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A monoradical approach to some cases of disuppletion

Abstract: This paper, a commentary on Harley 2014, explores cases of disuppletive roots, such as *destroy/destruct*, *persons/people*, and *worse/badder*, the predominant approach to which is to assume that these come from different roots. We adopt a monoradical approach to such cases, claiming that they always involve the same root, but that the suppletive allomorphy is conditioned by the presence or absence of additional functional heads in the structure. We also posit that defective verbs in Spanish, an extreme case of disuppletion (whereby one of the exponents of this root is ineffable), receive a straightforward analysis as a case of contextually limited allomorphy, following Harley's postulate that certain formatives may have no elsewhere item on either the LF or the PF side (the Encyclopedic List and the Exponent List, respectively).

Keywords: roots, allomorphy, suppletion, late insertion, pluralia tantum nouns, comparative suppletion, backformation, defective verbs, paradigm gaps

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1 The construction of roots

Heidi Harley's paper 'On the identity of roots' (2014) presents a convincing and comprehensive analysis of allomorphy and allosemy in verbal roots that demonstrates that the acategorical roots of Distributed Morphology (and potentially any realizational theory of morphology that attempts decomposition based on cross-linguistic and psycholinguistic evidence) are abstract indices, bearing neither dedicated phonological nor interpretive form, both of these being contextually determined. As such the account provides even fuller teeth to the Distributed Morphology (DM) notion of separate *lists*, wherein the Formative List (List 1), the Exponent List (List 2), and the Encyclopedic List (List 3) are wholly distinct, and

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in which roots such as Hiaki $\sqrt{\text{RUN356}}$ are realized as *vuite* in the context of a singular argument but *tenne* with a plural argument.

In a sense, this kind of suppletion in the context of verbal arguments should be no more surprising than the already familiar suppletion between *am* and *are* in the context of tense and agreement. Harley, however, musters important argumentation that, contrary to Marantz (1996), suppletion is not strictly limited to light/functional formatives:

Only “functional” stems, stems whose insertion is completely determined by features and thus whose stems aren’t involved in “ties” for insertion, could have suppletive allomorphs on this view. This approach would require a particular analysis of apparently “light” lexical stems that show suppletive allomorphy, including “go/went” in English as well as the words for “person” “child” “have” “be” etc. in various languages. (p. 17)

Harley, based on Veselinova’s (2006) crosslinguistic survey, presents evidence that patently lexical verbs with meanings such as ‘bite off’, ‘fall in water’, and ‘bet’ can show root suppletion based on singular/plural number, thereby disabusing any morphologists of the notion that suppletion is limited to lexically light/functional verbs. Rather, roots bear an abstract index (represented here by a series of alphanumeric characters), and their phonological form is contextually determined based on locality in their syntactic environment. Similarly, Harley develops argumentation that roots show allosemy that is contextually determined, thereby providing an implementation for how the same Hebrew root $\sqrt{\text{KB} \uparrow 438}$ can underlie the complex syntactic structures forming the words for ‘pickle’, ‘highway’ and ‘oppression’ (example due to Aronoff 2007), and for how the same English root $\sqrt{\text{CEP765}}$ may undergo allomorphy in *deceive/deception*, *perceive/perception*, despite an interpretive status that varies contextually.

Given the advances in clarifying the interplay of acategorical root indices with contextually determined allosemy and allomorphy that Harley’s paper has provided, the point of the current commentary is to demonstrate how an analysis of this sort is perfectly suited for dealing with allomorphy and allosemy in cases of *destroy/destruct* and *person/people*. It is thus all the more surprising that Harley has elected to treat such cases as the result of half-homophonous roots in Footnote 17:

P. Svenonius (p.c.) brings up cases where the two suppletive variants of a particular root, while remaining in a productive alternation in the main, have developed independent particular idiosyncratic meanings. For example, each member of the plural/singular *people* ~ *person* alternation occurs in particular contexts where the alternation is not productive. When this root occurs as a denominal locatum verb, for example, it’s always *people*: *to people/*person the planet*. In contrast, in the context of official search-and-rescue opera-

tions, we always have *person*, even in the plural, losing its idiosyncratic plural: *The Missing Persons Bureau*. For this case, I suggest that *people* is the elsewhere form, *person* being specified to occur in the context of a [+sg] Num⁰ head; thus *people* appears in the verbal as well as the nominal environment. In the special context of search-and-rescue (or other contexts where the individual's particular body is salient), we are dealing with a separate, half-homophonous root, realized by *person*. There are similar cases in the domain of Latinate verbs; consider, for example, the verb *to self-destruct*, which in undergoing back-formation from *self-destruction* lost its identity with the root exhibiting *stroy* ~ *-struct* alternations: **to self-destroy*.

In this paper, we provide examples of single-root analyses of allomorphy and allosemy facts in the verbal, nominal, and adjectival domains. We begin with our previous analysis of the *destroy/destruct* alternation (sketched in Arregi and Nevins 2013) in Section 2. In Section 3, we demonstrate that the same arguments for suppletion beyond light/functional items is needed for nouns, and in Section 4, we present an analysis for allomorphy and allosemy in *person/people* that does not depend on two roots, but rather on contextually determined allomorphy and allosemy of precisely the type made possible by Harley's model. Section 5 takes us to the realm of adjectives, in which we examine the difference between *worse* and *badder*, and provide a single-root analysis along the lines proposed for *person/people* in the preceding section. Taking full advantage of the parallels between allomorphy and allosemy brought out by Harley's paper, in Section 6 we propose that Harley's analysis of *caboodle* roots (whose meanings are wholly dependent on conditioning context) in terms of the Encyclopedic List can be extended to account for gaps in the paradigms of some so-called 'defective' Spanish verbs through an extension of the no-elsewhere idea Harley proposes to the Exponent List. We end the paper with a few concluding remarks in Section 7.

