On the difference between $\surd$ and root

1 Introduction

In traditional approaches to morphology, the notion of root tends to be described in terms of form, namely as "what is left when all morphological structure has been wrung out of a form" (Aronoff 1994). In syntax, such morphologically defined roots mostly coincided (until recently) with the traditional lexical categories. However, with the progress of structural decomposition, our conception of lexical categories began to change rather profoundly. In particular, what happened is that most grammatical properties of the traditional lexical categories were transferred from the lexical head onto functional projections. When this happened also to the categorial label (so that the functional categories *a*, *v*, *n*, *p* appeared where the earlier tradition had A, V, N and P), all grammatically relevant information has been dislocated to functional heads (Marantz 1995, Borer 2005, Ramchand 2008).

The consequence is that in a number of current approaches, the root has turned into a special kind of a syntactic object. Apart from having no grammatical properties (as these are now seen as properties of functional heads), a large part of the literature proposes that it also lacks phonological and semantic properties. The reasons for this position go in part back to Zwicky's (Zwicky 1969, Zwicky and Pullum 1986) *Principle of Phonology Free Syntax*, which says that "[i]n the grammar of a natural language, rules of syntax make no reference to phonology" (Miller et al. 1997:68). For instance, there is no rule such that if a verb begins with a labial, it moves to T, etc. If roots (like functional heads) have no phonology in syntax, the Principle of Phonology Free Syntax simply follows from this architecture.

A similar observation has been made for concepts associated to roots. For instance, whatever the difference between *cat* and *dog* on the conceptual side, this difference does not trigger differential syntactic behaviour. In sum, as Marantz (1995) puts it "[n]o phonological properties of roots interact with the principles or computations of syntax, nor do idiosyncratic Encyclopaedic facts about roots show any such interactions."

The result is that a number of present-day approaches use in syntactic trees the symbol $\surd$, which is an object devoid of syntactic, phonological and semantic properties, and works as a pure placeholder for the insertion of the morphological root. Within this largely consensual position, there is a debate concerning the number of such $\surd$s in syntax. Some authors argue that there is only a single $\surd$ (Marantz 1996, Borer 2014, De Belder and Van Craenenbroeck 2015), while others propose that there is potentially an infinity of $\surd$s, individuated through the use of numerical indices in narrow syntax (Pfau 2000, 2009, Harley 2014).

The reasons for proposing the (potentially infinite) number of roots has to do with root suppletion. As has been pointed out already in Marantz (1995), if root suppletion exists, then roots have to be somehow individuated in syntax (the argumentation leading to this conclusion will be presented in section 2). An initial hypothesis for the single-$\surd$ proposal has thus been that root suppletion does not exist. However, Haugen and Siddiqi (2013) and Harley (2014) have argued, convincingly to our mind, that root suppletion does in fact exist, which then necessitates the individuation of $\surd$s in syntax. In order to both individuate roots in syntax, and at the same time avoid assigning them phonology or meaning, Harley (2014) follows Pfau (2000, 2009) and proposes that roots in syntax are differentiated by a unique numerical index. (The common notation $\sqrt{\text{DOG}}$ is a version of the same proposal.)

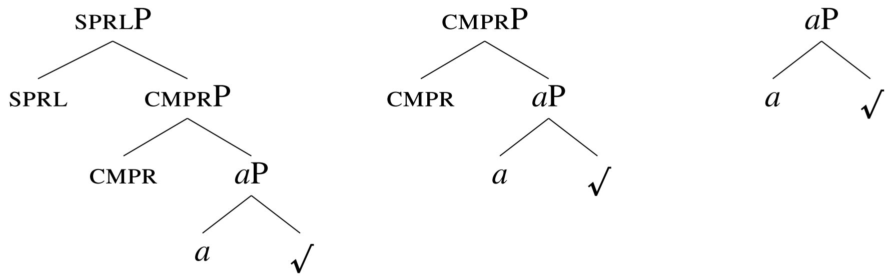
The consequences of this proposal are sub-optimal. While the spirit of Phonology Free Syntax is preserved (since e.g. $\sqrt{95}$ has no phonology in narrow syntax), the architecture of the system is such that syntactic rules can still in principle differentiate between *cat* and *dog*, since they have different numerical indices. The proposal thus does not go all the way to making the phonological and conceptual properties of individual roots irrelevant to syntax in the same way as the single-$\surd$ hypothesis.

In this paper, we make the single-$\surd$ approach compatible with root suppletion. We achieve this by introducing phrasal spellout into the theoretical landscape. In particular, what all the late insertion literature by and large has continued to take for granted is that there is an isomorphy between the traditional roots (i.e., the spellouts of nonfunctional lexical items such as *book, smart*, etc.), henceforth roots, and roots in narrow syntax, henceforth $\surd$. Once this assumption is dropped, a single-$\surd$ theory becomes viable again.

2 The nature of $\surd$

The question whether there is only a single $\surd$ in narrow syntax or an infinity of them is intimately related to the issue of suppletion. In presenting the argument, we shall limit ourselves to the empirical domain of adjectival degrees (positive, comparative, superlative). We do so for the reason that this domain has been recently thoroughly investigated in Bobaljik (2012) both with respect to suppletion as well as the functional heads involved. The core of the proposal in Bobaljik's (2012) book is that in order to capture certain facts about suppletion (specifically the *ABA generalisation), the positive degree of an adjective must be contained inside the comparative, which in turn must be contained inside the superlative. A version of this proposal is shown in (1).

