A Re-portage on spanning; Feature Portaging and Non-Terminal Spell-Out*

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SUMMARY

This paper expands upon the discussion of Feature Portaging in Kilbourne-Ceron et al (2016). Different theories of Vocabulary Insertion (VI) are considered and it is argued that non-terminal spell-out as proposed in Radkevich (2010) captures the data best but must be modified to avoid overwriting (a property of Radkevich's *Vocabulary Insertion Principle* and of the process of VI in Nanosyntactic works). The proposed modification is argued to involve feature-checking that allows for Domain Suspension (Bobaljik & Wurmbrand 2013). It is argued that overwriting and the Nanosyntactic notion of Spell-Out-at-Every-Merge make the wrong predictions regarding the domains in which phonological rules apply (Newell 2008, Newell & Piggott 2014)).

RÉSUMÉ

Cet article développe le propos de « portage » dans Kilbourne-Ceron et al (2016). Différentes théories de l'insertion de vocabulaire (VI) seront considérées, et nous soutiendrons que le « spell out » non terminal tel que proposé dans Radkevich (2010) capte les données de la meilleure façon, mais doit pourtant être modifié pour éviter « overwriting » (propriété du principe d'insertion de vocabulaire de Radkevich et du processus de VI dans les travaux de Nanosyntaxe). La modification proposée implique une vérification des caractéristiques permettant la suspension de domaine (Bobaljik & Wurmbrand 2013). Nous soutenons que les théories de « overwriting » et de « spell out-à-chaque-instance-de-merge » ne produisent pas les bonnes prédictions concernant les domaines phonologiques qui sont observés à l'intérieur des mots (Newell 2008, Newell & Piggott 2014).

* Thanks to Lisa Travis, Oriana Kilbourne-Ceron, and Jonathan Bobaljik for helpful discussion. All remaining errors are of course our own.

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1 INTRODUCTION

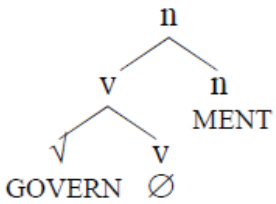
This paper clarifies the discussion of *Feature Portaging*, an operation proposed in Kilbourne-Ceron et al (2016). More specifically, we discuss some aspects that distinguish *Feature Portaging* from similar accounts of suppletion and portmanteau morphology such as *Spanning* (Svenonius 2012, 2016, Bye & Svenonius 2011, Merchant 2015), the *Vocabulary Insertion Principle* (Radkevich 2010), and *Non-Terminal Spellout* within Nanosyntax (Starke 2009, Caha 2018). We begin with a discussion of these different theories and some relevant suppletion data. Throughout the article, we discuss the advantages of *Feature Portaging* over the other theories discussed. We argue that *Feature Portaging* offers a method for predicting the domain of suppletion without any look-ahead mechanisms in a way that is consistent with the computation of word-internal phonological domains.

2 DERIVING SUPPLETION AND PORTMANTEAUX

2.1 TERMINAL SPELL-OUT

Works couched in Distributed Morphology (DM) (Halle & Marantz 1993) assume that vocabulary items are representations of terminal syntactic nodes, as in (1).[1]

(1)



In order to account for portmanteaux morphemes in DM, the post-syntactic mechanism of Fusion has been appealed to in order to maintain that Vocabulary Insertion (VI) occurs only at terminal nodes (see Embick and Marantz 2008, Embick 2014 for defences of terminal-node spell-out). In the following DM-style derivation the P and D morphemes must undergo Fusion under D in order to be spelled out as a single suppletive lexical item.

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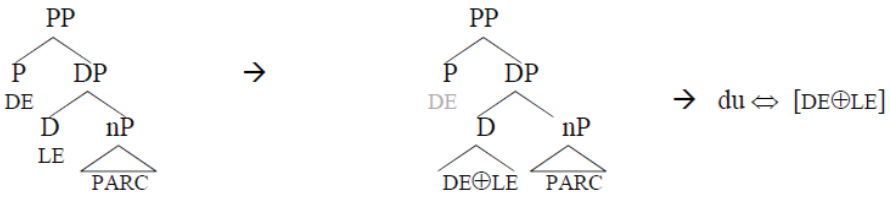


The operation of Fusion has been argued to be problematic as it appeals to a 'look-ahead' operation, where all and only those groups of morphemes that will be spelled out as portmanteaux will undergo Fusion (Caha 2009a, Merchant 2015, Svenonius 2016).[2] Fusion has also undergone

[1] Throughout this paper small caps indicate abstract morphemes without phonological features.

