Semantic Domains for Syntactic Word-Building

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Abstract and Keywords

Event structure often appears to co-vary with verbal morphology and VP syntax. Thus theories of event structure interact with theories of the organization of the grammar. Some theories have posited that syntactic heads associated with the introduction of events are responsible for 'closing off' a domain of idiomatic interpretation, both below and above the word level. The traditional boundary between 'idiosyncratic' words and 'generated' sentences breaks down when one considers idiosyncrasy at the phrasal level such as idioms, on the one hand, and structure and compositional meaning within words, such as derivational morphology, on the other. This chapter introduces several current approaches to syntactic word-building, and then reviews different proposals for the semantic interpretation of syntactically-composed words. This background will be used to explore the different domains that have been put forth as delimiting the site for special interpretations, within which it is predicted we will find Apparent Compositionality Exceptions.

Keywords: compositionality, morphology, idioms, roots, lexical semantics

10.1 Introduction

ONE of the central questions in the theory of the organization of grammar centres on the balance between stored idiosyncratic information and generative structure building. Traditionally, idiosyncrasy has been primarily associated with words and morphemes, with sentences being viewed as compositionally interpreted structures. The balance between these two aspects of grammar is relevant to event structure, which appears to co-vary in part with the morphology of verbs and the syntax of the verb phrase. Some theories posit that much of the variation of inner aspect is in fact determined by morphosyntactic structure within the verb (see below on Borer 2005*b* and Ramchand 2008*b*), and some also posit that variation in argument structure is similarly structural in origin (see below on Hale and Keyser 1993 and Marantz 1997).

The traditional boundary between words and sentences breaks down when one considers idiosyncrasy at the phrasal level, such as idioms, on the one hand, and the availability of structure within words, such as derivational morphology, on the other. Thus, while Chomsky (1970) described a view whereby words can be derived in a specific lexical component of grammar which also stores idiosyncratic information (a 'lexicalist' approach), more recently many have proposed different ways of generating words within the (or a) syntactic component of grammar, leaving the lexicon (or some equivalent component) as a repository for storage purposes alone. This seems to be the simplest hypothesis, to divide these two domains such that there are two separate components of grammar: one which stores all idiosyncratic information, and another which generates all rule-governed structures from these idiosyncratic pieces. This is the strong view dubbed the 'single engine hypothesis' in Halle and Marantz (1993) (p. 266) and proposed as part of the framework of Distributed Morphology (DM). This hypothesis posits that syntax is the sole generative engine within language such that what has traditionally been viewed as 'morphological' structure is handled by the same mechanisms that produce sentential structure.[1]

Researchers working on morphology have found that there are connections between the morphological structure of words and the decompositional representations of lexical semanticists. That is, there appear to be subword constituents which correspond to subword meanings posited by semanticists. Further, it has been argued that this morphological structure is represented in the syntax proper. Baker (1988) argues that morphological complexity bears a close resemblance to syntactic complexity, and that the ordering of morphemes reflects their combination by 'incorporation', or head movement. Baker, following Marantz (1981), focuses on morphemes which appear to affect the argument structure of the words that they are part of. Subsequent work such as Kayne (1994) pursues a similar line of reasoning beyond the domain of morphemes which are 'grammatical function changing'.

The extension of these findings has been to posit that there may be syntactic complexity reflecting semantic decomposition even when there is a lack of overt morphological indication. Hale and Keyser (1993, 2002) take a more radical approach, proposing that even some apparently simple verbs should be syntactically decomposed, often with a noun at the core. Inspired in part by such work, Kayne (2008) proposes that all lexical (open-class) content belongs to the category N, and that all verbs are derived from nouns. Work on the structure of verbs in the framework of Distributed Morphology (Halle and Marantz 1993) has proposed an even more extreme view—that no verbs or nouns are atomic elements. This ties in with a semantic division of the root from other lexical material, as the hypothesis is that root material comes in as an independent syntactic element. Marantz (1997) argues that verbs are not primitive elements, but rather are composed of functional heads in combination with 'roots' which contribute lexical meaning. In essence, to be a verb is to be a functional verbal element, call it 'little *v*', alone or in combination with other heads modifying or in the complement of that *v*.

Approaches which adopt this type of syntactic approach to word-building offer an elegant view of the distribution of linguistic components in addition to accounting for a variety of empirical phenomena. Prima facie, however, they appear to be challenged by the difficulty of accounting for the rampant appearance of noncompositionality that has been observed at the word level. Lexicalist theories can resort to proposals that words derived in the lexicon permit noncompositional interpretations that are not available (as generally) at the syntactic level of derivation. Single engine theories, however, draw no such distinction. Thus a central question for any syntactic approach to word-building is how to account for this seemingly greater flexibility of interpretation for words. Although this phenomenon is often described as 'lexical noncompositionality', the approach taken by many theorists of syntactic word-building is to propose that (p. 267) these words are in fact compositionally derived; the 'trick' is that they demonstrate a special kind of compositionality which involves a great degree of polysemy or flexibility of interpretation, possibly similar to that found with idioms at the phrasal level. Thus I will coin a less biased term for words or phrases with this surface appearance of noncompositionality: Apparent Compositionality Exception or ACE.

Some examples of ACEs found at the lexical level are exemplified in (1) from Harley (2009).

(1)

a. edit-or-ial (opinion article)
b. class-ifi-eds (small newspaper advertisements)
c. institut-ion-al-ize (commit to a care facility)
d. univers-ity (institution of higher learning)

These examples appear to be noncompositional because the meanings indicated in parentheses do not seem to include the typical meaning of the root of the word. An editorial does not involve any 'edit' per se, nor do the classifieds pertain to a 'class', etc. The challenge posed is how to account for such idiosyncrasy in theories which predict compositionality at the word level.

In this chapter I will briefly review the basic assumptions of several current approaches to syntactic word-building to the extent that it is necessary to understand how they account for lexical ACEs (Section 10.2). In Section 10.3 I will review some of the proposals that have been put forth regarding the semantic interpretation of syntactically composed words. Equipped with this background, in Section 10.4 we can consider the different domains that have been put forth as delimiting the site for special interpretations.

10.2 Approaches to syntactic word-building

There are many approaches to syntactic word-building, most of which I cannot do justice to in this chapter which focuses more directly on the question of ACEs. Thus in this section I will provide brief summaries of the approaches which seem to have spawned their own industries, so to speak. These include Distributed Morphology (Halle and Marantz 1993), Structuring Sense Sense (Borer 2005*a*), L-syntax (Hale and Keyser 1993), and First Phase Syntax (Ramchand 2008*b*).