2 The roots of destruction

As an example of a monoradical analysis of disuppletion, consider the allomorphy between *destroy* and *destruct*, regulated by sisterhood v^* (i.e. the head that introduces external arguments in transitive verbs). We assume that both /dəstɔɪj/ and /dəstɪlɪkt/ are allomorphs of an abstract, categoryless root (in the sense of Arad 2003), denoted here as $\sqrt{\text{DESTR156}}$:¹

¹ In this paper, we distinguish notationally category-fixing heads (e.g. V, whose syntactic role is to form verbs) from other category-specific heads (e.g. agent-introducing v^*) by capitalizing the former and representing the latter in lower case. This differs from standard notation in DM, where category-fixing heads are often represented in lower case (e.g. Harley 2014).

- (1) *Allomorphs of the root destroy/destroy, differing only in contextual restriction*
- $/d\text{ə}st\text{ɔ}j/ \leftrightarrow \sqrt{\text{DESTR156}} / \text{--- } v^*$
 - $/d\text{ə}st\text{ɪ}\lambda kt/ \leftrightarrow \sqrt{\text{DESTR156}}$

The second item, $/d\text{ə}st\text{ɪ}\lambda kt/$ is an elsewhere item – less specific with respect to context. As such, it occurs in all environments besides those with immediate sisterhood to v^* , including adjectives (*destructive*, *destructible*) nouns (*destruction*) and root compounds in which the root $\sqrt{\text{SELF}}$ blocks sisterhood with v^* in *self-destruct*.²

In other words, there is no need for a back-formation analysis of *self-destruct* (Aronoff 1976: 27–28), which simply receives the elsewhere allomorph.³ Surprising confirmation of the analysis in the text comes from the lyrics to the song “As I destruct” by the band Threat Signal,⁴ which employ the verb in question in an unaccusative usage, where v^* is not present. The allomorph $/d\text{ə}st\text{ɔ}j/$ is only used in a limited/specialized environment. We assume that passive *destroyed* (not **destroyed*) contains transitive v^* . This can be implemented in terms of a head Voice distinct from and higher than v^* (present in both actives and passives) that in its passive incarnation, suppresses the external argument licensed by v^* and is also responsible for other systematic differences between passive and active configurations (Collins 2005 and Merchant 2013; see also Pykkänen 2008:Chapter 4 and Harley 2013 for related proposals).

3 Suppletion in nouns

As one of the goals of Harley’s paper is to convincingly demonstrate that suppletion occurs in verbs that cannot plausibly be reduced to semifunctional, lexically light heads (as opposed to roots), and that thereby roots themselves must undergo late, postsyntactic Vocabulary Insertion, we focus here on the existence of sup-

² Although some of these non-verbs might be deverbal – and thus include category-fixing V – they lack the v^* head that licenses external arguments in verbs (Marantz 1997). See Punske 2012 and Ultra-Massuet 2013 for recent discussion of deverbal nouns and adjectives in the framework of DM. With respect to *self-destruct*, it is not clear to us whether it contains v^* . If it does not (like unaccusative *destruct*, discussed below), suppletion in this case is simply due to the absence of v^* .

³ Indeed, the notion of backformation – that diachronically, *self-destruct* appeared in the history of English after *self-destruction* – is an E-language notion.

⁴ <http://www.songlyrics.com/threat-signal/as-i-destruct-lyrics/>.

pletive singular/plural pairs in nouns, where the very same argument can be made.

In fact, there is a great deal of nominal suppletion with singular/plural pairs. One clear set of examples comes from Archi (see Moskal 2013 for an overview), in which many such nouns cannot plausibly be called ‘functional items’, such as those meaning ‘corner of a sack’ and ‘pier of a bridge’:

(2) *Number-driven root suppletion in absolutive forms of nouns in Archi*

	Singular	Plural
‘man’	bošór	kɛlé
‘shepherd’	úɫdu	ɫːʷat
‘corner of a sack’	bičˀní	boždó
‘woman’	ɫːonnól	χom
‘cow’	χˀon	bucˀi
‘pier of a bridge’	biqˀní	bozdó

It should therefore be clear that Harley’s arguments that root-suppletion of non-functional items demonstrate the need for late insertion of roots (and therefore abstract, phonologyless indices) transfer over directly to nouns as well (see also Bonet and Harbour 2012:Sec. 6.3.2 and Haugen and Siddiqi (2013) for discussion). In the next section, we demonstrate how the notion of phonologyless, indexed roots, which acquire allomorphic (and allosemantic) properties in Lists 2 and 3, respectively (which we call the Exponent List and the Encyclopedic List), can account for the *person/people* allomorphy discussed in Harley’s Footnote 17.

4 Missing persons

We propose that the key to understanding all the uses of *people* and *person* mentioned by Harley lies in the analysis of pluralia tantum nouns such as *scissors*. Adapting Harbour’s (2007, 2011) analysis of collective and pluralia tantum nouns in Kiowa, we analyze these nouns in terms of the feature [+group], which we locate in category-fixing N.

This feature is relevant to nouns that describe individuals that typically come in groups, such as collective nouns (e.g. *hair*) and pluralia tantum nouns (e.g. *scissors*). The former are [+group], which signifies that the parts of a plurality are nonsalient, while the latter are [–group], which indicates that these parts are

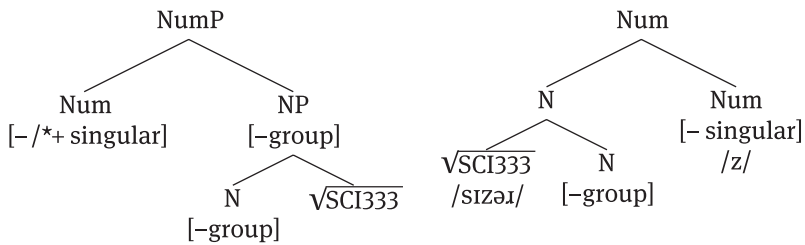
salient (see Harbour 2011: 571 for details). This feature interacts with nominal roots and number in the following way:⁵

(3) *Syntactic conditions on [-group]*

- a. Certain roots cannot be sisters to an N not specified as [-group].
- b. An NP specified as [-group] cannot be sister to a Num specified as [+singular].