(1) a. superlative b. comparative c. positive



In these trees, we go slightly beyond the letter of Bobaljik's proposal in that we have decomposed his lowest projection, A, reminiscent of the traditional lexical categories, into a $\surd$ node and a 'little *a*' node, as customary in the literature where $\surd$s are used. However, the reasoning that we will develop here for the $\surd$ node would carry over, mutatis mutandis, to Bobaljik's A, which too would have to come in an infinite variety (like $\surd$). Finally, this reasoning carries over also to approaches that dispense with $\surd$s all together, and adopt a view according to which there are 'functional heads all the way down,' as in Ramchand (2008). These approaches apparently also have to introduce an infinite variety of such heads, a conclusion that defeats the very purpose of the enterprise.

In the Distributed Morphology (DM) framework, which Bobaljik (in large parts) adopts, suppletion is accounted for by the specific form of Vocabulary Items (VIs), which insert phonology under terminal nodes. To account for different forms of $\surd$ in different environments (e.g. positive vs. comparative), the VIs that apply at the $\surd$ node are sensitive to the presence or absence of a comparative (CMPR) node higher up in the structure:[1]

(2) a. $\sqrt{}$ $\Leftrightarrow$ *bett-* / ___] *a*] CMPR]

b. $\sqrt{}$ $\Leftrightarrow$ *good*

Under certain circumstances, these VIs are in competition with each other. Not in the positive degree (recall (1c)), as there is no CMPR head here, so that only (2b) meets the structural description, and *good* will be inserted. In the comparative, given in (1b), however, a competition between (2*a*) and (2b) will arise, since the structure generated in syntax meets the strucutural description of both rules. The outcome of that competition is determined by the Elsewhere Principle (Kiparsky 1973, Halle 1997:428), which states that a more specific rule takes precedence over a more general one. (2a) thus wins in the competition in the comparative, since it is a more specific VI than (2b). As a result, *bett* is inserted in the comparative. The CMPR head is subsequently spelled out as *-er*, yielding the form *bett-er*, little *a* being silent.

Now the VI in (2b) as currently formulated is just a fragment of the English Vocabulary. If left on its own, it will insert *good* under any terminal $\sqrt{}$ node. One way of extending our fragment will therefore be to add more roots:

(3) $\sqrt{}$ $\Leftrightarrow$ *good, nice, happy, small, intelligent, bad, …*

What this (extended) rule achieves is that there is a free choice of insertion of a variety of roots in the positive degree under $\sqrt{}$. But now a problem arises with respect to (2a): since it is more specific than (2b), it is also more specific than (3) (which is in relevant respects like (2b)). The result is that *bett-* will be inserted under $\sqrt{}$ in any comparative structure, an obviously wrong result. This problem in the analysis of root suppletion was pointed out in Marantz (1996), and it is a consequence of the format of the rule (2a): it basically says that *just about any* $\surd$ has the form *bett-* in the context of a comparative. Before we discuss possible solutions, notice finally that this problem is actually independent of whether we have a $\surd$ node, a lexical A node, or a functional F node at the bottom of the tree; the whole reasoning carries over to these proposals as well.

In an attempt to turn the apparently wrong prediction to the framework's advantage, Marantz (1997) takes the radical view that root suppletion does not exist. If that is so, the apparent counterexamples like *bad-worse* (or *go-went* and others) must involve the functional vocabulary. This entails that unlike in the case of *cat* and *dog*, there is some feature in the syntax that distinguishes functional adjectives like *good–bett* and *bad–worse* from lexical adjectives like *happy* etc., which realise the $\surd$ head. If this is so, then *bett-* is not a comparative of *just any* $\surd$, but the comparative of *one particular* functional feature or functional head, and the problem disappears.

However, Harley (2014) argues against this position on empirical grounds (cf. Haugen and Siddiqi 2013), because her facts suggest that suppletion targets not only functional heads, but also $\surd$s. In order to deal with the problem pointed out by Marantz, and without giving up on Phonology/Concept Free Syntax, she claims that $\surd$s are individuated in the syntax, i.e., prior to vocabulary insertion, by means of a numerical index. Once *bett-* is not a comparative of *just any* $\surd$, but a comparative of *one particular* $\surd$ with a unique index, the problem also disappears.

Let us show how this works for both Marantz' and Harley's proposal by considering the VIs for the suppletive pair *good–bett* given in Bobaljik (2012):

(4) a. $\sqrt{\text{GOOD}}$ $\Leftrightarrow$ *bett-* / ___] *a*] CMPR]

b. $\sqrt{\text{GOOD}}$ $\Leftrightarrow$ *good*

In Marantz' idea, $\sqrt{\textsc{good}}$ is interpreted as a reference to a functional feature that may be part of the numeration, and as such be the input for syntax. Nonsuppletive adjectives are inserted by the free-choice rule (3) (except that it would no longer contain *good* as a choice). But the VIs in (4) only compete with each other, not with (3), since their structural descriptions apply to different syntactic heads.

In Harley's idea, $\sqrt{\textsc{good}}$ in (4) would be written more accurately as $\sqrt{93}$ (or any other kind of index that would uniquely identify this root among all others). The pre-syntactic lexicon in this view contains an infinity of different, individuated, $\sqrt{}$s (see also Pfau 2000, 2009). Free choice of a root is then not exercised at the point of insertion (as in Marantz' approach), but at an earlier point, namely in the selection of items for the numeration, i.e., when the elements that will serve as the input to the syntactic computation are selected. At the point of insertion, the competition is consequently restricted to the two VIs in (4), modulo the replacement of $\sqrt{\textsc{good}}$ by $\sqrt{93}$.