Although the citation years do not always accurately reflect their origins, these theories have been circulating for many years and have thus reached a certain level of empirical breadth and maturity. Other current approaches to syntactic word-building can also be found in Svenonius' (2012*b*) 'Spanning' and Adger's (2013) 'Syntax of Substance', both inspired by Brody's (2000) Mirror Theory, Julien (2002), Starke's (2009) 'Nanosyntax', and Kayne (2008).

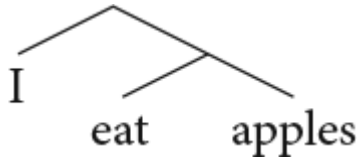
(p. 268) One thing that all approaches to syntactic word-building share is a notion that lexical (vs. functional) words are derived from or associated with a basic unit that contributes the core meaning. In some approaches this core is considered to belong to a syntactic category such as N, while others call it a 'root', sometimes indicated with a √ symbol. This root is associated in some fashion with a meaning and a form of a word, without the further specification that syntactic context provides. I will use the term 'root' in this informal sense, unless discussing a theory such as DM where the term has a more specific meaning. Across different approaches, the root serves to differentiate the meanings and forms of the words 'cat' and 'dog' which are otherwise the same in syntactic category (N) and share other properties such as being count nouns, etc. Given this notion of root, Ramchand (2008*b*) divides theories of syntactic word-building into two broad camps—those with 'naked' roots and those with 'well-dressed' roots. Naked root theories in the extreme (such as De Belder and van Craenenbroeck 2015) propose that roots are radically abstract and do not contain any internal specification as to the syntactic contexts they can appear in. Well-dressed theories posit roots which are 'dressed' with some properties that constrain their insertion contexts, such as syntactic category or aspectual features. There is no sharp dividing line between these two 'camps', but more of a difference in spirit, with some theories attempting to keep roots as naked as possible and others more freely adding features as needed. In this section I will first discuss the major proposals using relatively naked or abstract roots, and then those which add a greater amount of specification to their roots.

10.2.1 Naked roots

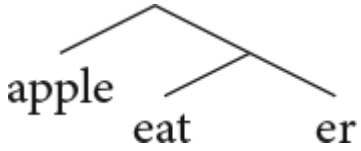
10.2.1.1 Distributed Morphology (DM)

In some theories of grammar, syntax and morphology are two distinct components of grammar, both generative. Thus (2) would be generated by syntax, while (3) would be generated by the morphology.

(2)



(3)



The ‘single engine hypothesis’ put forth by Halle and Marantz (1993) for the framework of Distributed Morphology (DM) posits that there is only one generative component of the grammar: syntax. The implication is that word-building is a syntactic operation, rather than a separate lexical operation. DM is a more general theory of morphology and its interaction with neighbouring domains of grammar. Thus the scope of the (p. 269) framework goes far beyond the concerns of this review. Here the focus will be solely on the ways in which this framework would account for ACEs. The key aspect of DM that concerns ACEs is the prediction that semantic composition should apply both ‘above’ and ‘below’ the word level. This in turn suggests the hypothesis that ACEs on both levels are parallel, and should receive a unified explanation.

As mentioned above, in DM, words are not built in the lexicon, but rather in the same fashion as phrasal constituents, in the syntax. Words are not atomic, but are built from roots, which constitute the atomic syntactic terminals providing the ‘lexical’ content. De Belder and van Craenenbroeck (2015) present a theory of roots which renders them radically ‘naked’. Generally, DM-style roots usually do not directly bear categories like ‘verb’ or ‘noun’ (see also Pesetsky 1995, Barner and Bale 2002, 2005, Borer 2005*a*,*b*). Rather, they seem to ‘join’ these syntactic categories when they combine with what are considered to be category-specific heads (or ‘categorizers’) in the syntax.[2] One such categorizer would be little *v*. For example, For example, Marantz (1997) argues that the verb *grow* and the noun *growth* are both derived from the root √*grow*, and thus the words are formally related, but neither is derived from the other. Such roots are identified by their phonological signature, or as in Harley (2014), an index, and are semantically related to one conceptual domain. The roots are Vocabulary Items (VIs) that are linked with meanings via the Encyclopedia. In Hebrew, for example, the VIs of roots are phonologically associated with consonant clusters that cannot be pronounced on their own, but are realized in different phonological forms that share encyclopedic meaning (as argued in Arad 2005).

10.2.1.2 Structuring sense via XS

Borer (2005*a*) proposes a theory which shares with DM the notion that roots are highly underspecified grammatically, and that many of what have been traditionally viewed as lexical properties are actually consequences of the functional structure that roots are em-

bedded in. She refers to this type of approach as *exoskeletal* (abbreviated XS), in that the properties of a 'word' are determined by the structure surrounding it, rather than deriving from the interior, the root itself (which would be *endoskeletal*). Borer calls roots *listemes* and the repository for storing them the *Encyclopedia*. This Encyclopedia is distinct from the functional lexicon which contains grammatical morphemes and abstract features.

In the XS approach, listemes are not categorized by predetermined 'categorizer' heads in the same way as DM. Rather, category emerges from a combination of what Borer calls a range assigner and an open value. Without getting into technical details, the simple version is that open-class lexical roots must merge with both an open value and a functional element which serves as a range assigner in order to be assigned a category. (p. 270) While open values don't have a parallel in other frameworks, range assigners are familiar functional elements such as determiners, or aspectual heads in the verbal domain.

With respect to the interpretation of roots, Borer's view differs from 'traditional' DM in viewing roots as even more radically devoid of specification. Not only do they lack syntactic categories, they lack any representation of meaning. As elucidated in Borer (2009), interpretations are accessed at one point for any given root and whatever other categories it may combine with. Encyclopedic meaning is associated with phonological representations. Given the inability of roots to occur 'naked', they will only be interpreted within the cloak of some functional material which also will determine the phonological form. Thus while the view typically adopted in DM-based accounts is that roots have a basic meaning which may contribute to compositional interpretation or be interpreted idiomatically, Borer would have no link with encyclopedic meaning corresponding to roots on their own. Meanings are all determined in a functional context and associated directly with phonological forms. This contrast is relevant to the discussion in Section 10.3, as Borer's theory of meaning assignment functions specifically on phonological words and thus is necessarily separate from that used to explain phrasal idioms. Marantz (1996), on the other hand, proposes a parallel between the idiosyncratic interpretation of roots in words and phrasal idioms.