[2] *De+le* spelling out as *du,* /dy/, is traditionally treated as a portmanteau morpheme. Note that this misses the fact that *du* /dy/ appears to share the d- of /də/. According to Leu's *HomoMorphemicity Thesis*: "Phonemically identical morphemes cannot be distinguished within lists" (Leu 2017:189), a learner would presumably segment the /d/ in both forms, *de* and *du*. (See also

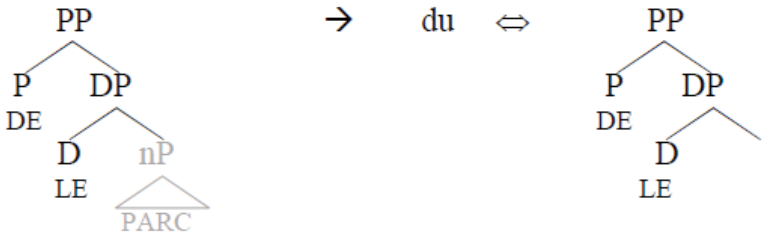
criticism in the way that all post-syntactic morphological operations in DM have; it is a complication of the theory that detracts from the central proposition of DM that the same type of abstract structure-building (syntax) underlies the derivation of lexical and phrasal objects. We agree with these criticisms here and reject the proposal that VI can only occur at terminal nodes. In the following section we discuss three alternate theories of suppletion and portmanteaux: Nanosyntactic Non-terminal Spell-Out (NTS-O) (Starke 2009, Caha 2018), Spanning (Svenonius 2012, 2016, Bye & Svenonius 2011, Merchant 2015) and the Vocabulary Insertion Principle (VIP) (Radkevich 2010).[3]

2.2 NTS-O, SPANNING, AND THE VIP

2.2.1 NTS-O

Within the framework of Nanosyntax it has been proposed that lexical items are not phonological representations of feature bundles at terminal nodes, but rather they are representations of articulated arboreal structure. Each terminal node in the syntactic tree is restricted to a single syntactic feature, and what appears to be 'bundling' is the Spell-Out of a range of terminal nodes and the structure that they project (syntactic structures are targeted for Spell-Out).

(3)



In (3) the nP is greyed out to indicate it has moved. In Nanosyntax only constituents undergo Vocabulary Insertion (Starke 2009). According to the constituent spell-out model, if the nP in (3) had not moved, then it would have had to have been spelled out as part of the exponent of the PP. As Nanosyntax proposes that spell-out cyclically targets every node in the syntax, the nP will have undergone VI before spell-out of DP is attempted. The output of DP will be *le parc* 'the park', but then *le* will be overwritten at the spell-out of PP, as the portmanteau *du* lexicalizes the same structure (P+D) with fewer vocabulary items. In this paper we argue that spell-out driven-movement is unnecessary, and that spell-out at every merge is empirically falsified (see §4).

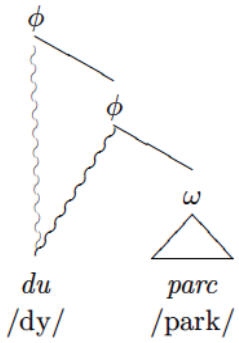
Embick's *Avoid Accidental Homophony*: "Learners seek to avoid accidental homophony; absent evidence to the contrary, identities in form are treated as systematic" (Embick 2003:156)). An alternative to the portmanteau approach would therefore be one according to which d- is an instantiation of P_{DE} (with the schwa unpronounced before a vowel along the lines of Government Phonology analyses of French (see Scheer 1998 for an overview)). The high front rounded vowel in *du* would, under this approach, constitute an allomorph of $D_{DEF.MASC}$ in the environment of P_{DE} (phonologically conditioned by the vowel initial adjacent word). As for *à+le* as *au,* /o/, also often treated as a portmanteau, this form could be derived by a phonological process that pronounces some /alC/ sequences as /o/ in French (cf, cheval/chev**als**→chev**eaux**, but chacal/chacals; the /s/ in these examples is phonologically present but unpronounced). Stated differently, *au* /o/ might involve neither a portmanteau morpheme nor allomorphy, while *du* involves allomorphy of the definite article only. As nothing bears on this issue in the current discussion, we leave it to further discussion; see Newell and Noonan (in prep.). Thanks to Thomas Leu and Glyne Piggott for helpful discussion on this. (All errors remain ours.)

[3] For reasons of space, we ignore here the proposal that suppletion can target strings of linearized morphemes without regard to syntactic structure, or Stretching (Embick 2014, Ostrove 2018, Haugen & Siddiqi 2016),. The behaviour of this type of VI operation and its predicted interactions with cyclic spell-out are left for further study.

2.2.2 SPANNING

In Caha (2009a), it is proposed that constituent spell-out may be able to ignore not only traces, but elements that have already undergone spell-out. The ability to ignore previously spelled-out constituents aligns Caha (2009a) with the Spanning proposals in Svenonius (2016) and Merchant (2015) (although in later work Caha does not discuss 'ignoring' and argues only for spell-out driven movement/constituent spell-out (Caha 2010, 2013, 2018)). Spanning does not limit VI to syntactic constituents. Instead, any contiguous span of syntactic terminals may be targeted for VI.[4]

(4)



(Svenonius 2012:9)

