

RESEARCH

*ABA in stem-allomorphy and the emptiness of the nominative

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In this paper I examine patterns of irregular allomorphy in nominal stems sensitive to case in a number of nominative-accusative languages. I will argue that the data surveyed reveal a certain regularity in the distribution of irregularity across the cases in that they conform to what I call the Nominative Stem-Allomorphy Generalization. One irregular stem form is always found in the nominative (and in other cases that may be systematically syncretic with it), with all other cases sharing a single other stem form. I will show that this subsumes a clear instance of a *ABA pattern, and in fact is even more restrictive, as it also shows *ABC and (qualified) *AAB. I will situate these findings relative to recent work on *ABA patterns and on case-sensitive irregularity in noun and pronoun suppletion, and then will build on that prior work to propose an account for the generalization in terms of a structured representation of nouns and case categories interacting with locality conditions on allomorphy.

Keywords: stem alternations; allomorphy; case; nominative; *ABA

1 An introduction to the pattern from Tamil

Nouns in the Dravidian language Tamil follow a generally agglutinative pattern in their inflection.¹ As can be seen in Table 1, the case markers are easily segmentable, and the same ones attach to all nouns (with minor differences based on animacy).² The form of the noun stem that these suffixes attach to is mostly constant, aside from the application of regular rules to ensure phonological well-formedness. E.g. there is frequent epenthesis of *-u* to avoid word-final (non-nasal) obstruents, as in the nominative singular of ‘cotton’, or of *-v-* to avoid hiatus, as in the non-nominative forms of ‘mother’. However, one large class of nouns shows an interesting alternation. These end in *-am* in the nominative, but replace this with *-att-* before all of the case endings, as is illustrated by ‘tree’ and ‘time’ in Table 2.³ Nouns of a second class, exemplified by ‘house’ in Table 2, geminate their stem-final obstruent outside the nominative (which then triggers phonologically regular devoicing). These alternations do not correspond to any regular phonological rules or patterns in the language and have no synchronic phonological motivation. At least descriptively we must recognize distinct morphological stems.

¹ The Tamil data are from Schiffman (1999); Asher & Annamalai (2002) and Sandhya Sundaresan, p.c. The transliteration used here approximates the written standard form of the language rather than the colloquial form for simplicity and because the differences between the two are not relevant for the concerns of the paper.

² The paradigms throughout the paper are typically abbreviated, including only a subset of the case forms of the nouns in question sufficient to demonstrate the patterns of interest.

³ Note that this inflection class is productive: *ṭayam* is a recent borrowing of English *time*, and borrowings from Sanskrit (e.g. *giraamam* ‘village’) very frequently end up in this class as well.

Table 1: Tamil regular noun declensions.

	'boy'	'cotton'	'mother'
NOM	payyan	panju	ammaa
ACC	payyan-ai	panj-ai	ammaav-ai
DAT	payyan-ukku	panj-ukku	ammaav-ukku
INS	payyan-aale	panj-aale	ammaav-aale
SOC	payyan-ooḍa	panj-ooḍa	ammaav-ooḍa

Table 2: Tamil nouns with stem alternations.

	'tree'	'time'	'house'
NOM	mar-am	ṭay-am	viidu
ACC	mar-att-ai	ṭay-att-ai	viitt-ai
DAT	mar-att-ukku	ṭay-att-ukku	viitt-ukku
INS	mar-att-aale	ṭay-att-aale	viitt-aale
SOC	mar-att-ooḍa	ṭay-att-ooḍa	viitt-ooḍa

In this paper I will show that similar patterns of stem allomorphy are found in a wide selection of languages with non-trivial morphological case marking on nouns, and a survey of the data makes it clear that the distribution of stem irregularities across cases is not arbitrary. Rather, I will argue that at least in nominative-accusative languages, it appears to be subject to a version of the restriction in (1).⁴

(1) **Nominative Stem-Allomorphy Generalization (NSAG)**

When there is (noun) stem allomorphy conditioned by case, it distinguishes the nominative from all other cases.

To the extent that this generalization is accurate, it should tell us something about the morphosyntactic structures involved in case-marking on nouns and about restrictions on the conditioning of allomorphy. Note crucially that the NSAG subsumes an instance of the *ABA pattern that is the focus of this issue: any pattern where the nominative has one stem alternant A, a second case has a different alternant B, and then in a third case the stem reverts to A would involve a stem distinction between two cases outside the nominative, which the NSAG clearly rules out. Indeed, it goes even further in additionally excluding AAB and ABC patterns.⁵ This paper will be devoted to making (1) precise, demonstrating that it does indeed hold across a significant number of languages and exploring the theoretical import of the resulting state of affairs. Briefly, I will argue that

⁴ I have decided to focus on stem allomorphy to the exclusion of suppletion (which we could also think of as root allomorphy) because, in addition to being formally distinct, the two phenomena show clearly different behavior in their sensitivity to case. This will be discussed in detail in section 4.1 and will play an important role in the theoretical proposals to be made.

⁵ An anonymous reviewer asks how the cases should be ordered to determine whether a given pattern should be construed as AAB, ABB or ABA. We can assume as a starting point the hierarchy of cases proposed by Blake (2001) and updated by Caha (2009), which essentially reflects markedness relationships among the cases. For a nominative-accusative language, this starts with the nominative, then the accusative, then all other cases. Caha presented evidence for this hierarchy from syncretism and inventory patterns, and we will see that it furthermore yields good and consistent results with stem allomorphy, lending additional support. As per the NSAG itself, the order of the cases beyond the accusative will, however, play no role for our purposes.

the stem alternations amount to allomorphy for the little *n* head that is sensitive to the presence of case heads, using a version of Caha's (2009) theory of the structure of case categories and Moskal's (2015a) approach to the locality of allomorphy.

2 The empirical basis for and limits of the NSAG

I will begin with an empirical exploration of the NSAG that is meant to achieve two goals. First, I want to provide a basic illustration of the pattern to make an initial case that something systematic is at stake. Second, I want to clarify what the generalization is and is not meant to apply to, showing how and why certain superficially similar phenomena are to be set aside, and making the limits and details of the claims more precise.

2.1 Two types of alternations in Finnish

It is important to understand from the outset that the NSAG is not meant to apply to any imaginable change in a stem in the different case-forms of a noun, but specifically to allomorphy for distinct stem-markers. By this I mean alternations between two (or more) stored morphological formants, to which case-markers are affixed, as opposed to alternations that are the result of phonological processes applying to a single stored formant in the context of case-markers (see for example Embick 2012; 2016: for relevant discussion of the division of labor between phonology and morphology in implementing allomorphy). We can get a good initial understanding of the distinction by considering some Finnish data, presented in Table 3 (the Finnish data are taken from Karlsson 1995). Like Tamil, Finnish is highly agglutinative, as exemplified by the regular declension of *talo* 'house'. But as *katu* 'street' and *ihminen* 'person' show, we also find stem alternations related to case.⁶

Yet it is important to note that the two nouns show crucially distinct behavior in their alternations. *Katu* reflects a pervasive alternation in Finnish known as 'Consonant Gradation' (CG). CG is found in verbal and other paradigms in addition to nominal ones, so we might not expect it to have anything directly to do with case or nominal stems. Its effects can be characterized phonologically in terms of lenition — in this example a difference of voicing, in others of gemination or frication. Furthermore, its triggering environments can be characterized at least primarily in phonological terms: the weak variant (here *d*) appears in the onset of a closed syllable and the strong one (here *t*) in the onset of an open one.⁷ On the other hand, what we see in *ihminen* 'person' does not reflect any independently attested phonological alternation found in the language. The pattern is fairly common, but it is restricted to a specific class of nouns and adjectives, i.e. we

Table 3: Three Finnish noun paradigms.

	'house'	'street'	'person'
NOM	talo	katu	ihmi-nen
GEN	talo-n	kadu-n	ihmi-se-n
PART	talo-a	katu-a	ihmi-s-tä
INESS	talo-ssa	kadu-ssa	ihmi-se-ssä

⁶ The distinct forms of the partitive suffix here are phonologically determined — in addition to the vowel harmony effects found throughout the system, the initial *-t-* deletes intervocalically. The variable appearance of *-e* in the *-s(e)-* stem forms is also phonologically conditioned and general to stems ending in consonants.

⁷ This is a (not entirely innocent) simplification — see e.g. Karlsson (1995). Ultimately some non-phonological information must be taken into account to identify the contexts where CG applies, but its *effects* can be described in purely phonological terms. We will see in Section 6.4 that this is what matters for the NSAG.

don't also find it with verbs the way that we do with CG. Most importantly, the difference between *-nen* and *-s(e)-* is not easily described by phonological rule, nor is there any phonological characterization of the triggering environments. Thus while the alternation between *katu-* and *kadu-* could be implemented as phonological readjustment of a single underlying stem, that between *ihmi-nen* and *ihmi-s(e)-* must go beyond the phonology, involving some allomorphy between two distinct underlying stem formants.