10.2.2 Dressed roots

10.2.2.1 L-syntax

Hale and Keyser (2002) propose a syntactic theory of word-building in order to account for regularities observed in the relationship between argument structure, lexical items, and syntactic structure. They argue that contrasts in the types of alternations a verb can participate in are derived from contrasts in lexical properties of the root of the verb and the corresponding structure that it can be embedded within. On this view, sentences which appear superficially similar, such as (4) and (5), actually have distinct structures at the level of word-building, or L-syntax. L-syntax (lexical syntax) is the component of grammar which is responsible for word-building and is subject to similar constraints as narrow

syntax, but also permits distinct operations such as conflation, which constructs words from multinode structures.

(4)

I splashed saddle soap on my chaps.

(5)

I smeared saddle soap on my chaps.

On one level, these verbs share a common structure in that both are what Hale and Keyser (2002: 13) describe as a '(b)-type' structure where there is a head that takes both a complement and a specifier. However, Hale and Keyser (2002: 24) suggest the (p. 271) verbs diverge with respect to the types of complements they take. In this sense it is their distinct structure which results in the possibility of (6) but not (7):

(6)

Saddle soap splashed on my chaps.

(7)

*Saddle soap smeared on my chaps.

On their analysis, *splash* is a verb which can take a PP as a complement, either with or without a specifier. In the variant without a specifier of PP, the second semantic argument of the preposition will be realized via the specifier position of the verb phrase, producing (6). Verbs like *smear*, on the other hand, cannot combine with nonmaximal PPs, and thus only have the transitive variant as a possibility. Inspired by Marantz (1997), Hale and Keyser specify this requirement as a kind of encyclopedic lexical property of the root. This property is associated semantically with the root *smear*'s need for an agent to enact what they call the 'adverbial' feature of smearing. That is, an event of smearing expresses the manner in which an agent is performing an act of 'putting on', namely by spreading something in a particular way. This contrasts with *splash*, which describes an event that can optionally be caused by an agent, but does not implicate an agentive manner. They call verbs like *smear* Agent-manner and those like *splash* Patient-manner.

Hale and Keyser use a notation to indicate requirements such as agent-manner using an index on the root which must be bound by a matching argument of the root. Though this is not intended as a formalism, it captures the intuition that roots have certain encyclopedic selectional properties that restrict their distribution. Thus, although the L-syntactic structure determines the behaviour of the root, the possible structures that the root can be inserted into are the deeper level at which lexical distribution is determined. Knowledge of the argument structure of a verb root boils down to a combination of encyclope-

dic knowledge, which is presumably universal, and category features which may vary by language.

10.2.2.2 First Phase Syntax

Ramchand (2008*b*) presents a theory of syntactic word-building with the aim of accounting for the relation between a verb's argument structure and its event structure. Her model, called First Phase Syntax (FPS), is an attempt at a middle ground between lexical approaches to argument structure and more radical constructionist theories. FPS is not lexicalist, in that only the syntax is generative. However it is not radically constructionist, in that lexical items are not devoid of syntactic specification, but rather carry features which determine and limit their syntactic distribution. This is a variant of what Ramchand calls the 'well-dressed roots' view. She proposes that FPS is able to better capture the limitations of root distribution observed crosslinguistically, especially in languages less flexible than English in this sense.

(p. 272) Architecturally, the syntax of FPS is essentially standard Minimalist syntax, except for the link with lexical items. The power of the proposal comes from the projecting features that are associated with lexical items. Ramchand's lexicon is richer than the Encyclopedia of DM due to the dressing on the roots. Lexical entries are described as 'the memorized link between chunks of Conceptual Structure and conditions of insertion' (Ramchand 2008*b*: 14). This is in contrast to the standard DM view in which roots are purely links between Conceptual Structure and an index or phonological signature (presumably FPS lexical entries also are linked to a phonological realization as well). So FPS lexical entries are triple links, while DM roots are only double links.[3]

The features that Ramchand suggests are responsible for the majority of these distributional restrictions are aspectual features. The three key features she makes use of are *init*, *proc*, and *res*. Each of these features essentially determines the syntactic category of the root, as the *init* feature will project an initP, the *res* feature a resP, and so on. Roots may carry one or more of these features. Each head is further identified with particular argument types. In syntax, the heads can combine to form complex argument and event structures, producing syntactically derived verbs and verb phrases.

10.3 Explaining special meanings

One matter that is important to establish in the investigation of how roots enter into idiosyncratic interpretations is the question of how they are relevant to interpretation at all. In this section I will review some of the major semantic approaches to explaining the variation of root interpretations, before considering how these map onto a syntactic domain in Section 10.4.

10.3.1 Argument asymmetries in verb interpretation

Kratzer (1996) aims to account for agent/theme asymmetries in idiomatic interpretation observed by Keenan (1976) and Marantz (1984) concerning the availability of special interpretations of verbs combined with objects in examples like (8)–(10) (Marantz 1984, (2.19)):

(8)

a. throw a baseball
b. throw support behind a candidate
c. throw a boxing match (i.e., take a dive)
d. throw a party
e. throw a fit

(p. 273) (9)

a. take a book from the shelf
b. take a bus to New York
c. take a nap
d. take an aspirin for a cold
e. take a letter in shorthand

(10)

a. kill a cockroach
b. kill a conversation
c. kill an evening watching TV
d. kill a bottle (i.e., empty it)
e. kill an audience (i.e., wow them)

Her analysis of this phenomenon, where special interpretations can only be determined by objects and not subjects (or rather, agents), is that agents are not true arguments of verbs. Along the way to this conclusion, she adopts a particular view of idiomatic interpretation which has been taken up by many researchers attempting to account for idiosyncrasies observed at the level of word-building. Since her account provides an explanation for setting the boundary at the point of agentivity, it is compatible with proposals for lexical ACEs that posit such a domain, including Marantz (1996), Harley (2014), and Anagnostopoulou and Samioti (2015). Other approaches to be discussed below based on categorizers, functional merge, or phases like Arad (2003), Borer (2013*b*), and Marantz

(2013*a*) would require different interpretive strategies to explain lexical ACEs, though they are compatible with Kratzer's approach as applicable to phrasal idioms.

