

1. Distributed Morphology: reminder

Recall: "Distributed" because things that used to all be collected in the Lexicon are spread around:

- a) Features to be manipulated by the syntax are the equivalent of the Minimalist "lexicon" -- the "numeration" consists of morphosyntactic features drawn from that list.
- b) Vocabulary items spelling out bundles of those features are a separate list, that fills in the representations with phonological information after the syntax.
- c) The non-morphosyntactic sound/meaning connections -- meanings of roots and roots in construction with other things -- are listed in the Encyclopedia.

2. The reply to the "what's a word" question:

- a) phonological words are determined by a combination of the morphophonological properties of vocabulary items -- whether they're affixes or not -- and the machinations of the syntactic and morphological components -- sticking otherwise separated features together.
- b) semantic words are determined by the Encyclopedia -- meanings of roots in construction with other things, idioms, etc. ("caboodle"). There's no distinction between special meanings within phonological words and without them. (i.e. 'outside' them). ☺

3. Differences between DM and Lieber or DiSciullo & Williams' Word Syntax (or, for that matter, HPSG & LFG's lexicons)

- a) for all of the above-named theories, phonological words have a special status: they are the input to the syntactic component and they *provide all the morphosyntactic features that the syntax will manipulate*: they CANNOT be underspecified.
- b) all of the above-mentioned theories will have a generative component internal to the lexicon which will build phonological words -- for Lieber, e.g., it's subcategorization frames on the affixes. For DM, on the other hand, the syntax builds the internal structure, and the affixes just spell it out -- there's only one generative component in grammar.

4. Different ways of realizing the syntactic terminals:

No clusters of terminals. Nodes are spelled-out as words

Simplest case: one-to-one mapping between morphosyntactic features in terminal nodes in the syntax and word-sized vocabulary items (ultra-isolating languages like Vietnamese):

- a) [CompP COMP[intelligent]] → more intelligent

No clusters of terminals, Vocabulary Items are words and affixes, P-words an accident of the morphophonology

Next-to-simplest case: one-to-one mapping between morphosyntactic features in terminal nodes in the syntax and affix-sized vocabulary items ('leaner' clitics, whose position is entirely transparent syntactically):

- b) [IP [DP you] [I [I are] [VP ...VP] I] IP → you're
- c) [DP [DP the dog in the manger] [D' [DGEN] [NP puppies] D'] DP
→ the dog in the manger's puppies

Clusters of terminals created in the syntax by head-to-head movement, realized by VIs that are affixes (typical case, although words could in theory also go in here).

Next-to-next-to-simplest case: one-to-one mapping between morphosyntactic features in terminal nodes in syntax that have been combined via syntactic head-to-head movement and affix-sized Vocabulary Items. (note: where the heads are linearly adjacent after the syntax is linearized, as in head-final languages with serial/light verb constructions, it may be difficult to distinguish between this and the previous case). (Agglutination)

- d) [NumP [NUM *pl*+CAT_i] [NP t_i]] → cats
- e) [vP [DP John] [v' [VP [DP Hanako] [V t_i] VP] [vCAUS+GO_i] v'] vP] → ik-ase

Post-syntactic morphological operations on terminals which mess things up:

Clusters of terminals created in the morphology by Merger

Next-to-next-to-next-to simplest case: one-to-one mapping between morphosyntactic features in terminal nodes that have been combined via Merger in the Morphology (not in the syntax) and affix-sized Vocabulary Items. (Again, may be difficult to distinguish between this and the previous case where two heads are involved).

- f) [CompP [COMP+smart]] → smarter
- g) [TP [VP [v[WALK+past]....]]] → walked

Clusters of terminals created in the morphology by Insertion of an extra terminal

Next-to-next-to-next-to next-to simplest case: addition of a syntactically (and semantically) irrelevant terminal node/feature by the morphological component to meet some morphophonological template. Theme vowels, e.g.:

- h) [v SPEAK] → [v [SPEAK+theme]] → *parla-* (Italian *parl+a* in the imperfect indic.: Spencer 215)
- g) [T *past*] → [T [V+*past*]] → did

A single terminal created from multiple terminal in the morphology by Fusion

(Usually happens after Merger or Head Movement): next-to-next-to-next-to next-to next-to simplest case: many-to-one mapping between many morphosyntactic features that have been fused into a single node in Morphology and one Vocabulary Item:

- i) [v [WALK+[3sg, present]]] → walks
- j) [Adj [BIG + [masc, singular, dat]]] → bol'shomu (Russian *bol'* + *shomu*)

An extra terminal created in the morphology by Fission after Fusion

Most complicated case: a single terminal node including a whole batch of features is split into two (which must remain adjacent), by "Fissioning" off one of the features. (This is one way in which non-canonical mappings can arise). (Cf. Arabic person inflection, Noyer)

A terminal simplified via Impoverishment

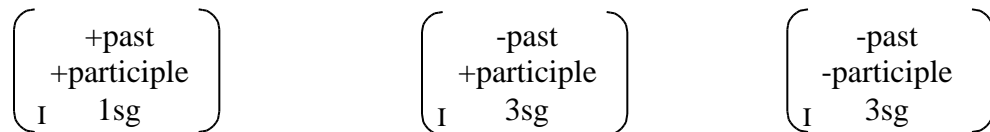
This can happen in any of the above cases: in situations where you'd expect a certain form to appear conditioned by a feature you have reason to believe the syntax provided, it might be the case that the Morphology deleted that feature, possibly because the representation was too complex. This is one way in which syncretism can occur. We'll see Sauerland's use of this type of rule shortly.

5. Vocabulary Insertion and Rule Blocks:

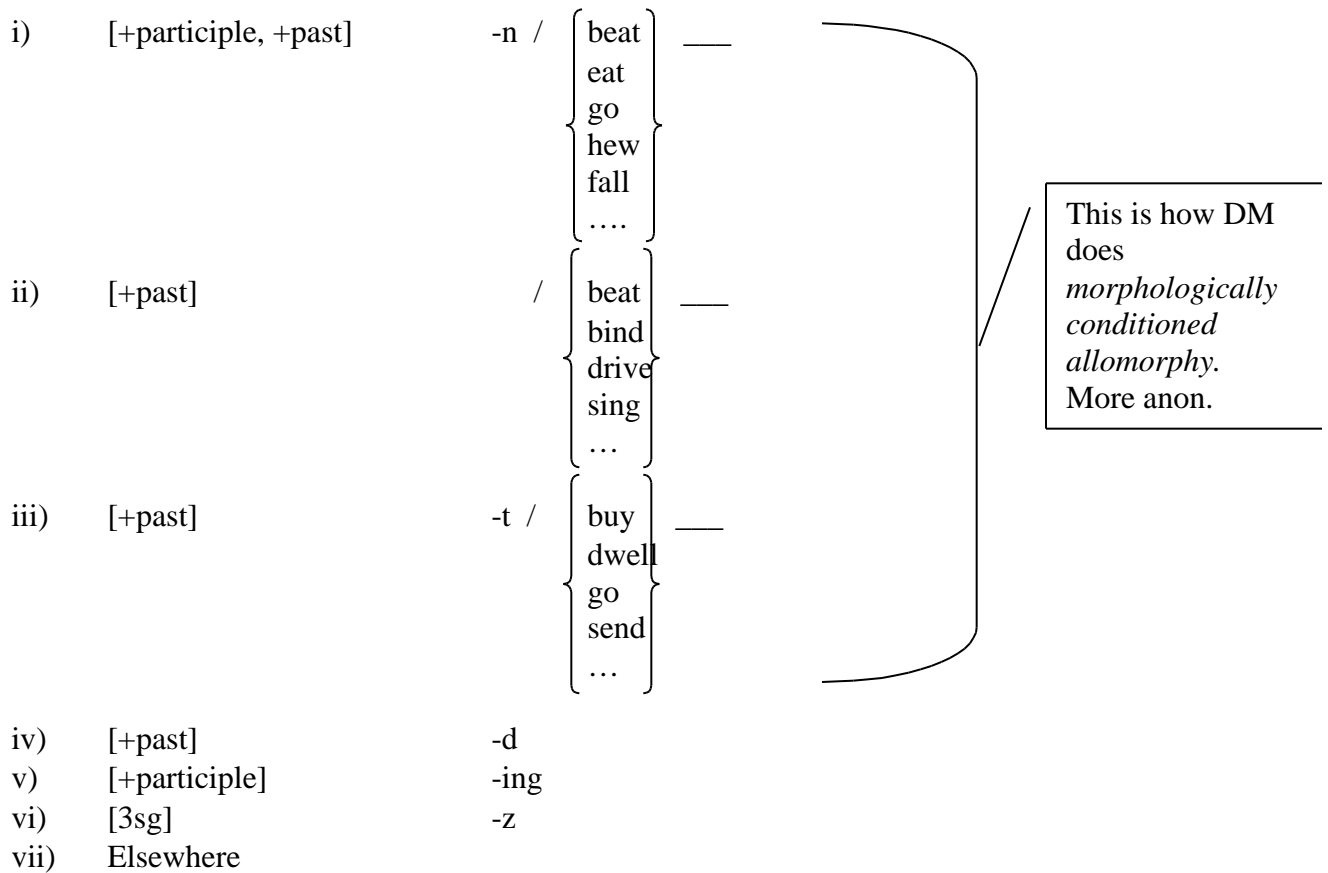
- a) every bundle of features in a node gets spelled out by Vocabulary insertion
- b) Vocabulary Items compete for insertion into nodes
- c) "Rule Blocks" are epiphenomenal — that is, you don't have to stipulate which rules/Vocab Items go into certain blocks. Rather, all the forms that spell out a subset of the features of a given node are the possible candidates for spelling it out, and the most specific one will be the one that actually spells it out.