The root in *scissors* (and all other pluralia tantum nouns) has property (3a).⁶ The fact that this noun is necessarily plural is implemented by (3b):⁷

(4) *The structure of pluralia tantum nouns*⁸



Note that the conditions in (3) are only applicable in contexts where these roots are used as nouns. They are thus correctly predicted to not display pluralia-tantum-like behavior in other environments. For instance, as a verb, *scissor* can either mean ‘cross’, as in (5a), or ‘cut or stab with scissors’, as in (5b):

- (5) a. John scissored his legs while swimming the sidestroke.
- b. John scissored the fabric.

⁵ Although stated as a syntactic condition, (3a) might be restated as an Encyclopedic condition, namely in terms of a rule that assigns an interpretation to the relevant roots in the context of N specified as [-group], but not in any other nominal context. This would make it parallel to Harley’s use of the Encyclopedia to restrict the interpretation of *caboodle* items to specific syntactic environments (pp. 242–247).

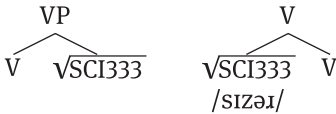
⁶ Though not immediately relevant for the current analysis, the condition in (3b) invites the converse, namely [+group] NPs which cannot be sister to a Num specified as [-singular]. This might underlie nouns such as *furniture*, which are incompatible with plural marking.

⁷ In all trees below we represent both the full phrasal structure underlying the relevant words as well as the word-structure derived by head movement. The latter structure also includes the realization of each overt node.

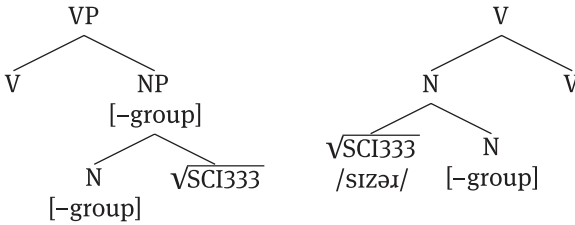
⁸ In this and other examples below, N shares its [-group] feature with NP, which we assume is an automatic consequence of the fact that N is the head of NP.

According to the diagnostics in Kiparsky 1982: 11–12 and Arad 2003: 755–759, the verb in (5a) is root-derived, since scissoring in this sense does not necessarily involve scissors. On the other hand, scissoring in the sense in (5b) does require using scissors (**John scissored the fabric with a knife*), an indication that this verb is noun-derived. The verb *scissor*, then, can have two distinct structures:

(6) *Root-derived scissor*

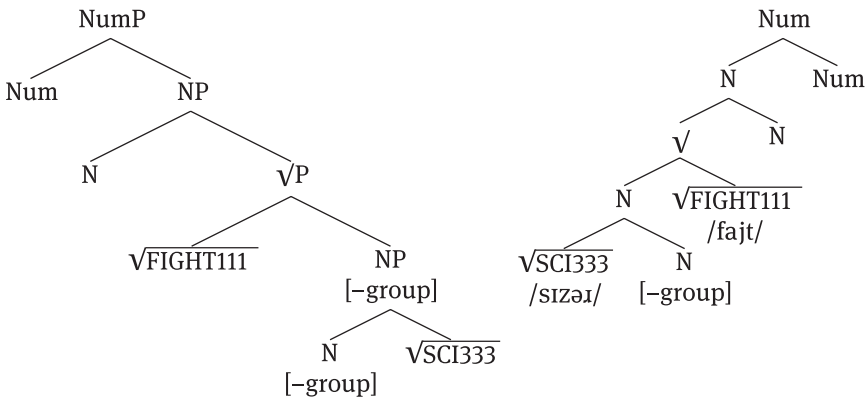


(7) *Noun-derived scissor*



The root-derived context lacks both N and Num, and thus vacuously satisfies the conditions in (3). In the noun-derived context, the root does combine with N, which by (3a) must be [-group], but the absence of Num results in vacuous satisfaction of (3b). Similarly, even the noun *scissor* is not expected to have pluralia-tantum-like behavior in contexts where it is not specified for number. This is the case in compounds such as *scissor fight* and *scissor-blade* (see Harley 2009 on the structure of noun-noun compounds):

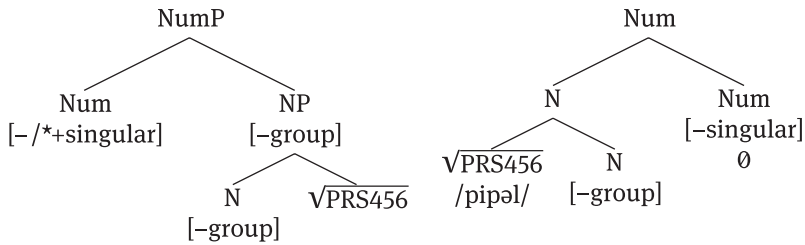
(8) *Structure of scissor fight*



As in the noun-derived verb, N[-group] is not in the immediate context of Num, and thus does not force the latter to be plural.