Note then that the alternation in *ihminen* is consistent with the NSAG, while that in *katu* would violate it. That is, *ihminen* has the *-nen* stem only in the nominative, versus *-s(e)* everywhere else, but *katu* has *katu-* in both the nominative and the partitive, as against *kadu-* in both the genitive and the inessive, and were we to bring in additional case forms, we would find both stems sprinkled throughout. This is clearly not nominative versus everything else. What is more, it reflects a general pattern in the language. The only alternations in Finnish that would apparently violate the NSAG are ones of the *katu* type, i.e. ones for which there are indications that they are phonologically implemented. Genuine morphosyntactically implemented stem allomorphy like with *ihminen* always splits the nominative from everything else.

Now, deciding whether a particular alternation is true stem allomorphy or phonological stem readjustment is not trivial. The basic idea, which I will make more precise as we proceed, is as follows. For current purposes, 'allomorphy' implies that two (or more) distinct exponents alternate for insertion in a single position, conditioned by the morphosyntactic context. This can be contrasted with a single exponent, which after insertion is modified by phonological operations. The term 'stem' is used to contrast with root suppletion (as found in *go/went*), and to indicate that the allomorphy involves part of the base to which case attaches rather than the case suffix itself. So in a form like genitive *ihmisen*, we have a root *ihmi-*, followed by a stem-formative allomorph *-s(e)-* (which alternates with *-nen*), followed by a case-marker *-n*. In genitive *kadun*, on the other hand, we have the same stem *katu-* as in N *katu*, but with phonologically implemented voicing of the final consonant, followed by case-marker *-n*. I will elaborate on some formal aspects of phonological stem readjustment, how it is constrained, and how we can distinguish it from true stem allomorphy in Section 6.4.

2.2 Some lessons from the Latin 3rd declension

Latin also has a considerable number of nouns, generally in its 3rd declension, with case-sensitive stem alternations, as shown in Table 4 (see Sihler 1995: for Latin data and extensive discussion of relevant historical background). I include *princeps* 'chief', a regular masculine noun of this declension, for comparison.⁸ Note in particular that there is an overt ending *-s* in the nominative. *Lapis* 'stone' has the same endings, but shows a stem alternation — a stem-final *d* that appears elsewhere is missing in the nominative. This, however,

Table 4: Latin 3rd declension masculines.

	'chief'	'stone'	'man'	'old (man)'
NOM	prīncep-s	lapi-s	hom-ō	senex
ACC	prīncip-em	lapi-d-em	hom-in-em	sen-em
GEN	prīncip-is	lapi-d-is	hom-in-is	sen-is
DAT	prīncip-ī	lapi-d-ī	hom-in-ī	sen-ī

⁸ The alternation between *e* and *i* in the second syllable is phonologically regular, or at least can be implemented as a regular phonological readjustment, and won't concern us here.

can be understood in terms of a regular synchronic phonological rule. All masculine and feminine nouns of the 3rd declension with stems ending in a coronal stop show this alternation. Furthermore, the deletion of the stem-final coronals occurs in a phonologically well-defined environment, immediately before *-s*, and the expected form **lapid-s* would involve a consonant cluster that is otherwise unattested in Latin and is presumably disallowed by its phonology. Other contexts where such a cluster would be expected are also affected by deletion of the *d*, e.g. *rīsī*, perfect of *rīdeō* ‘laugh’, from *rīd-* + *-sī*. We can thus understand this stem alternation as the result of a regular rule deleting coronal stops immediately before *s*. It happens to be consistent with the NSAG, but it is not the type of phenomenon that the generalization is intended for, thus it does not count as support.

On the other hand, consider the declension of *homō* ‘man’. The oblique forms have the regular endings added to a stem *homin-*, but the nominative is *homō*. The precise synchronic analysis of this form is tricky, but one way or another it must involve *both* an irregular stem and an irregular suffix, either *hom-ō*, or *homō-∅*. Unlike with *lapis*, there is no way that we can derive the surface alternation phonologically from the regular stem *homin-*. If we assumed that it had the regular nominative ending *-s*, so that it would underlyingly be *homin-s*, we would have no reason to expect that both the *n* and the *s* would be deleted, since Latin *does* allow final *-ns* clusters (e.g. *mīrāns* ‘admiring’). If we assumed that it were (exceptionally for a 3rd declension masculine) endingless, hence underlyingly *homin*, there would be no reason for the *n* to be deleted. Indeed, 3rd declension neuter nouns are (like most neuters) endingless in the nominative singular, and ones with a stem in *-n* surface with that final *n* intact, as e.g. *nōmen* ‘name’, discussed below. Under either assumption, even if we could find a reason to delete the consonant(s), there is no regular source for the final *ō* that surfaces. Thus *homō* is an example of an alternation of the relevant kind, with a stem alternation that must be morphosyntactically triggered. Crucially, it also conforms to the NSAG, with *homō* found only in the nominative, and *homin-* everywhere else.

Now, one could try to argue that the *homō* alternation is somehow down to its highly irregular nominative singular ending, but this won’t work for *senex* ‘old (man)’. Here we find in the oblique cases the regular set of endings attaching to a stem *sen-*, but the nominative form *senex* involves something else. This form must be analyzed as having the regular nominative ending *-s* attached to a stem *senec-*, yielding the cluster /ks/ (which is regularly rendered as *-x* in Latin orthography). One could of course propose that the irregular stem already ends in /ks/, and that we again have an irregular endingless nominative singular, but in the absence of compelling evidence we should assume one irregularity rather than two.⁹ We can compare in this respect regular nouns with a similar stem form like nominative *carnifex*, accusative *carnificem* ‘butcher’. As the inflection of those nouns shows, there is no regular phonological (or other) process that would lead to the deletion of the *-ec-* stem element in the non-nominative cases (though again we do get the phonologically regular *e/i* alternation). Thus we must recognize again in *senex* a case of morphosyntactically triggered stem alternation. Furthermore, since the nominative clearly has the regular *-s* ending, the trigger must be the distinction in case categories,

⁹ In fact, the independent evidence that is available clearly supports the analysis as *-k-s*, not *-ks-∅*. A number of related words in Latin include the *-k-* in their stem, but never *-ks-*, e.g. *senecta* ‘period of old age’, *senectus* ‘old’, *senica* ‘old man’ and *seneciō* ‘old man’. There is also an interesting relative in Gothic *sineigs* ‘old, elder’, where the *-s* is again the nominative singular ending rather than part of the stem (note accusative singular *sineig-ana*). It is far from clear that Gothic *-eig-* and Latin *-ec-* in these stems reflect a common inheritance, since they can quite easily have both been added to **sen-* in the independent prehistories of the two languages. Interestingly enough, however, we find a Gothic stem alternation reminiscent of the Latin one in that the *-g-* disappears (quite exceptionally) in the superlative form *sin-ist-s*.

not the simple presence or absence of any case suffix. As expected, we find that the NSAG is respected, with nominative *-ec-* contrasting with \emptyset - in all other cases.

2.3 Latin neuters and an adjustment for syncretism

The neuter nouns of the Latin third declension provide further examples of interest, as shown in Table 5. We can start from *nōmen* ‘name’, which shows the regular declension without irregular stem alternation (again with the phonologically regular *e/i* alternation), and is like the masculine in the genitive and dative, but endingless in both the nominative and accusative. The first interesting alternation comes in *genus* ‘kind’. This represents a class of neuter nouns which end in *-us* in the nominative/accusative, but have *-er-* in the same position in all other cases, to which the regular case terminations are then added. This *-er-* is clearly a stem-forming element, as it precedes the normal case endings. The suffix *-us* can’t be a case ending, but must also be a stem-forming element, since it alternates in the same position as *-er-* and does not have the right form to be a nominative/accusative neuter singular ending in the language.¹⁰

The alternation between *-us* and *-er-* is an instance where the historical background is actually fairly clear. A sound change in Old Latin shifted *s* to *r* intervocally, and the vowels follow an old pattern of ablaut inherited from Proto-Indo-European. This cannot, however, be part of the synchronic phonology. The ablaut pattern is restricted to particular morphological contexts, and forms like *carbasus* ‘flax’ make it clear that the *s > r* change is no longer phonologically active. Again, we must recognize this as a morphological alternation involving stem allomorphy.¹¹ The same point can be made even more strongly with the noun *iter* ‘journey’. It ends in *-er* in the N and A, but replaces this with *-iner-* in the oblique cases, to which the regular case endings are added. This clearly cannot be the result of any synchronic phonological process (indeed, it’s the (somewhat mangled) reflex of an old stem alternation that is clearly a case of allomorphy rather than phonology as far back as we can reconstruct it to Proto-Indo-European).

What is especially interesting about these neuters for present purposes is that their alternations don’t exactly respect the NSAG as I stated it in (1). Rather than splitting the nominative from everything else, they put the accusative with the nominative, and split

Table 5: Latin 3rd declension neuters.

	‘name’	‘kind’	‘journey’
NOM	nōmen	gen-us	it-er
ACC	nōmen	gen-us	it-er
GEN	nōmin-is	gen-er-is	it-iner-is
DAT	nōmin-ī	gen-er-ī	it-iner-ī

¹⁰ The only actual nominative/accusative singular endings in Latin are the *-um* of second declension nouns and the *-d* of a number of pronominal forms. All other neuter nominative/accusatives are endingless.