Kratzer observes that these examples in (8)–(10) are not true 'idiom chunks' (like Nunberg *et al.*'s 1994 'idiomatic phrases'), since they are not completely frozen:

(11)

kill every evening (that way)

(12)

kill an afternoon (reading old Gazettes)

(13)

kill a lovely morning (paying overdue bills)

This means we can't use any existing 'idiom chunk' account for these examples. Her proposal is that, in the examples above, there is one 'kill', but various ways to interpret arguments, as follows:

(p. 274) • If the argument is an animate being *a*, *f* yields a function that assigns truth to any individual *b* if *b* kills *a*.

• If the argument is a time interval *a*, *f* yields a function that assigns truth to any individual *b* if *b* wastes *a*.

• If the argument is a conversation or discussion *a*, *f* yields a function that assigns truth to any individual *b* that dampens *a*.

• etc.

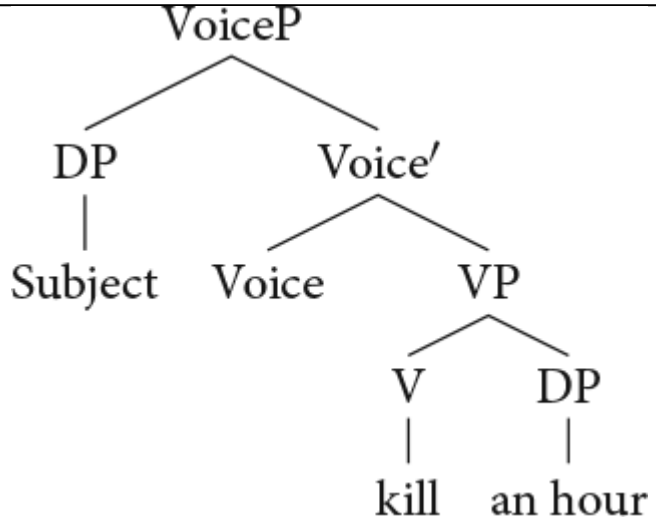
With what has been stated thus far, this kind of special interpretation could just as well be formulated for agents, by putting conditions on the *b* argument. Kratzer's solution then is to 'sever' the agent from the meaning of the verb, such that it is introduced by a separate head which she calls Voice. This Voice head composes with the verbal predicate via a process she calls *Event Identification*. Her denotation for the Voice predicate is as in (14).

(14)

$$[\![\text{Voice}]\!] = \lambda x_e \lambda e_s.\text{Agent}(x)(e)$$

The structure for a verb which takes an agent would then include both a verb and a separate Voice head, as shown in the tree in (15).

(15)



If we sever the external argument from the denotation of the verb, Kratzer suggests we cannot as easily capture an idiomatic expression containing the agent. Given these assumptions, the denotation for *kill* would then look something roughly like this (my formulation):

- If the argument is an animate being *a*, *f* yields a function that assigns truth to any event in which *a* is killed.
- If the argument is a time interval *a*, *f* yields a function that assigns truth to any event in which *a* is wasted.
- If the argument is a conversation or discussion *a*, *f* yields a function that assigns truth to any event in which *a* is dampened.
- etc.

Here there is no reference to the agent argument, which will be introduced by a Voice head, via Event Identification, rather than Function Application. Thus, a special (p. 275) (compositional) interpretation which makes reference to the agent cannot be formally stated. If we try to extend this theory of idiomatic interpretation, it predicts that such special interpretation will always be dependent upon the semantically selecting head. That is, the meaning of a functor can be contextually determined by one (or more) of its arguments.

Although Kratzer's (1996) account is widely adopted as an approach to severing the external argument from the verb and provides an approach to explaining special meanings, it does not straightforwardly extend to ACEs where the special meaning seems to depend on functional syntactic context rather than the presence of specific arguments.

10.3.2 Special interpretation as allosemy

One view of root interpretation that is more compatible with categorizer- and phase-based approaches to ACE domains is that proposed in Levinson (2007) and later named 'allosemy' (Levinson 2010), inspired by Arad's (2003) Multiple Contextualized Meaning (MCM), discussed in Section 10.4.2. A version of this view is assumed in Marantz's

(2013*a*) approach to ACEs based in contextual allosemy. The proposal is that some determination of word meaning is best viewed as being the 'flip side' to the morphophonological phenomenon of allomorphy. This term can be used to describe a situation in which the phonological realization of an expression is consistent while the meaning ('seme') varies.

Contextual allomorphy is found all over, and is a well-recognized phenomenon in morphology. For example, (16) and (17), adapted from Marantz (1996), illustrate two different past tense forms for the root √*rise*.

(16)

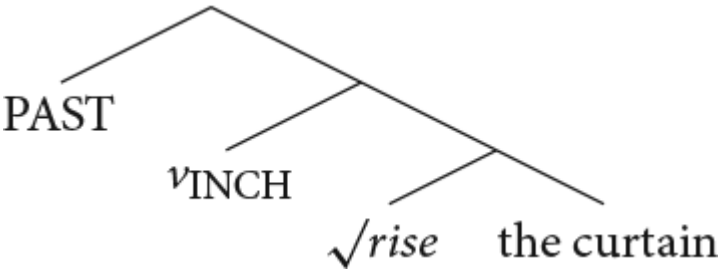
The curtain rose. (inchoative)

(17)

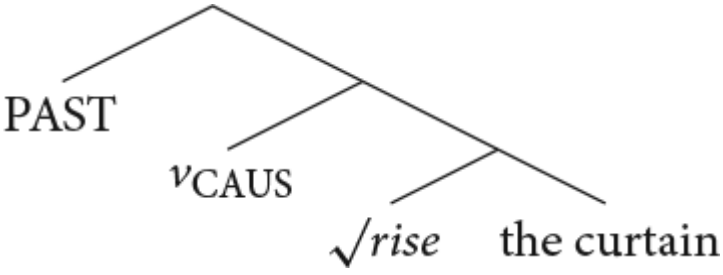
The director raised the curtain. (causative)

In (16), the root √*rise* is phonologically realized as [ɹoʊz]. In (17), the same verb is pronounced [ɹeɪzd]. This kind of alternation is very common in other Germanic languages, where one can see that the two forms are related but distinct. The variation in pronunciation is due to the grammatical context—*rose* and *raised* are contextually determined allomorphs of the same verb. In DM, the contexts might be described (very roughly) as follows:

(18)



(p. 276) (19)



√*rise* is an abstract representation of the core lexical associations of the verb. In DM this root does not have any pronunciation on its own, but rather is associated with phonological information at spellout. This is an operation in DM called 'Late Insertion', since the phonological material is inserted late, on the way to Phonetic Form (PF). One way that the different pronunciations can be derived, if one assumes root suppletion exists and is

relevant here (see Harley 2014), is by inserting different phonological material, such that the allomorph *rose* will be plugged in if the root is embedded under PAST and v_{INCH}, but *raised* if it is under PAST and v_{CAUS}. Another approach which takes the phonological similarity of these cases to reflect a shared phonological form is to use a readjustment rule in the causative context.