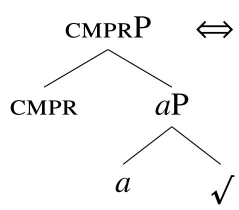
In sum, in order to deal with suppletion, both approaches use different means to achieve the same goal: they must somehow identify the unique lexical item that undergoes suppletion, and limit the competition to those VIs which stand in a suppletive relation to this particular item. Marantz (who works with just a single $\sqrt{}$) has no other option but to make suppletive items unique by placing them in the class of 'functional' heads. Evidence against this position has been presented in Harley (2014), who argues that suppletive verbs in Hiaki include verbs with rich lexical meanings, for which an analysis in terms of functional heads is unlikely. To deal with the issues, she proposes that the number of $\sqrt{}$s is infinite, and that they are individuated by an index. But if $\sqrt{}$s really lack any constant substantive property that allows the syntax to identify them, one needs to seriously wonder why they should be differentiated in narrow syntax at all. By making them distinct, we allow for a theory where *cat* and *dog* have different syntax after all: there is no conceptual reason why syntax should not be able to make reference to this distinction in its inner workings.

3 Cyclicity and Phrasal spellout

In this section, we describe the main features of an account that allows for root suppletion with just a single √ in syntax (or without any √ at all, if √s are to be eliminated, as in Ramchand 2008). What makes such a theory possible is phrasal spellout. The reason for this is that phrasal spellout allows for a suppletive comparative to spell out a different node than the positive, which is impossible in the standard account.

In order to present this idea in an accessible way, we will switch to the suppletive pair *bad—worse*, which has been treated by non-terminal spellout also in Bobaljik (2012). We shall then return to *good—bett-er* in the following section. The relevant lexical entries (with the required containment relation) are given in (5). While *bad* is just a regular √ (see (5*a*)), *worse* spells out a non-terminal node containing the √, the category-defining head *a* and the CMPR head (see (5b)).

(5) a. √ ⇔ *bad*

b. 

⇔ *worse*

Independent support for (5b) comes from the fact that *worse* lacks the regular CMPR marker *-er*, which is captured if its lexical entry is as in (5b), because such an entry on its own pronounces the terminal where *-er* gets usually inserted.

We will get to the technical details of non-terminal insertion shortly, but the main intuition is this: when syntax builds just the *a*P (corresponding to the positive degree), only *bad* will be inserted, because its lexical entry provides an exact match for the syntactic tree. The lexical item for *worse*, in contrast, is not an exact match: it is too big. 'Too big' may be understood either in an absolute sense (it is not a candidate for insertion at all), or in a relative sense (it is a candidate, but it is 'too big' relative to *bad*). When syntax builds CMPRP, only *worse* is an exact match and will be inserted, this time because *bad* is too small (again, this can be interpreted either in the absolute or in the relative sense).

There are several ways of formalising the phenomenon that an exact match gets inserted, and not a lexical item which is either too big or too small. For instance, one way is to rely on the Subset Principle augmented by Radkevich's (2010) Vocabulary Insertion Principle VIP), a strategy adopted in Bobaljik (2012). On this account, the Subset Principle makes sure that *worse* is too big for the positive, and the VIP makes sure that *bad* is too small for CMPRP. The second available option, which we develop and explain later, adopts the Superset Principle (Starke 2009). For now, the main point is that no matter how the 'too big/too small' difference gets encoded, we initially run up against the same conundrum as the terminal-based proposal in section 2. In order to see that, let us once again turn to the fact that there are a number of roots, all in free competition for the $\sqrt{}$ node, as shown in (3) above, repeated here as (6):

(6) $\sqrt{}$ $\Leftrightarrow$ *good, nice, happy, small, intelligent, bad, …*

Again, the problem is that once syntax builds the CMPRP, all of these are going to be 'too small' compared to *worse*. The problem still resides in the fact that the lexical entry in (5b) says that whenever the $\surd$ node is combined with *a* and CMPR, *worse* can spell out such a constituent, and since other lexical entries are 'too small,' *worse* wins, independently of how the 'too big'/'too small' distinction is to be implemented.[2]

However, in the new setting based on phrasal spellout, a new type of solution to this problem becomes available, if one more ingredient is added into the mix. The needed addition is that spellout proceeds bottom-up, as in Bobaljik (2000, 2002), Embick (2010) or Starke (2009, 2018). We phrase this as (7), noting that (7) need not be seen as an axiom, but rather the consequence of two proposals, which are given in (8).

(7) *Bottom-up spellout:* If AP dominates BP, spell out BP before AP.

(8) a. Merge proceeds bottom up.

b. Spellout applies after every Merge step.

The consequence of (7) is that the $\surd$ node will always be spelled out before any phrase in which it is contained, including, of course, CMPRP. In other words, when spellout applies at CMPRP, this happens *after* spellout has applied at the $\surd$ node.

These two proposals—namely the bottom-up nature of spellout and the fact that it targets non-terminals—bring us to where we wanted to go: to a single-$\surd$ syntax that can accommodate root suppletion. In order to see this, consider the fact that spellout (in order to be usable at all) must keep track of what it has done at lower nodes, so that it ships this information to PF at some relevant point.[3] Because of this, it is enough that we now require that the phrasal lexical item (5b) can apply at CMPRP *only if* the $\surd$ node has been spelled out by *bad* before. Equivalently, *worse* is inapplicable if (by free choice of $\sqrt{}$) we have chosen a different lexical entry than *bad* as the pronunciation of $\sqrt{}$.

In order to reflect this, let us rewrite the entry for *worse* as in (9), where instead of the $\sqrt{}$ node, we write *bad*. Following Starke (2014), we refer to this device as a pointer. The entry reads as follows: insert *worse* at CMPRP, overwriting everything inside it, but only if at a previous cycle, the sister to *a* was spelled out as *bad*.

