

A Tale of Two Levels

- I. Recall *birm*, *rebirmable*, *rebirmize* and **rebirmity*...
- II. SPE: various types of boundaries: +, #, =;
- a. the distinction motivated by their different interaction with phonological rules;
 - b. treated as “real” segments whose presence was manifested only indirectly in the interaction with rules.
- III. Siegel (1974): Class I (+-boundary) and Class II (#-boundary) affixes (following discussion in Spencer (1991)):
- (1) Class I suffixes: +ion, +ity, +y, +al, +ic, +ate, +ous, +ive
Class I prefixes: re+, con+, de+, sub+, pre+, in+, en+, be+
Class II suffixes: #ness, #less, #hood, #ful, #ly, #y, #like
Class II prefixes: re#, sub#, un#, non#, de#, semi#, anti#
 - (2) Class I: trigger and undergo phonological processes:
 - stress shift: *productive* *productivity*
 fragile *fragility*
 - trigger other non-automatic phonological processes, i.e. processes dependent on the type of morpheme involved:
 - Trisyllabic Shortening (*fragile* – *fragility*)
 - Spirantisation (*democrat* – *democracy* vs. *cat* - *catty*)
 - Nasal Assimilation (*inedible*, *illegal*, *impossible* vs. *uneatable*, *unlawful*, *unruly*).

Class II: phonologically inert:

 - stress-neutral: *productiveness*
 fragileness
 - undergo only automatic phonological processes – those which apply irrespective of the morphological structure of the word.
 - (3) Arguments for the distinction:
 - (a) semantic differences (recall Aronoff’s discussion of #ness and +ity);
 - (b) Class I affixes attach to free as well as bound morphemes: *possible* – *impossible*, [ept] – *inept*, [ert] – *inert*, [leg] – *legal*; Class II affixes can only attach to free morphemes (derived or underived words);
 - (c) **Affix Ordering Generalization**: typically the order of affixes is subject to certain restrictions, not all combinations are allowed; when affixes from both classes appear in the same word, Class I affix is always closer to the root than Class II affix:

<i>*hope#ful+ity</i>	<i>*ir+ re# fill</i>	<i>able</i>	<i>*late #ness +ic</i>	<i>*happy#ness+al</i>
root II I	I II root ?		root II I	root II I
- Siegel (1974): the two classes of affixes constitute two separate “blocks”; non-automatic phonological processes apply in between, i.e. after Class I affixation and before Class II affixation. The two “blocks” came to be known as **levels** and the whole idea as the **Level Ordering Hypothesis**:
- | | |
|---------------------|----------|
| Class I affixation | Level I |
| stress rules | |
| Class II affixation | Level II |

IV. What about compounding? Allen's (1978) **Extended Level Ordering Hypothesis**:

- with respect to phonology, components of compounds behave like Class II affixes;
- compounds accept neither Class I nor Class II affixes:
passion fruit **com+passion fruit* **passion fruit #y*
- they accept regular inflection

conclusion: compounds constitute a separate level:

Level I (+affixation)

stress rules

Level II (#affixation)

Level III (compounding)

Level IV (regular inflection: #ing, #s, #ed)

note 1: some more semantic differences - recall Bauer's discussion of the numerous possible readings of not established compounds when they appear outside their context.

note 2: the advantage of the notion of level ordering over the SPE-type boundaries: we avoid the complications that arise when we treat boundaries as segments.

V. Levels and the theory of Lexical Phonology

- Kiparsky (1982) adopts the Level Ordering Hypothesis
Level I (+affixation; stress rules, other Level I phonological rules)
Level II (#affixation, compounding, regular inflection: #ing, #s, #ed, Level II phonological rules)
- Halle and Mohanan (1985) prefer the extended version:
Level I (+affixation; phonology)
Level II (#affixation; phonology)
Level III (compounding; phonology)
Level IV (regular inflection: #ing, #s, #ed; phonology)
- phonological rules apply between each WFR, not, as in Siegel's and Allen's models, between each block/level; hence the above modifications.
- Bracketing Erasure Convention (Kiparsky 1982:140): Internal brackets are erased at the end of each level.

VI. Problems with level ordering

Problem one: limited explanatory power of the hypothesis; it explains the ordering of stress-sensitive and stress-neutral affixes with respect to one another (when they appear in one word) but it fails to account for the class/level-internal restrictions. A bit of mathematics (Fabb 1988):

▪take 43 most frequent English suffixes and combine them into pairs – you get 1849 possible pairs;

▪take into account category-related restrictions – only 663 pairs are left;

▪take into account the Level Ordering Hypothesis – and you end up with 459 pairs;

▪only 50 combinations are attested...

