Generalizations on Root Suppletion: Motivating a Theory of Contextual Allomorphy

Jurij Božič

1. Introduction

In Distributed Morphology (Halle & Marantz, 1993), recent years have seen an intense focus on delineating the locality domains of contextual allomorphy (Bobaljik, 2000; Embick, 2010; Radkevich, 2011; Bonet & Harbour, 2012; Gribanova, 2015; Merchant, 2015; Moskal, 2015; Moskal & Smith, 2016). In particular, Merchant (2015) and Moskal & Smith (2016) argue for the existence of *non-locallly triggered* suppletion, where the trigger of suppletion is *non-adjacent* to the point of insertion. This paper presents a short cross-linguistic survey of non-locally triggered root suppletion and fleshes out two key generalizations that need to be captured by theories of allomorphy. Specifically, we show that local and non-local allomorphy are in an *implicational relation*, such that non-local allomorphy implies local allomorphy. In addition, the non-local patterns of suppletion that have been reported in the literature, together with those uncovered in this paper's survey, are very conservative in terms of the distance between the *trigger* and *target* of insertion. Both these generalizations are not expressed in existing approaches to non-local allomorphy such as Merchant (2015). A key goal of this paper is to motivate a general theory of contextual allomorphy based on the generalizations on suppletion uncovered here. We flesh out the formal beginnings of a model of contextual allomorphy that accounts for these generalizations towards the end of the paper.

2. Survey on suppletion

To determine the cross-linguistic properties of non-locally triggered root suppletion, and hence contextual allomorphy in general, we performed a systematic survey of the *Surrey Suppletion Database* (Brown et al., 2003). This database contains suppletion data from 34 languages from distinct languages families and so forms a representative sample of cross-linguistic suppletion. Two criteria were followed in determining whether a pattern was local or non-local. The first of these criteria is *linear adjacency*:

(1) CRITERION 1: Linear Adjacency

$\boxed{\sqrt{\text{RT}}} - \underline{X^0} - Y^0$ ⇝ *local*

$\boxed{\sqrt{\text{RT}}} - \underline{X^0} - \underline{Y^0}$ ⇝ *non-local*

$\boxed{\sqrt{\text{RT}}} - X^0 - \underline{Y^0}$ ⇝ *non-local*

$Y^0 - \boxed{\sqrt{\text{RT}}} - \underline{X^0}$ ⇝ *local*

$\underline{Y^0} - \boxed{\sqrt{\text{RT}}} - X^0$ ⇝ *local*

$\underline{Y^0} - \boxed{\sqrt{\text{RT}}} - \underline{X^0}$ ⇝ *local*

The boxed syntactic heads represent the targets of insertion,[1] while the underlined one represent the triggering contexts. This is a practice adopted throughout this paper. According to this first criterion,

* Jurij Božič, McGill University, jurij.bozic@mail.mcgill.ca. I would like to thank the following people who provided valuable comments on the research that led to this paper: Lisa deMena Travis, Jessica Coon, Chris Bruno, Nico Baier, Victor Acedo-Matellán, Andrew Nevins, Jason Merchant, Itamar Kastner.

[1] As a starting point, we subscribe to the proposal advanced by Harley (2014), viz. that roots are subject to late insertion just like affixes and, hence, may undergo contextual suppletion.

 Proceedings of the 35th West Coast Conference on Formal Linguistics, ed. Wm. G. Bennett et al., 114-123. Somerville, MA: Cascadilla Proceedings Project.

only *linear adjacency* was assumed to be a factor that determines how local the trigger of suppletion is. For instance, one of the Y^0-prefixes above could be merged relatively high in the structure, i.e. higher than the X^0-suffixes, but this was not considered to be a factor that could play a role in the locality of suppletion. This is well in line with existing work on linear adjacency, such as Embick (2010) or Ostrove (2016). The module of the PF-interface that is concerned with converting syntactic structure to phonology is expected to operate with linear information in some way.[2]

The second criterion that was followed involves determining the status of suppletion triggered across null syntactic heads. Null syntactic heads were not considered to be real interveners for suppletion:

(2) CRITERION 2: Null heads ≠ interveners

$\boxed{\sqrt{\text{RT}}} - \underline{X^0} - Y^0$ ⇝ *no intervener*

$\boxed{\sqrt{\text{RT}}} - \varnothing - \underline{Y^0}$ ⇝ *no intervener*

$\boxed{\sqrt{\text{RT}}} - X^0 - \underline{Y^0}$ ⇝ *real intervener*

$\boxed{\sqrt{\text{RT}}} - \underline{X^0} - \underline{Y^0}$ ⇝ *real intervener*