¹¹ An anonymous reviewer asks what the evidence is against an alternative analysis, where *-us* is the nominative/accusative case ending, and the stem-forming suffix is null here, alternating with the *-er-* in the other cases. The central argument is again that all other neuters of the 3rd declension are endingless in the nominative/accusative (and the neuters in other inflectional classes that *do* have overt endings have rather distinct ones), so assuming that *-us* is a case ending here would require postulating two irregularities (an irregular stem alternation between \emptyset and *-er* plus an unexpected case ending) rather than one (an irregular stem alternation between *-us* and *-er-*). So in the absence of clear evidence in favor of the more complicated analysis, we can adopt the simpler one proposed in the main text. In fact, however, even if we *did* adopt the analysis suggested by the reviewer, it would not affect the abstract status of the alternation presented by nouns like *genus* as it is relevant for the NSAG.

them apart from everything else. There is something systematic here, however, in that in these cases, the accusative doesn't just share the same stem as the nominative, but is invariably fully syncretic with it. Furthermore, this is not an accidental syncretism: in Latin (as in all Indo-European languages), the nominative and accusative are universally syncretic in neuters. One way to think about this, at least descriptively, is that with these nouns the accusative form really *is* just the nominative form, and thus we should not be surprised that, in just this case, we find the accusative patterning with the nominative rather than the other cases for purposes of irregular stem allomorphy. We should thus update the NSAG as follows:¹²

- (2) **Nominative Stem-Allomorphy Generalization (NSAG, version 2)**
When there is stem allomorphy based on case, it distinguishes the nominative (along with any cases systematically syncretic with the nominative) from all other cases.

2.4 How well supported is the NSAG?

We have now seen a series of alternations from Tamil, Finnish and Latin illustrating the patterns described by the NSAG, and we have gotten some idea of additional types of alternations that are somehow similar, but which the NSAG is not meant to apply to. This will hopefully have made it seem reasonable to think that case-based stem alternations obey certain restrictions, and that the NSAG is an accurate description of the restrictions evidenced by the alternations discussed so far. The question is whether this is just an accident of the languages and examples I have discussed to this point, or whether it finds broad, empirical support across a large and diverse collection of languages.

Indeed, in the languages that I have analyzed so far, I have found a sizable collection of case-based stem allomorphy alternations which are consistent with the NSAG. I have also found a number of alternations like that with Finnish *katu*, where the distribution of stem formants would contradict the NSAG, but the details of the alternation itself make it amenable to a phonological analysis, so that the generalization is not expected to apply. Crucially, I have not yet found any clear counterexamples which are not amenable to a reasonable alternative analysis.¹³ An important caveat is that the sample of languages I have considered thus far, while certainly not trivial, is not as large or as diverse typologically and genetically as one would like as the basis for drawing broad generalizations. I have examined alternations in Ancient Greek (Smyth 1956: and discussion in section 6.3), Estonian (see section below), Finnish, Gothic (Streitberg 1920), Icelandic, Kannada (Sridhar 1990), Latin, Northern Saami (Svenonius 2008), Russian (Wade 2011), Sanskrit (Mayrhofer 1978), Tamil, plus approximately 20 languages which don't show any case-based alternations of the relevant type (or only show minor phonologically based ones).¹⁴

The limitations on size and typological diversity are in large part down to the fact that the relevant kind of stem allomorphy seems to be relatively uncommon cross-linguistically. We are obviously limited to languages that distinguish at least three morphological cases

¹² I do not discuss the behavior of vocatives, as their status is a bit uncertain with respect to the other cases, i.e. it is not always clear whether the vocative should be understood as a case or as a different kind of form related to the noun (see Daniel & Spencer 2009: for some discussion).

¹³ I have recently become aware of a handful of potential counterexamples in the inflection of certain Ancient Greek adjectives, introduced by Zompí (2017). I will discuss these in Section 6.3.

¹⁴ These languages include Aguaruna (Overall 2017), Arabic (Ryding 2005), Comanche (Charney 1993), Evenki (Nedjalkov 1997), Huallaga Quechua (Weber 1989), Hungarian (Kenesei et al. 1998), Hup (Epps 2008), Japanese (Tsuji-mura 1995), Kayardild (Evans 1995), Khalaj (Doerfer 1988), Kolyma Yukaghir (Maslova 2003), Korean (Sohn 1994), Kwaza (van der Voort 1994), Malayalam (Asher & Kumari 1997), Maricopa (Gordon 1986), Nobiin (Werner 1987), Old Nubian (Browne 2002), Southeastern Pomo (Moshinsky 1974), Tundra Nenets (Nikolaeva 2014) and Turkish (Kornfilt 1997).

in their noun inflection, plus the language has to have the kind of inflectional morphology that involves stem-forming affixes, which furthermore must interact in non-trivial ways with case affixes. This kind of morphology is richly attested in the Indo-European languages, and is found to a more limited extent in some Finno-Ugric languages, but it is quite uncommon elsewhere. In most case-marking languages, case on nouns at least is marked with easily segmentable affixes that show little to no interaction with the noun stem beyond relatively simple vowel harmony and sandhi phenomena. This is why, as the list in footnote 14 above should suggest, the majority of languages I have considered — including most of the non-Indo-European ones and most of those spoken outside of Europe and South Asia — simply have no stem alternations of interest, and are thus irrelevant for testing the generalization. An important additional point is that, in order to distinguish the morphological stem-allomorphy alternations that are of interest here from the phonologically triggered ones that are not, one needs to carry out an analysis based on at least a basic understanding of the morphophonology of the language in question. This should be clear from the discussion of Finnish *katu* and Latin *lapis*, *homō* and *genus* above and will be further bolstered by the considerations in Section 6.4 below. What this means is that a quick survey of large numbers of languages, e.g. using existing databases like WALS, is not sufficient or appropriate. A careful analysis of each language and each alternation is required in order to determine whether it can provide a relevant test of the NSAG (see Baker 2010 for some relevant methodological discussion).

An obvious related question is whether anything similar to the NSAG might be observed in languages with ergative case-marking. We might expect an analogous Absolute Stem-Allomorphy Generalization, whereby stem allomorphy can only distinguish the absolutive from all other cases, under the idea that the general pattern singles out the unmarked structural case and distinguishes it from all others. Indeed, work by Smith et al. (2016) on the closely related phenomenon of case-based suppletion does find cross-linguistic support for the idea that nominative and absolutive have a special status as unmarked cases, while ergative and accusative pattern together with the obliques.¹⁵ However, here I cannot make any specific claims, as my examination of ergative languages so far has been less extensive and less systematic and has turned up even fewer alternations of the relevant type than in nominative-accusative languages. I will happily go on record to say that my expectation, based on the account I will propose for the NSAG and my understanding of how ergative case systems relate to accusative ones (on which see e.g. Baker & Bobaljik to appear), is that something like an ASAG should hold. Indeed, the few relevant alternations I have come across — like the distribution of ‘oblique stems’ in Hindi illustrated in Table 6 — are consistent with this hypothetical generalization. Still, this should only be

Table 6: The Hindi oblique stem alternation.

	‘child’
NOM/ABS	bacc-aa
ERG	bacc-ee-ne
ACC/DAT	bacc-ee-ko
GEN	bacc-ee-kaa

¹⁵ It is worth noting, however, as an anonymous reviewer points out, that the only cases of AAB and ABC patterns of case-sensitive suppletion in pronouns reported by Smith et al. (2016) come from ergative-absolutive languages. There is thus potentially a relevant difference between the two language types with respect to the case-sensitivity of morphological irregularity. It would be premature to speculate too much at this point on what might be going on here.

regarded as suggestive, as the empirical basis for testing that expectation is simply not sufficient yet.

3 Interpreting the NSAG

It is clear that further empirical work is needed to examine and test the NSAG on the basis of a larger collection of languages and to investigate the possibility of a broader generalization encompassing ergative languages. Still, the evidence at this point is sufficient to suggest that there is something real that requires an explanation. If the NSAG turns out to be (essentially) correct, how might we go about understanding it? What makes the nominative special and distinguishes it from all other cases in this way? In this section I will first consider and reject two ways of ‘explaining away’ the effects of the NSAG, then I will discuss the implications of taking it seriously as the description of a constraint on synchronic grammars, laying out precisely which patterns of stem alternation it allows and which it rules out. The sample patterns introduced will serve as the basis for the discussion of my proposals in the remainder of the paper.

3.1 The (ir)relevance of endinglessness

One idea we could entertain is that what underlies the patterns described by the NSAG is the simple presence of an ending. Note that in Tamil, Finnish and many other languages, the nominative is distinguished by the *absence* of an ending, whereas the other cases generally have overt marking. We could thus imagine that the choice between stem allomorphs tracks not grammatical case categories, but whether or not there is an actual case-marking suffix. The NSAG would then be a misnomer or even misanalysis and should be replaced by something like the Endinglessness Stem-Allomorphy Generalization.

While this may be the correct characterization of some alternations in some languages, it cannot be the general story. We have already seen an irregular stem alternant showing up in a nominative form with an overt *-s* ending in Latin *senex*, and additional data from Tamil and Icelandic make it clear that endinglessness is really orthogonal to the choice of stem forms. Consider first the situation in Tamil. For most nouns, there are two distinct forms that can be used in broadly genitive contexts, marking possessors, part-whole relationships and the like. One form (sometimes called the *sociative*) bears the suffix *-ooḍa*, as in (3a). The other form, in (3b), has no overt suffix, but in nouns of the *-am/-att-* class like *maram* ‘tree’, it crucially uses the oblique stem in *-att-*, not the one in *-am-* found in the nominative.