The inspiration for the basic idea of contextual allosemy presented in Levinson (2007) comes from observations found in Marantz (1996). It can be seen in the contrast in root meanings between (20) and (21):

(20)

The director raised the curtain. (causative)

(21)

The director raised a pig (to play Wilbur). (causative)

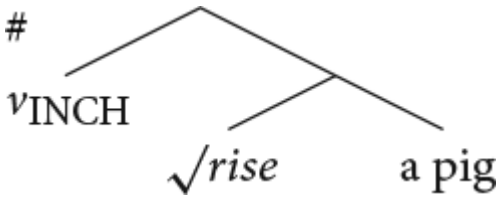
Here, the verbal allomorphs are the same, because both sentences provide transitive contexts. However, the meanings of the verbs are different. In (20), the verb describes an event in which the curtain rises. In (21), the pig doesn't 'rise', but rather grows up. Where we see that this is contextually determined is if we try to plug this meaning into the intransitive (inchoative) context (along the lines of Marantz 1996, (23)):

(22)

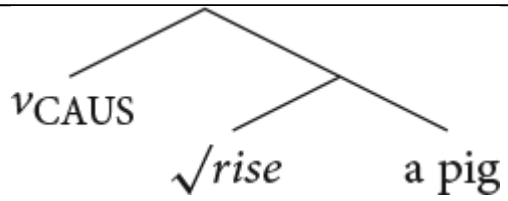
*A pig rose (to play Wilbur).

This meaning for the verb is incompatible with this context. The approach that Levinson (2007) puts forth for this allomorphy-like determination of meaning is that the semantic type and encyclopedic meaning of roots can also be determined by the syntactic and semantic context of the root. So in this example the contrast would be explained if the **alloseme** meaning something like 'grow up' is only available in the v_{CAUS} environment, just like the allomorph *raised* is only appropriate in that context.

(23)



(p. 277) (24)



Allosemy is distinct from homonymy, since the meanings are related, not accidental. As discussed in Marantz (2013*a*), contextual allosemy is relevant to examples which display some type of polysemy in the root, rather than homonymy.

10.3.3 Interpretation by En-search

Borer's (2013*b*) approach to the interpretation of roots (as a development of Borer 2005*a*) and thus ACEs differs from the typical DM-based assumptions whereby a root is linked directly with one or more meanings. Like Marantz (2013*a*) she proposes that the domain of lexical ACEs is phase-based, but the way these interpretations are achieved is not via contextual allosemy of the root itself. Borer proposes that meanings from an Encyclopedia are matched with derived phonological forms at the phase boundary. In such an approach roots don't have any meaning of their own per se; they are only interpreted as contributors to a phonological form. In Borer's terms, content is assigned to a phonological form by a process of 'En-search' which searches the Encyclopedia for the relevant phonological form and its paired meaning. The Encyclopedia does not contain any content relevant to the roots as standalone units. Thus the domain of special interpretation is the domain upon which En-search is computed. Borer posits that En-search is blocked by functional extended projections, which establishes a boundary for interpretive domains, or in other words, a phase.

10.4 Sizing domains for ACEs

All of the approaches discussed in Section 10.2 must ultimately account for contrasts in availability of special interpretations that have traditionally been linked with lexical vs. syntactic derivation as in Wasow (1977). The predominant approach to explaining ACEs in theories of syntactic word-building is to make some appeal to a notion of special interpretive domains. That is, the apparent greater availability of idiomatic interpretations at the word level would be due to the fact that many words fit into a small syntactic domain. What varies between different proposals, in addition to the interpretive assumptions discussed in Section 10.3, is the size or 'boundary' node of the relevant domain for special interpretations. The various answers to this question will form the focus of this section.

(p. 278) 10.4.1 Domains under agentivity

Marantz (1996) cites Jackendoff's (1995) observations showing that special meanings are pervasive in language, and found in various 'sizes'. Marantz agrees with the general observation, but disagrees with the view of the lexicon that this leads Jackendoff to. He argues that idioms are not syntactically special, and that the special meanings which arise

do not affect the computational system (syntax), but are rather due to the Encyclopedia, in DM considered the locus of conceptual semantic information associated with roots. This seems similar to what Nunberg *et al.* (1994) argue for with respect to their 'idiomatically combining expressions', and Marantz points out that the arguments of both Nunberg *et al.*(1994) and Ruwet (1991) support the view that idioms generally 'preserve the compositional meanings of their syntactic structures' (Marantz 1996: 9). More specifically, Marantz is suggesting that the word 'cat' is itself an example of an idiom, since its meaning is also contextually (and conventionally) determined, as part of its being a noun.

On Marantz's view this 'noncompositionality' is not problematic for the general hypothesis of compositionality, as it involves linking a syntactically atomic unit with its conventional meaning. The meanings are special because they are contextually determined. Contra Nunberg *et al.* (1994) (though not argued as such), Marantz analyses even 'kick the bucket' as being compositionally derived. He argues that this is what gives us the fact that 'kick the bucket' is an accomplishment with 'a punctual complete aspect of a transitive verb with a definite direct object', even if the object is nonreferential. This leads to the unacceptability of one saying 'I'm kicking the bucket' to mean 'I'm dying'. So, Marantz takes the more extreme view that all 'idiomaticity' boils down to contextually determined variations in meaning, described as 'allosemy' in Levinson (2010). Rather than storing morphologically and syntactically complex expressions in a lexicon with special meanings, the appearance of idiomaticity is derived when the meaning associated with a VI in a special syntactic context is not the same meaning associated with its most common or citation forms.

So one empirical question that arises is what constitutes a valid context for contextually determined meanings. What is the right context? Is there some limited domain? How is this calculated and composed? There is some evidence that there are locality constraints on this kind of special interpretation. Debate over what these locality constraints are constitutes the primary battleground in accounting for ACEs in theories of syntactic word-building. Here we will review Marantz's (1996) empirical arguments for basing all verbal ACEs on special interpretations within the domain of the agent-introducing head.