It is unclear from the literature whether the Spanning hypothesis entails overwriting as in Nanosyntax, but it is clear that spell-out is not restricted to single syntactic nodes. Svenonius works within a Mirror Theory framework of syntactic structure which erases the distinction between terminal and non-terminal nodes (Brody 2000), necessarily eliminating the DM requirement that spell-out target only terminal nodes. Spanning differs from Nanosyntax though, in that "morphemes spell out multiple categories…without forcing us to assume that morphemes spell out branching syntactic structures; complex internal structure in a lexical item is restricted to nonprojecting features, on our assumptions." (Bye & Svenonius 2011:6). Another interesting question for Spanning accounts is how they determine the timing of Spell-out. In Svenonius (2016) the syntactic diacritics *w* and @ determine spell-out domains (words) and positions, while in Bye & Svenonius (2011) spell-out is determined by phases. In neither of these works (nor any other account of spanning that we know of) do the authors treat data that indicates that phases/spell-out positions are variable. We argue here that Feature Portaging (introduced below) *derives* the appearance of morphemes that spell out spans as well as, through the incorporation of Domain Suspension (Bobaljik & Wurmbrand 2013), predicting *when* vocabulary insertion will apply within a phase-based framework.[5]

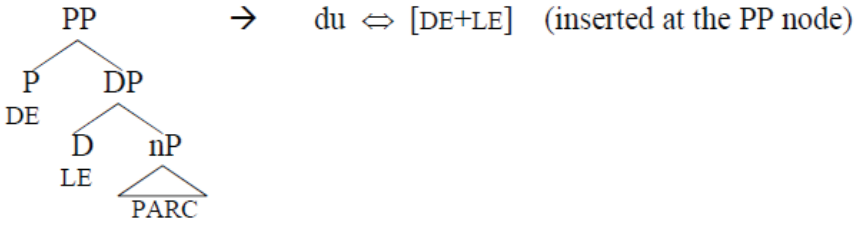
2.2.3 THE VIP

The Vocabulary Insertion Principle (Radkevich 2010) also includes the notion of overwriting argued for within the Nanosyntactic framework. In (5) LE will spell out as 'le' but will be erased

[4] Merchant (2015) proposes the *Span Adjacency Hypothesis*, according to which allomorphy must be conditioned by adjacent spans. We return to his crucial paradigm below and show how Feature Portage can accommodate it.

[5] Note that the proposal herein could easily be incorporated into a Spanning account of VI. We argue, however, that Feature Portage eliminates the need to appeal to lexical items that span multiple nodes, and is therefore a simpler theory.

and overwritten at the spell out of P. The VIP distinguishes itself from Nanosyntax in that it, like the DM and Spanning accounts, proposes that VI targets feature bundles, rather than articulated syntactic representations. But like Nanosyntax and Spanning, and contrary to DM, the VIP allows for VI at non-terminal nodes.

(5) 

2.2.4 INTERIM THEORETICAL SUMMARY

These three proposals (NTS-O, Spanning, and the VIP) all do away with the need for Fusion, which is an advantage in that a stipulative (and circular) step is removed from the derivation. Nanosyntax, however, introduces an analogous look-ahead stipulation; it relies on movement (of nP in (3)) that is motivated by the need for spell out to target constituents (PP in (3)).[6] Caha (2018) argues that Nanosyntax's appealing to different syntactic assumptions from the mainstream (extensive extraposition or spell-out-driven movement) is not problematic, but as it has yet to be globally motivated we must still consider it to appeal to look-ahead here.[7] Aside from this problem, we must ask what the difference is between Radkevich's VIP, Svenonius' Spanning, and Non-Terminal Spell-Out. One major remaining difference is the representation of lexical items. In Nanosyntax lexical items are composed of stored syntactic structures, while the VIP and Spanning hold (like in Distributed Morphology) that lexical items spell out feature bundles.

In the following section we examine how suppletion/the insertion of portmanteaux function in relation to rules of exponence and Domain Suspension (Bobaljik & Wurmbrand 2013) and argue for a version of VIP/Spanning that does not rely on overwriting and allows for the variable size of spell-out domains. We argue that the operation of Feature Portage *derives* patterns of suppletion via an independently necessary operation of VI-AGREE (to be defined in §3) at Vocabulary Insertion.

3 FEATURE PORTAGE

3.1 THE MECHANICS

Kilbourne-Ceron et al (2016) discusses the mechanism of allomorphy/suppletion at the point of VI. Taking into account the restrictions on allomorphy patterns described in Bobaljik (2012), it is proposed that an operation of feature-checking is necessary to trigger Domain Suspension

[6] Caha (2009a) proposes that VI might ignore previously spelled out (or moved) elements and rids the theory of this stipulation, but introduces a new problem. In such a system VI must be allowed to either overwrite *or* ignore previously spelled out material, with no independent indication of when this ignoring or overwriting will occur (the superset principle adhered to by Nanosyntacticians allows for overwriting of *le* or of *le parc* (if spell-out driven movement has not occurred) by *du* as the vocabulary item *du* contains a subset of the features necessary to spell out either P+D or P+D+n). Taraldsen (2018) argues against 'ignoring', which is equivalent to spanning, using evidence from Bantu prefixal portmanteaux. His argument rids Bantu of the need to reference spans, but does not argue definitively against all instances of spanning.