- (3)
- a. mar-att-ooḍa elai
tree-OBL-SOC leaf
‘the leaf of the tree’
 - b. mar-att-∅ elai
tree-OBL.STEM-GEN leaf
‘the leaf of the tree’
 - c. *mar-am-∅ elai
tree-NOM.STEM-GEN leaf

In other words, the genitive and nominative forms are both endingless, and differ only in the choice of stem formants. If the non-nominative stem were triggered by the presence of an overt ending, we would expect it, incorrectly, to be missing in the genitive just as in the nominative. If, however, it depends on some underlying representation of a non-nominative case, then we can analyze (3b) as having a genitive case specification, which triggers the oblique stem, but happens to have a null exponent.

Icelandic furnishes a different kind of argument that stem alternations do not depend on overt morphophonological endings (see e.g. Thráinsson 1994 for Icelandic data). In many noun classes, the nominative singular is marked with a non-null ending, e.g. *-ur* in the largest class of masculine nouns, exemplified by *hestur* ‘horse’ in Table 7. At the same time, the accusative singular is often endingless. This means that we simply cannot equate endinglessness with nominative in the language. Nonetheless, when a noun of this inflectional class shows irregular stem alternations, like *maður* ‘man’, it is again the nominative that is distinguished from all other cases. As with the word for horse, we have an overt ending *-ur* in the nominative singular, but here it attaches to an irregular stem *mað-*. All other cases are built on the stem *mann-*, crucially including the endingless accusative. Again, stem selection must be sensitive to a more abstract difference between nominative and the other cases, not to the presence of overt suffixes.

3.2 Markedness and change

Another possibility is that the NSAG is genuine, and is about nominative case, but that it reflects something about markedness relationships and the output of likely pathways of change, rather than expressing a constraint on synchronic grammars. In other words, it’s not that stem allomorphy can only make reference to certain case distinctions and not others, but that stem alternations of the relevant kind are expected to arise diachronically at a lower frequency and to be especially prone to elimination by analogical change when they do arise.

There is some initial plausibility for this idea. Synchronic stem alternations generally arise diachronically from the effects of sound changes which are conditioned to apply in the phonological contexts created by some affixes but not by others. For example, there is a series of English verbs with an alternation in their stem vowel between /ī/ in the present and /ε/ in the past, including *sleep/slept*, *leave/left* and *read/read*. These are not cases of Ablaut inherited from Proto-Germanic and ultimately going back to Indo-European antecedents, as we see in strong verbs like *sing/sang*, *draw/drew*, since *sleep*, *leave* etc. are actually weak verbs. Rather, we have here the survivors of a class of verbs for which the *-de* suffix of the weak past was attached directly to the verb root, without any of the intervening theme vowels (uniformly reduced to *-e-* by early Middle English) found with most weak verbs. This created a consonant cluster that triggered a Middle English sound change shortening long vowels immediately preceding two or more consonants (and in many cases also an assimilatory devoicing of the *-d-* in the suffix to *-t-*). In the present tense forms, where there was no such *-de-* suffix, the shortening did not apply, and the result is thus an irregular morphological stem alternation created by entirely regular sound change.

Against this background, we can ask how case-based noun stem alternations are likely to have arisen via phonological processes, and whether this might yield any insight into the distribution of alternants described by the NSAG. Can we expect nominative forms to be particularly susceptible to phonological meddling? In fact, since the nominative

Table 7: Icelandic ‘horse’ and ‘man’.

	‘horse’	‘man’
NOM	hest-ur	mað-ur
ACC	hest	mann
GEN	hest-s	mann-s
DAT	hest-i	mann-i

is so frequently endingless cross-linguistically, it does often create special phonological environments where significant sound changes might be triggered. That is, it leaves the bare stem ‘exposed’ in word-final position where various deformative changes frequently occur, like final devoicing, cluster simplification and even loss.¹⁶ The overt endings of the other cases, by occupying word-final position themselves, can potentially prevent such changes from applying to the stem itself. Something along these lines was clearly involved in the creation of the ancestor of the Latin *homō/homin-* alternation in pre-Proto-Indo-European (see e.g. Ringe 2006: 20f.).

One could then argue that irregular stem alternations, wherever they happen to be created, are most likely to be retained in the nominative. Like any other morphological irregularity, these alternations are liable to analogical levelling, whereby a single stem alternant is generalized to all forms in the paradigm, (re)establishing regular inflection. Of course, while leveling creates regularity of a kind, it is highly irregular in where and when it applies. Nonetheless, there are clear tendencies in where irregularity is tolerated over long stretches of time and where it tends to be eliminated. Generally speaking, it seems that morphological irregularity and complexity are more likely to be preserved in highly frequent and unmarked forms and contexts. Thus frequent, basic vocabulary is most likely to show suppletion (e.g. English *go/went* and *good/better*), and inflectional distinctions are most likely to be made within less marked categories (e.g. most English verbs only show agreement contrasts in the present, and Old English verbs only show person distinctions in the singular) (see e.g. Bybee 2007 for several discussions of such frequency effects). In typical nominative-accusative languages, nominative is the least marked case, not just in terms of morphological affixes, but also in terms of syntactic distribution, and thus also generally the most frequent (see e.g. Blake 2001 and much earlier work cited there). We can then expect special forms, like irregular stem alternants, to be more resistant to leveling in the nominative than in any other case. It may then be that irregular stem alternations that contradict the NSAG do sometimes arise, but special alternants in cases outside of the nominative are quickly leveled, so that the only distinction left is between a general stem and an irregular nominative stem.¹⁷

While all of these points have some individual validity, there is reason to think that the total picture is not sufficient to explain the NSAG. First, regarding the special phonological status of the nominative, the NSAG is heavily supported by Indo-European languages, which famously have overt nominative endings — even, as we have seen, in many of the nouns showing relevant alternations. It is true that many of those alternations there can be traced back to a phonological quirk of the nominative — the ending *-s, with no preceding vowel, seems to have wreaked havoc in various ways when attached directly

¹⁶ Consider that the Neogrammarians recognized a special category of sound laws that apply to final syllables, the so-called ‘Auslautgesetze’, simply because both vowels and consonants were treated differently here than in other parts of the word, e.g. in the (pre-)history of the Germanic languages. Furthermore, even among the Auslautgesetze, distinct laws had to be recognized for the same vowel depending on whether it occurred in absolute final position or was ‘covered’ by a following consonant.

¹⁷ An anonymous reviewer asks how exactly I define markedness and how markedness in this sense affects diachronic change. However, my intention here is not to propose or defend a particular theory of markedness and its role in change, precisely because I am suggesting that this does not seem to be the right way to go to explain the NSAG. I accept the arguments, presented by Bybee (2007) and many others, that frequency effects play a role in certain kinds of change, in particular reductive morphophonological processes that yield different outcomes in highly frequent forms than would be expected on the basis of regular sound change. I also accept the evidence that irregular forms (which one could think of as marked in *one* sense) tend to be retained (rather than being levelled to be in line with the productive morphology of the language) longer with highly frequent items (which one could think of as unmarked in a *different* sense) than with less frequent items. The point I wish to make here is, however, that while factors of these kinds clearly play a role in language change, they do not seem to be solely responsible for the patterns described by the NSAG.

to obstruent-final stems. However, what is special about this ending is its very specific phonological shape, which of course is arbitrary in the Saussurean sense and has no principled connection to the nominative the way that endinglessness apparently does. There are other consonant-initial case endings in Proto-Indo-European which could have, and sometimes did, trigger changes to preceding stem-final consonants, but these never seem to have been morphologized in terms of stem-allomorphy.¹⁸ The same goes for any number of other languages of the world which have something like -s as the ending of a particular non-nominative case. While such endings may trigger deformative sound changes that lead to phonological stem alternations, they don't ever seem to be turned into actual morphological allomorphy in the sense intended here. As soon as we get away from the special relationship between the nominative and endinglessness, we no longer have a clear expectation that the diachronic processes creating stem alternations would be particularly associated with that case. Put another way, the fact that irregular stem forms arise in both endingless and endingful nominative forms means that the special status of the nominative is probably not phonological, but grammatical.

More generally, an account of the NSAG based on markedness and likely diachronic developments would predict that it should describe a tendency, allowing some number of clear counterexamples, not an absolute rule. There would be nothing in the synchronic workings of case and nominal stem allomorphy to ban the possibility of irregular stems outside the nominative. These could thus arise under the right circumstances and be retained for some period of time in particular languages. Such developments might be relatively uncommon outside the nominative, and the pressure for the outcome to be leveled might be relatively high, but we would expect alternations violating the NSAG to be found at some low but non-trivial frequency.¹⁹ However, this is not what I have observed. Again, I have found a series of case-based stem alternations that are consistent with the NSAG, and none that clearly violate it. It is of course possible that the alternative scenario laid out above is correct, but that the expected frequency of the other types of alternations is so low that it is unremarkable that I have not yet found a convincing counterexample, given the sample size of languages I have analyzed. If so, then it is just a matter of time before such counterexamples are identified, and the NSAG is downgraded to a tendency. In the absence of such evidence, however, I will adopt the stronger hypothesis that the NSAG holds generally and describes a synchronic constraint on natural languages, and that it can thus tell us something about the grammar of case and allomorphy.