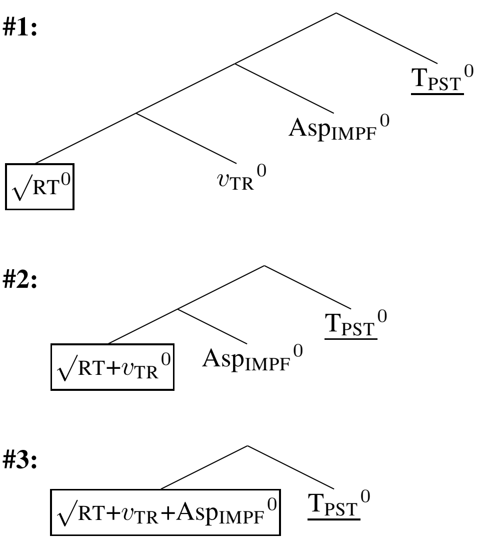
If null heads are not actual interveners for allomorphy, then any allomorphic relation that occurs across only nulls heads is still a fully local instance of allomorphy. This is grounded in other work that recognizes that null syntactic heads do not seem to act as interveners for allomorphy in general (Siddiqi, 2006, 2009; Embick, 2010; Arregi & Nevins, 2012). To be completely explicit, we follow the proposal put forth by Siddiqi (2006, 2009), in which the null syntactic heads undergo generalized fusion to the *target* of insertion. Consider the following derivation:

(3) Fusing null heads before root insertion

Step #1:

Step #2:

Step #3:



This represents an instance of T^0-triggered root suppletion, where the intervening v^0 and Asp^0 are null, but $T^0_{[\text{PAST}]}$ is overt. In this system, as developed by Siddiqi (2006, 2009), fusion applies freely before each Vocabulary Insertion step. Fusion can apply between the target of insertion and up to the first overt head – in this case T^0. In Siddiqi's system, overt heads such as $T^0_{[\text{PAST}]}$ here are lexically marked as incompatible for fusion. If $T^0_{[\text{PAST}]}$ fused to the heads below it, the derivation would 'crash'. See Siddiqi (2006, 2009) for more details on this system.[3]

[2] See also Božič (2017:17) for theoretical motivation for such an assumption.

[3] Note that 'look-ahead' need not be invoked here since the system of fusion is defined with respect to morphosyntactic features and not to whether the head in question is null or overt phonologically.

Language	*Local supp.*	*Non-Loc. supp.*	*Language*	*Local supp.*	*Non-Loc. supp.*
!Xóõ	✓		Koasati	✓	
Arapesh	✓		Kolyma Yukaghir		
Archi	✓		Komi	✓	
Basque	✓	(✓)	Limbu	✓	
Chichewa	✓		Mayali	✓	
Georgian	✓		Navajo		
Guarani	✓		Nishnaabemwin	✓	
Hebrew	✓		Palauan	✓	
Hua	✓		Qafar	✓	
Hungarian	✓		Russian	✓	
Itelmen	✓		Tariana	✓	✓
Jacaltec	✓		Tarma Qechua	✓	
Chichewa	✓		Tetelcingo Nahuatl	✓	
Japanese	✓		Totonac	✓	✓
Kannada	✓		Turkana	✓	
Kayardild	✓		Xakass	✓	
Chichewa	✓		Yimas	✓	
Ket	✓	✓	Yupik		

Table 1: Results from the survey based on the Surrey Suppletion Database

2.1. Survey results

This subsection provides details on the systematic survey of the Surrey Suppletion Database (Brown et al., 2003) that was performed. These results are based on the Criteria 1–2 discussed in the previous section. The entire results are shown in Table 1. Ouf of the 34 langauges in the database, very few revealed instances of non-local suppletion: the only instances of non-local suppletion were found in Ket (Yenisseian), Tariana (Arawakan) and Totonac (Totozoquean). However, it needs to be noted that Basque, as well, actually reveals an instance of non-local suppletion in its adjectival system (Bobaljik, 2012:156-158), but this particular datum does not show up in the Surrey Suppletion Database. However, we shall still consider it here. The survey thus reveals the following relations between the different types of suppletion found in the database:

(4) Overview of Surrey Suppletion Database results

Number of lang.	*Local Suppletion?*	*Non-Local Suppletion?*
34	31	4

Non-local suppletion suppletion seems to be much rarer than local suppletion. Local suppletion in fact seems to be quite common cross-linguistically, as we expect to find it in most languages of the world.