[7] It also allows VI to impact syntactic operations, an anti-modular proposal (cf. Fodor 1985) which is considered here to be problematic.

(Bobaljik & Wurmbrand 2013).[8] Consider the derivation of the Latin comparative and superlative.

(6) a. bonus
bi. melior bii. beatissimus
c. optimus

In (6) we see the output of VI for three different morphemes; the root BON, with its suppletive forms *bon* (6a), *mel* (6bi), and *opt* (6c), the comparative, with its suppletive forms *ior* (6bi) and *iss* (6bii), and the superlative *imus*. As noted in Kilbourne-Ceron et al. (2016), the following rules of exponence are entailed.

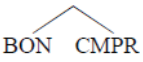
(7) √ = BON
a. BON,CMPR ⇔ opt / __ SPRL
b. BON ⇔ mel / __ CMPR
c. BON ⇔ bon

(8) CMPR
a. BON,CMPR ⇔ opt / __ SPRL
b. CMPR ⇔ iss / __ SPRL
c. CMPR ⇔ ior

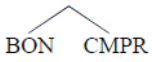
(9) SPRL
a. SPRL ⇔ imus

Note that BON and CMPR must contain identical rules of exponence in the environment of SPRL because there is no principled way to restrict the portmanteau exponent to the statement of allomorphy of either BON or CMPR alone. Another way of looking at this is that the rule of exponence BON,CMPR ⇔ opt / __ SPRL must be applied to a position that includes both the features of BON and CMPR (a non-terminal node).[9] If we take Fusion as an impossible operation, then the only possible structural position in which this separate BON,CMPR morpheme can emerge is at a non-terminal node, as in Radkevich (2010). How and when such a node is created/targeted comes about via Feature Portage.

(10) a. Syntactic Structure : CMPR



b. Structure after FP BON,CMPR



[8] The pattern of syncretism argued for in Bobaljik (2012) allows for the emergence of ABC (***bon**us/**mel**ior/**opt**imus)*, ABB *(**good**, **be**tter, **be**st)*, and AAA *(**slow**, **slow**er, **slow**est)* patterns, while at the same time excluding *AAB (***good**, **good**er, **best**)*. See Bobaljik (2012) for a detailed discussion.

[9] In Kilbourn-Ceron et al (2016) it is proposed that the rule of exponence BON,CMPR ⇔ opt / __ SPRL must be removed from the rules of exponence of BON and CMPR, instantiating its own morpheme. We no longer believe this to be the case as it makes the wrong predictions regarding Domain Suspension. If BON,CMPR ⇔ opt / __ SPRL is not included in the rules of exponence for BON we wrongly predict that BON will undergo VI before SPRL is merged. This would entail that BON is later overwritten, a possibility we argue against in §4.

Crucially, we propose that the structure in (10b) only comes about via Vocabulary Insertion. In the syntax the root BON does not project,[10] only CMPR does, as in (10a). When (10a) is sent to spell-out, BON's rules of exponence will be referenced first, as it is the most embedded element. As its statement of allomorphy includes a rule of exponence that is sensitive to CMPR (7b) it will initiate a search for CMPR. When it finds CMPR, it will check this feature, causing a match between itself and its sister node. We term this operation VOCABULARY-INSERTION AGREE (VI-AGREE). VI-AGREE initiates the operation of Feature Portaging, copying the matched features to the node that dominates the sister nodes involved.

(11) VOCABULARY-INSERTION AGREE
Upon the application of the Spell-out algorithm, a rule of exponence for *X* will trigger a search for features that condition allomorphy of *X*. A successful search will result in Feature Portage: the copying of the features of *X* to the node dominating both *X* and the conditioner of allomorphy.

In the derivation of (10), as there is another statement of exponence for BON, CMPR, and since CMPR itself is sensitive to SPRL, a search for SPRL will be initiated. As SPRL is not present in (10), Domain Suspension (DS) (Bobaljik & Wurmbrand 2013) will be triggered.[11] If a SPRL head is never merged, this structure has two options for spelling out (10b). Either BON and CMPR are spelled out separately, as in *mel-ior* (or the English *bett-er*), or the two are spelled out as a portmanteau at the non-terminal node, as in the Welsh *gwell* 'better' (or the English *worse*).[12] In other words, the checked features BON and CMPR constitute chains after Feature Portage applies. These chains will be spelled out, as proposed in Radkevich (2010), at the minimal node dominating all the features for which the exponent is specified.

(12) The Vocabulary Insertion Principle (Radkevich 2010, 8)
The phonological exponent of a vocabulary item is inserted at the minimal node dominating all the features for which the exponent is specified.