Consider the set of Vocabulary Items that spell out the features of the I that attaches to V in English. (Parts of this analysis I don't care for, but let's take it at face value for now).

- d) *I* can be specified for tense (\pm past), aspect (\pm participle), person,& number of subject (via Agree). So, e.g., you could imagine that any of the following are possible feature bundles under I:



The vocabulary items which spell out features that represent a subset of the possibilities for I are shown in (i-viii) below. (Note, e.g., that the vocabulary item /-z/ that spells out "pl" in English isn't listed, because its features will never coincide with the features in I).



They're ordered by specificity, where featural specificity counts but so does environmental conditions -- so "bought" will block "buyed".

Complaint: Notice, crucially, though, iv)'s got to be ordered before v), so that when [+past, +participle] are found in the same node, it gets spelled out as *-d* rather than *-ing*. But the [+participle] part of the account is very weird: participles don't get their features from Tense, but from Aspect or something. Plus it doesn't account for the homophony between the perfective participle, which they apparently assume must have a [+past] feature, and the passive participle, which clearly doesn't have to have such a feature. A much more likely account, seems to me, is one involving a separate functional projection for participial morphology, like "AspP" or similar.

A better example: A modified version of H&M's treatment of Georgian:

NB: I really apologize: pp. 118-119, which present the Georgian are missing from the coursepack papers! I reconstructed it but this may be wrong -- definitely consult a complete copy of H&M before you cite this!

Georgian transitive agreement paradigm:

with 3rd person object (3ACC, 1 or 2 NOM)(X *draws* 3rd person)

- | | | | |
|----|-------------------------|----|------------------------------|
| a. | v-xatav
'I draw him' | b. | v-xatav-t
'we draw him' |
| c. | -xatav
you draw him | d. | -xatav-t
you(pl) draw him |
| e. | xatav-s
he draws him | f. | xatav-em
they draw him |

with 3rd person subject (3NOM, 1 or 2 ACC)

- | | | | |
|----|---------------------------------|----|---------------------------------|
| g. | m-xatav-s
he draws me | h. | gv-xatav-a
he draws us |
| i. | g-xatav-s
'he draws you(sg)' | j. | g-xatav-t
'he draws you(pl)' |
| k. | xatav-s
'he draws him' | l. | xatav-s
'he draws them' |

with 1st & 2nd person subjs. and objs: (1NOM 2ACC or 2NOM 1ACC)

- | | | | |
|----|------------------------------|----|--|
| m. | g-xatav
'I draw you(sg)' | n. | g-xatav-t
'we draw you' (sg or pl) or 'I draw you (pl)' |
| o. | m-xatav
'you(sg) draw me' | p. | gv-xatav
'you (sg) draw us' |
| | | q. | gv-xatav-t
'you (pl) draw us' |

So: the eight affixes of this paradigm, as analyzed by H&M, in no particular order, are:

- i) -s
- ii) -t
- iii) -en
- iv) g-
- v) m-
- vi) gv-
- vii) -
- viii) v-

Quick exercise: before turning the page, try to figure out a set of feature specifications for these affixes which will give the right affixed form, assuming specificity-based competition.