To create a representative picture of non-local suppletion, we will also include other instances of non-local suppletion that have been reported in the literature, but were not uncovered in the survey. These include Greek (Merchant, 2015), Slovenian (Božič, 2016), Tamil (Moskal & Smith, 2016) and Lak (Radkevich, 2014; Moskal, 2015). An overview of all the instances of non-local suppletion is given in Table 2.

LANGUAGE	PATTERN	CAT	SOURCE
1. *Greek*	$\boxed{\sqrt{\text{RT}}}$-$\underline{\text{Voice}^0\text{-Asp}^0}$	V	Merchant (2015)
2. *Slovenian*	$\boxed{\sqrt{\text{RT}}}$-Asp^0-$\underline{\text{Ptc}^0}$	V	Božič (2016)
3. *Tamil*	$\boxed{\text{D}^0}$-$\#^0$-$\underline{\text{K}^0}$	D^0	Moskal & Smith (2016)
4. *Totonac*	$\boxed{\sqrt{\text{RT}}}$-Asp^0-$\underline{\text{Agr}^0_{2\text{P}}}$	V	Brown et al. (2003)
5. *Lak*	$\boxed{\sqrt{\text{RT}}}$-$\#^0$-$\underline{\text{K}^0}$	N	Radkevich (2014)
6. *Tariana*	$\boxed{\sqrt{\text{RT}}}$-Cl^0-$\underline{\#^0}$	A	Brown et al. (2003)
7. *Ket*	$\underline{\text{T}^0}$-AgrO^0-$\boxed{\sqrt{\text{RT}}}$	V	Brown et al. (2003)
8. *Basque*	$\boxed{\sqrt{\text{RT}}}$-Dim^0-$\underline{\text{Cmpr}^0}$	A	Bobaljik (2012)

Table 2: General overview of non-local suppletion

2.2. Minimal pairs of non-local suppletion

In this subsection, we briefly discuss minimal pairs that reveal non-local suppletion from each of the languages specified in the previous subsection. It should be noted that this paper offers a typological view of these data in order to capture broader generalizations that they offer. Each of the languages, of course, deserves careful attention, but we hope that the discussion here is a good start for further research in these patterns. We start with the pattern in Greek:

(5) **GREEK**
Voice^0-Asp^0-triggered suppletion in V (Merchant, 2015)

a. √tro -∅ -∅ -o
eat ACT IMPF 1P.SG

b. √troɣ -∅ -∅ -omun
eat NON-ACT IMPF 1P.SG

c. $\boxed{\sqrt{\text{fa}}}$ -∅ -∅ -o
eat ACT PRF 1P.SG

d. $\boxed{\sqrt{\text{faɣo}}}$ <u>-θ</u> <u>-ik</u> -a
eat NON-ACT PRF 1P.SG

Root suppletion in Greek occurs in verbal constructions where it is Voice^0 and Asp^0 that jointly condition it. Reference is needed to the adjacent Voice^0 (non-active) head, as well as to the non-adjacent Asp^0 (perfective) head, which makes this a non-local suppletion pattern. According to Merchant (2015:277), [tro-] and [troɣ-] are the same exponent, viz. /tro(ɣ)-/, as the /ɣ/ is sometimes dropped for independent reasons. /tro(ɣ)-/ must be the elsewhere exponent here, as it cuts across voice specification, as assumed by Merchant, i.e. it occurs with active and non-active forms.[4]

(6) **SLOVENIAN** (South Slavic)
Ptc^0-triggered suppletion in V (Božič, 2016)

a. √žanj -e -∅ -m
reap ASP/THM PRES.TNS 2P.SG

b. $\boxed{\sqrt{\text{ž}}}$ -e <u>-l</u> -a
reap ASP/THM PTC F.SG

In Slovenian, the participial head (Ptc^0), which expones the suffix /-l/, triggers suppletion across the overt theme vowel. Božič (2016) shows that the root exponent found in tensed verbs (i.e. √žanj-) needs

[4] N.B. Christopoulos & Petrosino (2017) have argued against Merchant (2015), proposing that this pattern is not an actual instance of non-local suppletion.

to be the elsewhere item because it also occurs in nominalizations, whereas /$\sqrt{}$ž-/ only occurs in verbal constructions. In other words, the contexts in which /$\sqrt{}$žanj-/ occurs do not form a natural class. See Božič (2016) for more details on this pattern.