Marantz primarily uses examples from the verbal domain to illustrate his arguments. As suggested in Harley (1995), he associates the categorizer *v* with the introduction of agent arguments. At the time of this work, the categorizer *v* was considered by most researchers to be the same head as the external argument-introducing Voice head proposed by Kratzer (1996). Thus in the verbal domain Marantz links the presence of an agent argument with the delimiting of the domain for special interpretation via categorization. One context in which this contrast of agentivity goes along with a (p. 279) contrast in availability for ACEs is with respect to special interpretations of light verbs in English. Light verbs such as 'make' can take on special meanings in combination with certain objects, as seen in the following examples from Marantz (1996, (6)):

(25)

make ends meet

(26)

make X over

However, Marantz argues that there is never such a special meaning when ‘make’ embeds an agentive verb. That is, the following cannot receive idiomatic interpretations based on the verb being in the context of ‘make’:

(27)

make X swim (no idiomatic reading)

(28)

make X fly a kite (no idiomatic reading)

As discussed in Section 10.3.1, Keenan (1976) and Marantz (1984) observed that internal arguments trigger ‘particular interpretations’ in a way subjects (agents) do not. Similar facts have been observed for French in Ruwet (1991), and for Japanese in Kuroda (1993), Harley (1995), and Miyagawa (1998). The Japanese is particularly striking, because the causative morpheme is an affix and there is a contrast between indirect and direct causatives, where only the former embed agents. When an agentive verb is embedded, there are no idiomatic interpretations of the V+*sase* complex, vs. when nonagentive verbs are embedded under the same affix:

(29)

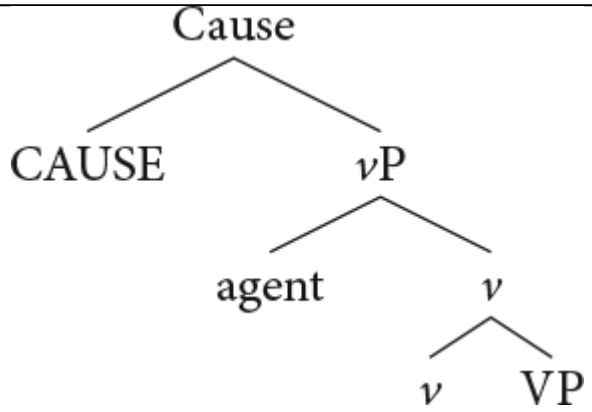
Causative with nonagentive VP embedded: *tob-ase* ‘fly-make’: demote someone to a remote post

(30)

Causative with agentive VP embedded: *suw-ase* ‘smoke-make’: make someone smoke (no idiomatic interpretations)

Here, with the indirect causatives, the word forms too big a domain for idiomatic interpretation. This contrasts with light verb idioms, where the domain is bigger than the word. This illustrates the dissociation of phonological word from the relevant domain for interpretation. Marantz proposes that this is because the head which introduces agents introduces a boundary for special interpretation:

(31)



(p. 280) Further evidence for a boundary of interpretation correlating with agentivity can be found in the domain of passives. According to Marantz, the only cases where idioms are uniquely passive are cases that are stative and nonagentive, based on observations by Ruwet (1991). He takes this to indicate that only passives which do not embed a Voice head can be idiomatic and necessarily have passive morphology.

Beyond DM, Ramchand (2008*b*) proposes in her discussion of Russian verb–particle constructions that the 'first phase' (in the FPS sense) can be seen as a potential site for idiomatic encyclopedic meaning, along the lines of the proposal in Marantz (1996). The evidence above seems to converge on the agent-introducing head as being beyond the boundary for special interpretation. What is not clear, however, is whether the boundary might be even lower than this head. This question became more clearly defined when various researchers (Marantz 2001, Pylkkänen 2002, Doron 2003) converged on the conclusion that there is a *v* head that is separate from and lower in the structure than the Voice head. In the next section it will be shown that Arad (2003) proposes that it is the categorizing head specifically which delineates the interpretive boundary, not the agent-introducing head that occurs above it.

10.4.2 First categorizing head

Arad (2003) provides evidence from Hebrew showing that, although one root may have different meanings and spellouts associated with it (Multiple Contextualized Meaning, or MCM, similar to what we are here calling *allosemes*), once the root combines with a categorizing head, the lexical semantics of the root is frozen to be the one that is consistent with that head. This is illustrated with the data in Table 10.1 (Arad 2003: 746), which shows the various words that can be formed from the root √*sgr*, all related to the concept of closure. The 'template' column lists various templates for deriving words from roots, where C is a variable ranging over root consonants. Thus combining the root √*sgr* with the template CaCaC produces the word *sagar*, the verb 'close'. It can be seen that √*sgr* itself is not specified for any lexical categories such as verb or noun, as there is no basic word form in common between the various realizations. What these (p. 281) words share is only the root. No word in Table 10.1 contains any other word in the table, and thus they cannot be derived from each other.

Table 10.1 Hebrew templates and words (Arad 2003: 746)

	template	**word**	**gloss**
a.	CaCaC (v)	*sagar*	‘close’
b.	hiCCiC (v)	*hisgir*	‘extradite’
c.	hitCaCCeC (v)	*histager*	‘cocoon oneself’
d.	CeCeC (n)	*seger*	‘closure’
e.	CoCCayim (n)	*sograyim*	‘parentheses’
f.	miCCeCet (n)	*misgeret*	‘frame’

All of the words derived from √*sgr* contain the same root consonants, but different words can be formed from the same root by combination with different heads.

The root can give rise to words of different syntactic categories, with different meanings. However, when there is affixation to an already categorized word, the derived word may only use the denotation associated with that categorization. For example, Arad draws a contrast between root-derived and noun-derived verbs. The root √*sgr* gives rise to many forms, including the noun *misgeret*, ‘frame’. There is then a noun-derived verb based on the word *misgeret*, *misger*, which cannot be derived directly from the root √*sgr*. This verb, meaning ‘to frame’, cannot, for example, also mean ‘to close’, although ‘close’ is a verb based on the same root, √*sgr*, in the form of *sagar*. Arad argues that this is a general property of word-derived categories as opposed to root-derived ones, which should extend to English as well, although the morphological derivation from the root to various categories is not always so transparent in English.

Arad (2003) proposes the following locality constraint, based on Marantz (2000):

(32)

Locality constraint on the interpretation of roots: roots are assigned an interpretation in the environment of the first category-assigning head with which they are merged. Once this interpretation is assigned, it is carried along throughout the derivation. (Arad 2003: 747)

This constraint is both more general and more restrictive than Marantz’s (1996) proposal. It is more general as it extends to all lexical categories, not just the verbal domain. It is more restrictive in identifying the domain at the categorizing head independent of agen-

tivity, which in a finely articulated verbal domain where Voice is higher than *v* would be a smaller constituent.

