational rules (*i.e.*, processes) that related different words to each other.
- These derivational rules derive new words and add a phonological marker as they do so.

- (30) a.  $decide \xrightarrow{Rule\ 1} decidable$   
 b.  $decidable \xrightarrow{Rule\ 2} undecidable$

- This sort of case allows for phenomena like what Anderson labels truncation.
- In the case of *demonstrate*, adding the suffix *-able* yields the form *demonstrable* (rather than the regular \**demonstratable*), dropping the *-ate* material in the original verb.

This is very similar to SUBTRACTIVE MORPHOLOGY on Anderson's analysis; see Section 3.3.1.

- (31)  $demonstrate \xrightarrow{Rule\ 1} demonstrable$

- The rule adding *-able* to verbs can be coded in such a way so as to delete the suffix *-ate* in certain words before adding *-able*.

### 3.2 Word-and-paradigm morphology

- **WORD-AND-PARADIGM (WP)** theories also reject the hypothesis that words are composed of morphemes and assume that only words are stored in the lexicon.
- Unlike **IP** approaches, **WP** theories do not assume that words undergo processes. Rather, words are part of **PARADIGMS**.
  - A paradigm in the traditional sense is just a set of all the forms of a word.
  - These are often represented as a chart, organized by features; see (32).
- On an approach like this, though, a paradigm is a formal object containing information about each word.
  - A paradigm can be thought of as a matrix containing the forms a word has, organized by feature.
  - Different forms of the word appear in different cells in the matrix.
- Thus, the forms *played* and *drove* are associated with the past tense in the paradigms for *play* and *drive*, respectively.
- Languages with more complex morphology have more complex morphology, like the Icelandic noun:

Regular morphology is generated in paradigms by analogy to other paradigms.

- (32) *Declension of the noun Icelandic hús 'house':*

	Singular		Plural	
	Indefinite	Definite	Indefinite	Definite
<b>Nominative</b>	hús	húsið	hús	húsin
<b>Accusative</b>	hús	húsið	hús	húsin
<b>Dative</b>	húsi	húsinu	húsum	húsunum
<b>Genitive</b>	húss	hússins	húsa	húsanna

- For instance, if the word *hús* ‘house’ occurs in a definite DP that is the object of a preposition that assigns dative case, we look for the [DEFINITE, PARADIGM, SINGULAR] part of the paradigm.
  - Thus, in this context, *hús* will be realized as *húsinu*.
  - This gives rise to the name **REALIZATIONAL MORPHOLOGY**.
- These are full forms that are determined by the properties of the word itself – there are no morphemes, only words and their forms.

Not all realizational approaches to morphology reject the notion of morpheme. Distributed Morphology is an item-and-arrangement approach that is also realizational (Bobaljik 2017).

### 3.3 Other challenges for IA approaches

- There are other cases that are challenging for **item-and-arrangement** approaches to morphology.
- In addition to the vowel changes we saw above, other forms of replacive morphology are also (on the surface) hard to account for.
- For instance, English distinguishes several nouns and verbs by stress placement:

(33) *Stress placement in nouns and verbs:*

Orthography	Noun $\sigma\sigma$	Verb $\sigma'\sigma$
<i>insult</i>	[ˈɪn.sʌlt]	[ɪn.ˈsʌlt]
<i>protest</i>	[ˈpɹoʊ.tɛst]	[pɹɔ.ˈtɛst]
<i>record</i>	[ˈɹɛ.kɔɹd]	[ɹɪ.ˈkɔɹd]

- There’s a clear, systematic difference here, but there is no phonological string that can be isolated and associated with being a noun or verb.
  - An IA approach would have to say that there is a null affix that determines what the stress of the base is.
  - There are affixes that shift stress in the base, like *-ity*, so as long as you are willing to accept a null affix there should be no issue here.

I think one could argue that the stress pattern is itself the morpheme, one that has a special suprasegmental phonological realization.

*toxic* [ˈtɑk.sɪk]  
*toxicity* [tɑk.ˈsɪ.sɪ.ti]

#### 3.3.1 Subtractive morphology

- A more troublesome issue is so-called **SUBTRACTIVE MORPHOLOGY**, where a piece of the base evidently disappears.
- The go-to example is French gender inflection. While many feminine forms appear to have an underlying consonant coda, the masculine forms lack this.

See the Wikipedia article on Disfixes

(34) *Gender inflection on French adjectives:*

Feminine		Masculine		Gloss
IPA	Orthography	IPA	Orthography	
bɛl	<i>belle</i>	bɔ	<i>beau</i>	‘beautiful’
fʁwad	<i>froide</i>	fʁwa	<i>froid</i>	‘cold’
ɡʁɔs	<i>grosse</i>	ɡʁɔ	<i>gros</i>	‘large’
nuvɛl	<i>nouvelle</i>	nuvo	<i>nouveau</i>	‘new’

- In these cases, there is no obvious candidate for an isolable morpheme that distinguishes masculine from feminine.
  - The rule seems to be something like ‘remove the final consonant of the feminine form to form the masculine.’
  - Some cases, like *belle~beau* might involve suppletion, but this is complicated by similar changes in, e.g., *nouvelle~nouveau*.
- IP and WP approaches do not have trouble with these cases because they are not tasked with identifying a morpho-phonological string that corresponds with each gender specification.
  - An IP approach will simply delete the final consonant in the masculine form.
  - A WP approach will simply look for the correct form in the paradigm.