Conclusion: there must be some other restrictions on affix ordering. Fabb (1988) gives four patterns:

▪some suffixes do not attach to an already suffixed form;

▪some attach outside one particular suffix;

▪3 out of 43 attach freely (obeying the category label restrictions)

▪some (6 out of 43) attach outside some but not all suffixes

Problem two: too strong constraints:

- there are cases that contradict the AOG: *organ#iz+ation* (Aronoff (1976)), words ending in *-abil+ity* and *-ist+ic* (discussed by Arnonoff and Sridhar (1983, 1987);
 - the so-called bracketing paradoxes, e.g. *ungrammaticality*: level ordering forces the structure [un [[grammatical]ity]] - but then *un#* is forced to attach to a noun, whereas it attaches to adjectives only;
 - inflection should never appear inside compounds, yet it does: *parks commissioner*, *systems analyst*, *the contents page*, *skills work*, *Common Errors box*;
 - some compounds do accept Class II affixes (based on discussion of Selkirk (1982) in Carstairs-McCarthy (1992)): *pickpockethood*, *un-self-sufficient*, *non-weather-related*, *mis-backdate*.
 - mutually feeding relationship vs. the phonology (based on Kaisse and Shaw (1985)):
- contrary to Allen's (1978) observations, #-affixation and compounding in English are in a 'mutually feeding relationship', i.e. you can add a strong affix onto a compound, and you can use an affixed form in compounding:

[air] [condition] – re [air condition]
[neighbour] hood – [neighbourhood] gang

- in one dialect of English the rule of Stem-Final Tensing (SFT) applies to compounds but not to #-suffixed forms; if we follow Kiparsky's idea about the organization of levels, we get the picture below, with SFT applying to both *happiness* and *city hall*:

	happy	hall	
Level I	-----	----	
Level II	[[happy]ness]	[[city] [hall]]	
	SFT

It has been proved, however, that SFT does not affect *happiness*; the division of morphology into levels cannot account for this fact.

- Well, maybe the Extended Level Ordering Hypothesis could solve the problem:

	[happy]	[hall]	
Level I	-----	----	
Level II	[[happy]ness]	----	
	[happiness]	----	BEC
Level III	[happiness]	[[city] [hall]]	
	-----	SFT

Here the application of SFT to *happiness* is blocked – at the point when the rule is “active” *happiness* is already a “monomorphemic” item (thanks to the operation of the Bracketing Erasure Convention).

- Now, think back to the ‘mutually feeding relationship’ in which #-affixation and compounding are supposed to be... The facts of phonology enforce that compounding and #-affixation constitute two separate levels; the ‘mutually feeding relationship’ in which these two processes are suggests that they are on the same level.

▪Halle and Mohanan's (1985) solution: a LOOP – some items can “go back” and undergo morphological operations on the preceding level.

▪This would nicely account for the behaviour of SFT, regular inflection inside compounds, the #-affixation of compounds and unexpected yet attested orderings of Class I and Class II affixes.

▪But there are still some problems:

- the possibility of loops weakens the predictive power of the theory: look at the ungrammatical examples in (3c) – for some reason these items cannot take a loop; why this restriction?

- it is the PRECEDING level; what about compounds with Class I suffixes: [transformational grammar]ian, [set-theore]tic? (these appear to belong to Class I: consider stress placement on *grammar* and *theory*)

VII. *rebirmity revisited

Actually there are two ways of approaching the ungrammaticality of this word:

1. [**[re [birm]] ity**] – the Class I affix *-ity* is attached after Class II affix *re#*; if the theory is modified as above, i.e. if we accept loops between levels, this argument loses its explanatory power.

2. [**re [[birm]ity]**] :

- *re#* attaches to verbs
- *+ity* creates nouns
- Kiparsky (1982) argues that V-to-N is a level I process (it affects stress, as in [torment]_V – [torment]_N), but N-to-V is a level II process (it does not affect stress: [pattern]_N – [pattern]_V)

These facts suggest that *rebirmity* should be grammatical, derived in the following way:

	[birm] _A	
Level I	[[birm]ity] _N	
	[birmity] _N	BEC
Level II	[birmity] _N	
	[[birmity] _N] _V	N-to-V conversion
	[re [[birmity]]]	

However, native speakers reject *rebirmity* as a possible English word; the theory makes wrong predictions, which means it is inadequate, if not completely wrong, and some other arguments are needed in order to account for the ungrammaticality of *rebirmity*.

VIII. Conclusion

Although developed to explain certain facts, the Level Ordering Hypothesis is not a very powerful tool, and encounters serious problems almost everywhere, even with explanations it aimed to provide.

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