

Integrating Roots and Grammatical Morphemes into syntactic trees

Joseph Emonds, Palacky University, Czech Republic
November 13, 2017, Masaryk University Roots Workshop

- Q1: Are there Roots? (How are they defined?) YES (?)
Q2: What is the role of features of Roots in Syntax..... NONE

A good model of vocabulary storage and insertion into syntactic derivations needs to make a distinction between distinct kinds of morphemes.

- There is an attested dichotomy between "lexical" and "grammatical/ functional" categories
- This dichotomy is sharp, not a continuum.

- (1) *one/ won; back (P) / back (N), may/ May, would/ wood, not/ knot, etc.*

I CLOSED vs. OPEN classes of root vs. functional/ grammatical morphemes

Exhaustive lists of classes of grammatical morphemes.

- (2) a. Jackendoff's (1977) Determiners in Det:
the, this, these, that, those, every, each, all, both, a(n) some, any, no, which, what, we, us, you
- b. Pronouns in Det with no N: *he, she, it, they, I, who* Total: 24
- (3) a. English modals in I possible with no agreement (includes a null 'present subjunctive' I):
will, won't, would, can, could, may, might, shall, should, must, need, dare, ain't, Ø
- b. Items in I with (mostly) irregular agreement:
is, are, am, was, were, do, does, did, don't, have, has, had Total: 26
- (4) Morphemes used to make plural cardinal numerals NUM (work by J. Hurford)
- a. Free: *zero, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, hundred, thousand, million, billion, trillion, zillion, dozen*
- b. Bound: *thir-, twen-, -teen, -ty, -score* Total: 24
- (5) Degree/ grading specifiers of adjectives:
very, so, too, enough, rather, quite, this, that, how, real, pretty, damn, darn, awful, mighty, hella, more, most, less, least, -er, -est Total: 22

Apart from the functional heads in (2)-(5) above, the "lexical" categories also have at most 20-30 grammatical members. This means, "items with no features other than those that function in syntax."

- (6) English grammatical verbs V/v, which are not roots (except in idiomatic combinations);
- a. Free: *be, have, get, do, go, come, need, dare, make, let, see, hear, watch, bring, take, say, help, ?want*
- b. Bound derivational: *-en, -ize, -ify, -ate, Ø* ("conversion") Total: 22+
- (7) English grammatical nouns N/n, not roots (except in idiomatic combinations):
- a. Free: *one(s), stuff, other(s), fact, place, time, way, people, man*
- b. Bound derivational: *-self, -thing, -ment, -tion, -age, -th, -ness, -ity, -t, -ist, -ism, -y, -ee, -ette, -er, -ess* Total: 25+
- (8) Functional/ grammatical categories are not Roots.
Roots can only be associated with these four "lexical head" categories: N/n, V/v, A/a, P/p.

Lexical categories can select different categories of phrasal sisters (N. Fukui and M. Speas).

- Thousands of) Nouns. Verbs. Adjectives. Hundreds of Prepositions (H. van Riemsdijk's work on Dutch)
- There are 3, at most 4, open class categories. (9) gives examples of P.

- (9) a. **Transitive P**:
in case of, in spite of, due to, out of, off of, up to, alongside, by means of, by way of, given, instead of, concerning, by virtue of, by dint of, according to, except for, ...
- b. **Intransitive P**: *outside, aside, overhead, ahead, aboard, upstairs, abroad, away, back, ...*
- c. Plus ordinary prepositions, to a total well over 50.

The distinction between roots and grammatical/ functional morphemes will be **empirically adequate only if it predicts or is consistent with the (mostly well known) empirical distinctions.**

II Properties distinguishing roots from grammatical morphemes

At least eleven distributional, semantic, and phonological properties divide the two types. (Notice that free vs. bound distinction is *not* a relevant distinction.)