(9) [CMPRP CMPR [*a*P *a* *bad*]] $\Leftrightarrow$ /*worse*/

Let us briefly reflect on the overwriting property of bottom-up spellout. When spellout is successful at a given node, this means that a matching lexical entry has been found. This, however, does not mean that this lexical entry is immediately shipped to PF. It is remembered, and it will eventually be sent to PF; but if later on, a lexical item matching a higher node is found, then the first (lower) candidate is not sent to PF at all: only the higher spellout survives.

From the perspective of a single-$\sqrt{}$ theory, the problem with suppletive lexical items like (5b) was that they could overwrite just any root. The pointer device just introduced is here to restrict unlimited overwriting: *worse* can only overwrite *bad*. Caha et al. (to appear) encode this by the so-called Faithfulness Restriction:

(10) *Faithfulness Restriction (FR, preliminary)*

A spellout α may override an earlier spellout β iff α contains a pointer to β

To conclude, let us stress the crucial point, which is that we now have a way to account for root suppletion with just a single $\sqrt{}$ (or a single A, or, potentially, just functional heads all the way down; the relevant point is that there is free choice of insertion at the node which is at the bottom of the hierarchy). To do so, we need a bottom-up phrasal spellout. In this kind of system, we can restrict *worse* to be the comparative of *bad* without placing an index on $\surd$ in the syntax. The way we do this is by relying on the so-called pointer. The pointer allows overwriting between two different entries, which is otherwise disallowed. This is encoded in the Faithfulness Restriction.

4 The nature of roots

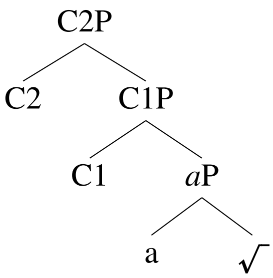
From the perspective of Phonology/Concept Free Syntax, the zero theory of $\surd$s is that there is only a single root. This was clearly argued for in the early work in DM (Marantz 1997), and Harley's retreat from this position requires justification. Here, we argue that such a retreat is not necessary if cyclic phrasal spellout is adopted. However, the success of this approach depends in part on how it applies in cases where suppletion is accompanied by regular morphology, e.g. in pairs such as *good—bett-er*: it seems impossible to have *bett-* both spell out CMPRP (as required by the single $\surd$-theory), and at the same time, leave CMPR available for the insertion of *-er*.

In this section, we suggest a solution to this problem. The solution is based on the observation (to be illustrated more extensively in sections 5 and 6 below) that in cases where suppletion co-occurs with overt marking, the overt marking tends to be 'reduced', often a substring of a different, non-reduced marker.

To see this on an example, let us turn back to English. Here we have *-er* and *more* for the comparative, and *-est* and *most* for the superlative. Clearly, *-er* and *-est* are morphologically reduced compared to *more/most*, if only because they are affixes while *more* and *most* are free-standing items. Further, if *mo-re* and *mo-st* decompose in the manner suggested by the dashes, then one can in fact speculate that *er* and *est* are in fact component parts of the non-reduced markers.

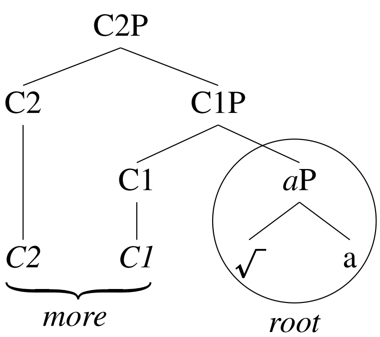
Now that we have established what we mean by full and reduced markers, consider the observation that suppletive adjectives in English only occur with the reduced markers (i.e., *-er/-est*) and never with the full markers (i.e., *more/most*), as observed by Bobaljik (2012). Theoretically, we can understand 'reduction' if we decompose the single CMPR node into two heads, C1 and C2, as shown in (11).

(11)

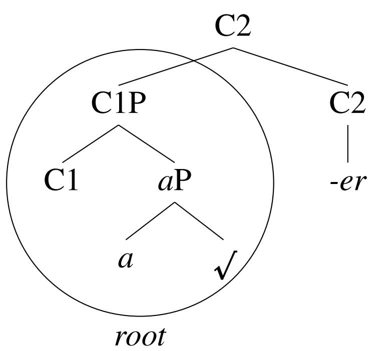


Once CMPR is decomposed, 'full' comparative marking can be analysed as expressing both C1 and C2, as in (12), while reduced marking would spell out only C2, as in (13). The two different realisations of the comparative structure would be causally linked to two classes of roots. If the root can spell out the aP only, non-reduced marking is found. If the root can spell out the whole C1P, reduced marking must be used.[4]

(12)



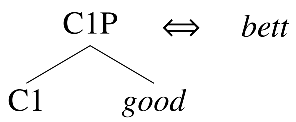
(13)



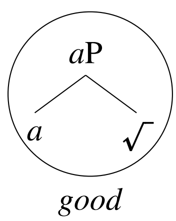
How do the two scenarios relate to suppletion? In a theory with a single $\surd$, the tree in (12) (with non-reduced marking) cannot (correctly) give rise to suppletion. That is because the root in (12) express a constituent (*a*P) that corresponds to the positive. And since suppletion (on the single-$\surd$ theory) requires that suppletive roots each spell out a different constituent, (12) is incompatible with suppletion (QED).