As to why portmanteaux morphemes have priority of exponence in derivations like (10), we follow Bye & Svenonius (2011:12) in appealing to Murungi's (2009) 'Union Spell-Out mechanism', Caha (2009b), Starke (2009), and Taraldsen (2010)'s 'Biggest Wins', or Siddiqi's (2009) 'Minimize Exponence' which all propose that VI inserts "the smallest number of morphemes possible" in accordance with the Elsewhere Principle.

The VIP trivially mirrors the nodes created by Feature Portaging, where all portmanteau morphemes must be spelled out at the "portage-site". But, it also allows for insertion of a vocabulary item at a lower node in the case of allomorphy without insertion of a portmanteau.

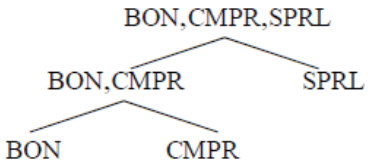
Now consider a derivation of the superlative. When SPRL is merged and VI is attempted, this will trigger additional applications of search/VI-AGREE and Feature Portaging, giving the post-syntactic representation in (13).

[10] But see Harley (2014) for a proposal where roots project and take complements. What is important here is that when the root is combined with CMPR, CMPR projects.

[11] That is, if we consider CMPR to be a spell-out domain; if it is not, SPRL will merge before the structure is sent to spell-out, negating the need to appeal to DS in this particular case. We assume CMPR to be a spell-out domain here for expository purposes.

[12] Allowing for non-terminal spell-out allows for the doing away with of zero allomorphs. We therefore do not consider the option where the root is spelled out as ex. *worse* and the exponent of the CMPR is null.

(13)



In (13) BON,CMPR has matched with SPRL, resulting in the portage these features. In this case we have two potential options for spell-out. First, SPRL can spell out on its own, and its sister can spell out as a portmanteau at the BON,CMPR node, as in the Latin *opt-imus*. Second, the head of the BON,CMPR,SPRL chain can spell out a portmanteau of all three morphemes, as in the Old Irish *dech* 'best'. The question here is whether there is a third option, namely one where we attest spell-out of the ROOT, CMPR and SPRL separately. According to Bobaljik (2014), this is not attested. He formulates the absence of this pattern in terms of the Inner Portmanteau Generalisation (IPG):

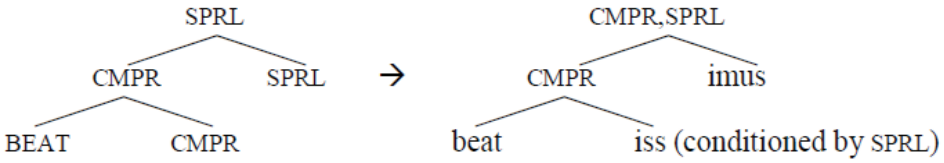
(14) Inner Portmanteau Generalisation (IPG)
In the ABC pattern, the superlative stem must be a portmanteau, including √ROOT+CMPR
(Bobaljik 2014: p. 6)

This implies that a form such as **opt-iss-imus* is in principle excluded. Kilbourn-Ceron et al (2016) propose to derive this generalisation through the Sisterhood Condition:

(15) Sisterhood Condition:
Allomorphy/suppletion may only be conditioned on a sister node.

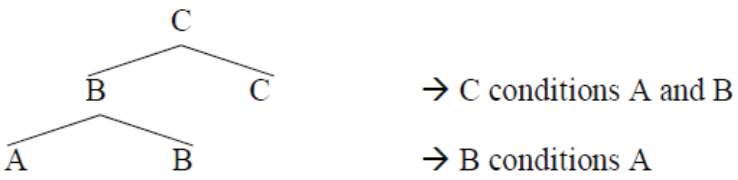
If SPRL can only condition allomorphy on its sister, the option of spelling out three separate nodes is not available for (13), thus deriving Bobaljik's IPG. Only in cases like (16) is a three-morpheme spell-out available, as the root only has one exponent and therefore never triggers Feature Portaging.

(16)



The only node available to spell-out the root in such a derivation is its initial merger site. We can illustrate Bobaljik's IPG as in (17), which disallows a situation A, B, and C are each lexicalised by separate morphemes (the unattested Latin superlative **opt-iss-imus)*, and forces A+B to be realized as a portmanteau.

(17)



However, Merchant (2015) discusses an intriguing pattern from Greek that calls into question the empirical correctness of the IPG. In Greek, the exponent of the verb stem is conditioned by the voice morpheme (active vs. non-active), as well as by Aspect (perfective). The voice morpheme itself is also conditioned by Aspect (perfective). Specifically, in the context of perfective, the stem may be suppletive and non-active voice spells out as *θ*.