You can easily codify this as a rule in an IP theory.

### 3.3.2 Cranberry morphemes

- Another issue we discussed somewhat last time are the case of **CRANBERRY MORPHEMES**. These are named after the word *cranberry* because the word evidently contains a meaningless, non-recurrent element *cran*.

- (35) a. strawberry  
 b. gooseberry  
 c. raspberry  
 d. cranberry

- Under an IA theory, *berry* is isolable, recurrent, has a meaning, and can be replaced in some words (*straw man*, *goose bump*).
  - *Berry* is clearly the head of all these words (all describe a kind of berry).
  - The elements left behind are also morphemes in English (though their meanings are mostly lost in the compounds).
  - ...except in *cranberry*. It only does one thing: It tells you that the kind of berry is a cranberry.
- If you really think having a meaning is diagnostic of being a morpheme (which is the traditional way of thinking), this looks really strange.
  - However, I would argue that it does contribute information, since it distinguishes cranberries from berries in general.
- If, however, you believe that morphemes only have meaning in the context of other morphemes, this looks like less of an issue.

Again, this is something that DM should allow for.

### 3.3.3 One-to-many mappings

- Another issue comes from apparent cases where a single affix represents information sometimes spelled out by multiple affixes.
- Last time, we saw a couple cases of Spanish verbal inflection. It is clear that we can distinguish separate tense and agreement affixes.

(36) a. <i>Spanish</i> hablábamos:	b. <i>Spanish</i> hablarémos:
habl- -á -ba -mos	habl- -a -ré -mos
ROOT -TH -TNS -AGR	ROOT -TH -TNS -AGR
speak -IMPF -1PL	speak -FUT -1PL
‘We were speaking.’ (imperfect)	‘We will speak.’

- However, there are also forms where these the tense and agreement affixes are combined:

(37) a. <i>Spanish</i> hablaste:	b. <i>Spanish</i> hablaron:
habl- -a -ste	habl- -a -ron
ROOT -TH -TNS.AGR	ROOT -TH -TNS.AGR
speak -PST.2SG	speak -PST.3PL
‘You spoke.’	‘They spoke.’

- WP approaches don’t have much trouble with these:
  - In a WP theory, look in the appropriate part of the paradigm.
- In IA approaches, you have to have an explanation for why sometimes the tense and agreement affixes are separate and why sometimes a single affix expresses both.
- IP approaches can actually have trouble with (37) because they assume there is one rule for tense and another for agreement.

### 3.4 Summary

- None of the problems discussed in this section are insurmountable for IA approaches (which we will continue to pursue).
- But it’s good to know where the problems are and what sorts of problems you might encounter while trying to do research in morphology.

Not to mention, you have squibs to write, and topics abound in these corners.

## Terms

**cranberry morpheme** An element that appears in a morphologically complex word that appears to be a morpheme but has no meaning of its own and appears in no other word.

**exocentricity** A property of some compounds where no word in the compound serves as the head.

**head** The morpheme in a word that determines the grammatical properties of that word, including its syntactic category and its inflectional properties.

**IA** item-and-arrangement

**IP** item-and-process

**isolability** It must be possible to identify a morpheme and separate it from the rest of the word (Fábregas and Scalise 2012).

**item-and-arrangement** A class of morphological theories that assumes morphemes exist (*i.e.*, that they are listed in the lexicon) and that they are mappings between form and meaning.

**item-and-process** A class of morphological theories that denies that morphemes exist. They assume that elements in the lexicon are operated on by various operations that change the forms of words.

**lexeme** A element of the lexicon in IP theories. These can be words, but in some formulations they are stems.

**morpheme** The basic elements manipulated by the morphology. On the traditional definition, they are pairings between form and meaning, and the smallest meaningful linguistic unit.

**morphological ambiguity** A phenomenon that occurs when the same set of affixes can be combined in different ways, giving rise to different morphological structures.

**morphotactics** Rules (and the study thereof) about what morphemes may appear adjacent to one another.

**paradigm** A set of all of the forms of a word, usually arranged by features or properties that each form has.

**parasyntesis** A derivational phenomenon where prefixing and suffixing must occur simultaneously.

**potential word** A word that can be generated by morphological rules but is not included in the lexicon of a language.

**realizational morphology** Categorizes approaches to morphology where the forms of morphemes are determined by features or properties that those morphemes have.

**replacive morphology** A morphological phenomenon where some phonological subpart of a base is replaced with some other material.

**root** The irreducible core of a word, with absolutely nothing else attached to it (Katamba and Stonham 2006). The core meaning of the word is usually associated with this element.

**subtractive morphology** A morphological phenomenon where some subpart of the base is deleted or removed. Sometimes called DISFIXATION.

**word-and-paradigm** A class of morphological theories that assumes morphemes do not exist. They assume only words are stored in the lexicon and that different word forms of every word are associated with different parts of a paradigm.

**WP** word-and-paradigm

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