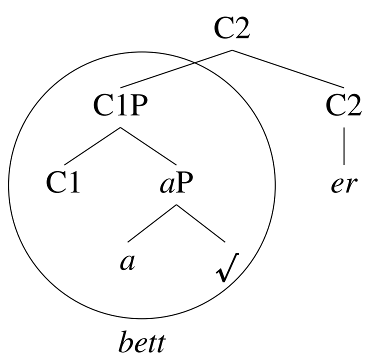
This prediction distinguishes the single-$\surd$ theory from the $\sqrt{\infty}$ approach in Harley (2014). In Harley's approach, as in DM in general, suppletive roots spell out the same terminal as their nonsuppletive counterparts. Suppletion arises because the relevant terminal (say $\sqrt{93}$) is placed in different environments. Therefore, suppletive roots should be in principle compatible with non-reduced marking (incorrectly, in this case).

Turning now to (13), this scenario allows for suppletion on our account, but does not force it. We first show how suppletion works, and then we turn to non-suppletive roots that combine with the reduced marker. Suppletive roots like *bett* will have an entry like (14), with a pointer to a different root.

(14)


In this case, *good* first spells out *a*P, as shown in (15), which is a stage of the derivation that feeds the insertion of *bett-* at C1P. This C1P is subsequently merged with C2, yielding the full comparative structure in (16).

(15)


(16)


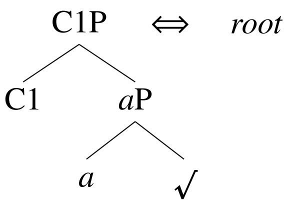
We now turn to non-suppletive roots that combine with *-er*. In order to show how they are accounted for, we shall diverge from our reliance on a broad spectrum of conceivable approaches to phrasal spellout, and focus on one particular version, due to Starke (2009, 2018). The specific component of this theory, which we now need, is a matching procedure based on the so-called Superset Principle (17).

(17) *The Superset Principle (Starke 2009)*:

A lexically stored tree L matches a syntactic node S iff L contains the syntactic tree dominated by S as a subtree

The principle says that if there is an entry like (18), then it can also spell out a C1P as well as an *a*P (because *a*P is contained in it).

(18)



If a root has such an entry, it can be used both in the positive (i.e., as an *a*P), and, at the same time, appear with reduced marking in the comparative. In English, the adjectives *old* or *nice* would be examples of such roots. The possibility of entries like (18) is what leads us to say that if a root spells out C1P (and thus occurs with reduced marking in the comparative), it does not have to be necessarily suppletive.

To sum up, the theory allows for two kinds of roots with reduced comparative marking: suppletive ones (*bett-*) and non-suppletive ones (*old*), depending on whether they have a pointer in their lexical entry or not.

Notice, however, that the entry for adjectives like *old* in (18) is very similar to the entry we have originally considered for *worse*, recall (5b). The problem with (5b) was that it could spell out the comparative form of just about any root. But we have closed this possibility by introducing the FR (10): overwriting at C1P only happens if the overwriter has a pointer to the overwritee. But this raises another issue: in a bottom up cyclic system, which we are proposing, the $\surd$ is always spelled out first. Here all lexical items that contain the $\surd$ node are candidates, and we let free choice decide. Suppose we choose an entry like *old*, with the entry (18). Since this entry contains the $\surd$, the Superset Principle is satisfied, and *old* gets inserted at $\surd$. The next step is to merge little *a* with the $\surd$, forming *a*P, and we again try to spell it out.[5] But the problem is that any item inserted at *a*P will overwrite the item selected for insertion at the $\surd$ node, and hence, this situation is regulated by the Faithfulness Restriction (10). So far, the condition says that overwriting is only possible if the overwriter has a pointer to the overwritee, which is not the case here. At the same time, we are not literally overwriting one entry by another, since we want to insert at *a*P the very same entry that we inserted at the $\surd$ node. This must be legal, otherwise an entry such as (18) would never get to use its lexicalisation potential. In order to allow this, we augment the FR in the following way:

(19) *Faithfulness Restriction (FR)*

A spellout α may override an earlier spellout β iff

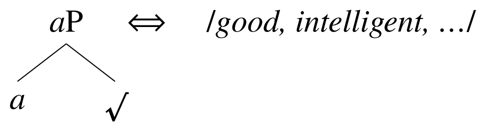
a. α contains a pointer to β

b. $\alpha = \beta$

This formulation allows the entry (18) to keep overwriting itself (due to (19b)) all the way to C1P. When C2 is merged, the whole C2P cannot be spelled out by (18), and so *-er* is inserted under C2.

Let us now turn to *a*P-sized roots, whose entry is as in (20).

(20)

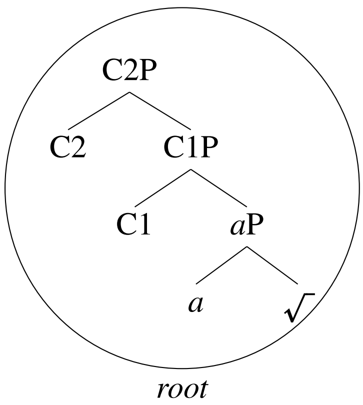


These again come in two varieties. Those that are not pointed to by anything (*intelligent*) combine with *more* in the comparative. Those that are pointed to by some other lexical item (*good* is pointed to by *bett-*) switch to the suppletive form in the comparative.

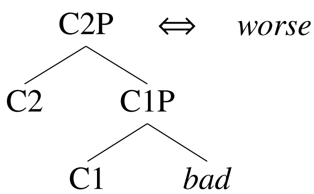
Proposing that these adjectival roots spell out *a*P (as opposed to spelling out just the √) has the advantage that we shall not need to worry about the exponence at little *a*, which these adjectives lack. Cross-linguistically, there are, of course, examples of morphologically complex positive-degree adjectives (e.g. English adjectives like *slim-y, cheek-y,* etc.), where the adjectival affix spells out the little *a*, so that the root cannot be inserted as a full *a*P, but as a √ only.