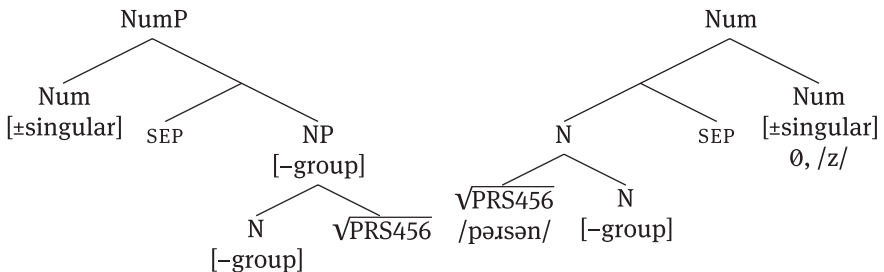
This analysis of pluralia tantum sheds some light on the *people/person* contrast. We propose that underlying all uses of these words is a root (designated here as $\sqrt{\text{PRS456}}$) that, like the root of pluralia tantum nouns, is subject to (3a) (see below for the vocabulary entries relevant for the realization of the root and Num in this structure):

(9) *People as a pluralia tantum noun*



As a pluralia tantum noun, *people* is necessarily plural. Two properties distinguish this root from others underlying pluralia tantum nouns. First, unlike *scissors*, it has a singular counterpart, and second, this singular form is suppletive (*person*). We analyze the first property in terms of a special formative SEP that extracts the individual parts from a plurality, thereby destroying its group structure. (This formative may be similar to the *singulative* operator that individuates collectives, as developed by Mathieu (2012)). This formative can also combine with the root underlying a collective noun, which accounts for the individuated use that some of these nouns have, such as *hair* when referring to a single strand of hair. When merged with $\sqrt{\text{PRS456}}$, it allows this root to combine with either singular or plural number:

(10) *Individuated person*



The structure satisfies (3b) vacuously, since NP[–group] is not Num’s sister, and as consequence, the noun can be either singular (*person*) or plural (*persons*).

This analysis accounts for suppletion in this root based on the following vocabulary entries:

- (11) *Vocabulary entries for* $\sqrt{\text{PRS456}}$
- a. $\sqrt{\text{PRS456}} \leftrightarrow /p\text{ə}i\text{s}\text{ə}n/ / \text{ ______ } \text{ SEP}$
 - b. $\sqrt{\text{PRS456}} \leftrightarrow /p\text{ɪ}p\text{əl}/$

The exponent in (11a) is the realization of the root in singular *person* (10).⁹ Plural *persons* also involves an individuated use of this root, hence its realization as *person*. The pluralia-tantum use of this word lacks SEP (9), making elsewhere *people* (11b) its only possible realization. This analysis of the difference between *people* and *persons* accounts for Harley’s intuition that in *missing persons* “the individual’s particular body is salient”, as well as the observation made in the entry for the noun *people* in the online edition of the *Oxford English Dictionary* that this word “is treated as the unmarked plural of *person*, whereas *persons* emphasizes the plurality and individuality of the referent.”¹⁰

Note also that the realization of plural Num correlates with the presence of SEP: irregular *people*(*s) vs. regular *persons*. The following fairly standard vocabulary entries for plural Num account for this fact:

- (12) *Vocabulary entries for plural Num (adapted from Embick 2010: 43)*
- a. [–singular] $\leftrightarrow \emptyset / \text{LIST}$
 where LIST = { $\sqrt{\text{SHEEP556}}, \sqrt{\text{PRS456}}, \dots$ }
 - b. [–singular] $\leftrightarrow /z/$

The presence of the root $\sqrt{\text{PRS456}}$ in pluralia tantum *people* triggers insertion of irregular plural \emptyset (present also in plural *sheep*). On the other hand, the presence of SEP in individuated *persons* between Num and $\sqrt{\text{PRS456}}$ blocks the insertion

⁹ Note that, as shown in (10), N intervenes between the root and SEP, but it does not block suppletion of the root as *person* triggered by SEP (11a). See the end of the present section for discussion of the theory of allomorphy underlying this account.

¹⁰ A common use of the noun *people* is with (roughly) the meaning ‘nation’ or ‘ethnicity’. We speculate that this noun involves a structure with $\sqrt{\text{PRS456}}$ and a null root interpreted as ‘nation’:

(i) [_{NP} N [$\sqrt{\text{PRS456}}$ $\sqrt{\text{NTN321}}$]]

In the absence of SEP, $\sqrt{\text{PRS456}}$ is realized as *people*.

of this contextually determined allomorph of Num, which is therefore realized as /z/.

The proposal that *people* is the elsewhere exponent, to be used in the absence of SEP, also accounts for its verbal use in examples such as:¹¹

(13) *Verbal people*

- a. Land could be used to attract entrepreneurs and people the townships of Upper Canada.
- b. The dominant forms of life will in the long run tend to people the world with allied, but modified descendants.

Since places can only be peopled with pluralities, this verb lacks SEP and the root is therefore realized as *people*:¹²



Another relevant verb is *person*, which can be used as a politically correct alternative to the verb *man*:¹³

(15) *Verbal person*

- Computers at the Stock Exchange might not all be working due to insufficient staff to ‘person’ them.

Unlike peopling, personing entails occupying a post or position with a single person.¹⁴ It thus involves merging $\sqrt{\text{PRS456}}$ with SEP:¹⁵

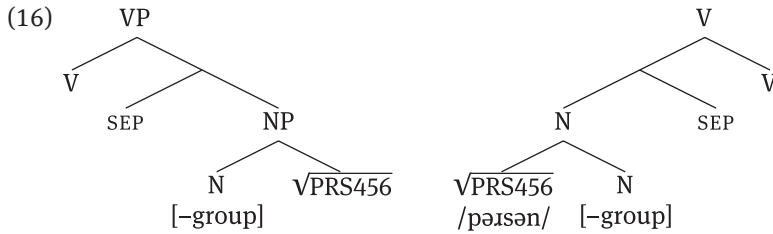
11 Both examples in (13) are from the entry for the verb *people* in the online edition of the *Oxford English Dictionary*.

