Words and Roots – Polysemy and Allosemy – Communication and Language

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Abstract

Most substantive (content-bearing) words are polysemous, but polysemy is cross-categorial; for instance, the lexical forms 'stone' and 'front' are associated with families of interrelated senses and these senses are spread across their manifestations as three words, noun, verb and adjective. So, the ultimate unit underpinning polysemy is not a word but the categoryless root of the related words, which must, in some sense, track the interrelated families of senses. The main topic of this paper is the vexed question of the meaning of roots and the backdrop is a view of words as delineated syntactic domains which allow assignment of atomic content (non-compositional meaning), and whose actual meanings are, in the first instance, pragmatically inferred in the throes of communication, some of them subsequently becoming established, so stored in a lexicon and directly retrieved in comprehension. Three different positions on the meanings of roots are outlined, and their merits and shortcomings are discussed: (a) inherent underspecified meanings; (b) meanings conditioned by grammatical context (allosemy); (c) meaninglessness. I argue that, overall, the current state of the evidence favours the third position: roots are categoryless, meaningless (perhaps phonological) indices.

1 Introduction: Words, Roots, and the Basis of Polysemy

The phenomenon of polysemy (a linguistic unit having multiple interrelated meanings) is typically taken to be word-based in psychology, the philosophy of language, and (until relatively recently) linguistics. Most substantive open-class words are polysemous, some highly so, e.g. the noun 'face' has at least the following meanings: body part; facial expression ('to put on a brave face'); apparent character ('she has many faces'); front surface (of an object); metaphorical front surface ('on the face of it'); sense of self/ego ('he didn't have the face to ask her out'); the verb 'run' has

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different but interrelated meanings in 'run a mile', 'run a bath', 'run a business', run for president, 'run a tight ship', and more. And new senses related to existing senses are emerging all the time: the noun 'laser', coined in 1957, as an acronym of 'light amplification by stimulated emission of radiation' now has a range of other uses, which could well become established as members of a polysemy family: 'to get one's tattoos lasered'; 'a laser stare' (i.e. a persistent and piercing stare); 'to throw a laser' (i.e. a straight and strong shot in baseball) (from Panagiotidis 2014).

What the 'laser' example indicates is that polysemy is cross-categorial (the meanings of the noun, verb and adjective are all interrelated and transparently so) and this holds quite generally: 'stone' and 'back' are categorized as noun, verb, and adjective, each with multiple senses interrelated cross-categorially, and so also the noun/verb pairs of 'face' and 'run'. Given the pragmatics of meaning extensions/modulations (Carston 2020/21), a sense of a noun in the family of related senses may be more closely related to a sense of an adjective or a verb in the family than it is to another of the noun senses. It is not sufficient, therefore, to list families of senses with specific nouns, verbs, or adjectives—we need also to account for the cross-categoriality of sense interrelatedness. In other words, lexical polysemy is grounded in something more basic than words, namely, the *root* shared by a family of words: $\sqrt{}$stone, $\sqrt{}$run, $\sqrt{}$laser.

As a pragmaticist (employing the relevance-theoretic framework developed by Sperber and Wilson (1986/95, 2015)), I have focused on the lexical meaning adjustments or modulations in specific communicative contexts that can result in new (non-compositional) meanings/senses and are thus a major source of polysemy. However, more recently, it became evident to me that significant work relevant to polysemy has been going on in generative syntax for quite some time and that there has been little, if any, interaction between the two (the pragmatic and the syntactic), a state of affairs I have subsequently tried to begin to redress. So, in recent work (Carston 2022) I have argued for a view of polysemy that is root-based, drawing on ideas in current generative grammar that take roots, rather than words, as the primitives, the basic atoms, that feed the syntax. On this sort of view, what we think of as words are, in fact, phrases, that is, they are syntactic structures like any other such structure generated by the grammar. This holds for apparently simple words like 'cat', 'run' and 'blue' as much as it does for the more obviously complex cases like 'nationalize', demonstration' and 'gaslight' (Marantz 1995, 1997; Arad 2003; Borer 2005; Harley 2005; among many others). Words have no distinctive theoretical status on this view; it is roots that are the basic units and that are listed as syntactic primitives in the grammar.

However, as conceded by many who endorse the root-based approach to syntax, words do seem to have some sort of psychological salience for language users and the structures that comprise words are manipulated as units of communication, on the basis that they are carriers of atomic meaning. One of these is Julien (2007), who denies words any theoretical status but says: "The psychological reality of words is probably a consequence of their distributional properties: since words are the minimal morpheme strings that can be used as utterances and that may be permuted more or less freely, words are the minimal linguistic units that speakers can manipulate consciously." (ibid: 83). Certainly, it is words (and other phrases), rather than roots, that are the domain of pragmatic processes of ad hoc sense creation, such as narrowing/broadening of existing meanings and metaphorical and metonymic

extensions.[1] I take it that, ultimately, a comprehensive account of language, as both a formal computational system of the mind and a powerful instrument of human communication, must accommodate both of these stances on words, that is, it will have to provide an architecture which includes both a narrowly linguistic (syntactic/computational) component and a broader user-based pragmatic component in which words are a central communicational unit.[2] The complex phenomenon of polysemy is, I maintain, a result of the interplay of the formal/syntactic and the pragmatic.

The main aim of this paper is to try to reach a reasoned position on what, if any, sort of meaning (categoryless) roots may have, as this is a currently unresolved component of the bigger syntactic-pragmatic picture of word meaning and polysemy. In Section 2, I briefly outline the 'single engine' root-based approach to morpho-syntax and its interface, as I see it, with the conceptual-pragmatic systems responsible for conferring non-compositional (atomic) meanings on word structures. This is intended as a backdrop to the central issue of the meaning of roots, which is discussed at length in Section 3, where three different views are presented (almost certainly not exhausting the possibilities) and their merits and shortcomings discussed. I don't expect, by any means, to arrive at an unassailable conclusion about this issue, but rather to bring several distinct existing positions into confrontation with one another, something which, to my knowledge, has not been done before, and to assess which meshes best with the kind of account given in Section 2 (and the earlier papers cited there). Finally, in Section 4, I return to words, understood as units of communication, and consider the kind of user-based lexicon which they occupy, ending with an unresolved issue concerning compositionality and conventionality.

2 Words: Phrasal Syntax and Pragmatic Meanings

2.1 Overview of the Account

This subsection and the next are largely a summary of ideas more fully developed in Carston (2022, 2023), the aim here being to provide the wider background picture within which the focal issue of the meaning of roots is situated. The general idea is that in order to give a full account of the nature of those entities which we intuitively label "words", the roles of two importantly distinct but interacting systems have to be delineated: the formal *narrow* linguistic system (syntax) and the system(s) of the *broad* faculty of language responsible for the meanings or Contents with which the

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[1] By and large, work in the philosophy of language meshes with the intuitive folk view of language in taking the word as the basic linguistic building block. Interesting recent exceptions to this are Dupre (2022) and Hughes (under review), both of whom embrace current root-based approaches to words and demonstrate the implications this has for longstanding issues in philosophy, the account of reference in the case of Dupre and the ontological status of words in the case of Hughes.

[2] Thanks to an anonymous reviewer who pressed me on the issue of words and their status in my account, pointing out that in language typology, it is widely agreed that there is not a clear understanding of what a word is. I acknowledge this point, and hope the text above and my discussion of what I call the 'communicational' lexicon (see Carston 2022, and remarks in Section 4 of this paper) go some way toward addressing the issue.

formal elements are coupled, meanings that are used in and shaped by communication (pragmatics).[3] The main points of the account are the following:

(a) A "single engine" account of language structure is adopted, i.e. there is no separate component for generating complex words, which are treated as structurally phrasal. The terminal elements (basic units) of the syntactic system are of two types, namely, roots (e.g. $\sqrt{}$cat, $\sqrt{}$sing, $\sqrt{}$blue) and functional/grammatical items (including categorizers like n, v, a, and functors like determiners, tense and number markers). Grammatical items come with a bundle of what are called 'synsem' features (such as 'past' for tense, 'plural' for number, perhaps 'event/action' for the categoriser v, 'entity' for n, etc.), which are to be sharply distinguished from the conceptual meanings that come to be associated with words/roots (Embick 2015: 31–40). Roots do not carry synsem features; in particular, and crucially, they are categoryless, but whether or not they have meaning/sense of some sort, including possible polysemy, is a highly contentious issue, discussed at length in Section 3.

(b) Whatever the position taken on the meaning properties of roots, it is clear that the set of words built on any given root can have a range of distinct and unpredictable meanings. Consider, for instance, the root $\sqrt{}$(de)tect, and the meanings of the nouns 'detection', 'detector', 'detective', 'detectorist', or the root $\sqrt{}$nat(ure) and the meanings of the various words based on it, including 'natural', 'naturalist', 'naturist', 'naturalize', 'naturalization'. Many of these are non-compositional, that is, they are not a function of whatever meaning is assigned to the first category level in combination with the higher levels of functional items in their structure (e.g. '-ive', '-ist', '-ize', '-ation'). If words are just phrasal structures (whose meaning is typically compositional), this fact about their semantics has to be explained somehow.

(c) The proposed explanation is two-fold, requiring an account of those structural domains that can admit unpredictable non-compositional Content, and an account of how the particular atomic meanings arise, e.g. the non-compositional meaning of 'naturalize' (= become a citizen) and of 'naturist' (= one who espouses nudity). The first part, then, is syntactic, and the second is pragmatic. The pragmatic part of the story is simply the standard relevance-theoretic account of how words acquire new (ad hoc) meanings in on-line communication, via inferential processes of narrowing/broadening, metaphor and metonymy, some of which conventionalize into established senses, i.e. settle into polysemy families, so are no longer pragmatically inferred but retrieved from a storage system or lexicon. (Carston 2020/21, 2022).

(d) The wider relationship of interest that this approach to words reflects is between (i) language (construed narrowly as syntax and its interfaces), (ii) language**s** (i.e. specific hook-ups of structure and conceptual content to the articulable/perceptible vehicles for externalizing them), and (iii) the use of languages in

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[3] The narrow/broad language faculty distinction (FLN and FLB) is taken from Hauser et al. (2002), and inspiration for my syntactic-pragmatic story has come from the following passage by Chomsky: "it is possible that natural language has only syntax and pragmatics; … In this view, natural language consists of internalist computations and performance systems that access them along with much other information and belief, carrying out their instructions in particular ways to enable us to talk and communicate, among other things." (Chomsky 1995b: 26–27).

communication (where meanings are made, adjusted, established, or lost). The fundamental distinction is between relatively rigid formal structures, on the one hand, and very flexible meanings, on the other hand. Being the hybrid entities they are, words are both relatively rigid pieces of structure and bearers of meaning/content which is susceptible to language users' pragmatic adjustments, hence associated with evolving families of senses (Contents or atomic meanings), stored in a 'communicational lexicon' (Carston 2019, 2023).