(7) **TOTONAC** (Totozoquean)
PERSON-triggered suppletion in V (Brown et al., 2003)[5]

a. $\sqrt{}$maː -ná -∅
lie IMPF 1P.PL

b. $\boxed{\sqrt{}\text{paː}'}$ -nán <u>-tit</u>
lie IMPF 2P.PL

c. ta- $\sqrt{}$máː -na
3P.PL lie IMPF

Second person features trigger suppletion here across the overt aspect (imperfective) head. The elsewhere exponent here must be /maː-/. We need to assume that this is the case since 1P and 3P cannot form a natural class to the exclusion of 2P under any treatment of person ϕ-features, be it geometric (Harley & Ritter, 2002) or binary (Nevins, 2007). For instance, if 1P is [+speaker,+participant] and 3P [–speaker,–participant], these two categories will not be able to form a natural class to the exclusion of 2P [–speaker,+participant].

(8) **BASQUE**
CMPR^0-triggered suppletion in A (Bobaljik, 2012:156-158)

a. $\sqrt{}$asko
much [positive degree]

b. $\boxed{\sqrt{}\text{gehi}}$ <u>-ago</u>
much CMPR [comparative degree]

c. $\boxed{\sqrt{}\text{gehi}}$ -xe <u>-ago</u>
much DIM CMPR [comparative degree]

Root suppletion is triggered by the comparative degree in adjectival formations in Basque, and crucially this is triggered across the overt diminutive suffix. The exponent in the positive degree, viz. /asko-/, needs to be the elsewhere . According to Bobaljik (2012), the positive degree has no head encoding its 'positive' status, but the comparative degree does (viz. Cmpr^0). Hence, the positive degree is always a proper subset of the comparative degree, and a contextual rule can only operate on the presence of additional heads and not their absence.

In the patterns that we have discussed up to now, we were able to make an argument for claiming that the *trigger* was always overt, as was the intervener. However, in the remainder of the dataset, it is more difficult to argue that the trigger of suppletion is overt. Future research will need to determine whether the triggers in the following cases are trully over or null. We can still safely conclude, though, that the interveners are definitely overt in these cases. We start with Tamill:

(9) **TAMIL** (Dravidian)
K^0-triggered suppletion of D^0 in PRONOUN (Moskal & Smith, 2016:306)

a. $\boxed{\text{naan}}$ -gal <u>-∅</u>
1P.PRON PL NOM

b. $\boxed{\text{en}}$ -gal <u>-ukku</u>
1P.PRON PL DAT

In Tamil, Case features trigger suppletion across an overt plural number head. However, it is difficult to determine whether it is NOM or DAT that is triggering suppletion, as Moskal & Smith (2016:306) note.

[5] Brown et al. (2003) specify personal communication from Paulette Levy as the source for this pattern.

(10) **TARIANA** (Arawakan)
NUMBER-triggered suppletion in A (Brown et al., 2003), (Aikhenvald, 2003:173)

a. $\boxed{\sqrt{\text{hanu}}}$ -pua <u>-∅</u>
big CLASS SG

b. $\boxed{\sqrt{\text{male}}}$ -pua <u>-pe</u>
big CLASS PL

In Tariana, number features trigger suppletion in the adjective ‘big’ across an overt classifier head. Here it is also difficult to determine whether it is the overt plural head or the null singular head that is performing the triggering.

(11) **LAK** (Northeast Caucasian)
K^0-triggered suppletion in N (Radkevich, 2014), (Moskal, 2015:35)

a. $\boxed{\sqrt{\text{barz}}}$ -ru <u>-∅</u>
moon PL NOM

b. $\boxed{\sqrt{\text{zur}}}$ -dald <u>-il</u>
moon PL ERG

In Lak, Case features trigger nominal root suppletion across an overt number head. Again, it is difficult to determine if the overt or null K^0-head is triggering suppletion.

(12) **KET** (Yeniseian)
$T^0_{\text{PRES/PAST}}$-triggered suppletion in V (Brown et al., 2003), (Werner, 1997:284)[6]

a. ku- <u>∅-</u> ɣu- $\boxed{\sqrt{\text{tus'}}}$
2P.SUBJ PRES.TNS 2P.OBJ intend

b. ∅- <u>il'-</u> gu- $\boxed{\sqrt{\text{dɛn}}}$
2P.SUBJ PAST.TNS 2P.OBJ intend

In Ket, the contents of the tense-head are triggering suppletion across the overt AgrO^0-head (2P.OBJ). Since present T^0 is null and only past T^0 is overt, it is difficult to determine which of these is triggering suppletion.[7]

3. Two generalizations on allomorphy

Two generalizations can be made on the suppletion data that we have considered, which have general implications for the *theory of allomorphy*. The first is about the status of locality in these patterns, and the second about the distance involved in non-locality. We start with the *status of locality*. It is accepted in much literature on allomorphy within Distributed Morphology that non-local patterns are much rarer than local patterns. This is directly supported by our findings, as already noted above. In just the results from searching the Surrey Suppletion Database, 31 languages showed local suppletion, while only 4 showed non-local suppletion. One might even go further and ask whether every language with non-local allomorphy generally shows *some* local allomorphy. This indeed turns out to be the case. We briefly indicate these cases in the following paragraph.