12 Note that this verb is root-derived, as evinced by the fact that one can people places with non-humans, as in (13b).

13 This example is from the entry for the verb *person* in the online version of the *Oxford English Dictionary*.

14 A group of people can of course person several posts, where each post is filled by a separate person.

15 Unlike verbal *people*, verbal *person* is noun-derived, as only humans can person (or man) posts.



Given the presence of SEP, the root is correctly predicted to be realized as *person*.¹⁶

In sum, the coexistence of two plurals, *people* and *persons*, can be understood not in terms of two roots, but in terms of additional functional structure in the case of the latter.¹⁷

We end this section with some comments on the theory of locality of allomorphy/suppletion presupposed in the analyses given above. In particular, while SEP triggers suppletion of $\sqrt{\text{PRS456}}$ as *person* across category-fixing N (see (10)–(11)), SEP blocks insertion of the root-determined plural allomorph $-\emptyset$, since it intervenes between the root and Num (see the text below (12)). Blocking in the latter case is a consequence of the adoption of strict locality conditions on allomorphy that block allomorph-triggering across intervening nodes (defined either in terms of c-command or linear adjacency). For the former case, we postulate that null category-fixing heads (e.g. N) are invisible for allomorphy conditions.¹⁸ A similar account is proposed by Embick (2010: 58–60), who uses a pruning operation to account for inward transparency of category-fixing heads in conditioning T allomorphy in English. The present case at hand cannot be subsumed under

¹⁶ Another relevant case is the compound *people person*, with two nouns based on the same root $\sqrt{\text{PRS456}}$. The first member lacks SEP (since a *people person* is someone who enjoys humans, without being overly fussy about their individual differences) and its root is thus pronounced *people*, even though it arguably lacks a Num head.

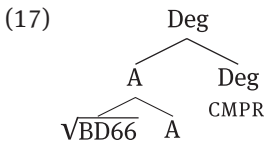
¹⁷ This approach is presumably extensible to other cases of nouns with two plurals, such as the German root $\sqrt{\text{WRT813}}$, which has the two plurals *worte* and *wörter* (see <http://german.stackexchange.com/questions/6375/die-worte-vs-die-worter>). The first of these means ‘text/prose’, while the second means ‘words’ in a countable, individuated sense, where, like with ‘persons’, the individual number is emphasized. Extending the analysis of *people/persons* in the text, the pluralia tantum form *worte* would be the most basic, the singular form *wort* would involve SEP, and with the pluralized SEP, form *wörter*.

¹⁸ The locality issue in (10)–(11) might be avoided if the contextual restriction for (11a) were replaced with [N -group] SEP . This contextual restriction is a *span* in Svenonius’s (2012) sense (i.e. a sequence of structurally adjacent heads). See Merchant, to appear, for arguments that contextual restrictions that condition suppletion/allomorphy are spans.

Embick's same rubric, as it is the *outward transparency* of the null category-fixing head N that is at stake for the suppletion of the root $\sqrt{\text{PRS456}}$. We therefore formalize a principle that seems implicit in much work on DM (including Harley's (2014) allomorphy rule in (7a), where V/v is ignored for number-sensitive root allomorphy), namely that null category-fixing heads are transparent for allomorphy. This correlation can be explained by postulating that the class of null category-fixing heads is exactly the class of category-fixing heads that undergo Fusion with their sister root. By fusing the root with the category-fixing head, the latter's null exponence and transparency for allomorphy would be accounted for by a single independently motivated type of rule.¹⁹

5 Bad, badder, and worse

In this section we present a brief extension to similar cases of root suppletion that at first blush seem to involve distinct suppletive allomorphs in different contexts, akin to *persons/people*. In English, the adjective *bad* has the suppletive form *worse* in the comparative. Nonetheless, in certain uses of *bad* that refer to a positively evaluated sense of this adjective (e.g. *Bad Leroy Brown*, Michael Jackson's *I'm Bad*, etc.), the comparative and superlative forms are *badder* and *baddest*, (e.g. *Still da Baddest* by the rapper Trina). How, then, can two distinct comparative forms exist alongside each other, without having two roots?²⁰ The following is the root for the normal sense of *bad*:

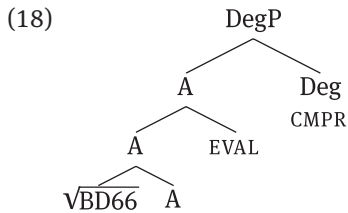


However, the positively evaluated use of *bad* in complimentary, anti-hero contexts involves literally the same root (indeed, to be the baddest, one can't be an altar boy), with an additional evaluative element, which we treat as akin to diminutive suffixes in Romance languages, in which adjectives receive a distinct, often

¹⁹ Alternatively, the claim about the transparency of null category-fixing heads might be more general, and not specific to the phonological content of category-fixing heads; if Lowenstamm's (2010) proposal is adopted, then *all* derivational suffixes that appear to induce category change are roots, and thus all category-fixing heads are null.

²⁰ Indeed, Bobaljik 2012: 194–195 proposes a two-root analysis of this alternation.

speaker-oriented, positive or negative evaluation in addition to their normal adjectival denotation:



The logic of suppletion then parallels our treatment of *persons/people* and *destroy/destruct* above; the additional head in the structure blocks the conditioning environment for suppletive allomorphy:

- (19) a. /wəɪs/ ↔ √BD66 / ____ CMPR
 b. /bæd/ ↔ √BD66

In summary, cases such as this show that the fact that the secondary, evaluative meaning of *bad* unexpectedly reverts to a regular form of allomorphy in the forms *badder*, *baddest*, *to badden*, unlike its etymological brethren *worse*, *worst*, *to worsen*, is entirely expected if the conditions on local suppletion are disrupted by the additional evaluative head, thereby showing an extension of the logic of *destroy/destruct* and *people/persons* to adjectival suppletion as well.²¹

6 Ineffability as suppletion

In examining the parallels between the Encyclopedic List and the Exponent List, Harley makes crucial use of mechanisms originally devised to account for allomorphy/suppletion (and syncretism) in order to provide an analysis of allosemy

²¹ Related cases to the extended use of *bad* and its differing comparative forms are potentially found in Italian, where *buono* 'good', with the comparative form *meglio*, has an additional meaning 'tasty', a specifically food-related evaluative. Crucially, the comparative form of this use is the regular (and analytic) *piu buono*, not *meglio*. Similar phenomena are perhaps found with *bad* in the sense of rotten (e.g. *foods gone bad*) and Swedish *god* 'good', parallel to the Italian case, both of which eschew the specialized suppletive comparative allomorph in these extended senses.