In the next subsection, I give a sketch of how the two systems (syntax and pragmatics) work together in the making of 'words', using the syntactic framework of Borer (2013a, b) and my own work on lexical pragmatics. For current purposes (and in fact ultimately), I assume, along with Borer and others, that (categoryless) roots have no meaning of their own and it is only categorized structures (e.g. roots that have been nominalized or verbalized, etc.) that acquire meaning, but other views on this issue are discussed in Section 3.

2.2 Roots, Syntactic Domains of Content, and Non-Compositional Meanings

I will look here at two kinds of words that appear different on the surface but are, in fact, manifestations of the same syntax-pragmatics interaction. The first are what are known as 'conversions', i.e. nouns and verbs with identical phonological form[4] and clearly related (non-compositional) meanings, e.g. 'sand', 'hammer', 'starch', 'dust', 'porch', 'treasure', 'scalp'. The second are obviously complex, wearing their structural parts on their sleeve as overtly realized categorizers, but bearing non-compositional meanings: e.g. 'natural-ize' (become/make someone a citizen of a country); 'recit-al' (solo concert); 'transmiss-ion' (car's gearbox); 'social-ist' (supporter of Marxist doctrine)'; 'flake-y' (unreliable).

The so-called 'conversion' process[5] is highly productive in English; here are some recent attested cases of innovative verbs, apparently coined on-the-fly in communication, and based on their established noun counterparts:

(1)　　a.　'If Trump isn't **25th Amendmented** in the next 24 hours, then he …'
(Scotus on YouTube comment, 9th Jan 2021)

　　　　b.　'… so spectacularly has she **cratered** her authority with her own MPs, that ….'
(Chris Mason, BBC, 14 October 2022)

　　　　c.　'You haven't **favorited** any desktops yet.'　　(*Outlook* notification, 2023)

An adequate account of this phenomenon requires two distinct kinds/levels of explanation working in tandem: one concerning structure (so syntactic), the other

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[4] Some pairs are subject to 'allomorphic' variation, e.g. 'thief' and 'thieve'; 'shelf' and 'shelve'; 'house' as /haus/ and /hauz/; and the stress differences in the noun/verb pairs of 'contract', 'permit', 'protest', 'record', 'object', etc. See Section 3 for discussion of allomorphy.

[5] I say 'so-called' because there is no 'conversion' process as such (for more detail, see Carston 2022).

concerning meaning (so pragmatic). According to the 'constructionist' approach to syntax (Borer 2005, 2013a), which is adopted here, syntactic structure determines the categorial status (noun, verb, adjective, …) of a root, which is, as it were, inserted into a structural template (Borer 2005: 69–70), which has a range of properties (e.g. temporal and aspectual, mass/count, singular/plural) and relations (e.g. thematic roles of the participants in the event and sub-events). More specifically: the tense functor 'T' defines a complement structure which is V-equivalent, and which accommodates both items that are already verbs (e.g. 'crystal-ize') and items which don't have any categorial properties i.e. categoryless roots, so insertion of $\sqrt{\text{stone}}$, $\sqrt{\text{run}}$, or $\sqrt{\text{yellow}}$, into that structure makes them V-equivalent. The number functor 'Num' (singular/plural) defines a complement structure which is N-equivalent, so accommodates both items that are already nouns (e.g. 'govern-ment') and roots, e.g. $\sqrt{\text{stone}}$, $\sqrt{\text{run}}$, $\sqrt{\text{yellow}}$. For notational simplicity, I will use the following for categorized roots: $[_N \sqrt{\text{stone}}]$, $[_V \sqrt{\text{stone}}]$, $[_{Adj} \sqrt{\text{stone}}]$. Setting aside questions about the semantic and phonological properties of roots for the moment, we can assume that, at a minimum, roots consist of an index (or address) tracking occurrences across categories, in effect $\sqrt{127}$, $\sqrt{753}$, etc., and thus (potentially) tracking cross-categorial polysemy.

Turning now to the pragmatic meaning relations between the conversion pairs and focusing on the noun → verb cases,[6] which were described in a landmark study by Clark and Clark (1979) as speakers' lexical innovations whose meanings were readily pragmatically inferred on-the-fly by hearers in appropriate communicational contexts. Bauer (2018) then added to this the idea that N → V (and V → N) conversions are **metonymic shifts** made by speakers in communication, on the basis (a) that the meaning relations between the members of the pairs are typical of figurative interpretations in being 'unpredictable and unrestricted' (ibid: 180), and (b) the meaning shifts involved are essentially the same as those discussed as regular metonymic transfers within the nominal category, such as *process for result* (e.g. 'building', 'painting'), *location for event* (e.g. 'Waterloo', 'Vietnam'), and *attribute/property for person* (e.g. 'The ham sandwich is getting impatient') (ibid: 177). Taking the example of 'crater' as in 'X has cratered her authority with Y', the new verb (specifically its meaning, as the phonology doesn't change) is inferred from accessible information in the encyclopedic entry of the concept CRATER encoded by the noun 'crater' (including, in particular, the damage and destruction associated with a human-made crater), and information in the wider discourse context (here including that X has made very bad decisions causing members of her team to lose confidence in her), guided by the standard relevance-theoretic comprehension procedure (of following a path of least effort in accessing cognitive implications until an optimally relevant interpretation is reached). This new (ad hoc) verb with the sense CRATER* (=cause a massive loss) may ultimately become conventionalized and enter the lexicon of established communicational units. Thus, the noun and the verb share the root $\sqrt{\text{crater}}$, which,

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[6] It's important to note that this talk of directionality and of which came first, noun or verb, is utterly irrelevant to the syntactic account just briefly outlined. It applies only at the level of the individual communicator who might, for instance, have the noun 'crater' in her lexicon long before she encounters its use as a verb.

although meaningless in itself (according to this account), is a marker of the family of senses (the polysemy) in which the noun and the verb co-participate.[7]

Moving now to the overtly complex words, which have categorizing affixes but non-compositional meanings: 'naturalize', 'reactionary', 'recital', 'transmission', 'socialist', 'solicitor', 'flakey'. Compositional meanings are, of course, available, in all cases, but are in much less communicative use, in most of these cases. On the face of it, these present a challenge to the supporters of the 'single engine' syntactic account of word structure, because phrasal structures generally have a compositional semantics (as in, e.g., 'the girl who loves the brown horse'). The approach taken by some of the syntacticians who have confronted this issue is to delimit specific syntactic domains to which a non-compositional (atomic, holistic, idiosyncratic, unpredictable) meaning (or Content) can be assigned. So 'recital', 'naturalize', 'reactionary' have a specific kind of syntactic structure which, although it has a compositional meaning (like all syntactic structures), allows for (but does not require) assignment of a special (non-compositional) meaning.

On her account of the 'syntactic domain of content', Borer (2013a, b, 2014a) distinguishes two kinds of functional items, C-functors and S-functors, and the basic idea is that C-functors (i.e. categorizers) allow non-compositional meaning assignment at multiple levels, while S-functors (a more disparate group including tense, number, determiners) do not, as exemplified by the following:

(2)   [{ ([$\sqrt{}$nature $_N$] al $_A$) ize $_V$} ation $_N$]

At each categorization point here, a non-compositional meaning *can* be assigned; such content has, in fact, been assigned at the initial categorization of the root as a noun, 'nature', and later at the verbal categorization by '-ize'.[8] In contrast, structures headed by S-functors do not allow this:

(3)   a. Tense phrases, e.g. 'jump-ed'

          b. Number phrases, e.g. 'book-s'

          c. Determiner phrases, e.g. 'the/that/my book'

          d. AS-nominals (which inherit the **A**rgument **S**tructure of the verb from which they are derived):

                    e.g. 'destruction' (of the city by the barbarians in a single day),

                    'teaching' (of the physics class by Mary)

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[7] A contentious issue here is whether all apparent 'conversion' verbs are root-derived or some are, in fact, derived syntactically from their noun counterpart, that is, whether they are structurally [$_V$ [$\sqrt{}$531]] or [$_V$ [$_N$ [$\sqrt{}$531]]]. Unfortunately, there is not space here to examine this important question; those who argue for two derivational classes of conversion include Arad (2003) and Marantz (2013); those who argue against that view include Harley and Haugen (2007) at least for a subclass of Arad's cases, and Borer (2013a).

[8] This account applies equally, of course, to the so-called 'conversion' cases; once a root, e.g. $\sqrt{}$stone, has been categorized as noun, verb, or adjective, it can be assigned a meaning/content.

In all of these cases, the meaning has to be compositional.[9] On Borer's account, the 'C-core' of a syntactic structure indicates those points at which there is a search of what she calls the 'Encyclopaedia' for a matching content. The Encyclopedia is not a component of the grammar, but belongs in the Chomskyan conceptual-intentional (semantic-pragmatic) systems with which the syntactic engine interfaces, and it is the locus of stored non-compositional meanings (atomic Contents); it seems very much like a kind of lexicon.

The task of the pragmatic part of the story is to provide an account of the non-compositional meanings of such structures (words) as 'reactionary', 'transmission' and 'naturalize'. Their atomic meanings are semantically related (sometimes somewhat tenuously) to their compositional meaning, in much the same way as the different senses of much simpler structures, such as 'run', 'face' and 'crater' are related, that is they are narrower or broader, metaphorical or metonymic. They too can be accounted for by the standard lexical pragmatic story in terms of online processes of meaning modulation (Carston 2022). For instance, 'naturalize' with its non-compositional meaning NATURALIZE (= make a foreigner into citizen of a country) is a (considerable) pragmatic narrowing of the more general compositional meaning [NATURAL + ize] roughly paraphrasable as 'to make natural'. Many jargon terms, e.g. 'transformation' in linguistics and 'transference' in psychoanalysis, are narrowings of the general compositional meaning of the structures, [TRANSFORM + ation] and [TRANSFER + ence]. A case like 'revolution' with the non-compositional meaning REVOLUTION (= overturning of a social order or government) seems to involve a metaphorical extension of the literal compositional meaning [REVOLVE + tion] to mean any major change (turning around) of an established social/psychological/behavioral configuration, with then a narrowing to the specifically social/governmental change meaning. A case that seems to involve metonymy is 'transmission' with the non-compositional meaning TRANSMISSION (= car's gearbox): there was probably first a narrowing of the denotation of the compositional meaning [TRANSMIT + tion], to the specific kind of transmission process that takes place in the engine of a car, and then a metonymical shift to the object responsible for this process (the gearbox). As with the conversion cases above, the syntax module is responsible for the formal structure of the word (root plus categorizers), while language users, that is, linguistic communicators employing their general pragmatic abilities, are responsible for the particular non-compositional meanings assigned to these structures.