Apart from the non-local pattern given in (5), Greek does have local allomorphy, e.g. the sensitivity of Agr^0 to T^0 (Merchant, 2015:277).[8] Slovenian shows instances of local allomorphy, where root

[6] Glosses are based on Vajda (2003).

[7] According to the morphemic analysis of these Ket structures in Brown et al. (2003), a third suppletive form is shown in the paradigm, which essentially appears to be the present tense root exponent followed by [in]. Since the /-in/ suffix encodes plural subject agreement in Ket, as discussed in Vajda (2003), I consider the [in] to be this pluralizer and not a part of the root exponent. The vowel of the root exponent, when occuring with /-in/, also seems to undergo a quality change, but it is presently unclear if this is an instance of root suppletion.

[8] Even in the patterns that involve non-local suppletion in Greek, discussed in ((5)), only a subset of those forms

suppletion in nouns is triggered by an adjacent #^{0}-head specified for plural (Božič, 2017). Tamil also reveals instances of local allomorphy: the spell-out of n^0 in nouns is conditioned by an adjacent K^0-head (McFadden, 2014:14). In Totonac, verbs such as 'come' and 'go' undergo suppletion conditioned by person features with no evident intervener (Brown et al., 2003). In Tariana, several roots supplete in the context of Vocative features with no evident interveners (Brown et al., 2003; Aikhenvald, 2003). In Ket, the root of the noun 'man' also suppletes in the context of an adjacent plural feature (Brown et al., 2003; Werner, 1997). In Basque, we can find instances of local blocking effects, where the spell-out of T^0 is sensitive to an adjacent ergative clitic (Arregi & Nevins, 2012). In Lak, the root of the noun 'horse', among others, suppletes in the context of the local #^{0}-head (Mel'čuk 2000: 516).

This indicates that, not only is non-local allomorphy rarer than local allomorphy, but also that it is somehow secondary to local allomorphy. For instance, in Slovenian we do find a small non-local pattern, but the rest of the patterns in the language seem to be fully local (Božič, 2015, 2016). No language, to the best of our knowledge, has been uncovered where non-local allomorphy is the pervasive and primary pattern. This suggests a tentative universal generalization along the following lines:

(13) *Locality Implication*: *non-local* $\Longrightarrow$ *local*
If a language exhibits non-local contextual allomorphy, it also exhibits local contextual allomorphy.

This generalization need not mean that non-local allomorphy is actually derived from local allomorphy, but it encodes the observation that non-local allomorphy is more exceptional and not the default pattern that we expect to observe. In sum, it seems inadequate to award local and non-local allomorphy equal status in theories of allomorphy. This generalization suggests that local allomorphy represents the default, *unmarked* pattern, and that non-local allomorphy is much more *marked*. Acknowledging a distinction in markedness does not in its own derive the Locality Implication, but it is useful to talk of unmarked vs. marked patterns, since that places them in a specific relationship.

We now turn to the *distance in non-locality*. If we consider our data in terms of the distance between triggers and targets of allomorphy/suppletion, we find that all of the instances of non-local suppletion are only non-local for one extra head:

(14) *Distance in Non-Locality*
Non-local allomorphy/suppletion can only involve treating two heads as context and not more.

What is fascinating about the Distance in Non-Locality, in a general way, is how conservative non-local patterns appear to be in terms of distance. The approach to non-local allomorphy proposed by Merchant (2015) predicts that non-local suppletion can in principle involve all the heads between the root and the very top of the extended projection, which can result in very many overt intervening heads. This prediction is not borne out, to the best of our knowledge.

We do not consider any instances of affixal allomorphy to see whether they also conform to this pattern. However, the data on root suppletion as such nevertheless form a generalization that needs to be captured by theories of allomorphy. For more discussion on this issue in affixal allomorphy, see Božič (2017). For now, we take a strong stance and assume that affixal allomorphy behaves the same as suppletion in terms of the distance between the target and trigger of allomorphy.