(or lack thereof) in roots. Just like suppletion in *people/person* is the result of an Exponent List containing a contextually determined exponent *person* (11a) and elsewhere *people* (11b), the interpretation of a root like $\sqrt{\text{THRW77}}$ (with invariant form *throw*) is interpreted by Encyclopedic rules that assign it contextually determined meanings (e.g. ‘light blanket’ in the context of N, or ‘vomit’ in a context including V and *up*) and an elsewhere rule (with no contextual restriction) interpreting it as ‘throw’ (Harley 2014: 242–247). Interestingly, she also proposes that certain roots are only interpreted by contextually determined Encyclopedic rules (i.e. they lack an elsewhere rule). This accounts for *caboodle* items, such as *cran*, which is only interpretable in the context of *berry*, and *cahoot*, which appears only in plural nominal environments.

We posit that the no-elsewhere approach to contextually limited forms, proposed by Harley on the LF side for the Encyclopedic List, can be extended to the PF side. The absence of an elsewhere item can be fruitfully employed in the Exponent List in order to account for paradigm gaps. Consider the often discussed defective paradigm of the Spanish verb *abolir* ‘abolish’. Its paradigm contains several gaps that can collectively be characterized as follows:

(20) *Gaps in the paradigm of abolir*

The root *abol-* lacks forms in which it is followed by a segment other than *-i-*.

The following are some relevant examples (‘indicative’ and ‘subjunctive’ are abbreviated as ‘ind.’ and ‘subj.’, respectively):

(21) *Partial paradigm of Spanish abolir*

Existing forms		Gaps	
Infinitive	abol-i-r	1Sg present ind.	*abol-o/abuel-o
1Pl present ind.	abol-i-mos	2Sg present ind.	*abol-e-s/abuel-e-s
3Sg conditional	abol-i-ría	3Pl present ind.	*abol-e-n/abuel-e-n
2Pl perfective	abol-i-steis	2Sg present subj.	*abol-a-s/abuel-a-s
3Sg perfective	abol-i-ó	3Sg present subj.	*abol-a/abuel-a
1Sg imperfective subj.	abol-i-era	1Pl present subj.	*abol-a-mos
Deverbal noun	abol-i-ción	2Pl present subj.	*abol-á-is

Since *abolir* is a verb of the third conjugation, the root is always followed by the vowel *-a-* in the present subjunctive, which makes all the forms in this sub-paradigm ungrammatical, including those in which the root is stressed (e.g. second singular **ab[ó]l-a-s/ab[wé]l-a-s*) and those in which it is not (e.g. first plural **abol-[á]-mos*). The other gaps are in the present indicative, which is the

only tense other than the present subjunctive in which the root is not followed by *-i-* in some of the forms.²²

Adapting Harley's analysis of *caboodle* items to the Exponent List, we propose that these gaps are the result of there being a single, contextually determined, vocabulary entry for the root of *abolir*:

- (22) *Vocabulary entry for* $\sqrt{ABL385}$
 /abol/ \leftrightarrow $\sqrt{ABL385}$ / ____ [-consonantal, +high, -back]

Thus, the grammatical forms of words containing this root include those in which it is followed by a vowel [i] (e.g. infinitive *abol-i-r*), as well as those in which it is followed by a glide [j] (e.g. 1Sg imperfective subjunctive *abol-i-era*). In the absence of an elsewhere item, words in which the root is followed by any other segment are simply not assigned an exponent.²³ Just as the absence of a meaning for *cahoot* in most contexts results in ungrammaticality, so does the absence of exponence for $\sqrt{ABL385}$ in contexts other than those in (22) lead to ineffability.

One aspect of this analysis of *abolir* seems to fly in the face of a fairly standard assumption in DM. In particular, it presupposes that Vocabulary Insertion at the root occurs after (or at the same time as) the formative following it is assigned exponence. This apparently contradicts the assumption that Vocabulary Insertion in words proceeds root out, that is, it starts at the root and then applies to progressively outer formatives (i.a. Bobaljik 2000, Embick 2010). We contend that this is only an illusion stemming from the absence of a sufficiently explicit algorithm determining the derivational order of Vocabulary Insertion within a word. Specifically, once we adopt Myler's (2013) explicit algorithm, the order of

²² Incidentally, the recent literature on the defectiveness of the paradigm of *abolir* only concentrates on the gaps with stress on the root (i.a. Albright 2003, Yang et al. 2013). Although all such forms are indeed gaps, the fact that this verb lacks all forms of the subjunctive, including those with stress on the vowel following the root, shows that the relevant generalization is about the segmental features of the vowel following the root, not about stress. The entry for *abolir* in the online edition of the *Diccionario de la lengua española* confirms this description of the gaps in this verb's paradigm: 'U. solo las formas cuya desinencia empieza por *-i*' (our translation: 'only forms whose desinence starts with *-i* are used.'). The same statement is made in the entry for *colorir* 'color, dye', another well-known verb with a defective paradigm.