10.4.3 Phases as domains

As discussed above, in the years following the proposal of Marantz (1996), the extended projections in the verbal domain became more highly articulated to create a division between the level of the categorizing *v* and the agent-introducing Voice, which raised the question of which was truly the appropriate domain for special interpretations. Also in this time the theory of phases within the Minimalist Program became further refined. Based on these advances, Marantz (2001) proposed that categorizing heads are phase heads, and subsequently Marantz (2007) proposed that the interpretive boundaries are established by these phase heads. Thus Marantz's later proposals essentially map out the same interpretive domain as that proposed in Arad (2003) while linking these domains with the notion of phases. These domains are smaller than those proposed originally in Marantz (1996) where the boundary was posited to be the higher Voice head in the verbal domain.

(p. 282) 10.4.4 Arguments for a return to the agentive boundary or higher

Although Arad (2003) and Marantz (2007) have argued for limiting ACEs at the level of categorization, others have argued for a return to the larger domain cut off by agentivity proposed in Marantz (1996), or even higher domains.

Borer (2013*b*) proposes an even (potentially) larger domain of interpretation for ACEs. She proposes that interpretations can be contextually determined up to the point of merge of the first 'functional head' above lexical content. For Borer the relevant functional heads in the verbal domain would be those such as Asp, T, and argument introducers, not the lower 'categorizer' *v* proposed in other work. In the nominal domain the relevant functional heads would be those such as D and Deg, not *n*. Borer posits these larger domains due to the availability of ACEs which depend upon contextual meaning assignment at higher nodes such as those in (33), where the derivational steps are provided in parentheses (Borer 2013*b*, (58)):

(33)

a. reactionary (ACT, REACT, REACTION, *REACTIONARY*)
b. naturalize (NATURE, NATURAL, *NATURALIZE*)
c. editorialize (EDIT, EDITOR, EDITORIAL, *EDITORIALIZE*)

In these examples, it can be seen that although the words *react* and *reaction* are already categorized, the same 'size' constituents are able to receive a special interpretation within the context of the word *reactionary*. Borer highlights the critical nature of functional structure higher than categorizers in her account for nominals with argument structure,

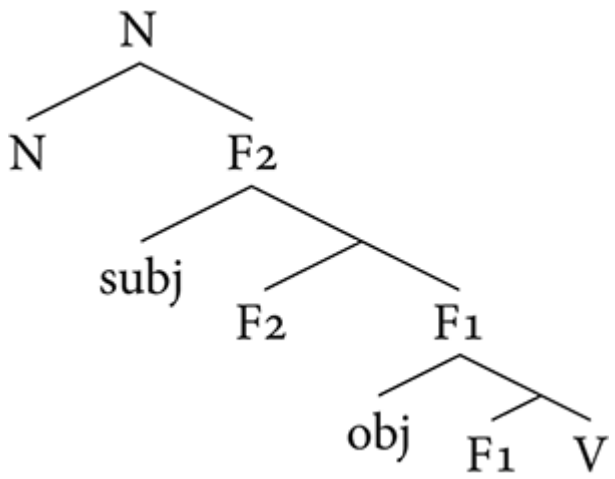
or AS-nominals. The data in (34) (Borer 2013*b*, (59–61)) are intended to show that the nominalization *transformation* can have a full set of arguments (34a), but not when it is used in the special jargon interpretation of linguistics (34b), even though these arguments are available in verbal contexts (34c).[4]

(34)

a. the transformation of our department by the administration
b. *the transformation of the structure by the linguist
c. the linguist performed a transformation on the structure

Borer's explanation for this contrast is that AS-nominals must include functional structure (higher than the categorizing heads) in order to provide a site to merge the relevant arguments. The structure proposed for *transformation* as an AS-nominal is as in (35).

(p. 283) (35)



Borer (2013*b*) presents a simplified account of how these interpretive boundaries are established based on En-searches on output forms, but her full account of how interpretations are constrained is presented in Borer (2013*a*). This theory is in part a phase-based theory like that of Marantz (2007), discussed in Section 10.3.3.

Returning to an agentive boundary approach, Anagnostopoulou and Samioti (2015) argue that a subset of *-tos* participles in Greek involve structure above the level of a verbalizer while permitting ACEs. They provide the following examples of participles derived from verbs and including a verbalizer suffix (Anagnostopoulou and Samioti 2015, (59)):

(36)

a. *kol-i-tos*
glue-*v*-PRT
'close friend' (literal interpretation: 'glued')

b. *xtip-i-tos*
whip-*v*-PRT
'striking' (literal interpretation: 'whipped')

Anagnostopoulou and Samioti also present data in support of Marantz's (1996) view that agentivity establishes a boundary for ACEs.

Harley (2014) presents examples from English which she argues demonstrate ACEs above the level of categorization. These are words which appear to 'become' ACEs only in the context of heads higher than the initial categorizing head. In the two examples repeated here (Harley 2014, (36)), not only is an ACE interpretation possible, but also the expected literal interpretation seems unavailable.

(37)

a. class, class-ify, classifi-eds
'small newspaper advertisements,' #things which have been classified

b. domin, domin-ate, dominat-rix
'woman who performs ritualized sexual domination', #woman who dominates

Harley (2014) concludes, along with Marantz (1996), and others, that the relevant domain for ACEs in the verbal context is the domain of agentivity and not the level of categorization.

(p. 284) Another challenge to the phase-based approach which links phases to categorizer heads is in the implications this has for phase theory and idiomatic interpretation more generally. There are indisputably idioms which cross phase boundaries, such as those including phase-bound nominals like *bucket* in *kick the bucket*. If such idioms are subject to the same explanation as word-level ACEs, a phase-based approach is not tenable. Based on these empirical and theoretical concerns, Marantz (2013*a*) defends the phase-based approach to word-level ACEs by distinguishing different types of 'idiomatic' interpretation, as explained in the next section.

10.4.5 Defence of a phase-based approach to categorizer domains

Marantz (2013*a*) presents an updated version of a phase-based analysis of contextual allomorphy and allosemy, evaluating whether both types of contextual determination can be accounted for with the same size domains. In this paper he defends the phase-based analysis in the face of examples like those in the previous sections by demonstrating that they are not counterexamples to a more refined notion of how contextual allosemes can

be triggered. This refinement involves a more explicit division between contextual allosemy and more general idiomatic interpretation on the one hand, plus a more nuanced evaluation of what heads trigger phase spellout.