¹⁸ I am using the term morphologized here informally to describe developments where an originally phonological alternation survives in a language and is incorporated into its morphological system after the relevant phonological conditions or processes cease to apply synchronically.

¹⁹ An anonymous reviewer suggests furthermore that, at least from a frequency-based view of markedness, we might even predict different semantic classes of nouns to show different case sensitivities, since we might well expect that certain nouns would be used far more frequently *outside* the nominative. As an indication that the differing frequencies of particular cases with different items might be relevant for language change, consider the origins of the present-day English oblique pronominal forms. When the distinction between dative and accusative case was lost in Middle English, it was the old accusative form of the neuter pronouns that was generalized (*it, that, what*) but the old dative form of the masculine, feminine and plural pronouns (*him, her, them, whom*). It is plausible to think that this was at least in part because back when the distinction was intact, the neuters, primarily used for inanimates, were far more likely to be used in the accusative, the case associated with direct objects, themes and patients. On the other hand, the masculine, feminine and plural forms, primarily used for animates, were far more likely (at least relatively speaking) to be used in the dative, the case associated with indirect objects, recipients, beneficiaries and experiencers.

3.3 NSAG patterns and their theoretical implications

Against this background, we can discern two parts of the NSAG, both of which are relevant to recent theoretical discussions and will guide our attempts to devise an account. First, allomorphy for noun-stem formants clearly *can* be sensitive to case. This tells us something about the structural representation of the pieces that go into building nouns and how they interact with conditions on allomorphy. Second, such allomorphy can be sensitive to *only* the distinction between the nominative and all other cases. No other case distinctions are visible. This tells us something about the representation of the distinctions among cases and how this can be relevant for allomorphy.

In order to summarize the findings reported here so that we can situate them with respect to prior research and consider the theoretical relevance of the NSAG in the remainder of this paper, I will close this section by explicitly laying out which abstract patterns of stem alternation we find. To simplify things, we can restrict ourselves to a toy three-case system of nominative, accusative and genitive, and we can use A, B and C to represent distinct stem forms. There are five logical possibilities for how stem forms can be distributed over the three cases, as shown in Table 8. Both the shading and the headers across the top indicate what the NSAG claims for each of these possibilities. Specifically, only AAA and ABB are supposed to be possible, except in the special case where A is systematically syncretic with N, in which case AAB is possible as well. ABA and ABC are simply ruled out.

Now let us consider each of these patterns in turn and discuss its potential theoretical relevance, using the real and invented examples in Table 9 for illustration (where shading highlights when two cases have the same stem form). AAA is the lack of alternation, which we find in the overwhelming majority of nouns in all languages. It is uninformative, and is thus left out of the table. ABB is what we find in the Tamil example *maram* ‘tree’, where there is one stem in the nominative and a different one everywhere else. This is important because it tells us that at least some case markers are in a configuration with the noun stem that satisfies the locality restrictions for allomorphy. This is not trivial, given that other types of irregularity like noun suppletion cannot be sensitive to case, as we will discuss in Section 4.1.

Table 8: Possible stem distributions in a three-case system.

	AAA	ABB	#AAB	*ABA	*ABC
NOM	A	A	A	A	A
ACC	A	B	A	B	B
GEN	A	B	B	A	C

Table 9: Attested and unattested patterns.

	ABB	AAB	*AAB	*ABA	*ABC
	Tamil	Latin	Inventite	Impossiblish	Hypothese
	‘tree’	‘kind’	‘fever dream’	‘abomination’	‘longing’
NOM	mar-am	gen-us	ill-ur	paɖ-il	neg-in-or
ACC	mar-att-ai	gen-us	ill-ur-et	paɖ-akk-ē	neg-as-em
GEN	mar-att-∅	gen-er-is	ill-in-so	paɖ-il-an	neg-ut-ad

The pattern labelled #AAB in Table 8 is an abbreviation for *AAB, unless the nominative and accusative forms are systematically syncretic. Latin *genus* is an example of the licit variant of AAB, because there is a single, identical form *genus* for both nominative and accusative.²⁰ The word for ‘fever dream’ in the invented language Inventite, on the other hand, shows what an illicit variant would look like — nominative and accusative share a stem form *ill-ur-*, distinct from the *ill-in-* found in the genitive, yet they are not syncretic, as the accusative has a distinctive ending *-et* next to the endingless nominative. When compared with ABB, this #AAB constellation gives us the first indication that there is something special about the contrast between the nominative and all other cases.²¹

We then come to the explicit statement that the NSAG subsumes an instance of *ABA, the pattern which has been of great interest in recent work on syncretism and suppletion. The word for ‘abomination’ in the invented language Impossiblish demonstrates what an ABA pattern would look like, where a stem form *paq-il-* is found in the nominative and then reappears in the genitive, with an irregular stem *paq-akk-* intervening in the accusative. Following Caha (2009); Starke (2009); Bobaljik (2012), such patterns provide evidence for (structural) containment relationships in the representation of the categories involved, as we will discuss in detail in Section 5. This can thus tell us a great deal about how cases are represented.

Finally, the NSAG also implies *ABC. That is, we don’t find nouns with a special stem form in the nominative, plus a distinction between two additional stem forms in the non-nominative cases, as the word for ‘longing’ in the invented language Hypothese would be, were it to exist.²² As we will see, this kind of restriction is not common in other morphological domains the way that *ABA is. To the extent that it is robust, it goes along with #AAB to establish the special status of the nominative and might tell us something about how locality interacts with the structure of case categories.

Now that we have laid out these basic patterns for stem allomorphy and how they relate to the NSAG, we are ready to begin constructing our theoretical account. We will approach this in two main parts, by taking each of the two central claims built into the NSAG, exploring how it relates to recent empirical and theoretical work on related phenomena, and adapting proposals made there to the purposes of stem allomorphy. We will start in Section 4 with the fact that noun stem allomorphy can be sensitive to case at all and what that tells us about the structure of nouns. Then in Section 5 we will try to make sense of the fact that it is only the distinction between nominative and everything else that matters. This will lead us to specific proposals about the representation of case categories and locality restrictions on allomorphy.

²⁰ Again, it does not matter whether we adopt the analysis proposed here, where *genus* has an irregular stem formant *-us* followed by a null case ending, or the alternative suggested by a reviewer, where it is the stem alternant that is null, and *-us* an irregular nominative/accusative case ending. Either way, we have an AAB stem pattern (because either null or *-us* is found in both the nominative and the accusative, and is in alternation with *-er-* elsewhere), and the identity in the nominative and accusative applies not just to the stem formant but to the entire form, including the case ending.

²¹ In response to a comment by an anonymous reviewer, I would like to state clearly at this point that the lack of AAB patterns (again, aside from the special case where the nominative and accusative forms are completely syncretic as with the Latin neuters) is not *expected* or *predicted* based on any prior conceptions we might have about stem allomorphy or syncretism patterns. Rather, it is an *observation* based on the sample of languages I have considered, and as such is in need of explanation. This is in contrast with the lack of ABA patterns, which of course also requires explanation, but is something that has been observed in a number of domains involving syncretism and morphological irregularities and thus it at least fits in with certain prior expectations we might have.

²² The name of this language rhymes with *Japanese*.

4 Nominal structures and allomorphy

4.1 A comparison with suppletion in nouns and pronouns

There is an important recent strand of work establishing typological generalizations and theoretical conclusions about suppletion in nouns (Moskal 2015a; b) and pronouns (Smith et al. 2016), taking off from Bobaljik's (2012) work on suppletion in adjective comparatives and superlatives. In general, nouns can supplete for number (e.g. the Ket word for 'child': sg. *dyl'*, pl. *kat*) but not for case,²³ while pronouns supplete readily for both, as illustrated by the Icelandic forms in Table 10 and parallel examples from myriad other languages. The line pursued in these works is that this difference between nouns and pronouns falls out of locality conditions on allomorphy. Suppletion is analyzed as allomorphy for the root, i.e. alternation in the exponent inserted in a root node, which is conditioned by the morphosyntactic environment. It is well established that allomorphy is subject to locality restrictions: only features close enough in some sense to a particular node can be consulted in determining which exponent to insert in that node (see e.g. Carstairs-McCarthy 2001; Embick 2010; Bobaljik 2012; Moskal & Smith 2016 and earlier work cited there). The basic idea is that, while number is sufficiently local to both noun roots and pronominal bases to trigger allomorphy, case is only sufficiently local to pronominal bases. It is too far away from nominal roots, thus they cannot be suppletive for case.

There are different ways to implement this idea. I refer the reader to Moskal (2015a; b); Moskal & Smith (2016); Smith et al. (2016) for discussion of why a number of initially plausible candidates won't do the trick and a selection of viable alternatives. Here I'll simply describe Moskal's (2015a) version, which is relatively straightforward and turns out to have useful properties when we come back to stem allomorphy. Moskal posits the structure in (4a) for nouns and the one in (4b) for pronouns, including the representation of number and case.²⁴

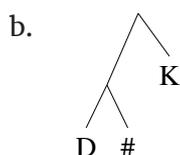
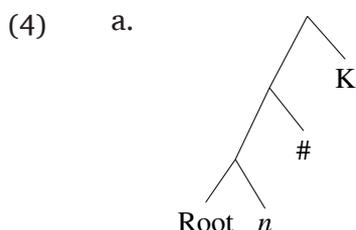


Table 10: Icelandic 1st person pronouns.