- (10) Distinctions (i) semantic
(ii) formal
- (11) **Semantic distinction between roots and grammatical morphemes:**
- a. purely *semantic* features *f*
- b. *conceptual* (i.e. interpretable), grammaticalized (syntactic) features *F*
- (12) 3 examples of "purely semantic" root features *f*.
- a. Damage vs. destruction: *damage, harm, injure, hurt, mess up vs. destroy, ruin, wreck, total, disable*
- b. liquid nouns vs. solid nouns: *drink the aspirin, break the butter*
- c. Color: *dark, light turquoise/ rust vs. * dark, light iron/ fire*
- (13) 3 examples of "conceptual/ grammatical" features *F* for lexical heads.
- a. \pm ANIMATE
- b. GRADABLE for Adjectives
- c. STATIVE for Verbs
- (14) **Roots can be associated *only* with lexical heads and contain purely semantic features *f*. Grammatical morphemes have no purely semantic" features *f*, they have only *F*. Many interjections have no syntactic *F*, they have only *f*.**
- (15) **A model of vocabulary storage** reflects the presence/ absence of features *f* / *F*
- **Dictionary** (roots) : repository of items with *f*
 - **Syntacticon** (grammatical morphemes): repository of items with only *F*

III A Model of vocabulary insertion: Deep vs. Late insertion

Bottom up derivational model of recursive PDs (= phasal domains)

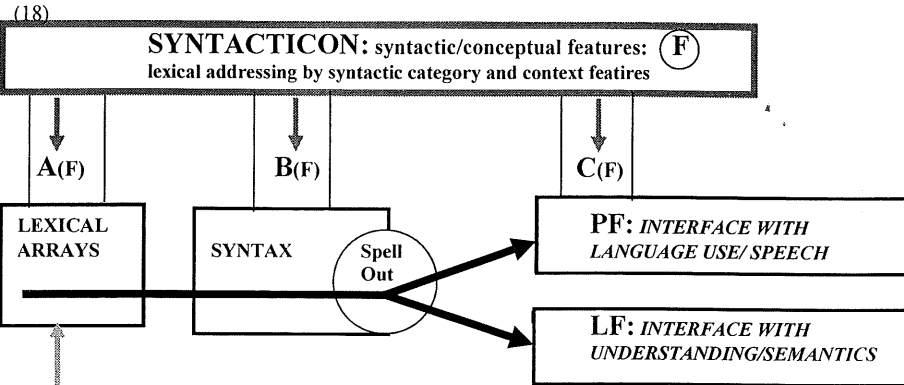
Think of PD₁ as some embedded clause or maximal nominal phrase, and of PD₂ as a higher or matrix clause.

- (16) ... [_{PD2} X - PD₁ - Y] ...

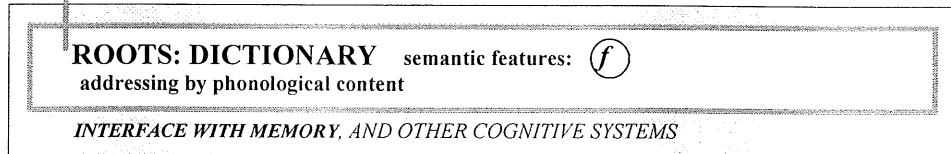
When a derivational phase on PD₁ terminates, PD₁ is ready for the LF interface, but not yet for PF.

(17) Steps in the phase of PD₂ (after PD₁ is processed and sent to the LF interface):

- **Deep or Phase-Initial Insertion.** Insert a **lexical head** of PD₂ into X-Y—often a **root**, but not necessarily. Such insertion might also include items besides heads.
Transformational derivation of PD₂, including possible raising/ control of items in PD₁,
- **Late Insertion.** Grammatical morphemes (not roots!), can now be inserted bottom up in (16).
 - **PF Insertion** into any unlicensed empty nodes remaining in PD₁. These are *invisible* in LF.
 - **Syntax Insertion** into empty nodes in PD₂. These are *visible* at LF, and PD₂ is now ready for the LF interface.



(19) What is the role of Roots?
What is the level of insertion of Roots?



Discussion of the handout Three levels of Insertion.

- PD₂ in all the trees is the highest NP.
- For the result nominals, there is no embedded PD₁.
- For the complex event nominals and the gerunds, the shaded VP and V' are the embedded PD₁.