Assume:

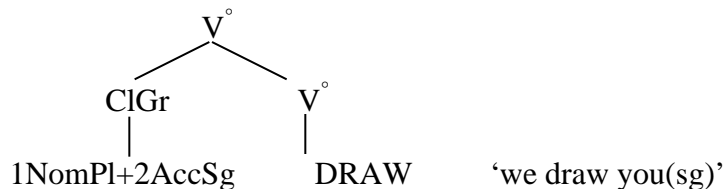
a) AgrS and AgrO have been *Fused* into one giant blob of agreement features ('clitic group'), which has been attached to the verb stem by, say, clitic movement or head-to-head movement:

b) you can refer to person, number and case.

c) there are two *positions-of-exponence* (POE) on the Georgian verb, a prefix and a suffix. Once the prefix position is spelled out by the most specific form, it is discharged—you can't concatenate prefixes. However, there is still a suffix position available, which can be filled if the correct features remain in the morphosyntactic derivation for one of the suffixal VIs to be inserted.

(For H&M, these two POEs illustrate *fission* of the clitic cluster into two separate morphemes (terminal nodes), which each, naturally, get their own spell out. For our purposes, though, let's say that the single POE licensed by the clitic cluster is split into two separate POEs, but the whole bundle of clitic cluster features is competing for insertion into both positions. We could just assume that it's a morphological template associated with the verb stem, however. Works just as well for this case, since the VIs are marked as prefixal and suffixal).

e.g.



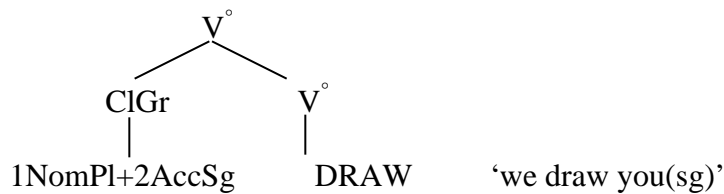
DRAW is spelled out as -*xatav*- , i.e with 2 positions of exponence (POE). Then the features of the clitic cluster will be spelled out by the most specific available combination of affixes available from the set above, to give *g-xatav-t*.

(NB: it doesn't matter if one or the other POE doesn't get spelled out).

My solution: (not necessarily H&M's, as I say, the pages are missing!)
 (presented in order of specificity)

- i) m- 1SgAcc
- ii) gv- 1PlAcc
- iii) -en 3PlNom
- iv) g- 2Acc
- v) - 2Nom
- vi) -s 3Nom
- vii) v- 1
- viii) -t Pl

So, e.g., for the form above:



- 1) spell out the root (in → out, according to cyclicity, cf. Sauerland, Bobaljik)

[1NomPl+2AccSg [___-xatav-___]]

- 2) All of these forms are competing for 2 POEs.
 Looking down the list of features, the most specific form which can spell out any of these features is g-, which spells out 2Acc:

[1NomPl+2AccSg [g-xatav___]]

- 3) None of the other prefixes can compete any more because the POE is gone. But the suffixes can compete: the only one relevant is -t, which spells out Pl

[1NomPl+2AccSg [g-xatav-t]]

(verify that it works for a few forms, e.g. xatav-s, 'he draws them' and 'gv-xatav-t', 'you(pl) draw me').

Sauerland (1994): "The Late Insertion of Germanic Inflection"

- Argues for fully specified syntax, underspecified morphology, i.e. 'interpretive', or 'late insertion' morphology
- Argues that a derivational level of 'paradigms' is unnecessary
- Uses Impoverishment crucially

1 Syntax is fully specified, morphology underspecified

→ usually paradigms contain a few many-to-one matches — many different morphosyntactic features are spelled out by a single morpheme.

→ called *syncretism*.

→ example: English verbal morphology:

1.	present		past	
	sg	pl	sg	pl
1	like		1	like-d
2				
3	like-s		3	

Apparently, *likes* is specified for [+3, +sg, +present], and it sort of looks like *like* really doesn't care what person or number it's associated with—*like* is underspecified. But, need more: If *like* were just unmarked for person and number, then **He like Mary* would be a grammatical sentence of English, just like *He likes Mary*.