The final theoretical option is that a root spells out the whole C2P, as in (21). This root spells out both C1 and C2, and hence, it appears with no comparative marking whatsoever. Such roots come again (in principle) in two flavours. One type of such roots has a pointer to a different root, as in (21), and then the root works as a suppletive counterpart of a positive root. We analyse *worse* like this.

(21)

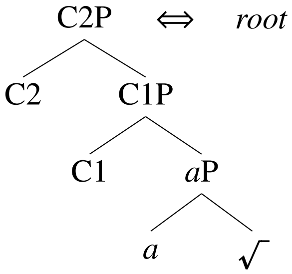


(22)



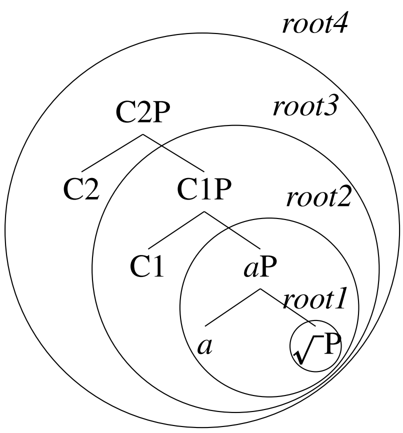
The other type is as in (23), without a pointer. English has no such adjectives, but we find cases like this in other languages, to be discussed in section 5 below.

(23)



In sum, the approach sketched in this section allows for there to exist a variety of roots in the morphological sense, while still maintaining a single √ in syntax. The variety of roots that our theory makes available can be visualised as a set of concentric circles, encompassing various sizes of structure, as shown in (24):

(24)



(25)
a. root1: appears with an overt little a in the positive
b. root2: no overt little a, full comparative marking
c. root3: no overt little a, reduced comparative marking
d. root4: no overt little a, no comparative marking

From the perspective of suppletion, we note that roots that reach up to the comparative zone (namely 3, 4) may work as suppletive comparatives of positive roots (those of size 2). The crucial theoretical possibility allowed by the split CMPR system is the existence of suppletive roots of size 3, corresponding to *bett-*: these can both work as suppletive counterparts to positive-degree roots of size 2, and, at the same time, combine with a 'reduced' comparative marker, namely *-er*. In the remainder of the paper, we present two case studies which illustrate this reduction effect under suppletion.

5 Czech

The first case study concerns the interaction between comparative marking and suppletion in Czech. We start from the fact that the traditional descriptions recognise three different allomorphs of the comparative (see Dokulil et al. 1986; Karlík et al. 1995; Osolsobě 2016). We give them in the first column of (26). The actual comparative marker precedes the dash, the *-í* following it is an agreement marker. Note that (26b,c) represent an increasingly 'reduced' realisations of the full marker *-ějš-*, seen in (26*a*).

(26)

	allomorph	POS	CMPR	SPRL	GLOSS
a.	*ějš-í*	chab-ý	chab-ějš-í	nej-chab-ějš-í	'weak/poor'
b.	*š-í*	slab-ý	slab- š-í	nej-slab- š-í	'weak'
c.	*-í*	hez-k-ý	hez-č- -í	nej-hez-č- -í	'pretty'
d.	*-í*	ostr-ý	ostř -í	nej-ostř -í	'sharp'

On the first two lines, we illustrate the *ějš-í* and *-š-í* allomorphs with two adjectives that are semantically and phonologically similar. We do so to show that the allomorphy is not driven by phonology or semantics. Rather, the distribution is governed by arbitrary root class: *-ějš* is the productive allomorph, while *-š-í* is restricted (occurring with 72 out of 5440 adjectives sampled in Křivan 2012).

On the third line, we illustrate the zero allomorph, and two facts should be noted. First of all, the positive and the comparative are not homophonous: their morphological identity is obscured by phonological interactions with the agreement markers. Specifically, the agreement marker *-í*, found in the comparative, triggers the palatalisation of the base (*k* goes to *č*), while the elsewhere agreement marker *-ý* does not palatalise the base (see Caha et al. to appear for a discussion of the palatalisations). As a result, the forms are distinct. The second fact to be noted is that in the standard language, this type of marking only occurs after a particular little *a* marker, namely *-k*. This morpheme is similar to the English *-y* in that it sometimes occurs after nominal roots (e.g., *sliz-k-ý* = 'slim-y') and sometimes after cranberry type of morphemes (e.g., *hez-k-ý* = 'prett-y'). Because of its limited distribution, it is not clear whether the ø allomorph needs to be recognised as a separate marker, or perhaps dismissed as a special realisation of *-š* after *-k*. We do, however, recognise the zero as a relevant allomorph to consider, because in the dialects of North Eastern Bohemia (Bachmannová 2007), one finds it also after non-derived adjectives, as shown on the last row.

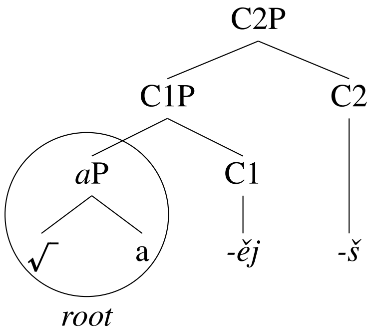
Given that *-š* is a substring of *-ějš*, it is tempting to decompose *-ějš* into a C1 *-ěj* and a C2 *-š*, as suggested by Caha et al. (to appear). Independent evidence for this analysis comes from comparative adverbs, seen in the second column of (27). Here the *-š*-part of the comparative adjective is systematically missing, while *-ěj* is preserved. This confirms an analysis where *-ěj* and *-š* are independent morphemes.