(18) Greek suppletive stem verbs (Merchant 2015:277)

imperfective + affix	active perfective stem	nonactive perfective stem	meaning
tro(ɣ)-	fa(ɣ)-	faɣo-θ-	'eat'
vlep-	ð-	iðo-θ	'see'
le(ɣ)-	p-	lex-θ- /ipo-θ-	'say'

(19) a. √EAT → fa(ɣ) / __ Voice[+Act] Asp[+Perf]
b. √EAT → faɣo / __ Voice[−Act] Asp[+Perf]
c. √EAT → tro(ɣ)

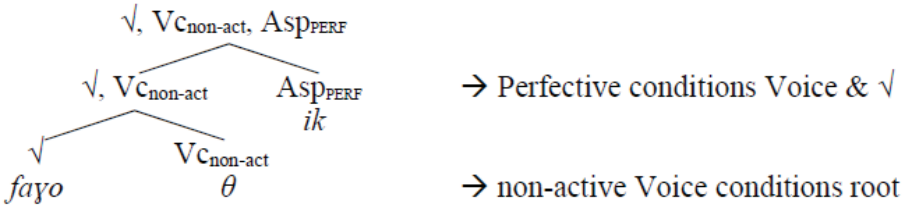
(20) Voice[−Act]→ θ / __ Asp[+Perf]

Merchant discusses in detail how the Greek pattern is problematic for any type of locality that involves node adjacency. He proposes a theory whereby a span (= a sequence of adjacent nodes) can jointly condition an adjacent span, thus giving rise to the appearance of non-local conditioning of allomorphy (Merchant 2015:294).

(21) *Span Adjacency Hypothesis*
Allomorphy is conditioned only by an adjacent *span*.

Note that the Greek pattern in (18) precisely instantiates the pattern unattested in Latin, **opt-iss-imus*, where both the root and CMPR would be conditioned by SPRL, but without constituting a portmanteau morpheme, clearly in violation of the IPG of Bobaljik (2014); see (22), after FP.

(22)



In order to allow this, the sisterhood condition as stated in (15) must therefore be abandoned. Note that it is, however, crucial that the intervening head not be a non-suppletive morpheme. Stated differently, a situation of ABC, where A has a rule of exponence that references both B and C, but B does not reference C is not possible. If in this situation A could portage to C, we would predict an outcome like the hypothetical Latin *opt-ior-imus to be possible. As Merchant points out: "One intuition behind spans is similar to the one behind Relativized Minimality (Rizzi 1990): one effect of the theory is that an allomorph can be triggered by a distant head only if the allomorphy affects all intervening heads as well" (Merchant 2015:289). Thus, while abandoning

(15), we need to constrain Feature Portaging to exclude this situation. Informally, what we need to derive is that X can only portage to a higher node if its conditioning sister also undergoes VI-AGREE (and thus feature portage).

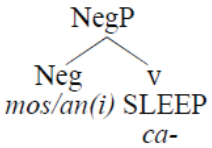
(23) Portage Chain Condition (Replacing Condition (15))
Feature portage may only occur from a node *X* to a node *Z* if there is no node *Y*, such that a segment of *Y* dominates *X* but does not dominate *Z*, and *Y* does not also undergo portage to *Z*.

(23) derives both patterns like *opt-imus*, where root and the first affix form a portmanteau, as well as the Greek *faɣo-θ-ik* (while excluding the hypothetical **opt-ior-imus* on theoretical grounds). Here is how it works. The rules of exponence for the Greek root EAT contain an allomorphy statement that references both VOICE (non-active) and ASPECT (perfective). This means that when VI occurs at PF, Portage applies to the root, giving the node/feature bundle √, $Vc_{non\text{-}act}$. As non-active Voice itself is conditioned by Aspect, both the root and non-active Voice therefore also undergo Portage to the node dominating Aspect, giving the feature bundle √, $Vc_{non\text{-}act}$, Asp_{PERF}. When VI occurs, the root feature-chain now VI-AGREEs with Voice and Asp. Thus, according to (19b), *faɣo* is inserted, Voice then gets spelled out as *θ*, and finally perfective Aspect is spelled out as *ik*.[13] Feature Portage and the Portage Chain Condition are in fact compatible with an ABC pattern which lacks an AB portmanteau.

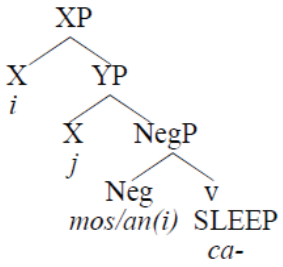
3.2 IMPLICATIONS OF FEATURE PORTAGE FOR SPELL-OUT VIA THE SUBSET PRINCIPLE

An additional proposed problem for the VIP, Spanning, and the account here is the appeal to the Subset Principle when Spell-out is effected. Caha (2018) discusses what he dubs the 'communication breakdown' that arises if one allows NTS-O in a system that assumes that VI occurs according to the Subset Principle. This problem is encountered by Chung (2007) when attempting to explain verbal allomorphy in Korean. Chung notes that in a structure such as (24a) (where no allomorphy is conditioned) the morpheme that spells out the verb contains a subset of the features dominated by NegP. So, by the Subset Principle, *ca* should be available to spell out *either* V or NegP. Compounding the problem is that any sentence built from NegP (e.g. 24b) should also be able to be spelled out by *ca* according to the Subset Principle, leading to the question of why sentences cannot be generally spelled-out by inserting only the exponent of their most embedded morpheme.

(24) a.



b.