What this discussion shows is that the root-based syntactic approach to word structure coupled with a pragmatic explanation of ad hoc meaning creation can provide an account of how a particular kind of polysemy arises, that is, where a word has both a compositional meaning (as do all phrasal structures) and a non-compositional meaning. Specific delimited syntactic domains allow assignment of

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[9] The different behaviour of two kinds of verb-derived nominals, R-nominals, which allow non-compositional content, and AS-nominals, which preclude it, provides nice evidence in support of this account of the delimitation of the syntactic domain of content (Borer 2013a, 2014a).

(or mapping to) a non-compositional meaning and the particular sense/content is (or originally was) derived pragmatically based on the compositional meaning and the specifics of the context of communication.[10] The compositional meanings of some complex words are not in much current use (e.g. 'recital', 'reactionary', 'naturalize') but are, nevertheless, always available via first category meaning (RECITE, REACT, NATURE) and syntax, while others are cases of established and in-live-use polysemy, e.g. 'revolution', demonstration', 'flakey', their polysemy distributed across syntax (which provides the compositional meaning) and a pragmatic (or communicational) lexicon which lists all conventionalized non-compositional meanings (but see Section 4 on the opposing pulls of compositionality and conventionality). Here, as with the conversion cases, the root shared across families of derived words (e.g. 'nature', 'naturism', 'natural', 'naturalism', 'naturalize', etc.) provides a formal means of tracking connections and relatedness of content across words.[11]

In this section, I have followed the line taken by Borer (2013a, 2014a, 2017) and others (Acquaviva 2009; Acquaviva and Panagiotidis 2012; Harley 2014a; Panagiotidis 2014, 2020) that roots have no meaning (semantics/content) in and of themselves, and it is only categorized roots, i.e. nouns, verbs, adjectives, that are capable of bearing meaning/content. However, this is by no means a consensus position, even among those linguists who subscribe to the 'single engine' view that word structure just is syntactic structure. In the next section, I consider two other views about root meaning that are fairly widespread in the relevant literature, presenting arguments against both of them, ending up, therefore, by supporting the assumption made in this section that roots are indeed meaningless indices.

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[10] This 'pragmatic' account of non-compositional meaning assignment should not be taken to imply that such meanings are always pragmatically inferred. Obviously, some (but far from all) word/phrase meanings that are first derived in online communication (via pragmatic modulation processes) become established over time and are stored in an individual's communicational lexicon, from which they are henceforth directly retrieved rather than inferred; such conventionalized meanings can be thought of as 'semantic', but the key point is that they are pragmatic in origin. See Carston (2020/21) for emphatic rejection of the 'radical pragmatic' position (based on an interpretation of 'Occam's razor' according to which, if a meaning *can* be pragmatically inferred then it always *is* inferred).

[11] An anonymous reviewer for the journal asks to what extent my analysis depends on the specific syntactic and pragmatic theories I employ. The account could employ a different pragmatic theory from relevance theory (RT), i.e. a theory with different operative principles or communicative maxims: e.g. coherence, informativeness, or a different notion of relevance from that developed within RT, provided that this other theory acknowledged 'lexical adjustment (or meaning modulation)' as a phenomenon occurring in online communication, governed by whatever principles/norms/maxims it favoured, e.g. Recanati (2004) develops such an account using coherence as a criterion rather than relevance. It is more difficult for me to assess the extent to which the analysis depends on the specifics of the syntactic theory employed (that of Borer 2005, 2013a). Certainly, the particular position I take on polysemy depends on a 'single engine' root-based syntax (that is one of my main reasons for adopting it) and on the idea that there is a distinguished kind of syntactic domain to which atomic (non-compositional meanings) can be assigned, but there are other syntactic theories that have these attributes. Perhaps a word-based (lexicalist) grammar could, with appropriate adjustments, also interface with pragmatics in the provision of non-compositional meanings.

3 The Meanings/Semantics of Roots[12]

3.1 Inherent/Basic/Core Meanings for Roots?

'Roots possess an inherent meaning (at least in the typical case)', according to Embick (2015: 47), and 'At a minimum, there must be a theory of Root meanings, …, to account for *the simple fact that Roots possess inherent meanings*.' (ibid: 50; emphasis added). This clearly stated position that roots have an inherent meaning (at least in the typical case) appears to be the exact opposite of the position I assumed in Section 2 (that roots are meaningless in and of themselves, with the minimal bearers of meaning being categorized roots). However, it can be taken in at least two different ways: (a) roots have a semantic content or sense (they encode a concept); (b) roots have a semantically underspecified meaning that underlies the (various) meanings/contents they have in different contexts. As one reads on in the text from which the quotes above are taken, it is not clear exactly which of these two positions Embick is supporting as he also uses the terms 'basic meaning' and 'core meaning' of a root, each of which is open to several interpretations. What is made clear is that the meaning of a root can alter dependent on the *immediate grammatical context* in which it appears: 'categorizers (and perhaps other morphemes local to a Root) play a role in determining which meaning(s) of a Root are active in a given grammatical context.' (ibid: 47).

Embick gives the following example: 'In … different grammatical environments there is a *shared component* of interpretation that is centred on the Root's "basic" meaning, but perhaps some context-specific differences as well. For example, when the Root √feather in English is employed as the noun 'feather', it refers to an object that has a number of properties. Part of what English speakers know about this Root, though, is that in another context, as the adjective 'feather-y', it can also have a more restricted meaning, where the weight aspect of √feather is prominent: 'feather-y' in this sense means "light or airy", with no actual objects (feathers) involved … Collectively, the different facets of lexical semantic meaning that are found with Roots in different contexts constitute the phenomenon of Root *polysemy* …' (ibid: 48–49; emphasis added). Note first that the conception of 'context' here is highly restricted, referring just to grammatical/syntactic context (and with certain further locality restrictions on how far that contextual domain can extend).[13] And, second, the

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[12] Here I am undertaking the limited exercise of looking at three possible general views of root meaning: (1) roots have an inherent or basic meaning; (2) roots have grammatically-conditioned contextual meanings; (3) roots themselves have no meanings (only categorized roots can bear content). Clearly, there are various possible hybrid accounts, which would allow for some roots to have inherent meanings, others to have meanings only in a context, etc. Thanks to an anonymous reviewer for making this point.

[13] The attribution of different meanings to roots in different grammatical contexts is central to the 'allosemy' view surveyed in the next subsection, albeit with the crucial difference that, on that view, roots themselves do not (or need not) have an 'inherent' meaning. Embick, at least as manifest in Embick (2015), is an advocate of the view that roots can have both an inherent meaning (context-free, I take it) and several contextually conditioned meanings (allosemes or polysemes), with the former (somehow) constituting a common (shared) component of all of the latter. See also Embick (2021). Other advocates of allosemy, to be discussed in Section 3.2, maintain that roots do not have any meaning in isolation, e.g. Harley (2014a).

idea seems to be that all the different polysemes of a root *share* some component of meaning that comes from the inherent/basic meaning of the root. As regards the particular example, much more could be said: rather than being a more restricted meaning, the 'feather' in 'feather-y', at least as described above, is broader in denotation, applicable both to actual feathers and to other light airy entities (a classic case of pragmatic broadening, as discussed in Section 2). Also, this is just one meaning of 'feathery'; consider a sentence like 'I love that feathery collage' referring to an artwork made from feathers, whether actual feathers or pieces of wire and fluff artistically modelled into things that look like feathers. There are, doubtless, other possibilities contingent on broader discourse or communication contexts.

The idea that the basic units (the primitives) of a language have (must have) a semantically underspecified meaning has a long history, having been applied to *words* long before the root-based approach took hold. It is highly intuitive and, if it worked, would make for a neat and unified account of word polysemy, one in which all the polysemes of a word shared a common core of meaning, while differing in whatever other components of meaning make each of them into a fully semantic entity capable of contributing to the truth-conditional content of a sentence/utterance. Furthermore, that common core would function as a constraint on possible senses of a word; any new contextually prompted sense would have to incorporate that core meaning in order to qualify as a possible new sense of the word. On such an account, a word would have an invariant but underspecified (abstract) meaning and any fully semantically specified senses it is used to express would be a result of (broad) context and pragmatic inference fleshing out that core (skeletal) meaning. One of the strongest advocate of this view is Ruhl (1989), who maintains that what people talk of as polysemy is a purely pragmatic phenomenon, entirely context-dependent, and to be explained in those terms, while most words (where words are taken here to be the basic linguistic units) are 'monosemic'. Ruhl carried out extensive and thorough examination of specific cases, such as the verbs 'bear' and 'run', often cited as cases of highly polysemous verbs, examining their different meanings in different contexts, and describing their specific senses as cases of pragmatic specialization and generalization, very much at one with (and preceding) the relevance-theoretic account of lexical pragmatics (e.g. Carston 2002, Wilson & Carston 2007). However, the key difference is his commitment to the 'monosemic principle' that 'a word's semantics should concern what it contributes in all contexts' (ibid: 87). He says that this single linguistic meaning is impossible to put into words, as it is highly abstract and formal, ' … highly remote from all ambient contingencies', but insists that it must exist.

The psychologists Frisson and Pickering (2001) also favour a 'radical monosemy' model, according to which the only element of word meaning/semantics stored in the mental lexicon is an underspecified schematic meaning, which is said to 'encompass all related senses of a word' (ibid: 149). This is what a hearer retrieves initially and then at a subsequent stage of processing, 'context is actively involved in refining the interpretation of a word by changing the underspecified meaning into a specific interpretation' (ibid: 164), that is, a specific sense is recovered through interaction of the schematic linguistic meaning with contextual information. However, they openly acknowledge that this thin core

meaning does not constrain the creation of new senses in context: 'Because the underspecified meaning is an abstraction over the features of specific senses, a *novel* interpretation of a word cannot be captured by the underspecified meaning.' (ibid: 159, their emphasis). Thus, it seems that as new senses arise and become established/conventionalized, a revision, a further attenuating, of the alleged underspecified meaning would be necessary. It is extremely hard, then, to see what purpose this schematic meaning would serve or why the child learning word meanings (via communication, so involving fully semantic senses) would induce such a non-semantic core meaning for a word. In short, the radical monosemy position seems to express a strong intuition but one for which evidence is entirely lacking. As the pragmatic account of the origins of much word polysemy (which includes metaphorically and metonymically related senses) indicates, the inferences may lead to senses whose relations are those of family resemblances without any single shared core. I have argued in more detail elsewhere against any common core meaning for polysemous words (Carston 2020/21), a meaning that seems to have no role in constraining new (pragmatically-derived) senses and which would have to grow ever more schematic and abstract the more new senses that a word acquires.[14]

Whether Ruhl would have embraced recent root-based approaches to syntax and attempted to find a common core meaning for the much larger families of senses that this entails, e.g. 'run' in its myriad noun and verb senses, I don't know, but obviously any such endeavor would be subject to the same difficulties encountered at the word level but much magnified.