4. Distance in Non-Locality

An influential approach to deriving non-local allomorphy is the system of 'contextual spans' developed by Merchant (2015). In this section, we show that such a system cannot capture the generalization on Distance in Non-Locality, discussed above. We then suggest what properties a model of allomorphy needs to have in order to successfully capture such a generalization. Merchant (2015)

actually involves overt interveners. This means that the remaning forms involved in the pattern actually involve local suppletion. That being said, Greek does contain a significant number of roots that seem to undergo some sort of non-local suppletion (Merchant, 2015:281). The point, however, is that even Greek is not entirely free of local patterns, which again makes the non-local ones look 'irregular'.

proposes that any 'span' of syntactic heads within an extended projection can constitute context for root suppletion. To illustrate this, let us construct a toy grammar with rich, overtly expressed morphology:

(15) Toy grammar

a. $\sqrt{\text{blag}}$ -zi -nur -sa -ta -la
eat $v^0{}_{\text{TRANS}}$ $\text{Asp}^0{}_{\text{PRF}}$ Mod^0 $\text{T}^0{}_{\text{PRES}}$ $\text{Mood}^0{}_{\text{INDIC}}$
'(You) Eat.'

b. $\boxed{\sqrt{\text{mar}}}$ -zi -nur -sa -ta -pi
eat $v^0{}_{\text{TRANS}}$ $\text{Asp}^0{}_{\text{PRF}}$ Mod^0 $\text{T}^0{}_{\text{PRES}}$ $\text{Mood}^0{}_{\text{IMPERAT}}$
'(You) Eat!'

In this toy grammar, root suppletion is triggered by the Mood^0-head when it is specified for 'imperative'. The intervening heads can also be said to participate in the triggering. However, four overt heads appear between the target of suppletion and Mood^0 in this pattern. The system of 'spans' proposed by Merchant (2015) is able to derive such a pattern:

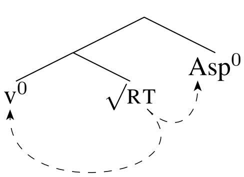
(16) $\sqrt{\text{EAT}} \leftrightarrow$ *mar* / ______ $\langle v^0, \text{Asp}^0, \text{Mod}^0, \text{T}^0, \text{Mood}^0{}_{\text{IMPERAT}}\rangle$
$\sqrt{\text{EAT}} \leftrightarrow$ *blag*

A span is formed between v^0 and Mood^0, which triggers root suppletion. However, the fact that the system of contextual spans permits the construction of such large spans is a problem, as triggering suppletion across so many overt syntactic heads is not attested. In other words, a system that permits such non-locality misses the generalization on Distance in Non-Locality, discussed in the previous section.

4.1. Steps towards deriving 'Distance in Non-Locality'

We here flesh out the basic assumptions that are needed to adequately derive the generalization on Distance in Non-Locality. A fully formal account will not be developed here, but see Božič (2017) for a formally explicit account and the discussion of the predictions that it gives. We propose that the local as well as non-local aspects of suppletion and allomorphy must stem from the formal characterization of *Vocabulary Insertion* (VI). We follow Trommer (1999) in assuming that VI is formally defined as $\langle$PHON, TARG, CTXT$\rangle$, where 'CTXT' constitutes context and 'TARG' the target of insertion, and 'PHON' the phonological exponent that is inserted. We propose that CTXT is formally implemented as a type of *buffer*-unit, $\mathfrak{B}$. $\mathfrak{B}$ consists of maximally two slots which are designated for storing either *left* or *right*-adjacent context: $\mathfrak{B}=\langle S_\alpha, S_\alpha\rangle$. The slots are 'labelled' with α-labels, where 'α' stands for a set of *directionality labels/features*, $\alpha=\{L(\text{eft}), R(\text{right})\}$. We propose that these labels need to be *satisfied* for insertion to occur. They can only be satisfied if a syntactic head that matches their specification (either 'left' or 'right adjacent') is stored in the slot with the appropriate label. Consider the following example:

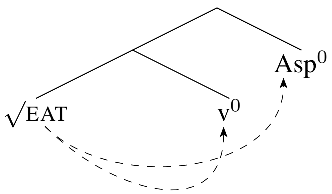
(17) Inserting at $\sqrt{\text{RT}}$ with $\mathfrak{B} = \langle S_L, S_R\rangle$



When VI selects the root for insertion, the two labels in the slots in $\mathfrak{B}$, viz. L and R, each perform a 'search' for context: L retrieves a head that is left-adjacent to the root (v^0), while R retrieves a head that is right-adjacent to the root (Asp^0). This is how VI determines what the *context of insertion* is in the syntactic tree. After the context has been determined, VI can proceed to insert the exponent for its target.