	1 SG	1 PL
NOM	ég	við
ACC	meg	okkur
DAT	mér	okkur

²³ For the few apparent exceptions, there is reason to believe that a particular structural deficiency of the nouns in question is responsible (Moskal 2015a). An anonymous reviewer notes that in some examples of this kind, there are stem-formant alternations in addition to root suppletion, which show an intricate interaction with number, case and the identity of the root (see e.g. Radkevich 2014 on Lak).

²⁴ The label D in (4b) should not be taken to necessarily denote the determiner category. It is simply the label Moskal uses for the position of the pronominal base. Smith et al. (2016) use the label BASE instead.

She proposes that the relevant locality condition allows vocabulary insertion to be sensitive to the structure up to and including one node past the next cyclic node.²⁵ If, as is commonly assumed, categorizing nodes like *n* are (potentially) cyclic, this yields the right results. For the nominal root in (4a), the next cyclic node is little *n*, so allomorphy is sensitive to little *n* plus one node beyond — i.e. #. Case is too far away, hence nouns cannot supplete for case. Pronouns, on the other hand, lack little *n*. So for the pronominal base (represented as D) in (4b), there is no cyclic node and thus no locality domain separating it from either # or K. Hence pronouns can supplete for both case and number.²⁶

4.2 Noun stem alternations are allomorphy for *n*

Consider now how our noun stem alternations fit into this picture. The stem allomorphy described by the NSAG differs from noun suppletion in that a substantial chunk of the noun remains constant, with the alternation affecting only a stem-forming element. It is reasonable to take the constant chunk as the root, meaning that the alternating piece should be the realization of a functional head below number and case. The simplest assumption is that the case-sensitive stem alternations we've been looking at boil down to allomorphy for little *n*. This also fits in well with how the elements that engage in the alternations relate to morphologically identifiable classes of nominal lexemes in their languages. Specifically, in many instances the alternation is found in a whole group of nouns, constituting a stem class largely characterized by the alternation itself. For example, as already noted, Tamil has a very large and productive class of nouns in *-am*, all showing the alternation with *-att-*; Finnish has an extensive collection of nouns showing the *-nen/-s(e)-* alternation, and Latin has dozens of nouns that inflect similarly to *homō* (with a small number of identifiable sub-classes). Thus it makes sense to take these stem formatives as the realization of functional material involved in implementing or deriving nominal categories.

Crucially, locating stem allomorphy in little *n* also gives us the first part of the story about what can trigger it. Remember that for Moskal, the form of the Root cannot be conditioned by K, because the cyclic node (little *n*) and one node above it (#) intervene. But little *n* itself will not be thus restricted, because there is no (potentially) cyclic node between it and K. We thus correctly predict that noun stem alternations — like pronominal suppletion but unlike nominal suppletion — can be sensitive to case in addition to #. This gives us a good first approximation of an explanation for the first part of the NSAG described above. Noun stem alternations can be sensitive to case because they amount to allomorphy for little *n*, and the structural representation of case is sufficiently local to condition Vocabulary Insertion in that position.

²⁵ This is grounded in the idea that nodes are not inherently cyclic, but only potentially so. The highest *potentially* cyclic node in an extended projection is the one that will in fact *be* cyclic (see Bobaljik & Wurmbrand 2005). This means that it cannot be determined whether a particular node is actually cyclic without seeing the next node up (to see whether it is potentially cyclic and part of the same extended projection or not), yielding locality domains of a cyclic node plus one. See Moskal (2015a; b).

²⁶ I will use the term 'cyclic node' in a general sense to refer to nodes that are singled out to determine the apportioning of structure into domains that are relevant for locality. For the most part, this definition should be sufficiently precise. Where the technical details of the definition and relevance of cyclic nodes matter, I will follow the usage of Moskal (2015a) except where I explicitly indicate otherwise, since I will be utilizing her approach to the locality of allomorphy.

5 Case structures and allomorphy

Now that we've set things up so that we expect K to affect the shape of stem-forming elements in little *n*, the second part of the NSAG becomes all the more acute. If stem alternations can be sensitive to the distinction between nominative and non-nominative, why can't they be sensitive to distinctions *among* the non-nominative cases?

5.1 Bobaljik's CSG and *ABA

At this point it will be useful to make a comparison with other work on *ABA patterns, in particular Bobaljik (2012). Bobaljik makes a typological survey of suppletion in comparative and superlative forms of adjectives, formulating the generalization in (5):

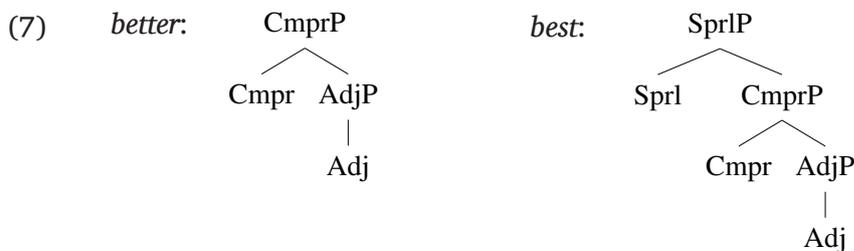
(5) **The Comparative-Superlative Generalization (CSG)**

If the comparative degree of an adjective is suppletive, then the superlative is also suppletive (i.e. with respect to the positive). If the superlative degree of an adjective is suppletive, then the comparative is also suppletive (i.e. with respect to the positive). (Bobaljik 2012: 2)²⁷

In other words, we find patterns like (6a) and (6b), and occasionally ones like (6e), but not the equivalents of (6c) or (6d):

- (6)
- a. small – smaller – smallest (AAA)
 - b. good – better – best (ABB)
 - c. *good – better – goodest (*ABA)
 - d. *good – gooder – best (*AAB)
 - d. bonus – melior – optimus (ABC) from Latin

Bobaljik explains the CSG, in particular the *ABA part, by proposing that the structure of the superlative *contains* the structure of the comparative, as in (7):



Again, suppletion is analyzed in terms of allomorphy for Vocabulary Insertion in a root node. If the comparative form of a particular adjective is suppletive, there must be a special vocabulary item specified to realize the relevant root whenever the Cmpr node is present, as in (8a). The form that shows up in the positive will simply be the elsewhere realization of the root, as in (8b).

- (8)
- a. $\sqrt{\text{GOOD}} \leftrightarrow \text{be(tt)} / \text{__ Cmpr}$
 - b. $\sqrt{\text{GOOD}} \leftrightarrow \text{good (elsewhere)}$

Crucially, the conditions for (8a) are also met in the superlative structure in (7), because the Cmpr node is present there as well. Suppletion in the comparative thus implies the

²⁷ Bobaljik states the CSG in two parts. I have put them together for simplicity.

same suppletion in the superlative, deriving *ABA. I will now propose a similar approach to the differences between cases described by the NSAG.²⁸

5.2 Caha’s hierarchy and case containment

To do this, we need an additional piece relating to the structural representation of case categories. Note that it is essential to Bobaljik’s (2012) account of the *ABA part of the CSG that there is a containment relationship between the superlative and the comparative. If we want to do something parallel for the NSAG, we will need to assume containment among relevant case categories. Fortunately, we can adapt for this purpose an existing theory that was aimed at capturing a different kind of *ABA in case marking. Caha (2009) argues that attested syncretisms between different cases in a wide array of languages follow a universal hierarchy with a *ABA pattern. This can be illustrated with the three case system of Modern Greek, where there is no syncretism of nominative and genitive to the exclusion of accusative, as shown in Table 11.

Caha thus proposes to derive a version of Blake’s (2001) hierarchy of cases from a structure where each case includes the structure of the next lower case, plus an additional functional head, as indicated in (9).²⁹

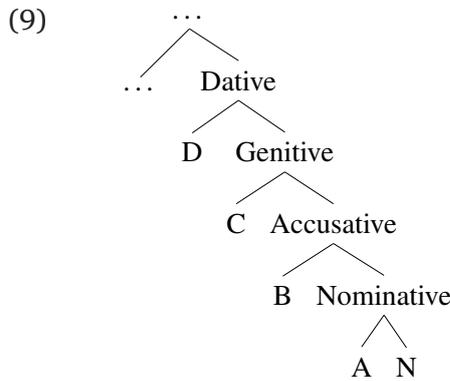


Table 11: Case syncretisms in Modern Greek.

	‘fighter’	‘fighters’	‘alpha’	[not attested]
NOM	maxitis	maxites	alfa	A
ACC	maxiti	maxites	alfa	B
GEN	maxiti	maxiton	alfa	A

²⁸ I won’t discuss in detail Bobaljik’s treatment of the constellation of ABC with *AAB. There are clear parallels to what we must deal with for noun stem alternations, and some similarities in the execution. In particular the idea is that *AAB is ruled out because the relevant element is too far away in some sense to trigger irregularity. But there are also important differences in the implementation because the facts go a different way. Bobaljik’s account is complicated by the empirical fact that ABC patterns are attested in comparative-superlative suppletion, so the superlative can’t be too far away from the root in an absolute sense. For case-based stem alternations, we have *ABC alongside *AAB, so I will be able to assume a simpler locality story covering both patterns, which places the genitive (and higher cases) too far away to trigger stem allomorphy.