Moving back to roots now and the various meanings they can have in 'grammatical contexts' (considerably more restricted than the contexts that Ruhl considered and than the notion of communicative context employed quite generally in pragmatics). Most expositions of the position that roots have an inherent core meaning use examples from Semitic languages to illustrate their point because roots and their manifestations in different grammatical contexts are especially clear in these languages. This is due to the wholly consonantal nature of their roots, which cannot occur alone but appear in a range of different 'templates' (that is, sequences of consonants and vowels) as words whose meanings are often clearly related, e.g. Arabic $\sqrt{\text{KTB}}$, manifest in the verb 'kataba', the noun 'kitaab', the adjective 'kitaabii', among many others, all of which have meanings related to writing (Embick 2015: 48). An important study in this vein is Arad's (2003, 2005) account of Hebrew word formation; she takes the meaning of a root to be the common 'semantic

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[14] More recently, however, Pietroski (2018, 2023, i.a.) has developed a very well-argued position for distinguishing a word's meaning from the various senses/concepts that may be associated with it. This is the view that the meaning of a linguistic expression is 'an instruction for how to generate a concept', e.g. to a first approximation, the meaning of the expression 'book' is the instruction to fetch a concept from the 'book'-address, a single lexical instruction or recipe that may be executed in a number of ways (i.e. may generate any of several senses/concepts in particular contexts). This is as minimalist about meaning as you can get; there's nothing contentful, conceptual or sense-like about it, not even anything like a 'semantic feature' in the offing (e.g. [±human], [±temporal]), or a Kaplanian character; no need to search in vain for some thin, abstract kernel of meaning that figures in each of the concepts/senses associated with the instruction. This 'meaning' is in effect, just a pointer to an address where all the real semantic/meaning stuff resides.

denominator' or the 'kernel of meaning' shared by the words derived from it. Consider, for instance, the following root XŠB and words built on it:

(4)   √XŠB:

<u>Verbs</u>: xašav (to think), xišev (to calculate), hexšiv (to consider), hitxašev (to be considerate)

<u>Nouns</u>: maxšev (a computer / calculator), maxšava (a thought), xašivut (importance), xešbon

(arithmetic / bill), taxšiv (calculus)

Discussing this and other cases, Arad (2003: 9–10) maintains that 'although the range of meanings in each group is quite varied, all members share a common semantic core. For example, all the words made from the root √xšb are related to some mental activity – whether thought, consideration or calculation.' The view may seem fairly plausible in this particular case, but there are also word families, clearly built on the same root, whose semantic relatedness is much less evident, making the case for a shared core or kernel of meaning intrinsic to the root much harder to maintain. Consider the following (from Aronoff 2007):

(5)   √KBŠ:

<u>Nouns</u>: *kviš* 'paved road', 'highway'; *kivšan* 'furnace, kiln'; *keveš* 'gangway, step, degree,

pickled fruit'; *kvišja* 'compression', *maxbeš* 'press, road roller'; *mixbaša* 'pickling shop'

<u>Verbs</u>: *kibeš* 'conquer, subdue, press, pave, pickle, preserve'; *kavaš* 'press, pickle, store, hide',

hixbiš 'to subdue, subjugate'

There is also a set of adjectives built on this root, but the nouns and verbs are sufficient for the key point here concerning the alleged core meaning of the root, which is given as 'press'. Aronoff (2007: 822) puts the point well: 'The reflex response to problems like this is to posit an 'underspecified' core meaning for the root, which is supplemented idiosyncratically in each lexical entry. It is logically impossible to show that underspecification is wrong, but trying to find a common meaning shared by pickles and highways brings one close to empirical emptiness and this methodological danger recurs frequently in any Semitic language. In any case, there is no need to find a common meaning in order to relate the two words morphologically …', and he goes on to show how such words can be related via 'root alternation classes' without any common meaning, an account that goes well beyond the issue here. With regard to the meanings of the many words formed from √KBŠ, he tells a plausible etymological story about the origins of the 'highway' and 'pickle' meanings based on how paved roads and pickles were originally made in the relevant societies, both involving 'pressing' of one sort or another. The connection between the meanings seems to be essentially pragmatic, involving a series of metaphoric (resemblance) and metonymic (contiguity) relations; the essential point is that 'there is nothing left of pressing in the meanings of these Hebrew words today' (ibid: 822) and no role for any such core meaning of the root. See

also Panagiotidis ([2020](): 61–63) for a comparable range of cases in Greek, all based on the root $\sqrt{}$esth but with no discernible common semantic denominator, and the discussion below of English words based on bound (Latin) roots, e.g. $\sqrt{}$-ceive, $\sqrt{}$-fer, $\sqrt{}$-mit, $\sqrt{}$-flect; whatever commonalities of meaning they may once have had are long gone, as evident from consideration of, for instance, 'refer', 'infer', 'confer', 'defer'.

The problem here, as with polysemous *words*, is that there seems to be no way to isolate any common core meaning for roots and no role for any such element of meaning; as cultural and communicative contexts evolve, leading to the coining of new senses and new words based on the same root, any alleged common core meaning gets more and more attenuated until it disappears altogether. Furthermore, the pragmatics of meaning construction is not constrained by any such core meaning, but proceeds via chains of inference in multiple directions, via narrowing/broadening, metaphor and metonymy. Recall the case of 'laser' mentioned above: its meaning has rapidly proliferated from a single concrete noun meaning to various others based on (more or less fanciful) resemblances: 'a laser stare', 'throw a laser', 'his laser precision', etc., and the multiple diverse meanings of words based on the roots $\sqrt{}$face, $\sqrt{}$run, $\sqrt{}$line, and the noun/verb pairs: 'book', 'table', 'sand', 'ship', … There just is no common core constituting the meaning of the root in each case, and that isn't a problem because language users coin new words and new senses (to meet their communicative needs in specific contexts) by adapting and repurposing the senses and words they already have/know, and they can rely on the pragmatic capacities of their interlocutors to understand and grasp these new senses and words.

The idea of a shared semantically-underspecified core meaning hasn't worked for words and it doesn't look as if it works for roots either, even when the relevant notion of 'context' is radically restricted, as it is here (and in the next position to be considered). Arguably, the identificatory linguistic knowledge that speakers have about the roots in their language is phonological and any apprehension of a root as having meaning is coming from knowledge of the various senses of *the words* based on that root, whose degree of interrelatedness can vary greatly.

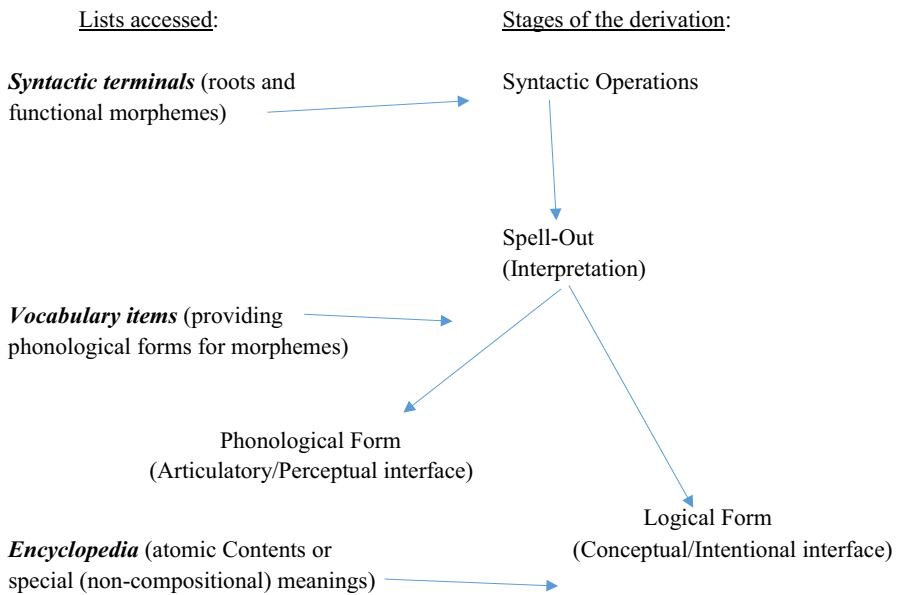### 3.2 Allosemy – Grammatically Conditioned Root Polysemy

The third position on root meaning that I'll look at, in a bit more detail than the previous two (no root meaning, inherent root meaning), is known as 'allosemy' (or 'root polysemy'), viewed by its advocates as a semantic counterpart to 'allomorphy', which is where roots can take different phonological forms in different grammatical contexts.

3.2.1 Allomorphy

In certain current approaches to the language faculty, in particular, the approach known as Distributed Morphology (DM) (Halle and Marantz [1993](); Marantz [1997](), [2001](), [2013](); Harley [2012](), [2014a](); Embick [2015](), [2021](), i.a.), once syntax has done its computational work (that is, performed various combinatorial operations, all of them instances of the basic operation of 'merge'), a structure is 'spelled out' or 'interpreted' phonologically and semantically. That is, on the one side, it undergoes morpho-phonological

operations, resulting in a 'phonological form', which interfaces with the articulatory/perceptual systems responsible for its externalization for use in communication, and, on the other hand, it undergoes certain semantic operations that result in a 'logical form', which interfaces with conceptual/intentional systems (within the individual's wider cognitive system), which are responsible for providing the content or meaning of the structures. As well as the central computational (generative) engine of syntax, there are three lists of stored items: the syntactic primitives (roots and grammatical/functional items); vocabulary items (these are the various phonological forms that syntactic primitives may take); the encyclopedia (which provides 'special', that is non-compositional, unpredictable semantics). This is roughly summarized in the following diagram:[15]

(6)   **Grammar and its Interfaces:**

Lists accessed: Stages of the derivation:

Syntactic terminals (roots and   Syntactic Operations
functional morphemes)

Spell-Out
(Interpretation)

Vocabulary items (providing
phonological forms for morphemes)

Phonological Form
(Articulatory/Perceptual interface)

Logical Form
(Conceptual/Intentional interface)

Encyclopedia (atomic Contents or
special (non-compositional) meanings)

There is some variation among theorists concerning what the syntactic domains of spell-out are, with some allowing just VP's and clauses, while others, especially within DM, include much smaller domains (essentially, those phrases that comprise words) as the syntactic domain that is spelled out (Marantz 2001). There is an assumption here that the phonological and the semantic sides of spell-out are symmetrical and each has its 'allo-' manifestations, so a given single root (nothing more than an index or address, as hypothesized above) may take any of several (related) morpho-phonological forms, depending on its immediate syntactic context (e.g. 'receive' and 'reception', 'wise' and 'wisdom', 'teach' and 'taught', 'mouse' and 'mice') and

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[15] This diagram is an adaptation and combination of diagrams in Embick (2015: 20) and Harley (2012: 2153).

may have any of several (related) meanings (semanticses), also depending on its syntactic context; the first of these, known as 'allomorphy', is well-established, while the second, labelled 'allosemy', is more recent and somewhat more contentious. The further issue of whether or to what extent the syntactic domains within which these two kinds of allo-forms arise are the same is discussed and disputed within the theory (see, for instance, Marantz 2013), but this is a level of detail that I won't consider here, my aim being to cast doubt on the very notion of allosemy.