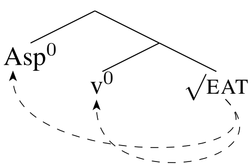
A buffer in which one of the slots is labelled with L and the other with R, such as $\langle S_L, S_R\rangle$ in ((17)), is used for computing fully local context. Since local patterns seem to be unmarked as compared to non-local patterns in allomorphy, we expect such a buffer specification to be the default one. However, non-local patterns can also be derived by this system if we assume that one of the labels in $\mathfrak{B}$ gets RE-LABELLED: this yields either $\langle S_L, S_L \rangle$ or $\langle S_R, S_R \rangle$. Such a 're-labelled' $\mathfrak{B}$ can then compute non-local context, either in the left or right direction:

(18) Computing non-local context with $\mathfrak{B}=\langle S_R, S_R \rangle$



$\rightsquigarrow \mathfrak{B}=\langle \mathrm{v}^0, \mathrm{Asp}^0 \rangle$

(19) Computing non-local context with $\mathfrak{B}=\langle S_L, S_L \rangle$



$\rightsquigarrow \mathfrak{B}=\langle \mathrm{v}^0, \mathrm{Asp}^0 \rangle$

The first computation of context above can be used for languages such as Greek, which are mostly suffixing: here the two slots in the buffer search for two heads in the right direction. The second computation of context can, in turn, be used for languages such as Ket, which are mostly prefixing: here, the two slots in the buffer search for two heads in the left direction.

This type of system directly encodes the generalization on Distance in Non-Locality. This is because it predicts that non-local allomorphy will only ever consider *two heads* in a single direction, be it left or right. This is because the buffer only contains two slots. One might wonder why the buffer does not perhaps contain more than two slots, but this can be explained by maintaining that it is designed to compute only minimally local context, one left and one right-adjacent head. This is actually supported by the generalization which states that non-local allomorphy is much more marked than local allomorphy, as discussed in section 3. In this sense, VI is designed to compute purely unmarked, local context, but it may be *exploited* to also compute non-local context to some degree. One might then ask why it is that only 'two slots' represent the specification for computing purely local context – why not 'three slots'? This follows from the simple observation that the cardinality of the set of directionality labels $\{L, R\}$ cannot logically exceed *two*. In other words, 'two slots' represents the minimal specification for context because precisely two linear dimensions exist at the PF-interface – *left* and *right*.

The model of allomorphy outlined here makes constrained predictions about possible allomorphic patterns cross-linguistically, and, in addition, it begins to explain the nature of allomorphic locality in natural language.

5. Conclusion

This paper has presented a short survey of non-local suppletion cross-linguistically. The results of the survey allowed us to formulate two generalizations that should inform the construction of theories of allomorphy. The first generalization states that local allomorphy represents the *unmarked, default* pattern in allomorphy, but that non-local allomorphy is much more *marked*. The second generalization is, in turn, concerned with the distance between the trigger and target in non-local allomorphy, and it reveals that this distance between them is quite small cross-linguistically: the non-local patterns that have been uncovered appear to only consider two overt heads in either the left or right direction, from the target of insertion. In section 4.1, we sketched the beginnings of a model of allomorphy that derives these two generalizations from the basic properties of the PF-interface.

References

Aikhenvald, Alexandra Y. (2003). *A grammar of Tariana, from northwest Amazonia*. Cambridge University Press, Cambridge.

Arregi, Karlos & Andrew Nevins (2012). *Morphotactics: Basque Auxiliaries and the Structure of Spellout*. Studies in Natrual Language and Linguistic Theory 86, Springer, New York.

Bobaljik, Jonathan (2000). The ins and outs of contextual allomorphy. Grohman, K. K. & C. Struijke (eds.), *University of Maryland Working Papers in Linguistics 10*, 35–71.

Bobaljik, Jonathan (2012). *Universals in Comparative Morphology: Suppletion, superlatives and the structure of words*. MIT Press, Cambridge, MA.

Bonet, Eulàlila & Daniel Harbour (2012). Contextual allomorphy. Trommer, Jochen (ed.), *The morphology and phonology of exponence*, Oxford University Press, Oxford, 195–235.

Božič, Jurij (2015). *Spell-Out of Phonological Domains: The Case of Slovenian*. Master's thesis, University of British Columbia, Vancouver, BC.