²⁹ Caha’s trees place the sequence of case heads above the determiner head of the DP, as is motivated by semantic and sentential-syntactic considerations. When it comes to the form of an actual noun, however, we must eventually end up with a structure more along the lines of (9), where the sequence of case heads appears directly above the structure of the noun itself. There are different ways to derive the latter structure from the former, utilizing movement, Agree, or some combination of the two (Caha 2009 uses movement). Since the form of the noun is what we are concerned with here, I am restricting my attention to these simpler structures.

This will provide the basis for locality differences among the different cases. The accusative-defining head B is further away from N than nominative A, and genitive C is further away still. Thus even before we discuss specific theories of the locality of allomorphy, we can see that accusative is more likely to be able to interact with the noun than genitive. Furthermore, because of the containment relationships, we predict implications between the different cases with respect to triggering particular allomorphs. Anything sensitive to the accusative via head B will also be triggered in the genitive and dative, all other things being equal, because B is present there as well. A distinct stem form in a case higher on the hierarchy will only be possible if an additional vocabulary item refers to the relevant higher head, e.g. dative-defining D. That is, if there is a special stem form for the accusative, there is no way to default back to the unmarked nominative stem form in the dative, yielding an ABA pattern, because the dative structure includes the head B, which will still trigger the special accusative form. In this way, a version of Caha's system derives the *ABA portion of the NSAG.

5.3 Making the nominative special with H and emptiness

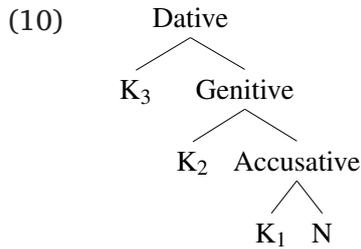
To get the full NSAG, however, including the #AAB and *ABC portions, we need to make the nominative truly special.³⁰ This will require an explicit theory of locality. What we want is for the head defining the accusative to be relevant for allomorphy on the stem, but nothing above it in the structure. It is this head, after all, that marks the distinction between the nominative and all other cases, so it is what our 'non-nominative' stems must make reference to, and we need to make sure that stem allomorphy cannot refer to the genitive head or anything higher. There are a number of concrete ways we could reasonably do this. I will pursue one particular approach that combines Moskal (2015a)'s locality conditions on allomorphy with a modified version of Caha's case structures.

Assume first that nominative is not just the least marked case, but the total absence of case at an abstract level (Bittner & Hale 1996; Asbury 2008; McFadden & Sundaresan 2010; Kornfilt & Preminger 2015).³¹ This yields (10), which is like Caha's structure but without a dedicated nominative head, thus making a clear distinction between the nominative and all other cases: nominatives are bare nominal structures, while all other cases

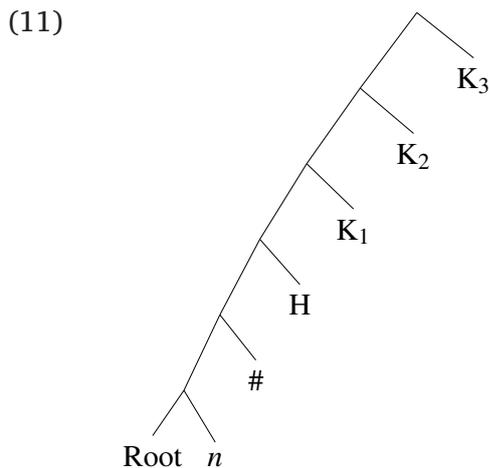
³⁰ An alternative approach, suggested by an anonymous reviewer, would be to leave the theory as it is at this point, avoiding the complications to be considered in this section, and predict that AAB and ABC patterns should be possible. As will be discussed in section 6.3, some potential AAB patterns have been reported by Zompí (2017), and we should actually expect that ABC patterns would be extremely infrequent, even if they were technically possible. We could thus say that the fact that they have not yet been identified for case-sensitive noun stem allomorphy is a not particularly surprising accident of the relatively small sample size. For now, I will continue to assume that the facts turned up so far are an accurate reflection of what is possible and develop a theory for what is in fact attested. Should future research turn up any clear ABC patterns, we can happily fall back on the less restrictive version of the NSAG and the perhaps simpler theory it would require. See 6.3 for more relevant discussion.

³¹ As two anonymous reviewers point out, assuming that the nominative is the total lack of case may seem difficult to square with the fact that several languages (including Latin and Icelandic as discussed above) have clearly overt nominative case endings. If there is no actual morphosyntactic representation of nominative case, then what are these suffixes realizing? I will not defend any specific detailed proposal here, in part because I think the answer is likely to be different for different suffixes in various languages. One thing to note is that the majority of nominative-accusative languages do *not* seem to have overt nominative endings, and a large number of those that do come from the Indo-European family, i.e. they all inherited this peculiarity from the same place. Another is that these are typically highly inflecting languages, where there is a single fusional marker that simultaneously indicates case, number and often inflectional class. It is thus reasonable to suggest that the overt 'nominative' endings will be susceptible to analysis as markers of inflectional class or even unmarked number in morphophonological systems that are not especially tolerant of endless forms. Something different must be said about languages like Japanese and Korean, which also have overt nominative endings, but no fusional morphology or inflectional class effects of the kind observed in the Indo-European languages. Note, however, that these languages also do not display any stem-allomorphy alternations sensitive to case, and so the approach presented in this paper has little to say about them directly.

involve some additional amount of functional material, providing something for stem allomorphy to be sensitive to.³²



We can integrate this modified version of Caha’s account of case with Moskal’s approach to locality as follows. The key to making the difference between nominative and the other cases visible, but not the distinctions among those other cases, is to ensure that K_1 and K_2 are on opposite sides of a locality boundary relative to little n , where stem alternations are realized. The presence of K_1 is what all non-nominative cases have in common, identifying them as *not* being nominative. In Moskal’s theory, having a locality boundary between K_1 and K_2 means having K_1 as the first head above a cyclic node. Thus we are led to posit such a node — call it H — between $\#$ and K_1 .³³ Putting (4a) together with (10) and adding H yields the structure in (11):



The question of course is what the identity of this H could be.³⁴ We might be tempted to identify it with D , since this is roughly the position in the sequence where D would appear in a DP , but as discussed in footnote 29 above, as least for languages like Latin, Icelandic and Finnish where there is case concord, such that case can be marked on multiple words

³² In order to avoid any confusion, I used Caha’s labels A, B, C for the case heads in his version but am using K_1, K_2, K_3 etc. for the heads in mine.

³³ An alternative would be to have $\#$ itself be a (potentially) cyclic node, leaving out H entirely. The concern is that, under the dynamic approach to cyclic domains, this would imply that little n , though still a potentially cyclic node, would not count as an actual one, having an additional potentially cyclic node in $\#$ directly above it. This would eliminate the difference between little n and the nominal root for purposes of locality — $\#$ would end up being the first actually cyclic node above both of them, so we would incorrectly predict that nouns could be suppletive for the nominative-accusative case distinction.

³⁴ Note that it must be something in which nouns and pronouns are distinct, since again AAB and ABC patterns are found with pronouns. An anonymous reviewer suggests that we could assume that there are no cyclic heads in functional material, essentially keeping them out of the projections of pronouns. While this would make it easier to handle the differences in allomorphy patterns between nouns and pronouns, we would still need to determine the identity of the additional cyclic node above little n in nouns.

than distributed on either side. A different way to look at it, which is less dependent on the specific assumptions of Moskal's theory of locality, is that stem allomorphy can be sensitive to whether any case heads are present, but not to which specific ones are there. Again, this only makes the right cut if the nominative amounts to the complete lack of case heads.

6 Bringing it all together

In this section I will bring together the various strands of the preceding discussion to illustrate and precisify my account of the NSAG. I will first demonstrate in Section 6.1 how the account covers the patterns described by the NSAG, then in sections 6.2, 6.3 and 6.4, I will deal with three loose ends in the behavior of plurals, some potential counterexamples to part of the NSAG and the dividing line between stem allomorphy and phonological alternations, respectively.

6.1 Deriving the sample patterns

Let us consider then how the account developed in Sections 4 and 5 covers the NSAG, allowing the attested stem allomorphy patterns and ruling out the unattested ones. AAA is the trivial case where little *n* has only one form and requires no further comment. We get ABB when there is a special 'B' exponent of little *n*, specified to be inserted in the context of K_1 , e.g. the vocabulary item in (13a) for the *-att-* formant in Tamil nouns like *maram*. Since that K_1 head is present in the accusative, genitive, dative and any other cases higher in the hierarchy, this allomorph will be inserted in all of those cases. The corresponding 'A' formant, like Tamil *-am-* in (13b), is simply an elsewhere exponent of little *n*, which will be inserted when K_1 is not present.³⁸ Given the structure of the cases, this only happens in the nominative.