Conclusion, of course: the Blocking Principle, or Elsewhere Principle, is in effect, according to which, if a more specified form exists, it must be used in preference to a less specified form.

So: morphological underspecification. But: syntactic full specification?

2. 1st argument for full feature bundles in the syntax: full agreement triggered even when morphology is underspecified:

- a. The sheep jump over the fence.
- b. The sheep jumps over the fence.

In a), *The sheep* must have a [+pl] feature, and in b), *The sheep* must have a [+sg] feature, otherwise the agreement pattern is unexplained. Morphology of *sheep* is underspecified.

A similar argument: homophony of past tense forms in *hit* and *hit*:

- c. You hit the hay at 8 o'clock, didn't you?
- d. You hit the hay at 8 o'clock, don't you?

3. 2nd argument for full feature bundles in the syntax: the trickle-down theory of feature agreement:

- (i) In German Det+Adj+N sequences, the Det, Adj, and N all agree.
- (ii) The most economical way to get them all to agree is to say that agreement happens as a cross-check of two pairs: (N+Adj), and then (Adj+D). (or (N+D) and then (D+Adj), or (Adj+N) and then (N+D)... whatever).

(iii) If morphological underspecification reflected syntactic underspecification, then the “middle” element in the agreement-checking sequence, when unspecified, ought to be happy agreeing with two morphologically distinct elements.

(iv) So, e.g, if the sequence is N checks Adj, and then Adj checks Det, if Adj is syntactically underspecified, then it should be able to agree with an N and a Det which differ in the value for the unspecified feature:

- a. *Das grün-e Frau ist angekommen
 the_{NEUT} green_{NEUT/FEM} woman_{FEM} is arrived

ditto for the other possible pairwise checking sequences:

- b. *Ein grün-er Männchen ist angekommen
 a_{MASC/NEUT} green_{MASC} manlet_{NEUT} is arrived

- c. *Der grün-en See ist warm
 the_{MASC} green_{FEM} lake_{MASC/sea}_{FEM}

4. A putative argument *for* syntactic underspecification:

German case-matching requirements: When a wh-word, heading a relative clause is subject to ‘case clash’, the only grammatical spell-out is one in which the two case-forms for the wh-word are homophonous:

- a. Der Junge iBt was auf den Tisch kommt
 The boy eats what_{NOM/ACC} on the table comes

- b. *Der Junge mag wer/wen ihm zu essen gibt
 The boy likes who_{NOM/who}_{ACC} him to eat gives.

- c. Der Junge mag wen seine Eltern nicht mögen
 The boy likes who_{ACC} his parents not like

But: assuming one DP can get case twice violates a crucial assumption of case (and checking) theory! So this can’t be a case of syntactic underspecification licensing two case-checking operations!

Sauerland’s suggestion: this is really a PF phenomenon. There are really two coindexed wh-words, one heading the relative and one forming it, which receive separate cases (“the boy eats [what [what on the table comes]] or similar). One copy must be deleted at PF, and there is a strict phonological identity condition on PF-deletion. The deletion operation fails in (b) above, hence its ungrammaticality. It will succeed under case-identity (c) and when the two forms are phonologically identical.

5. Given a requirement of syntactic full specification, what can a lexicalist do?

- 1) (very memory-intensive)
→ list each syncretized realization of a feature group separately, as a homophone
- 2) (choice of most morphological theories): a level of Paradigm Structure
→ create the possible specific forms with the inflections you have
like-s [+3, +sg, +pres]
like [+pres]
like+d [+past]
→ generate a paradigm based on the feature space defined in the lg

	pres	past
1sg		
2sg		
3sg		
1pl	likes	
2pl		
3pl		

→ fill in the empty blocks of the paradigm with the less specified forms,

	pres	past
1sg		liked
2sg		liked
3sg		liked
1pl	likes	liked
2pl		liked
3pl		liked

	pres	past
1sg	like	liked
2sg	like	liked
3sg	like	liked
1pl	likes	liked
2pl	like	liked
3pl	like	liked

→ add the features of each block to the filled-in forms, creating the necessary homophones

→ off to the syntax, projecting structure

This implements the Blocking Principle in a lexicalist theory: the pre-filling of a paradigm slot in Paradigmatic Structure prevents a less-morphologically-distinct form from getting that feature bundle.