Božič, Jurij (2016). Locality of exponence in Distributed Morphology: Root Suppletion in Slovenian. Hammerly, Christopher & Brandon Prickett (eds.), *Proceedings of NELS 46*, GLSA, Amherst, MA, 137–146.

Božič, Jurij (2017). Non-local allomorphy in a strictly local system. MS. *lingbuzz/003469*.

Brown, Dunstan, Marina Chumakina, Greville G. Corbett & Andrew Hippisley (2003). Surrey Suppletion Database. *University of Surrey*. dx.doi.org/10.15126/smg.12/1.

Christopoulos, Christos & Roberto Petrosino (2017). Conditioning greek root-allomorphy without spans. Talk given at *WCCFL 35*. April 29, University of Calgary, Alberta.

Embick, David (2010). *Localism versus globalism in morphology and phonology*. MIT Press, Cambridge, MA.

Gribanova, Vera (2015). Exponence and morphosyntactically triggered phonological processes in the Russian verbal complex. *Journal of Linguistics* 519–561.

Halle, Morris & Alec Marantz (1993). Distributed Morphology and the Pieces of Inflection. *The View from Building 20*, MIT Working Papers in Linguistics, MIT Press, Cambridge, MA, 111–176.

Harley, Heidi (2014). On the identity of roots. *Theoretical Linguistics* 40:225-276, 225–276.

Harley, Heidi & Elizabeth Ritter (2002). Person and number pronouns: A feature-geometric analysis. *Language* 78:3, 482–526.

McFadden, Thomas (2014). Why nominative is special: Stem allomorphy and case structures. *Handout from GLOW 37, 4th April, Brussels* .

Merchant, Jason (2015). How much context is enough? Two cases of span-conditioned stem allomorphy. *Linguistic Inquiry* 46:2, 273–303.

Moskal, Beata (2015). *Domains on the Border: Between Morphology and Phonology*. Ph.D. thesis, University of Connecticut, Storrs, CT.

Moskal, Beata & Peter W. Smith (2016). Towards a theory without adjacency: Hyper-contextual VI-rules. *Morphology* :26, 295–312.

Nevins, Andrew (2007). The representation of third person and its consequences for person-case effects. *Natural Language and Linguistic Theory* 25:2, 273–313.

Ostrove, Jason (2016). Portmanteaux and locality in the irish verbal complex. *Handout from LSA 2016, 7th January. Washington DC* .

Radkevich, Nina (2011). On locality in contextual allomorphy: Evidence from Mayan. Paper presented at NELS 42, University of Toronto.

Radkevich, Nina (2014). Nominal allomorphy in Lak. *Poster presented at NELS 45*.

Siddiqi, Daniel (2006). *Minimize exponence: economy effects on the morphosyntactic component of the grammar*. Ph.D. thesis, University of Arizona, Tucson, AZ.

Siddiqi, Daniel (2009). *Syntax within the word: Economy, allomorphy and argument seletion in Distributed Morphology*. John Benjamins.

Trommer, Jochen (1999). Morphology consuming syntax's resources: Generation and morphology consuming syntax's resources: Generation and parsing in a minimalist version of distributed morphology. *MS. Universität Potsdam, Potsdam.* .

Vajda, Edward J. (2003). Ket verb structure in typological perspective. *Sprachtypol. Univ. Forsch. (STUF)* 56:1/2, 55–92.

Werner, Heinrich (1997). *Die ketische Sprache*. Harrassowitz, Wiesbaden.

Proceedings of the 35th West Coast Conference on Formal Linguistics

edited by Wm. G. Bennett, Lindsay Hracs, and Dennis Ryan Storoshenko

Cascadilla Proceedings Project Somerville, MA 2018

Copyright information

ISBN 978-1-57473-472-0 library binding

Ordering information

Orders for the library binding edition are handled by Cascadilla Press.
To place an order, go to www.lingref.com or contact:

Cascadilla Press, P.O. Box 440355, Somerville, MA 02144, USA
phone: 1-617-776-2370, fax: 1-617-776-2271, sales@cascadilla.com

Web access and citation information

This entire proceedings can also be viewed on the web at www.lingref.com. Each paper has a unique document # which can be added to citations to facilitate access. The document # should not replace the full citation.

This paper can be cited as:

Božič, Jurij. 2018. Generalizations on Root Suppletion: Motivating a Theory of Contextual Allomorphy.
In *Proceedings of the 35th West Coast Conference on Formal Linguistics*, ed. Wm. G. Bennett et al., 114-123.
Somerville, MA: Cascadilla Proceedings Project. www.lingref.com, document #3381.