[13] Our discussion glosses over a number of details discussed in Merchant (2015), which should not affect the general gist of the Feature Portage approach.

Importantly here, Feature Portaging allows the system to avoid the 'communication breakdown' entirely. In (24a) *ca-* does not contain a statement of allomorphy that references NEG and therefore the features of v are not Portaged to the NegP node. If vocabulary items spell out feature bundles (rather than syntactic structures/constituents) then the absence of v features at a higher node will entail that the v and Neg features are spelled out separately. In other words, we assume that feature bundles are created by VI-AGREE. These bundles translate to vocabulary items. Vocabulary items are therefore *not* spelling out constituents, but bundles of features, as in DM. The only difference here is that these bundles do not have to be uniquely found at terminal nodes.

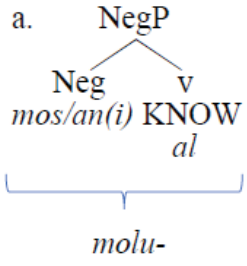
Caha proposes that Subset-Principle-driven insertion is especially problematic in cases where allomorphy is blocked by an intervening morpheme, as in (28). The rules of exponence of each morpheme in (28) are found in (25)-(27).

(25) √ = KNOW
  a. KNOW ⇔ molu / NEG
  b. KNOW ⇔ al

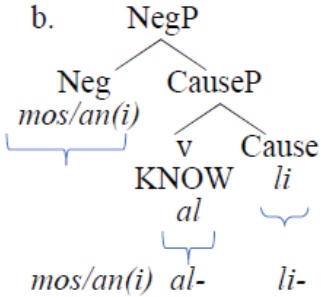
(26) NEG
  a. NEG ⇔ molu/ al
  b. NEG ⇔ mos/ani

(27) CAUSE
  a. CAUSE⇔ li

(28) a.



b.

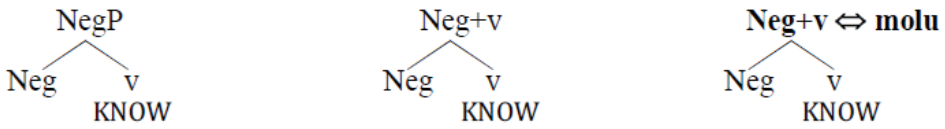


Caha claims that although Radkevich's VIP/insertion via the Subset Principle at a non-terminal node predicts the correct vocabulary items in the case of (24a) and (28a) (given that SLEEP has no portmanteau allomorph but KNOW does), it does not correctly account for (28b). In (28b) the causative morpheme blocks the insertion of the portmanteau morpheme exponing KNOW and NEG. If the VIP is correct, Caha argues, *molu* should be able to be inserted at the top node of the tree (NegP) as it spells out a subset of the features dominated by this node. Caha points out that "The Subset Principle – which has been widely adopted in DM as a principle governing insertion – fails badly when used as a principle that regulates insertion at non-terminal nodes." Once Feature Portaging (conditioned by (23)) is incorporated, however, Caha's assessment fails to hold. In (28b) VI will target the verbal node and will encounter a rule of exponence that references NEG, and therefore will minimally wait until the next head is merged to spell out (via Domain Suspension if necessary). When the next head is merged and it is not NEG, no Feature Portaging will be permitted to occur: AL has no statement of exponence that depends on CAUSE; *li-* has no

statement of exponence that depends on NEG. The exponent of AL will be inserted before CAUSE, and CAUSE will be inserted before NEG. By (23), no features of the root are Portaged to the NEG node. There is therefore no feature bundle triggered by *Vocabulary Insertion→VI-AGREE→Feature Portage* at PF that contains both AL and NEG. We therefore, correctly, do not expect to see the insertion of *molu* at the highest node. Caha's argument against the Subset Principle is dependent on the proposal that vocabulary items spell out syntactic structures. Feature Portaging allows for the correct prediction of when features will be treated as bundled and when they will not. This return to spell-out via the Subset Principle (and the feature bundle) then allows for the elimination of derivations where spell-out-driven-movement must be appealed to and consequently eliminates any operations that appeal to look-ahead mechanisms. Feature Portage + spell-out of feature bundles is therefore a more appealing theory of spell-out.

It is important to note here that Feature Portaging has no impact on the Narrow Syntactic (NS) structure. Spell-out can be considered as an operation that takes a snapshot of the relevant domain at NS and sends it to PF (Newell 2017). Operations of VI apply to this snapshot. The detailed derivation of (28a) proceeds as follows.