(20) Distinctions between Roots and grammatical morphemes (Emonds (2000: Ch. 3 and 2015)).

	Syntactic properties:	Roots	Grammatical morphemes
i.	Grammatical categories which can spell them out	N, V, A, P	ALL
ii.	Items with PF features dissociated from their LF positions	NO	possible
iii.	“Late insertion” possible during syntax and at PF; see handout	NO	possible
Phonological properties:			
iv.	Items conform phonologically to “primary vocabulary” Example: Germanic uniform stress on initial syllable	NO	YES
v.	Bound right hand heads in compounds have inherent stress (careful vs. care-free; postman vs. post-man)	YES	NO
vi.	Phonetically zero morphemes possible. E.g. in lists (3) and (6).	NO	YES

Storage and processing properties:			
vii.	Interface with non-linguistic memory, psychology and culture	YES	NO
viii.	Open classes; hundreds / thousands of members (vs. closed classes with 2-3 dozen). Adults can coin neologisms.	YES	NO
ix.	Can have purely semantic features <i>f</i> not used in derivations,	YES	NO
x.	Processing look-up in terms of initial consonant clusters (“cohort theory” in psycholinguistic processing)	YES	NO
xi.	Full suppletion inside paradigms (go/went; bad/ worse)	NO (several languages)	possible

How does the model (17)-(19) relate to the empirical generalizations in Table (20) ???

- accounts for (i)	Roots (= open class items, the dictionary) only accessible for phase-initial insertion.
- explain (ii), (iii)	Dissociations (=Alternative Realizations) result from derivations, not from storage.
- accounts for (iv)	Since there are so many roots, phonology must diversify to increase their number.
- explains (v), (vi)	Obligatory grammatical heads are expected, so need no phonetic prominence.
- explains (vii),(ix)	The purpose of syntax is to relate stored psychology and culture, not to create them.
- accounts for (x), (xi).	The indices/ stored roots are underspecified phonological feature matrices. They are needed to make roots in trees pronounceable.

IV The ‘extra baggage’ of phonological and purely semantic features *f* on roots in derivations

- The indices of roots in pronounceable trees are *minimal specifications* of how to find the pronunciations.
- Integers are *not* minimal specifications. The set of integers contains a successor function, two closed operations of addition and multiplication, etc. These are not part of the language faculty.

Another name for a stored item’s index is ‘**classificatory matrix**’:

(21) “The more direct the relationship between the classificatory and phonetic matrices [the latter are directions for pronunciation, JE], the less complex—the more highly valued will be the resulting grammar.” (Chomsky and Halle 1968: 381).

- Since the feature/ category specification (including insertion contexts) of each grammatical formative is unique, pronunciations are just paired with them in the **Grammatical Lexicon/ Syntacticon**.
- Since the syntactic features of Grammatical Morphemes have meaning (in their canonical LF positions), there can easily be sentences that are fully interpretable, even though *they contain no roots*.

(22) *You can do that when I come back.*

Those people aren’t saying what we should bring with us today.

Some references

Anderson, Stephen (1982). Where’s Morphology? *Linguistic Inquiry* 13. 571-612.
 Aronoff, Mark (1976). *Word Formation in Generative Grammar*. Cambridge: MIT Press.
 Chomsky, Noam (1970). Remarks on Nominalization. In *Readings in English Transformational Grammar*. 184-221. Eds. R. Jacobs and P. Rosenbaum. Waltham: Ginn.
 Chomsky, Noam and Morris Halle (1968). *The Sound Pattern of English*. New York: Harper and Row.
 Emonds, Joseph (2000). *Lexicon & Grammar: the English Syntacticon*. Berlin: Mouton de Gruyter.
 --- (2004). How do we construct Convergent Numerations? *Theoretical and Applied Linguistics at Kobe Shoin* 7. 1-20.
 --- (2015). The Computational Lexicon. *English Linguistics*.
 Halle, Morris and Alec Marantz (1993). Distributed Morphology and the Pieces of Inflection. In *The View from Building 20*. Ed. K. Hale and S. J. Keyser. 111-176. Cambridge: MIT Press.