Let's first look at the allomorphy side of the story and start with a clear case, the English plural (taken from Embick 2015: 172); on this sort of account, the grammatical item 'plural' has the following vocabulary items (allomorphs):

(7)   [+pl] $\longleftrightarrow$ -en / { √ox, √child, …} __

       [+pl] $\longleftrightarrow$ -Ø / { √fish, √moose, …} __

       [+pl] $\longleftrightarrow$ -z

The first of these is to be read as 'the plural' functor manifests as /-en/ when it occurs in the context of (is suffixed to) the roots √ox, √child, and perhaps others that would need to be included in the unordered set; similarly, mutatis mutandis, for the second line, where the plural has a zero realisation. The third line, which does not specify any grammatical context, gives the 'elsewhere' condition or default value for the plural morpheme, that is, if neither of the other contextually specified vocabulary items applies, then the value is /-z/. (Note that this value may itself surface in several distinct forms, e.g. [-z] for 'dog', [-s] for 'cat', [əz] for 'class', but this is entirely a matter of phonological conditioning by the immediately preceding phoneme, e.g. the devoicing caused by the voiceless obstruent [t] of 'cat'.)

The plural morpheme is, of course, a member of a *functional/grammatical category*, to do with number (singular/(dual)/plural). Now, what about the other class of basic syntactic elements, which is more central to this paper, namely, roots? On the surface at least, allomorphy seems to work here in essentially the same way,[16] so, for instance, there are two allomorphs (two vocabulary items) for the root √destroy, roughly indicated here:

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[16] However, an anonymous referee for the journal cautions me that 'the idea that there is allomorphy *of the usual kind* with roots is controversial' (my emphasis). Indeed, there are various ways in which the apparent phenomenon can be approached (whether in terms of competing vocabulary items, hence "the usual kind" of allomorphy, or as requiring special morpho-phonological readjustment rules; see Siddiqi (2009) for clear exposition of these two accounts and of their knock-on effects for the overall view of the grammar). Further issues arise for cases of what is known as 'root suppletion', where the manifestations of a root seem not to have any shared phonology, e.g. 'go'/'went', 'bad'/'worse'; for relevant discussion of root suppletion (from differing points of view), see Borer 2013a, pp. 397–403, and Harley 2014a. Whatever approach one takes to the morpho-phonological phenomena at issue, what I am questioning is the idea that there is a parallel semantic phenomenon (i.e. root allosemy).

(8)   √destroy or √320 ⟷ destrʌk- / { [NP___ [n -tion]], [AP___ [A- tive]], … }

√destroy or √320 ⟷ destrɔɪ

That is, this root manifests as /destrʌk-/ in specific nominal and adjectival contexts ('destruction', 'destructive') and elsewhere it is /destrɔɪ/, the default value. Other cases of root allomorphy discussed in the literature are √mouse with the allomorphs /mais/ manifest in the context of plurality and /maus/ elsewhere (e.g. in the singular and in compounds like 'mouse-trap'), √thief with the allomorphs /thi:v/ and /thi:f/, √speak with the allomorphs /spi:tʃ/, /spouk/, /spi:k/ in different grammatical contexts (see Siddiqi 2009).

Similarly for the bound root √-ceive or √683, which manifests as /sep/ in certain nominal and adjectival contexts (as in 'reception' / 'perception' and 'receptive' / 'perceptive') and as /si:v/ elsewhere, its default value (as in 'receive', 'receiver', 'perceive' and 'perceiver'). This nicely captures a generalization: the /si:v/ ~ /sep/ alternation is a property of the –ceive root itself, which is why it behaves the same way across lexical items that share this root (e.g. deceive, conceive, perceive) and in imaginary nonce items formed from –ceive (e.g. acceive, acception). Contextual allomorphy, then, is a real phenomenon, such that there are distinct vocabulary items (phonological forms) for a single morpheme X (whether a functional item or a root) dependent on the immediate grammatical context Y that the morpheme occurs in, as schematized in (9) (from Embick 2015: 178):

(9)   X ⟷ -x / __ Y

There are important further components of the theory of allomorphy, in particular concerning the 'locality conditions' on the structures within which the morpheme X and the context Y can interact (that is, constraints on the domains within which they can 'see each other'); I think/hope that this important and somewhat contentious issue, which I do not attempt to address here, does not affect my central concern which is to consider the grounds for a semantic parallel to allomorphy (for discussion of these locality issues, see Marantz (2013), Embick (2015, chapt. 7)).

In the next section, the focus is on allosemy, the hypothesized semantic counterpart to allomorphy. After introducing the idea, I look at some putative examples of allosemy, drawing on work from Borer (2014b) and Panagiotidis (2020) in finding striking differences between the way these work (or, in fact, do not work) as compared with the examples of allomorphy just considered. Then, at a more general level, stepping away from specific cases, I question the underlying

assumption informing this work, namely, that there is a Phon/Sem symmetry in language, arguing instead for a significant asymmetry. In short, the position taken here is that there isn't such a phenomenon as allosemy (root polysemy), that roots themselves have no meanings (inherent or grammatically conditioned), and that the bearers of content/meaning are structural domains as defined in Section 2 (Borer's C-core of categorizers), the established/stored non-compositional meanings of these structures (words) having been originally pragmatically inferred in specific communicative contexts.

3.2.2 'Allosemy'—the Idea and its Problems[17]

Apparently paradoxically, some linguists talk of roots as being both meaningless (as discussed above) and polysemous (Marantz 2013, p.103; Panagiotidis & Nobrega forthcoming). How can this be? The idea is that roots are meaningless in isolation but have meanings in a grammatical context, often several distinct meanings, each dependent on the local grammatical context in which the root appears. Marantz characterizes the 'theory of contextual allosemy' as 'the theory about what governs the choice of meaning for a polysemous root.' (2013: 103). Note that if there are such meanings for roots, they are 'special' (non-compositional), as for the meanings at issue in Section 2 above; roots themselves have no structure, no parts to compose, so any such meaning(s) must be atomic. That is, as with allomorphs, allosemes are unpredictable and so have to be listed together with the syntactic contexts in which they are realized.[18]

   In support of the view that contextual allomorphy and contextual allosemy arise in the same local grammatical domains, Marantz (2013: 102–103) discusses the root √house, which has the two allomorphs: /hauz/ as in the verb 'house' and the default (elsewhere) /haus/ as in the noun 'house' and compounds like 'housework'. In parallel to this, he points out, their meanings are not compositionally related: 'no literal *house* nor even a literal *container* is implied by the verb' (p. 102); that is, √house has two contextual allosemes (polysemes): HOUSE (the dwelling) and HOUSE* (roughly: 'give shelter/harbour'). So far, so good (although, of course, this case is at least as well explained by the account in Section 2 on which roots themselves have no meaning, contextual or otherwise). This is not to say that the two phenomena must always occur together: consider 'relief'/ 'relieve', 'belief' / 'believe' (allomorphy without allosemy), on the one hand, and

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[17] Here I confine the discussion to the allosemy of roots and the issues arising in this domain; for a critical appraisal of its application to functional items, see Ramchand (2015).

[18] It remains unclear to me whether or to what extent established/stored figurative meanings (metaphorical and metonymic) are included in this notion of 'root polysemy', since if included, it is difficult to see how *grammatical* context could choose between them. Consider, for instance, the so-called double function adjectives, 'cold', 'warm', 'rigid', 'flexible', 'soft', 'hard' etc., which have both a literal (physical) and a metaphorical (personality) meaning.

the noun/verb pairs 'field'/ 'field' (= catch or stop) and 'pinch'/ 'pinch' (= steal) (allosemy without allomorphy), on the other hand.

Setting aside allomorphy for now, the following seem like good candidates for root allosemy (with the grammatical contexts that condition the allosemes in each case presented very informally here):

(10)

√fetch ⟷ FETCH* (= attractive) in a local adjectival context overtly realized as '-ing'

⟷ FETCH (= get/retrieve) elsewhere

√liquid ⟷ LIQUID* (= get rid of) in a local verbal context overtly realized as '-ate'

⟷ LIQUID (= fluid) elsewhere

√book ⟷ BOOK* (= register/reserve) in a local verbal context

⟷ BOOK (= information tome) elsewhere

It's worth emphasizing that what is being claimed here is that these are *meanings of the root itself*, albeit contextually conditioned.

What about the special non-compositional meanings of complex words such as 'reactionary', 'natualize', and 'recital', discussed in Section 2? Recall that these, as well as the cases just discussed ('fetch', 'liquid', 'book'), all fall within Borer's 'syntactic domain of Content' account. Where do they fit into an allosemy account? Presumably, they simply don't: the meaning 'make a citizen' isn't an alloseme of √nature or √nat (whichever of these is the root here) and 'backward-looking' isn't an alloseme of √(re)act, because in these cases the special meaning doesn't arise in an appropriately local context of the root, there being several categories intervening between the root and the categorization at which the atomic meaning arises.[19] If that is right, then contextual allosemy is quite limited in the range of non-compositional meanings of words based on a single root that it encompasses, meanings all of which might be thought of as associated with that root.

Even allowing for the limited nature of the phenomenon, specific problems arise. Consider the following cases of allosemy for the root '-ceive', or √683, as presented by Harley (2014a: 245):

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[19] There is extensive ongoing work on the issue of what constitutes a spell-out domain (bearing on the locality conditions for root allomorphy and allosemy) and on a distinction between words that are directly root-derived (e.g. the noun /haus/ and the verb /hauz/ discussed above) and words that are (claimed to be) derived from other words (e.g. the verb /haus/ claimed to be derived from the noun /haus/ and so semantically much more closely aligned with the noun (Marantz 2013: 103)). The details are complex and contentious, and I am hoping that my discussion of allosemy can bypass them without distortion; see Arad 2003, Embick 2010, 2015, 2021; Marantz 2013.