²³ Importantly, absence of exponence should be distinguished from assignment of null exponence, which would result in the grammatical use of a phonologically empty root. The latter is arguably the case of the Spanish verb *ir* 'go', in which, for instance, the (grammatical) infinitive form *ir* only has overt exponents for the theme vowel *-i-* and the infinitive suffix *-r*.

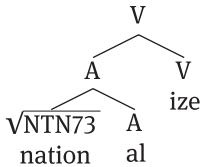
Vocabulary Insertion presupposed by the analysis above follows in a principled way, without losing any of the empirical coverage that motivated the adoption of the root-out principle. This algorithm can be stated as follows (adapted from Myler 2013: 3):

(23) *Derivational order of Vocabulary Insertion*

Given a pair of terminal nodes x and y such that x is the head of a node z and z dominates y , then y undergoes Vocabulary Insertion prior to x .

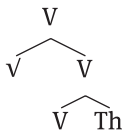
According to this principle, non-heads are assigned exponence before heads. In the typical case, this results in root-out Vocabulary Insertion. Consider, for instance, the structure of *nationalize*:²⁴

(24) *Structure of nationalize*



According to (23), the root undergoes Vocabulary Insertion before terminal A, and both are assigned exponence before terminal V. The order is thus root → A → V, i.e. root-out Vocabulary Insertion. However, (23) makes a different prediction for Romance verbs, whose structure, following Oltra-Massuet 1999 and Oltra-Massuet and Arregi 2005, is the following:²⁵

(25) *Structure of verbs in Romance*



In this structure, Th is the so-called theme vowel, a formative inserted to satisfy a postsyntactic well-formedness condition on certain nodes. Crucially, the high

²⁴ We assume that the adjective *national* is root-derived. The same predictions would be made under a noun-derived analysis of this word.

²⁵ This structure is always embedded under other functional heads, such as T in finite forms, or N in deverbal nouns.

front vocoid mentioned in (20) and (22) which conditions the effable forms of *abolir* is always the realization of Th. As shown by Myler, (23) does not determine a total order of Vocabulary Insertion for structures of this type. Since V is the head of the entire structure, (23) establishes that the root and Th are assigned exponence before V (which is null), but no relative order is fixed for Vocabulary Insertion at either of the former terminals. Following Myler, we assume that in such a case, the relevant terminals are assigned exponence simultaneously. As a consequence, the exponence of either node can be made dependent on the phonological features of the exponent on the other.²⁶ In the case at hand, the exponence of $\sqrt{\text{ABL385}}$ can be made dependent on the phonological features of Th, and thus is realized as *abol-* when the exponent of Th starts with *-i-*, but receives no exponence otherwise.²⁷

Taking stock of what we have just proposed, so-called ‘defective’ verbs in cases such as Spanish *abolir* can be seen as an extreme case of disuppletive radicals: the root has two allomorphs, one of which is extremely contextually-limited and the other of which is an ineffable realization, i.e. undefined for its output in Vocabulary Insertion.

7 Conclusion

We have pursued a monoradical approach to cases of disuppletion, in which apparent cases of half-homophonous roots such as *persons/people* indeed constitute instances of the *same* root, with the divergences in meaning reflecting syntactic differences, and with these syntactic differences in turn being reflected by

26 Myler (2013:Footnote 2) reaches a different conclusion, namely, that simultaneity of exponence prevents the exponence of either node from being dependent on the exponence of the other. It seems to us that either conclusion is in principle theoretically possible, and the data discussed in this section can be seen as preliminary evidence for ours.

27 The former case includes forms in which Th is realized as [-je-] (e.g. 1Sg imperfective subjunctive *abol-ie-ra*). This diphthong might be the result of diphthongization of /e/ under stress, although we cannot be completely sure of this, since this exponent is always stressed and thus provides no evidence of being subject to a monophthong/diphthong alternation. If that is the case, the analysis presented here necessitates the application of at least some phonological rules cyclically in tandem with Vocabulary Insertion. Other forms (e.g. 1Sg present indicative **abol-o/abuel-o*, where no overt theme vowel surfaces) raise similar questions about the interaction between Vocabulary Insertion and phonology, but discussing them would take us far beyond the scope of the present brief remarks.

the way that suppletive allomorphy may be conditioned.²⁸ Each proposal we have made (across verbal, nominal, and adjectival domains) has involved the postulation of specific pieces of functional structure, viz. the v^* head specific to transitive verbs, the SEP head implicated in the individuation of pluralia tantum nouns, and the EVAL head responsible for complimentary and affective uses of adjectives beyond their root-specified meaning. As such, the analyses developed here share much in common with the exo-skeletal approach to syntactic, semantic, and morphological compositionality developed in Borer 2013. Specific details of the analysis have also incurred development of aspects of the theory of locality of allomorphy (in which category-fixing heads are transparent for outward-sensitive allomorphy) and cyclic Vocabulary Insertion (in which two nonprojecting terminals may undergo simultaneous Vocabulary Insertion). The fact that we have been able to outline new empirical and theoretical directions here as a direct consequence of the model outlined in Harley's paper constitutes a testament to the clarity and impact of the latter.

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References

- Albright, Adam. 2003. A quantitative study of Spanish paradigm gaps. In *Proceedings of the 22nd West Coast Conference on Formal Linguistics 22*, ed. G. Garding et al., 1–14. Somerville, MA: Cascadilla Press.
- Arad, Maya. 2003. Locality constraints on the interpretation of roots: The case of Hebrew denominal verbs. *Natural Language and Linguistic Theory* 21:737–778.
- Aronoff, Mark. 1976. *Word formation in generative grammar*. Cambridge, MA: MIT Press.
- Aronoff, Mark. 2007. In the beginning was the word. *Language* 83:803–830.
- Arregi, Karlos, and Andrew Nevins. 2013. Contextual neutralization and the Elsewhere Principle. In *Distributed Morphology today: Morphemes for Morris Halle*, ed. O. Matushansky et al., 199–222. Cambridge, MA: MIT Press.
- Bobaljik, Jonathan David. 2000. The ins and outs of contextual allomorphy. In *Proceedings of the Maryland Mayfest on Morphology 1999*, ed. K. K. Grohmann et al., volume 10 of

²⁸ Importantly, we would not posit a single root for *mice* and *mouses* in which the latter refer to computer accessories, despite their identity in the singular – this seems to be a clear case in which the roots have diverged and become separate, unlike *person/people* or *go/went*, which maintain an identical semantic core, syntactic argument structure, and allosemic properties (e.g. idiomatic contextual restrictions) across their different allomorphs.