(27)

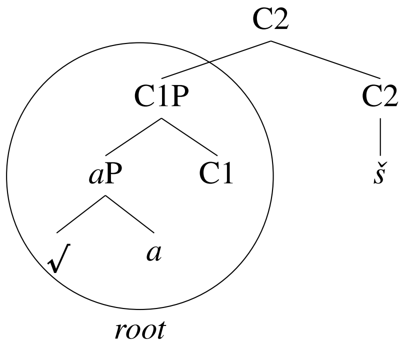
CMPR ADJ	CMPR ADV	
chab-ěj-š-í	chab-ěj-i	'weak'
rychl-ej-š-í	rychl-ej-i	'fast'
červen-ěj-š-í	červen-ěj-i	'red'

Given our model with two comparative heads, the facts are easily captured if *-ěj* and *-š* spell out C1 and C2 respectively. With *a*P-sized roots, both markers surface, see (28). With roots of the size C1P, only *-š* appears, as in (29), and zero marking arises when the root spells out all of the projections, as in (23). Recall that (23) was presented as a logical option allowed by our system, and though it was not attested in English, we need it to account for *ostr-ý* ‘sharp’ in (26).

(28)



(29)



Given our theory, where comparative suppletion requires a root that is at least of the size C1P (so that it applies at a different node than the positive, which spells out *a*P), we arrive at a prediction. In particular, root suppletion should be incompatible with *-ěj-š*. To verify this, the table (30) presents an exhaustive list of suppletive adjectives based on Dokulil et al. (1986:379) and Osolsobě (2016). The table shows that the prediction is borne out: all suppletive adjectives require the ‘reduced’ *-š* allomorph.

(30)

POS	CMPR	GLOSS	POS	CMPR	GLOSS
dobr-ý	lep-š-í	‘good’	špatn-ý	hor-š-í	‘bad’
velk-ý	vět-š-í	‘big’	mal-ý	men-š-í	‘little, small’
dlouh-ý	del-š-í	‘long’			

We submit these facts here as an important confirmation of the phrasal spellout model, which says that when there are two or more ways of marking the comparative, suppletion is incompatible with the full marker. With reduced markers, we find both suppletive and regular cases, depending on whether the entry of the size C1P has a pointer or not.

6 Latin

Latin provides evidence for a correlation between reduced marking of the superlative and suppletion. The regular marking of comparative and superlative is shown in (31a).

(31)

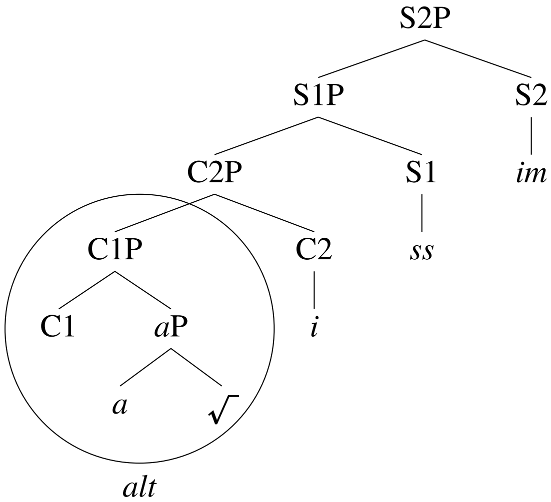
	POS	CMPR	SPRL	GLOSS	marking in SPRL
a.	alt-us	alt-i-or	alt-**i-ss-im**-us	'tall'	full marking
b.	mal-us	pe(i)- or	pe- **ss-im**-us	'bad'	SPRL lacks *-i*
c.	bon-us	mel-i-or	opt- **im**-us	'good'	SPRL lacks *-i-ss*
d.	magn-us	ma-i-or	max- **im**-us	'big'	SPRL lacks *-i-ss*
e.	parv-us	min- or	min- **im**-us	'small'	SPRL lacks *-i-ss*
f.	mult-us	plūs	plūr- **im**-us	'much'	SPRL lacks *-i-ss*

Following De Clercq and Vanden Wyngaerd (2017), we segment the regular superlative into five morphemes. The first morpheme is the root (*alt*), and the last one is agreement *-us*. The reason for treating the three middle markers *-i*, *-ss* and *-im* as separate morphemes is that they can be missing in the irregular forms in (32b-f). These represent an exhaustive list of the suppletive cases given in Gildersleeve and Lodge (1903:46).

We analyse *-i* (the first of the post-root morphemes) as a comparative marker, i.e., as a morpheme identical to the *-i* of the comparative *alt-i-or*. We treat *-i* in the same way as the English *-er*, namely as the spellout of C2. Consequently, we analyse *-or*, which follows *-i* in the comparative, as an agreement marker. We do so because the masculine form *alt-i-or* 'taller, M.SG' alternates with the neuter *alt-i-us*. As a C2 marker, *-i* is compatible with suppletion. In (31c), for instance, the positive degree root *bon-* realises *a*P, the suppletive comparative root *mel-* realises C1P, and *-i-* is the marker of C2.