(11) √683 ⟷ "think" / [v [[*con*-]ₚ [__]√]ᵥₚ

⟷ "dupe" / [v [[*de*-]ₚ [__]√]ᵥₚ

[with other meanings/allosemes when in the context of *re*-, *per*-, etc.]

The first line is to be read: the (inherently meaningless) root '-ceive' ($\sqrt{683}$) gets a contextual meaning paraphraseable as "think" when it occurs within a verbal domain and is immediately preceded by the prefix 'con- ', and the same goes, mutatis mutandis, for the other cases. As already noted, it's important to be clear that the claim is that the Content (i.e. encyclopaedic meaning) here belongs to the root '-ceive' itself rather than to the whole formation 'conceive' or 'deceive', whose verbal prefixes merely constitute the domains in which it is realized. This seems problematic. As emphasised by Panagiotidis (2020: 61) in a discussion of the Hebrew case above in (5), there is no 'elsewhere' condition here as there is for allomorphy, that is, no default meaning: the contextual meanings of '-ceive' are all, in effect, specific 'special meanings'; they are the atomic Contents CONCEIVE, RECEIVE, DECEIVE, etc. Furthermore, the "think" alloseme realized in the context of [*con*-] does not apply to the "become pregnant" sense of 'conceive'/ 'conception' and the "get" alloseme realized in the context of [*re*-] does not apply to the "social event" sense of 'reception'. There is no nice generalization across cases here as there is for the allomorphy of $\sqrt{}$-ceive (i.e. /siːv/ and /sep/), which holds for all occurrences of the root in the specific syntactic contexts given by the rules. These issues arise for numerous other cases (of Latinate roots), e.g. $\sqrt{}$-mit in 'commit', 'permit', 'transmit', 'emit', etc.; $\sqrt{}$-volve in 'revolve', 'devolve', 'involve', 'evolve', etc.; $\sqrt{}$-tract in 'detract', 'contract', 'subtract', 'retract', etc. In contrast with allomorphy, allosemy seems unexplanatory.

A further point of interest is that the meanings of these roots are semantically **un**related, so talk of root *polysemy* seems misplaced, at least if the word 'polysemy' is being used in its well-established sense of a single linguistic unit which has several *interrelated* meanings, thereby distinguishing it from homonymy (accidental coincidence of form with unrelated meanings). As far as I can tell, it is not the intention of allosemy supporters to obliterate the polysemy/homonymy distinction; I don't think anyone is suggesting, for instance, that the root √bank has as two of its allosemes the financial and the riverside meanings. It seems, then, that what is being captured by the allosemy cases above is etymological relatedness rather than any current semantic/pragmatic relatedness.[20]

Moving now to a different sort of case: the meanings of 'conversions' such as those discussed in Section 2 would, presumably, also be listed as allosemes of the root, so, for example:

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[20] An anonymous journal referee has commented that the unrelatedness of some allosemes of a root is exactly what the allosemic approach to meaning predicts, in parallel with this theory's approach to allomorphy which does not require form relatedness. Allosemy is, then, quite different from standard cases of polysemy.

(12)   √sand or √527   SAND (= rock grains) in [immediate local] nominal context

SAND* (= to smooth) in [immediate local] verbal context

√dust or √113   DUST in [immediate local] nominal context

DUST* (= to remove dust) in [immediate local] verbal context

But what about the sense of the verb 'dust' in 'to dust the cake (with sugar)'? There is no syntactic context to distinguish this "sprinkle" sense from the "remove" sense – it is entirely a matter of discourse context, general knowledge and pragmatics. This could arise (perhaps has arisen already in some instances) for many verbs, which, in principle, allow for both a removing X and an adding X meaning, e.g. 'seed', 'skin', 'shell', 'pit', 'pebble', 'weed'. Similarly, it is easy to envisage a further sense for 'sand' arising and becoming established, as in 'Let's sand this area so the kids can play here' meaning to cover (or pile up) with sand.[21] Nothing about the immediate syntactic context will distinguish the operative alloseme here. The point applies generally to any number of cases of denominal verbs, so 'brick' gets different meanings according to speaker/hearer's concerns as in 'They cleared the debris and bricked the wall' (=make/repair something with bricks), 'She bricked the papers so they would all fit in her bag' (=make something into (the shape of) bricks). Unlike the √-ceive case, these noun/verb alternations *are* instances of polysemy (in the sense of having related meanings), but again there is no default meaning, no generalization across cases, just a list of non-compositional meanings whose realization is not a matter of grammatically specifiable contexts but of fine-grained communicative contexts.

Another issue concerns what exactly constitutes a 'syntactic' or 'grammatical' domain, especially when overt categorizers are involved. Consider, for instance, the nouns 'fracture' and 'fraction', both formed directly from the root √fract and with very different meanings (albeit both to do with 'breaking'); these meanings would appear to be prime candidates for contextual allosemes of √fract, but how are the two local grammatical contexts to be distinguished? The functors '-ure' and '-tion' are both nominalizers of the root and do not seem to have any obviously different formal syntactic/semantic (syn/sem) features, both apparently realizing states, processes, and results (see Lieber (2004:39) who talks of them as rival affixes which are semantically interchangeable). If this is right, it looks as if it will be necessary to involve phonological components, /tjur/ and /šən/, in conditioning the choice of root meaning, but

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[21] In discussing the 'house' example mentioned earlier, Marantz (2013) points out that, as well as the verb pronounced /hauz/, there could be a verb /haus/ (as in 'The developer housed the piece of land in the most ugly way imaginable' meaning 'put up houses'); he maintains that rather than being directly root-derived like /hauz/, this verb is derived from the noun 'house', itself derived from the root, so that this is the same alloseme as that of the noun. Even if that is right in this case (and perhaps the 'sand' case too), it is unclear whether and, if so, how it might apply to the 'dust' type cases.

this is precluded by the assumed architecture of the grammar and its interfaces (see the diagram at (6) above). There seem to be several other noun pairs built on a single root, to which this concern pertains: creature/creation; fissure/fission; denture/dentition; juncture, junction; nature/nation.[22] Other pairs that may raise the same problem, but involve different pairs of affixes are 'proposal'/ 'proposition', 'sensory'/ 'sensual', 'credal'/ 'credible'. Another manifestation of the same issue (that is, the required 'grammatical' nature of the conditioning context) arises for the multiply polysemous words/roots 'run', 'bear', and 'line'. Consider √run and its myriad meanings when in an immediate verbal context: 'run a mile', 'run a business', 'run a bath', 'run a tight ship', 'run for president', 'run for New Zealand' (in the commonwealth games), 'run an argument/idea', and more. It looks very unlikely that each of these different meanings for 'run' and hence potential allosemes of √run can be distinguished entirely on the basis of immediate grammatical context, but rather that considerations of discourse context and real world knowledge have to be brought to bear, a far more expansive notion of context than anything needed for allomorphy and one which has, therefore, been excluded also for allosemy (see Harley (2014b: 469) for brief discussion of the exclusion of 'discourse context' from the theory of allosemy).

In her stringent critique of Harley's (2014a) applications of allosemy, Borer (2014b) points out further problems that the approach faces when dealing with idiomatic phrases (e.g. 'spill the beans', 'kick the bucket'),[23] the key point being that these structures receive their idiomatic meanings as a whole. She extends the point to morphologically complex and simple words quite generally:

> Clearly, neither *kick* nor *bucket* are assigned Content in the context of the idiom *kick the bucket*. Rather, what is assigned Content is the constituent as a whole. By a similar rationale, neither *nat* nor *ceive* are assigned Content, nor, for that matter, are *nature* and *natural* within *naturalize* when the relevant Content is NATURALIZE – *become a citizen*. Rather, Content is assigned to *receive* or to *naturalize* as a whole. But if that is the case, then there is little reason to assume

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[22] The relative rarity of both these suffixes nominalizing a single root is a further indication that there is very little, if any, difference in their syn/sem features, so e.g. rupture, *ruption; aperture, *aperition; culture, *cultion; closure, *clotion; stricture, *striction; fiction, *ficture; emotion, *emoture: ovation, *ovature; and many more. That is, typically, these two suffixes occur in complementary distribution.

[23] See Harley (2014a: 270–271) on the (allosemic) interpretations of √kick and √bucket in the context of 'kick the bucket'. Early remarks supporting this approach (although not yet using the term 'allosemy') to the meaning of 'bucket' in the idiom 'kick the bucket' appear in Marantz (1995, p.9): '… When a specialized context is listed in the Encyclopedia that "bleaches" or negates the (canonical/default) semantic effect of the choice of a Vocabulary item, this is a case of special non-compositional meaning. For example, in "kick the bucket," the choice of "bucket" might lose its canonical non-compositional meaning referring to buckets in the syntactic context of "kick".' However, in subsequent work, Marantz (and others working on allosemy), has recognised that allosemy does not apply to phrasal idioms and the two must, therefore, be given distinct accounts (Marantz 2013, and see discussion in Anagnostopoulou and Samioti 2013). Similarly, Borer's 'syntactic domain of Content' does not apply to phrasal idioms, which as she points out (following Nunberg et al. 1994) have quite different properties from those of words with non-compositional meaning (Borer 2013a: 480–488).

that roots are ever assigned Content, with or without context. Content, rather, is always associated with (labeled) syntactic constituents, at times with considerable internal complexity. To the extent that we perceive the 'root' realized as *dog* to have Content, then, this is not because the root itself has Content but rather, [$_N$ $\sqrt{}$dog] has Content, distinct, we note, from that associated with [v $\sqrt{}$dog]. (Borer, ibid: 356)

This is, of course, the position I have adopted in Section 2: given an adequate account of the syntactic domain of Content, as developed by Borer (2013a, b), together with a store of such Contents (established non-compositional meanings), and a process for matching the two, there is no need for anything like allosemy.[24] So, given the problems with specific alleged cases of allosemy and its, at best, very limited explanatory range, the Borerian account seems preferable.[25]

Leaving aside the details of specific cases now, the question arises: why is it that this alleged allomorphy/allosemy symmetry is seen by many theorists, especially those working within the DM framework, as a desideratum of the theory, which it very clearly is (see, in particular, Marantz (2013: 97))? Certainly, the architecture of DM, itself reflective of the architecture of the broader minimalist program in generative grammar (syntax kept minimal with much of the action now playing out at the phon/sem interfaces) (Chomsky 1995a, 2021; Allott & Lohndal forthcoming), does seem to point to such a symmetry (see the diagram in (6)), with the syntax cyclically sending chunks of structure off simultaneously to both kinds of spell-out (interpretation). Theory-internal considerations of economy and elegance, then, appear to favour a phon/sem symmetry, and thus, given the undoubted reality of allomorphy, the existence of a parallel phenomenon of allosemy.