Although Marantz (1996) and Marantz (2001) draw a parallel between contextually determined root interpretation and idiom interpretation, Marantz (2013*a*) argues based on data like those in the previous section that these must be analysed distinctly. While idiom interpretation can clearly cross phase boundaries, Marantz argues that there is a distinct type of special interpretation which is based in the selection of a root alloseme, the semantics of which are discussed by Levinson (2007, 2010) and summarized in Section 10.3.2. Marantz argues that these ACEs which involve selection of one from a set of multiple possible root meanings are more restricted with respect to the domain for triggering alloseme selection. For example, Marantz discusses the polysemy of the noun *globe*, which can refer to either (1) the planet Earth or (2) any spherical object. This polysemy is presumably present at the level of the root and the noun is compatible with either alloseme. The form *global*, however, seems to select only meaning (1) relevant to the planet Earth, since it cannot mean something along the lines of 'pertaining to a sphere'. That is, in choosing between a light bulb that has a globe shape as opposed to one that is candelabra-style, one cannot tell a store clerk 'I'll take the global one' and reasonably expect them to understand you. Crucially, the form *globalize*, derived from *global*, cannot 'flip flop' the meaning of the root once it has been determined by the *-al* suffix. Thus, *globalize* must relate to meaning (1) also, and cannot mean 'make into (something pertaining to) a sphere'. Such a meaning would constitute a counterexample to Marantz's (2013*a*) analysis of phase-based delimitation of alloseme selection.

(p. 285) Given this clearer exposition of the type of examples that counterexemplify the phasal analysis, Marantz argues that the types of examples in Section 10.4.4 are not truly counterexamples, as they do not involve 'flip flopping' or selection of an alloseme across a phasal boundary. *Naturalize* was used by Borer (2013*b*) as one such example, presumably since it does not involve the most common alloseme of the root of the noun *nature*. It is, however, built upon an interpretation of the word *natural* as in *natural-born citizen*. Marantz would thus argue that there is an interpretation of *natural* which selects an alloseme of the root √*nature* which pertains to citizenship. This alloseme is selected in the formation of *natural* and is maintained in the form *naturalize*. Thus it does not pose any problem for a phase-based analysis of alloseme selection and ACEs.

More nuanced is Marantz's (2013*a*) explanation for the Greek participles discussed by Anagnostopoulou and Samioti (2015) presented in (36). In accounting for these special interpretations (which do not seem to be based on a lower alloseme selection like *naturalize*), Marantz makes use of the observation made by Anagnostopoulou and Samioti that the relevant participles do not appear to involve any event variable as would normally be expected from a participle which contains an eventive *v* head. Based on this fact Marantz proposes that the syntactically and morphophonologically active *v* head (the *-t-* part of the suffix) is semantically null, and thus does not block adjacency. In such cases alloseme se-

lection need not occur until merge of the affix *-os*. Marantz provides a similar explanation for other apparent counterexamples from Japanese that were suggested by Volpe (2005).

Marantz illustrates this phenomena with parallel examples from English where a semantically vacuous (not event-encoding) *v* head does not block alloseme selection, in contrast with a semantically interpreted *a* head. Consider the examples in (38) and (39) from Marantz (2013*a*, (7)). The examples in (38) have an overt *v*, *-ize*, but it does not encode its usual event variable. Thus while the verbal *quantize* denotes an event of quantization, *quantized energy* does not need to have undergone such an event or process. It instead refers to certain (quantum) units of energy. Thus the head associated with the participle morphology, *-ed*, is able to select an alloseme of the root. In the examples in (39), in contrast, the *-al* suffix is a semantically active *a* (adjectival category) head, and thus serves as the alloseme selection point. When *-ize* is added outside of the categorizing head it must be interpreted eventively with respect to the root alloseme determined by *-al*. Thus these examples denote meanings which entail a process of globalization, nationalization, or fictionalization.

(38)

a. quantized energy
b. pulverized lime
c. atomized individual

(39)

a. globalized universe
b. nationalized island
c. fictionalized account

(p. 286) Marantz links this notion that semantically null heads do not interfere with semantic adjacency and interpretation with a proposal that phonologically null heads similarly do not interfere with phonological adjacency. This proposal puts a new spin on constraining contextual determinations such that they are not delimited purely based on the category and phasehood of a particular head (e.g., whether it is a *v* or an *a*, etc.). Contextual allomorphy and allosemy are both also sensitive to adjacency constraints. In order to falsify this theory of ACE domains, which depends upon a more nuanced perspective of phase theory, one would need to find examples of words which exhibit triggering of a root alloseme by a phase head across another interpretable phase head (e.g., an eventive *v*) where the alloseme does not appear to occur with the inner phase head alone. At the time of writing, no such counterexamples have been proposed in the literature.

10.5 Conclusion

Despite the various technical implementations of building words in the syntax, there is a relative fluidity in the compatibility of different frameworks with similar explanations for ACEs. In this chapter we have seen that most such explanations depend on a complex interaction between the interpretation of roots and the delimitation of syntactic domains for interpretation. The most comprehensive proposal to date, which includes a theory both of interpretation and the relevant domain, is that recently put forth in Marantz (2013*a*). This proposal links a theory of contextual allosemy with the independently motivated domains of phases. As work in this area is very much an ongoing pursuit, it remains to be seen whether this view is the most empirically accurate account for the possibility and impossibility of ACEs.

Notes:

([1]) In practice, DM does also make use of a limited set of highly local and constrained postsyntactic operations.

([2]) Some approaches under the DM umbrella do propose features that will associate some roots with a specific category, such as the 'optional' ±v feature in Harley and Noyer (2000). Such details however are not central to the focus of this chapter.

([3]) Various DM-based approaches also add specific 'third links' of different kinds. As discussed above, Harley and Noyer (2000) make use of category features on some roots. Schäfer (2008) proposes causativity- and agentivity-related features on some roots. Levinson (2007) presents a variant whereby an additional semantic 'sublink' is established with semantic types. This places the restrictions on root distribution on semantic composition rather than syntactic category (as in FPS or other DM-based syntactic features).

([4]) It is interesting to note that these arguments do not seem possible with *transform* as a verb with this jargon interpretation either:

((i))

*The linguist transformed the structure.

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