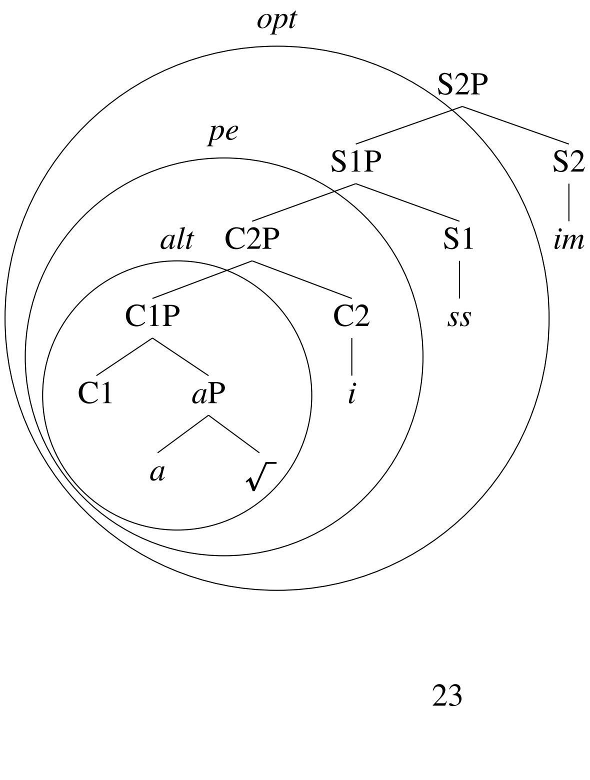
The remaining two morphemes mark the superlative, which we then split into S1 and S2, analogously to Cmpr. The structure of *alt-i-ss-im-us* thus looks as follows:

(32)



Against this background, consider the fact that the superlative marking with suppletive roots is *always* reduced, see (33b-f). There is not a single suppletive root in Latin which keeps all the three pieces in place, as indicated in the final column of (32). More specifically, we see two classes of suppletive roots. The majority of suppletive roots lacks the C2 *-i* as well as the S1 *-ss*, and we would thus analyse them as spelling out S1P. *Pe-* lacks only the *-i*, which, on the assumption that *-i* is C2, leads to the proposal in (33).

(33)



This picture has implications for the analysis of the comparative. Specifically, all suppletive roots which spell out a projection larger than C1P should make *-i* disappear not only in the superlative, but also in the comparative. This is true for the adjectives *min-or* 'smaller' and *plus* 'more', as well as, arguably, *pe-or* 'worse,' where the glide in the comparative *pe[j]or* results, on our analysis, from phonological factors (hiatus filling). Note that *plus* lacks the agreement marker *-or*, and Gildersleeve and Lodge (1903:46) analyse it as a neuter form, with the masculine cell left blank. Here we treat *plus* as spelling out minimally S1P, lacking *-i* in the comparative and in the superlative also *-ss*). We leave the reasons for the lack of agreement open to interpretation.[6]

The (c) and (d) cases of (31) warrant some further comment, since they have *-i-* in the comparative but lack it in the superlative. This is because they instantiate an ABC-pattern, with two different suppletive roots: one of size C1P (explaining the presence of *-i-* in the comparative), and another of size S1P (explaining the absence of both *-i-* and *-ss-* in the superlative). These suppletive roots successively point to one another, e.g. the lexical entry for *opt* contains a pointer to *mel*, which itself contains a pointer to *bon*.[7]

7 Conclusion

This paper proposes an approach that allows for root suppletion within a theory of narrow syntax that is phonology/concept free, and which dispenses with indexed $\surd$s. By dispensing with indexed $\surd$s, the theory is also compatible with approaches where $\surd$s are dispensed with all together (Ramchand 2008). What makes this type of theory available is a bottom up phrasal spell out, where different roots apply at different nodes. Finally, we have addressed the issue of how to maintain such a theory in the face of the fact that root suppletion sometimes combines with overt marking.

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Notes

[1] Bobaljik adopts the adjacency condition on suppletion, and so the CMPR node triggering the application of the rule (2a) appears be too far away from the $\surd$, being separated from it by the intervening *a*-head. Nevertheless, due to certain intricacies of the ABC suppletion pattern, there is a way to make $\surd$ sensitive to the CMPR node despite the non-adjacency even in Bobaljik's system, as reviewed in Caha (2017:sect. 3.1). We do not elaborate on this issue here as it is orthogonal to the main point.

[2] This problem is analogous to the one noted by Marantz (1995). Our discussion of this issue is indebted to Michal Starke (p.c.).

[3] This could be a phase or some larger chunk of structure relevant for the locality of suppletion, see, e.g. Embick (2010), Merchant (2015), Moskal and Smith (2016).

[4] We leave it open whether *mo-re* spells out C1 and C2 separately, or as a portmanteau. We also leave it open as to how exactly spell out applies here. It could be that C1 and C2 are turned into a constituent, either by head-movement (Matushansky 2013), Local Dislocation (Embick 2007) or by Complex-Spec formation (Caha et al. to appear). Alternatively, if some version of Spanning is adopted (Williams 2003, Abels and Muriungi 2008, Taraldsen 2010, Dékány 2011, Svenonius 2012, Merchant 2015, Haugen and Siddiqi 2016), *more* can simply span C1 and C2, as shown in (32). Similarly, we leave it aside how the surface order is derived in (33), as this would take us too far afield, and is orthogonal to our concerns.

[5] Should spellout fail, then little *a* would have to be spelled out on its own as a terminal.

[6] Note that *plus* and *plur* are two shapes of a single root, with *s* undergoing rhotacism in intervocalic positions, which happens also in the comparative when inflected, cf. *plur-is* 'more, GEN.SG.'

[7] We take *s* in the superlative *maks-im-us* 'biggest' to be a part of the root, given that it is not a geminate like the superlative S1 marker. The comparative *ma-i-or* 'bigger' could arise from the root *mag-*, as suggested in Bobaljik (2012), with the root final *g* first assimilating to *j* (yielding *maj-j-or*), which is then reduced due to degemination. Bobaljik (2012) concludes from this that this adjective has a regular AAA pattern, and hence, that is is irrelevant for suppletion. However, this move requires the parsing of the positive as *mag-nus*, which we see little evidence for. We therefore treat it as an ABC pattern (*magn–ma(g)–maks*).