I think there are significant grounds for doubting that there is such a symmetry, that the semantic interface works in the same way as the phonological interface. First, recall that there are really two kinds of allomorphy, syntactically conditioned (e.g. the different plurals for 'boy', 'child', 'sheep') and phonologically conditioned (e.g. the distinct manifestations of the plural /-z/: [-s], [-z], [iz] (Embick 2015: 173–176)). Similarly for the allomorphy of the bound root $\sqrt{}$-fer, with distinct syntactically conditioned stress patterns (as in 're**fer**' vs. '**re**ference', 'refe**ren**tial') and, arguably, phonologically conditioned allomorphs /fɚ/ and 'fɚr/ as in 'refer' and 'referral'. Given the symmetry assumption, one might wonder what parallel there might be to this phonologically conditioned allomorphy on the allosemy side. Apart from the (alleged) syntactically conditioned meanings, the only other 'conditioning'

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[24] As a non-syntactician, I acknowledge that I have found the 'allosemy' view difficult to grasp and it may well be that, as one of the reviewers maintains, my presentation does not do it justice. In case this is so, let me note here some of the points he/she made: "Some morphemes show allomorphy and others do not. The same in the meaning side. Some roots have allosemes, but others do not. So, the problem is not whether roots have inherent meanings or not, but whether syntax plays a role in the realization of a subset of meanings. … this theory does not say that all meanings are allosemic, in the same way as not all forms are allomorphic. Allosemy theory is compatible with some roots having fixed meanings.".

[25] A variant of the allosemy position is taken by Saab (2016), who maintains that the amount and type of root content varies from the fully conceptual to the negligible. For critical discussion of this 'spectrum of content' view, see Panagiotidis & Nobrega (forthcoming).

factor available on the meaning side seems to be semantic/pragmatic. But there is no parallel here. Phonologically conditioned allomorphs are a small definitive set, the predictable outcome of facts about human articulation: the plural of the non-sense word 'jelit' will be pronounced [s], the plural of 'dax' will be pronounced [iz]. 'Semantically or pragmatically conditioned' meanings, on the other hand, are indefinite in number (new ones arising every day for ever-evolving speaker-hearer purposes, some recurring, many one-off and transient), unpredictable ahead of specific contexts of utterance—we can't predict what 'jelit' or 'dax' may come to mean, nor for that matter the meanings that 'mouse', 'swipe', 'remote' or any other word may acquire in use. There is no phon/sem parallel here.

Arguments coming from a rather different direction, point to an intrinsic asymmetry between the phonology and the (conceptual) semantics of a language. As Studdert-Kennedy (2000) says: '… a purely semantic representation of any language is indeed impossible, because a phonetic structure is intrinsic to every word. Every language has phonologically permissible words that happen not to have been assigned a meaning (so-called nonsense words). *No language has words that have meaning, but have not yet been assigned phonological form*' (ibid: 173; my emphasis).[26] The point is well illustrated by the famous (and now much-used for linguistic purposes) Jabberwocky sentences, e.g.'Twas brillig, and the slithy toves / Did gyre and gimble in the wabe / All mimsy were the borogoves / And the mome raths outgrabe.' These are perfectly grammatical sentences of English, with a minimal formal meaning template provided by functional and other closed-class items (e.g. 'and', 'the', 'was', 'all', plural, past tense, etc.), but the point here is that the open-class content words are phonologically complete and impeccable for English while lacking Content; the reverse situation (Content but no phonology) would simply not comprise linguistic expressions of any language. In short, languages are vehicles for Content and it is the phonology of a language that provides the vehicle.

The asymmetry at issue here could be argued to have its roots in a more fundamental (evolutionary) asymmetry, according to which the computational (syntactic) system has an asymmetrical relation with the two external components, the semantic-pragmatic or conceptual-intentional (CI) and the sensorimotor (SM) (Chomsky 2010; Berwick and Chomsky 2011, 2016).[27] Adopting this view, Mendívil-Giró

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[26] Studdert-Kennedy's topic is, in fact, reading and alphabetic writing systems: 'the letters of an alphabet represent neither sounds nor articulations, but phonological entities (phonemes) at a higher level of abstraction than the perceptuomotor entities that we must posit to account for imitation. Each phoneme encompasses a class of phonetic variants, or allophones, that vary across phonetic contexts, dialects and even individual speakers. What is important here is that alphabetic writing represents the phonological form of a word, not its meaning. *That is why we can read a text without understanding it, but cannot understand a text without reading it.*' (2000: 173; my emphasis).

[27] However, Studdert-Kennedy's points stand independently of whether or not one accepts this claim of an evolutionary asymmetry.

(2019) says: 'the computational system would be optimized for its interaction with the CI system, while the relationship with the SM system would be ancillary or secondary. It is then implied that the computational system is coupled with the CI system to form a kind of "internal language of thought" that would be essentially homogeneous within the species and that would not be evolutionarily designed for communication, but for thought.' (ibid: 1164). The secondary relationship, with the SM systems, comes with the externalization of language via the SM systems, making it usable for communication (articulable and perceptible), and giving rise to human language**s** with all the diversity and specificity of their sensorimotor properties (sounds/gestures) and of some of their structural properties.[28]

In line with the claim of a phon-sem asymmetry, some theorists maintain that while roots are meaningless in and of themselves, they do have phonological properties, and are, in fact, fundamentally phonological in nature. For instance, Borer (2013a) maintains that a root is a *phonological index*: 'a reference constant across all occurrences to a specific phonological information packet, where both /thief/ and /thieve/ could be accessed under the relevant syntactic circumstances, and where principles of *phonological faithfulness* would ensure some threshold of phonological relatedness, however defined' (p. 381; my emphasis).[29] In support of this view, there are verb pairs whose meanings are very closely related, e.g. 'eat' and 'feed', 'die' and 'kill', (the latter pair being semantically related in much the same way as the two occurrences of the single verb 'close' in 'The door closed' and 'Sue closed the door'), but which clearly have distinct roots: $\sqrt{\text{eat}}$ and $\sqrt{\text{feed}}$, $\sqrt{\text{die}}$ and $\sqrt{\text{kill}}$, rather than being allomorphs of a single root. That is, phonological form and not meaning/content is the key individuating property of a root, and in the case of the pairs 'eat/feed' and 'die/kill', the threshold of phonological relatedness for a single root is simply not met (so also for the closely semantically related pairs 'leg/walk',

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[28] As Berwick and Chomsky (2011: 37) put it: 'Parameterization and diversity, then, would be mostly – possibly entirely – restricted to externalization. That is pretty much what we seem to find: a computational system efficiently generating expressions interpretable at the semantic/pragmatic interface, with *diversity resulting from complex and highly varied modes of externalization*, which, furthermore, are readily susceptible to historical change' (my emphasis). For further elaboration, see Mendívil-Giró (2019).

[29] It lies beyond my aim here (and my capacity) to argue for (or against) this phonological view of roots, but Borer certainly makes a powerful case in its favour (Borer 2013a: 379–403), concluding that the very subject matter of morphology depends on (categoryless, meaningless) roots being fundamentally phonological. As noted in the quote above, the idea that a root is a package of phonological information (or instructions) does not entail phonological *identity* across all of its occurrences but rather that a standard of *sufficient phonological resemblance or faithfulness* (yet to be delineated) is met by the allomorphs of any given root (e.g. thief/thieve, mouse/mice, worse/worst; better/best, -ceive/-ception, -mit/-mis, -duce/-duct). On this view, then, cases of suppletion (e.g. good/better; bad/worse, go/went) must be taken to involve two distinct (phonological) roots.

'round/circle', 'wing/fly', and umpteen others).[30] Just like the roots √tove, √gyre, √wabe, √gimble, etc., which underlie the not (yet) contentful noun forms 'tove', 'wabe' and the verb forms 'gyre' and 'gimble', established roots for English such as √ceive and √teach come with phonological properties, albeit underspecified so as to allow for contextual allomorphs as discussed above (e.g. /siːv/ and /sep/ for the root √-ceive, and /tiːtʃ/ and /tɔːt/ for the root √teach, which are realized in particular grammatical contexts). The point, again, is that phonological forms are in this sense basic and intrinsic to a specific language, while meanings/Contents, the stuff of thoughts and central to communicative interactions, are a distinct (probably universal) system, parts of which get hitched up to pieces of linguistic form (and are perhaps thereby transformed (Pietroski 2018, 2023; Acquaviva 2022)).

To conclude this discussion of the meaning of roots, we have seen three positions:

(1) Roots have a meaning in and of themselves, which may be (a) fully semantically specified (it is unclear whether anyone holds this view) or, more plausibly, (b) semantically underspecified (Arad 2003, 2005);

(2) Roots have no meaning in isolation, but in at least some cases, they have meanings (allosemes) that are realized in specific local grammatical contexts (Marantz 1995, 2013; Embick and Marantz 2008; Embick 2021; Harley 2014a, b);

(3) Roots themselves have no meaning, with or without context (Borer 2013a; Acquaviva 2014; Panagiotidis 2020). On some accounts taking this position, meaning (atomic Content) is assigned/matched to certain delimited phrasal structures (familiarly known as 'words') within which a root occurs, as detailed in Section 2.

The burden of this section has been to argue that neither of the first two options holds; rather, a root is a categoryless and *meaningless* index, which provides a marker of and, once categorized, a receptacle for inferred or stored atomic Content (sense), which can only be assigned to, or matched with, specified pieces of structure, and whose origin is pragmatic.[31]

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[30] One might wonder if there is any such threshold for semantic relatedness of words based on the same root. If there is, it seems very low, as pragmatic inferences in fine-grained communicative contexts can take meanings of a single form in many directions, as discussed in Section 2. Such single-root-based pairs as 'recite/recital', 'react/reactionary', 'flake/flakey', 'prove/proofs' have very divergent meanings. Over time, however, it may be that any meaning connections become sufficiently distant that they are lost to language users and what may have started out as polysemy is now homonymy. The form 'bank' may be such a case (see discussion in Elbourne (2011: 38)); whether we (still) have a single root √bank or two (albeit homophonous) roots, √291-bank and √377-bank, is a further interesting question.