8. The Mirror Principle: another reason to think that morphology cares about syntax (but not so much vice versa):

typological tendencies in verbal morpheme order (Bybee 1985)
 [person-number-gender] [mood] [tense] [aspect] STEM

if the syntax actually puts these features together, e.g. by head-movement, no need to stipulated that the morphology should mirror the syntax — it automatically will do so.

9. Wunderlichs & Fabri’s Fusion condition: again syntax dependent—neighbors in the above sequence of features tend to be fusable, cross-linguistically.

10. Sauerland: is homophony possible within a single paradigm? i.e can the same form spell out two different feature bundles in a single paradigm?

Consider the E. Low German adjectival inflection paradigm below:

	sg			pl
	masc	neuter	fem	
Nom/strong	-a	-et	-e	-e
Obl/strong	-n	-et	-e	-e
Nom/weak	-e	-e	-e	-n
Obl/weak	-n	-e	-e	-n

Acquisition hypothesis: is kid takes the set intersection of all the environments which contain a single affix. When the intersection is non-null, s/he assumes that the affix realizes the intersecting feature values. When the value is null, however, s/he assumes that the affix is the default. In the E. German paradigm, *two* affixes turn up with null intersections — *-n* and *-e*. Consequently, one of those must really be homophonous.

<i>n</i> :	+strong -nom, +masc, -neut, -f, -pl	<i>e</i> :	+str, +nom, -masc, -neut, +f, -pl
	-strong +nom, -mas, -neut, -f, +pl		+str, +nom -masc, -neut, -f, +pl
	-strong, -nom, +masc, -neut, -f, -pl		+str, -nom -masc, -neut, +f, -pl
	<u>-strong, -nom, -masc, -neut, -f, +pl</u>		+str, -nom, -masc, -neut, -f, +pl
	=		-str, -+nom, +masc, -neut, -f, -pl
			--str, --+nom, -masc, +neut, -f, -pl
			--str, --+nom, -masc, -neut, +f, -pl
			--str, -nom, -masc, +neut, -f, -pl
			<u>--str, -nom, -masc, -neut, +f, -pl</u>
			=

As you can see, these forms are arranged in such a way that there can be no elsewhere form. There are [+] and [-] values for both *-e* and *-n* for every feature in the paradigm: gender, number, case, and declension class: there is *-n* in the masculine strong and weak oblique, and weak *-n* in the plural nom and oblique weak cases. Of the four kinds of features at issue, there is an *-n* associated with every value: there's an *-n* with strong and one with weak; an *n-* with a gender value and an *-n* without (in pl), an *n-* with nominative and an *n-* with nom case... So there is no way to underspecify any single feature and make *-n* a default; you'd get at least one cell wrong. If you allow homophony, however, there's an easy treatment:

masc, Sg, Nom, strong	a
neuter, Sg, strong	et
Obl, masc	n
weak, pl	n
elsewhere	e

In contrast, consider the Mod. German strong inflection in X below. Take the intersection of all the features belonging to *e*, *r*, *m*, and *n*:

Strong

		+gender			-gen
		masc	neut	fem	pl
+dir	nom	r	s	e	e
	acc	n	s	e	e
-dir	gen	n	n	r	r
	dat	m	m	r	n

Weak

		+gender			-gen
		masc	neut	fem	pl
+dir	nom	e	e	e	n
	acc	n	e	e	n
-dir	gen	n	n	n	n
	dat	n	n	n	n

n keeps its hold on everything it had and spreads into many new cells. *e* loses ground in the pl, but spreads into the [+neut] and [+nom+masc] cells.

It becomes clear that *n* is the elsewhere form, and that what has happened in shifting from the strong to the weak paradigm is simply *impoverishment*: the weak forms are impoverished, for gender—now there's no gender distinction.; they're impoverished for case and gender in [-dir], impoverished for [+dir] in the pl—that gives the dist. of . Then *e* will show up everywhere in the [+dir] cases except in pl, and *n* will spread all over the [-dir] cases and into the [+dir] pl. (see p. 31)