(29) a. Narrow Syntax → b. PF(VI-AGREE) → c. Vocabulary Insertion



3.3 SUMMARY OF FEATURE PORTAGING

To recapitulate, we claim that the mechanism of Feature Portaging is necessary to explain allomorphy/suppletion. Allomorphy/suppletion cannot function without the VI-AGREE operation, comparing the lexical rules of exponence to the derived syntactic structure. This VI-AGREE operation results in feature checking. An allomorph can only be inserted at a node that contains all of the features mentioned in its rule of exponence, according to the Subset Principle. VI-AGREE creates chains of features and each feature-chain will only undergo Vocabulary Insertion once. As Feature Portaging leads to the emergence of nodes of feature bundles that are created via VI-AGREE during the derivation (that cannot be subject to first merge within Nanosyntax, as they are necessarily a feature *bundle*) this allows us to decide between Spanning/the VIP and the NTS-O of Nanosyntax in favour of the former two. Lexical items are not stored trees, they are stored feature bundles. Nodes like BON,CMPR,SPRL in (13) emerge during post-syntactic checking of rules of exponence. This allows us to do away with the major problem with the constituent-spell out algorithm proposed in Nanosyntax: complements do not need to be moved to create constituents in which VI can occur. Another problem with the spell-out mechanisms in Nanosyntax and Radkevich's VIP is discussed briefly in the following section: that of *Spell-Out at Every Merge* and the *Overwriting* that it entails.

4 AGAINST SPELL-OUT AT EVERY MERGE AND OVERWRITING

Within Nanosyntax and Radkevic (2010), spell-out is proposed to occur upon the merger of each node (feature). This process of *Spell-Out at Every Merge* fails to account for the presence and

distribution of phonological domains inside words. Such a system therefore predicts there to be no phonological domains that are larger than a single morpheme (portmanteau or otherwise). In other words, a word such as *beat-iss-imus* will be spelled out in 3 cycles. The root will undergo VI before the syntactic merger of CMPR. Then *-iss* will undergo insertion before the merger of SPRL. After the merger of SPRL *-imus* will be inserted.

But, what we know from the literature on phonological domains is that certain phonological rules apply differently depending on whether a *sequence* of morphemes are interpreted inside the same cycle or not. Importantly for the discussion here, this distinction is visible even when no allomorphy is triggered in a derivation. Consider the following example from Malagasy (31);

(31)	a.	mamatra	b.	ma^{m}pifatra
		[m-an-fatra$_{EP}$]		[m-an-[fa-i-fatra$_{EP}$]$_{EP}$]
		event-cause-measure		event-cause-event-i-measure
		'y measures x'		'z makes x be measured'

In Malagasy, an *n-f* sequence coalesces if it emerges within a single phase (31a), but results in a prenasalized stop if the nasal and labiodental fricative are spelled out in separate phases(31b) (Dobler et al to appear). In the above derivations nP, vP, and E(vent)P are phases. This is just one example of this type of pattern that is found in many unrelated languages (Newell 2016). If the proposal that spell-out occurs at the merger of each feature/morpheme were correct, the above types of phonological distinctions would not be possible. That uniform phonological behaviour across morpheme boundaries is not what occurs cross-linguistically indicates that cycles in which spell-out occurs may be larger than single syntactic heads. Such a pattern fits nicely within a system that allows Spell-out at phase heads, and the expansion of spell-out domains when Domain Suspension is triggered by Feature Portaging.[14]

5 CONCLUSION

In the previous sections we have argued that (i) the Subset Principle may be maintained if spell-out targets feature bundles rather than constituents. This supports Radkevich's (2010) independent arguments that VI governed by the Superset Principle (as in Nanosyntax) would predict unattested portmanteau morphemes in the domain of Tense-Aspect-Mood morphology, while the Subset Principle predicts all and only the attested patterns. We argue that this targeting of feature bundles for vocabulary insertion is governed by the operation of Feature Portaging via VI-AGREE in the post-syntactic module. Feature Portaging allows for a principled explanation for why it must be feature bundles that are targeted for Vocabulary insertion rather than syntactic constituents (as in the Korean examples in §3.2). We also argue that Feature Portaging allows us to rid the system of any appeal to look-ahead mechanisms (either Fusion or Spell-out-driven movement). Portmanteau morphemes will only be able to target non-terminal nodes if the language contains rules of exponence that trigger Feature Portaging, essentially predicting the

[14] An additional example comes from the regular English comparative suffix *–er*: the pronunciation of words such as *longer* and *younger*, [lɑŋgɚ] and [jʌŋgɚ], parallels that of monomorphemic words such as *finger* [fɪŋgɚ], in which the velar nasal necessarily spells out as the onset of the syllable spelled out by the suffix, suggesting that the adjectival root and the comparative suffix are spelled out in the same phase, even in the absence of root allomorphy. This contrasts with derived agentive nominals, where *–er* is suffixed to the already spelled out verb (where *g* has undergone deletion as it cannot be syllabified as part of a complex coda), e.g. singer [sɪŋɚ]. See Kilbourn-Ceron et al (2016) for a more detailed illustration.

appearance of the DM operation of *Fusion* without its attendant problems. And finally, we argue for a system where spell-out does not occur after every instance of merge (contra Nanosyntax and in line with a system that includes Feature Portaging and Domain Suspension). If spell-out were to occur at every instance of merge we would have to allow for *overwriting*, as argued for in both Nanosyntax and Radkevich (2010), and could not explain the phonological patterns discussed in §4.

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