[31] A distinct position on root semantics, not explored here, is that roots are to be classified as belonging to different ontological types, e.g. 'individual'-denoting, 'state'-denoting, 'event'-denoting, i.e. the idea that some roots are inherently 'nouny' (e.g. √dog) or 'verby' (e.g. √break) and that there are subclasses within the latter, perhaps as proposed by Alexiadou et al. (2006: 202): *agentive* (e.g. √murder), *internally caused* (e.g. √wilt), *externally caused* (e.g. √destroy), *cause unspecified* (e.g. √break), hence restricting their interaction (merging) with functional categories in the syntax. See also Harley (2005), Anagnostopoulou and Samioti (2014), Levinson (2014). Much of this work draws on the extensive earlier work on classes of verbs by Beth Levin and Malka Rappaport-Hovav (e.g. Rappaport-Hovav & Levin 1998). If correct, this sort of view would indicate that roots are not entirely semantically vacuous in isolation, after all, although this semantic typing is quite different from the attribution of specific meanings to individual roots. Many thanks to Terje Lohndal for relevant discussion.

4 Conclusion: Words as Units of Communication

What makes words particularly interesting and revealing is that they are both formal syntactic structures and manifestations of language as an instrument of communication, comprising the phonological vehicles (articulable and perceptible) that make the communicative use of language possible and providing a hub for the accumulation of senses/contents that matter to communicators in their exchanges with others. Compositional phrasal structures tend to become replaced by structures that allow non-compositional meaning when the denotation/content has passed some threshold of usefulness or salience in the life of a language community: 'When new tools of uncertain usefulness are invented, speakers may describe them by means of phrases, like "computing machinery," in Turing's seminal paper (1950), or "self-driving car" today. If their referents prove to be widely useful and become ubiquitous, such phrases are likely to be replaced by single words, like "computer" or "hybrid".' (Spelke forthcoming).

While the narrow language faculty (syntax and its interfaces) have roots (and a wide array of functional categories) as their basic elements (primitives), the linguistic communicator, arguably, employs words and other bearers of non-compositional meaning/content as basic communication units. As noted in the introduction, even those who disavow the scientific reality of words, recognise their psychological reality for language users: "The psychological reality of words is probably a consequence of their distributional properties … words are the minimal linguistic units that speakers can manipulate consciously. It is therefore no surprise that speakers are generally aware of words" (Julien 2007: 83), and "What people learn, use, recognize, utter, forget, recall, and miss are words, not morphemes [roots, affixes, etc. (RC)]" Mendívil-Giró (2019: 1207), due, in his view, to the fact that they are the smallest stretches of syntax that connect to the sensorimotor systems responsible for language externalization. Based on observations of this sort, it seems reasonable to hypothesize that there is a user-based communicational lexicon, quite distinct from any of the listed elements of the narrow linguistic (syntactic) system. Such a lexicon stores conventionalized pairings of phonological forms and families of senses, so it connects up items of the two interface components, the sensorimotor and the conceptual-intentional (or 'semantic-pragmatic'). The sense in which the meanings stored here are 'semantic' is not just that they can contribute to the truth-conditional content of utterances (i.e. are fully specified), as can ad hoc occasion-specific senses, but that they are established/conventionalized, while their polysemy families preserve various degrees of interrelatedness that reflect their typically pragmatic origins. In Chomskian terms, this sort of lexicon is a component of the language 'performance' systems (see footnote 3) and as such it reflects usage properties that are wholly irrelevant to the syntactic/compositional linguistic 'competence' system; for instance, the *frequency* of use of words and of particular word meanings, and the numerous associative relations (phonological, morphological, semantic) that give

rise to priming effects, both of which are important factors to be controlled for (or exploited) in psycholinguistic experiments on language processing.

This notion of a communicator's lexicon is, of course, quite distinct from the old 'lexicalist' view of the lexicon, which prevailed in earlier generative grammar and which was a pre-syntactic lexicon, a location for the derivation and storage of words which provided the basic input to the syntax. The lexical entries of the lexicalist lexicon were repositories of considerable syntactic and semantic information, including the argument structure of verbs and so-called 'selection restrictions' on those arguments (e.g. the subject of 'eat' must be animate, the object of 'hit' must be concrete). Rules of word formation (affixation) were also located here before the advent of DM (Halle and Marantz 1993; Marantz 1995) and Borer's 'exoskeletal' view of the lexicon as a 'listicon', which does not replicate syntactic information.[32] As Marantz (1995) puts it, on the 'lexicalist' approach, there was a *computational lexicon* as distinct from the computational syntax (so two language engines). The *communicational lexicon* is not computational, not generative – it is a repository of stored communication units, with well-established (i.e. conventionalized) atomic (unpredictable, non-compositional) meanings that cannot be generated/composed from the meanings of their parts and their syntactic structure. Individual speakers' communicational lexicons are likely to be somewhat idiosyncratic, incomplete, and informationally scrappy, overlapping to an appreciable degree with those of other members of a speech community but not 'shared' in any strong sense; they may contain 'communal sublexicons', tagged for the particular subgroup with whom the individual shares them (economists, linguists, Londoners, football aficionados, etc.) (Clark 1998).

The communicational lexicon, as I conceive of it, bears considerable resemblance to the lexicon developed in Jackendoff (1997, 2002), which he sees as the 'store of *memorized elements* of language', as distinct from those aspects of language which are generated afresh on each use by combinatorial rules (syntax). On this construal, the lexicon contains not only words (with their various stored senses), but also larger multi-word items: idioms like 'to spill the beans', 'The cat's got NP's tongue', frozen expressions like 'by and large', 'in cahoots with', 'kith and kin', and even whole sentences like 'May the force be with you'. Marantz (1995, 2001) has argued that Jackendoff's corpus of memorized/stored pieces of language is a quite different entity from anything we would want to call a 'linguistic lexicon'. This seems right to me; rather, it's a language user's communicative lexicon, containing myriad memorized conventional language uses, and it may have quite a considerable degree of internal organisation (established 'words' and their evolving families of senses may comprise one component,

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[32] See Borer (2017) for a clear account of developments within the lexicalist approach and of the issues that led to a radical redrawing of the lexicon/syntax boundary on constructivist and other root-based accounts.

social formulas like 'May the force be with you' having some distinct status, frozen forms another, and so on).[33]

An issue that arises for the communicational lexicon concerns the possible co-occurrence of compositionality and conventionality. It is clear that conventionalized non-compositional (atomic) meanings (e.g. REACTIONARY, NATURALIZATION, TRANSMISSION, DETECTIVE, etc.) must be stored, but what about apparently conventionalized compositional meanings (e.g. TRANSMIT+ion, REVOLU+tion, KIND+ness, SYNTAC+tic, FANTAS+ize)? The latter can all be composed/generated from the atomic meaning of the parts and their syntactic structure, as is the case for new coinages that we are sometimes aware of producing on-the-fly (e.g. 'crafty' with the meaning of engaged in crafts (making things), or 'machination' with the meaning of the filling of a space with machines). On the other hand, since the examples at issue involve well-established meanings/uses of these English words (i.e. they seem to be conventionalized/memorized), they appear to meet the standard criterion for storage in the lexicon and direct retrieval, as a single unit, by communicators. Some theorists working within the single syntactic engine framework posit a principle of 'Full Decomposition' according to which 'No complex [linguistic] objects are stored in memory; i.e. every complex object must be derived by the grammar', from which it follows that '*every word* and every phrase *is built every time it is used*' (Embick 2015: 17; my emphasis).[34] See also Mendívil-Giró (2019: 1192) who explicitly adheres to this principle, albeit with a somewhat different view from Embick of the kind of "complex object" that words and phrases are. Full decomposition is perhaps intended as an ideal, as a principle which would make for the most economical and elegant theoretical account: the only listed/stored items are syntactic primitives (i.e. roots, functors), vocabulary items (i.e. phonological realizations of roots and functors), and atomic Contents.

Again, then, a certain tension arises here as the FD principle seems to be at odds with the conventionalization and storage of complex (compositional) forms and meanings, and thus with the reality and salience of words (and other communication units) for language users, ordinary folk constantly employing language for communication. I remain unsure about the best way to go on this issue, but incline to the view that communicative exigencies coupled with our undoubtedly

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[33] In more recent work, Jackendoff has moved to a full-blown 'construction grammar' view of the lexicon, according to which it 'incorporates the rules of grammar and explicitly encodes relationships among words and among grammatical patterns', i.e. there is no principled distinction between grammar and lexicon (Jackendoff and Audring (2020). This, then, is radically different from what I am proposing, which maintains a strong divide between the computational system (grammar/syntax) and stored items in the lexicon, the latter belonging to the language faculty only on a broad construal that encompasses language as an instrument of communication.

[34] The principle of Full Decomposition is presented by Embick (2015: 21) as one of the four core positions that define the framework of Distributed Morphology.

capacious memories point in the direction of storage of these structurally and semantically complex units, notwithstanding the apparent redundancy and lack of theoretical parsimony this entails.[35] It could be argued that this is not a pernicious redundancy in that there are two distinct cognitive systems here, the computational (syntactic) and the communicational, although the former (arguably, not originally selected for a communicative function[36]) is recruited by the latter in generating the phrases and sentences we utter. Such a 'redundancy' in the overall architecture may make for more economical processing in utterance production and comprehension, the retrieval of ready-made communication units being, at least sometimes, less effortful than building structures and matching forms with meaning/sense. Whether or not this proves to be the right way to view the situation awaits more work on the interface of the formal/computational/syntactic and the communicational/pragmatic/performance components of the language mosaic.

Declarations

Conflicts of interests/Competing interests The author has no competing interests to declare that are relevant to the content of this article.

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[35] A similar parsimony issue arises in pragmatics when a word is regularly used with two senses, one of which is inferable from the other (i.e. calculable in context using pragmatic principles/maxims), e.g. perhaps the metaphorical use of the verb 'to disarm' or the narrowing of the general meaning of 'drink' to the more specific alcoholic drink meaning. According to Grice's Modified Occam's Razor: '*Senses are not to be multiplied beyond necessity*', often interpreted as 'if a meaning of a word can be pragmatically derived from another conventionalized sense of the word then it should not be treated as a (stored) sense of the word'. This principle held sway in early Gricean pragmatics, but is much less favoured now. For discussion, see (Carston 2020/21).

[36] As noted in Section 3.2, this is the well-known 'evo devo' view of Chomsky (Chomsky 2010; Berwick and Chomsky 2011, 2016); see Mendívil-Giró (2019) for an instance of a detailed working out of this view and its implications for the nature of the externalized languages we use in communication, an account that is broadly driven by the same issues and outlook as that of Borer (2013a), which I've adopted in this paper, but with some very significant differences also: in particular, Mendívil-Giró argues that it is concepts that are categorized rather than roots.

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