- University of Maryland Working Papers in Linguistics*, 35–71. Department of Linguistics, University of Maryland, College Park.
- Bobaljik, Jonathan David. 2012. *Universals in comparative morphology: Suppletion, superlatives, and the structure of words*. Cambridge, MA: MIT Press.
- Bonet, Eulàlia, and Daniel Harbour. 2012. Contextual allomorphy. In *The Morphology and Phonology of Exponence*, ed. J. Trommer, 195–235. Oxford University Press.
- Borer, Hagit. 2013. *Structuring Sense, Volume III: Taking Form*. Oxford: Oxford University Press.
- Collins, Chris. 2005. A smuggling approach to the passive in English. *Syntax* 8:81–120.
- Embick, David. 2010. *Localism versus globalism in morphology and phonology*. Cambridge, MA: MIT Press.
- Harbour, Daniel. 2007. *Morphosemantic number: From Kiowa noun classes to UG number features*. Dordrecht: Springer.
- Harbour, Daniel. 2011. Valence and atomic number. *Linguistic Inquiry* 42:561–594.
- Harley, Heidi. 2009. Compounding in Distributed Morphology. In *The Oxford handbook of compounding*, ed. R. Lieber et al., 129–144. Oxford: Oxford University Press.
- Harley, Heidi. 2013. External arguments and the Mirror Principle: On the distinctness of Voice and v. *Lingua* 125:34–57.
- Harley, Heidi. 2014. On the identity of roots. *Theoretical Linguistics* 40:225–276.
- Haugen, Jason, and Daniel Siddiqi. 2013. Roots and the derivation. *Linguistic Inquiry* 44:493–517.
- Kiparsky, Paul. 1982. Word formation and the Lexicon. In *Mid-America Linguistics Conference*, ed. F. Ingemann, 3–29. Department of Linguistics, University of Kansas, Lawrence.
- Lowenstamm, Jean. 2010. Derivational affixes as roots: Phasal Spellout meets English stress shift. Ms., Université Paris Diderot and CNRS, Paris. <http://www.llf.cnrs.fr/Gens/Lowenstamm/arfloha.pdf>.
- Marantz, Alec. 1996. “Cat” as a phrasal idiom: Consequences of late insertion in Distributed Morphology. Ms., MIT, Cambridge MA (version of December 1996).
- Marantz, Alec. 1997. No escape from syntax: Don’t try morphological analysis in the privacy of your own lexicon. In *Proceedings of the 21st Annual Penn Linguistics Colloquium*, ed. A. Dimitriadis, et al., volume 4.2 of *U. Penn Working Papers in Linguistics*, 201–225. Penn Linguistics Club, University of Pennsylvania, Philadelphia.
- Mathieu, Éric. 2012. Flavors of division. *Linguistic Inquiry* 43:650–679.
- Merchant, Jason. 2013. Voice and ellipsis. *Linguistic Inquiry* 44:77–108.
- Merchant, Jason. To appear. How much context is enough? Two cases of span-conditioned stem allomorphy. *Linguistic Inquiry*.
- Moskal, Beata. 2013. On some suppletion patterns in nouns and pronouns. Paper presented at PhonoLAM, Meertens Instituut, Amsterdam. [http://homepages.uconn.edu/~bam09006/Downloads_files/PhonoLAM_On some suppletion patterns in nouns and pronouns.pdf](http://homepages.uconn.edu/~bam09006/Downloads_files/PhonoLAM_On%20some%20suppletion%20patterns%20in%20nouns%20and%20pronouns.pdf).
- Myler, Neil. 2013. Exceptions to the Mirror Principle and morphophonological “action at a distance”: The role of “word”-internal phrasal movement and spell out. Ms., New York University, New York. <http://tinyurl.com/lof28jh>.
- Ultra-Massuet, Isabel. 1999. On the notion of theme vowel: A new approach to Catalan verbal morphology. MS Thesis, MIT, Cambridge, MA.
- Ultra-Massuet, Isabel. 2013. *Deverbal adjectives at the interface: A crosslinguistic investigation into the morphology, syntax and semantics of -ble*. Berlin: De Gruyter.
- Ultra-Massuet, Isabel, and Karlos Arregi. 2005. Stress-by-structure in Spanish. *Linguistic Inquiry* 36:43–84.

- Punske, Jeffrey. 2012. Aspects of the internal structure of nominalization: Roots, morphology and derivation. Doctoral Dissertation, University of Arizona, Tucson.
- Pylkkänen, Liina. 2008. *Introducing arguments*. Cambridge, MA: MIT Press.
- Svenonius, Peter. 2012. Spanning. Ms., University of Tromsø, Tromsø. <http://ling.auf.net/lingbuzz/001501>.
- Veselinova, Ljuba. 2006. *Suppletion in verb paradigms: Bits and pieces of a puzzle*. Amsterdam: John Benjamins.
- Yang, Charles, Kyle Gorman, Margaret Borowczyk, and Jennifer Preys. 2013. When words fail: On productivity and paradigmatic gaps. Ms., University of Pennsylvania, Philadelphia, and Oregon Health and Science University, Portland, OR.