- (13) a. $[n] \leftrightarrow \text{-att-} / \text{ ___ } K_1$
 b. $[n] \leftrightarrow \text{-am-}$ (elsewhere)

We get *ABA in the standard way from containment. An actual ABA pattern would mean, in our toy three-case system, that one form appears in the accusative, while the nominative and genitive share a different form. The only way to get a special accusative form is by reference to K_1 , and since this head is also present in the genitive, that special form would be triggered there as well. The only way to prevent the accusative form from appearing in the genitive is to set up a more specific genitive form, which makes reference to the K_2 head lacking in the accusative. Assuming for the moment that this were possible, the result would be an explicitly genitive form, not be the reappearance of the unmarked nominative form, since of course the nominative lacks the K_2 head. In this way we could only derive an 'accidental' ABA pattern, which is in reality an ABC pattern, where A and C are introduced by distinct rules, but happen to have the same form. This is laid out in (14) for the Impossible forms in Table 9. We get the *appearance* of ABA, because *-il-* shows up in both the nominative and the genitive, distinct from the *-akk-* in the accusative, but these are really two different stem formants introduced by two different rules.

- (14) Impossible accidental ABA as crypto ABC
 a. $[n] \leftrightarrow \text{-il-} / \text{ ___ } K_1, K_2$
 b. $[n] \leftrightarrow \text{-akk-} / \text{ ___ } K_1$,
 c. $[n] \leftrightarrow \text{-il-}$ (elsewhere)

³⁸ Of course, both of the items in (13) need to be further restricted to the class of nouns showing the *-am/-att-* alternation, but this is irrelevant to current purposes so I have left it off for simplicity.

Since what we have in (14) is underlyingly an ABC pattern, we can use something parallel to derive surface ABC, e.g. the Hypothese forms in Table 9 via the VIs in (15), but of course, the NSAG excludes ABC, so we need to make sure we prevent systems like this, and this is precisely what our locality account provides.

- (15) Hypothese ABC
- a. $[n] \leftrightarrow \text{-ut-} / \text{ ___ } K_1, K_2$
 - b. $[n] \leftrightarrow \text{-as-} / \text{ ___ } K_1,$
 - c. $[n] \leftrightarrow \text{-in-} \text{ (elsewhere)}$

The presence of the cyclic H node means that allomorphy for little *n* will be able to see one node past H, i.e. to K_1 . Hence VIs like (13a), (14b) and (15b), all of which set up accusative stems by referring to K_1 , will work just fine. However, K_2 and higher K heads will be too far away to be visible for vocabulary insertion at little *n*. Thus VIs like (14a) and (15a), which pick out genitives and higher cases by making specific reference to K_2 , will be unstatable or will simply never find anything to apply to. We thus successfully rule out ABC patterns, including accidental ABA like (14). Even if the systems of VIs in (14) and (15) could be set up, they would still just produce ABB. The special VIs making reference to K_2 would never apply, as K_2 , even if present, would be non-local, and the VIs making reference to K_1 would apply in those contexts instead. Note now that it is difficult to see how we could get these results if the different cases corresponded to different features or feature bundles in a single K head, because we do not expect there to be any locality or accessibility differences between the different features in a single bundle. I.e. if the difference between nominative and accusative in that position is legible to allomorphy for little *n*, it is not clear how further case differences could be made illegible.³⁹

This basic locality story also extends to *AAB. These differ from *ABC only in that there is no special accusative stem form, still requiring a VI to make reference to K_2 for the special form in the genitive and beyond. This is laid out in (16) for the Inventite forms in Table 9.

- (16) Inventite AAB
- a. $[n] \leftrightarrow \text{-in-} / \text{ ___ } K_1, K_2$
 - b. $[n] \leftrightarrow \text{-ur-} \text{ (elsewhere)}$

Again, locality forbids reference to K_2 for purposes of the allomorphy of little *n*, so even if a VI like (16a) were licit, it would never find a matching context, and so we would get an AAA pattern with the elsewhere formant *-ur-* throughout. There is an additional important issue, which is that pronoun suppletion *does* allow ABC patterns and AAB patterns without syncretism, as discussed by (Smith et al. 2016). For pronoun bases then, there must be no locality distinction between K_1 and K_2 .⁴⁰ Dealing with this will require further amending

³⁹ An anonymous reviewer asks whether the observed patterns could be derived in a theory using case feature bundles, as long as we added the assumption that the nominative is unique in being the only case that lacks all features. Indeed, I suspect it would be possible to make this work given the right series of technical assumptions, but it would not be a simple matter. We would need to ensure that the allomorphy rules could see that case features are present, but not distinguish among those features, since otherwise allomorphy patterns should be able to be sensitive to the distinctions among the non-nominative cases. In the approach in terms of a hierarchy of case features adopted here, allomorphy can indeed be sensitive not just to the presence, but also to the identity of the case features. It just happens that only the lowest of the case features is sufficiently local to trigger allomorphy, and it can only distinguish the nominative from everything else.

⁴⁰ Keep in mind, however, that the part of the NSAG that seems to implicate containment, i.e. the ban on ABA patterns, *does* still hold for pronoun suppletion (again, see Smith et al. 2016). It is thus only the portion of the NSAG that seems to depend on locality that differs between noun stems and pronoun bases, which is perhaps not so surprising.

our inventory of cyclic nodes, adapting our assumptions about the structure of pronouns, or admitting new ways to circumvent locality boundaries. Since I currently have no way to decide among these options, I simply note the issue and leave it for future research.

Of course, the pattern we are trying to model from the NSAG is not exactly *AAB, but what I have been calling #AAB, where AAB is possible as long as there is total and systematic syncretism between the nominative and accusative. As things stand, the locality story here does not provide a way to derive such special AAB patterns, predicting instead strict *AAB, so we need to say something more. The problem, e.g. with the Latin neuters, is that the conditions for the ‘oblique’ stems like *gener-* and *itiner-* seem to be able to distinguish between accusative and genitive. However, under the analysis built up so far, this should not be possible, as the K_2 head responsible for this distinction is not sufficiently local to little n . Indeed, we should be suspicious of the fact that *AAB holds in general, except in the special case where the accusative is syncretic with the nominative. This last point makes clear where exactly we should look for a solution to this little problem. Our approach should be that what shows up with these nouns in (syntactic) contexts where we expect accusatives, are structurally nominatives, at least at the point in the derivation when the exponent for n is inserted. In other words, the ‘accusatives’ here also lack the K_1 that normally characterizes accusative-marked nouns. This is why they do not satisfy the conditions for the oblique alternant of n , but also why they are realized exactly the same as the nominative in all other respects.

One way to derive this would be in terms of an operation like Impoverishment, so that these nouns would initially be structurally accusative, but would have the K_1 head deleted before vocabulary insertion. This would admittedly be an unorthodox move, since under the nanosyntactic Caha (2009)-style view adopted here it would imply the deletion of case *structure*. This would be rather more challenging to formalize than the deletion of case features under a DM-style feature bundle view, and I will not attempt it here. As an alternative, one could assume a kind of Differential Object Marking, such that accusative assignment would simply not apply to the relevant nouns, leaving them caseless, which is equivalent to nominative (see Richards 2010; Baker 2015: for compatible approaches to DOM). One reason to think that this is a not unreasonable possibility is that the Latin neuters are overwhelmingly inanimates. Animacy (even in a highly grammaticalized version) is one of the factors that is commonly relevant for clear instances of DOM cross-linguistically — actual object marking tends to be found on animates, while inanimates, like the Latin neuters, remain unmarked (see e.g. Aissen 2003). The ‘oblique’ stem form with these nouns, just like the ones with normal ABB, will thus be specified to show up in the context of K_1 , i.e. the accusative-defining head. This will ensure, as in other examples, that they also show up in the genitive and all higher cases. It is just that with these nouns, there are no forms that reach VI with K_1 without also having at least K_2 , i.e. there simply are no accusative forms to spell out. This yields an apparent AAB pattern, which in reality is an ABB pattern, but where the accusative B never surfaces. We thus have an account for #AAB that explains why apparent AAB is limited to instances where the nominative and accusative are fully syncretic.

6.2 Lessons from plurals

Until now, I have restricted my discussion to stem alternations in the singular forms of nouns, leaving plurals aside. But what happens with irregular stem allomorphy in the plural has the potential to be quite instructive, given certain ideas about the triggering of allomorphy and what is known about suppletion. Recall from above that while pronouns can supplete for both case and number, nouns supplete only for the former. Moskal’s (2015a) account of this fact depended crucially on the intervention of the # head rendering

K non-local to the noun root. There is also a long tradition of arguing that allomorphy requires adjacency of some kind (see Embick 2010; Bobaljik 2012; Moskal & Smith 2016; and references there), hence we might expect allomorphy of noun stems based on case markers to be blocked by intervening (overt) plural affixes. It will thus be worth our while to see what happens in the plurals of the nouns we've been discussing — whether we get 'nominative' stems, 'non-nominative' stems or a repeat of the alternation.

As it turns out, languages differ in this respect, giving us some evidence for differences in the details of how the alternations are implemented. In Finnish, Latin and Icelandic, plurals have the 'non-nominative' stem throughout, even in the nominative, as shown for Finnish and Latin in Table 12. This is somewhat puzzling. We could take it as evidence that, in these languages, the stem formant in the nominative singular is actually the marked one, with explicit restrictions on the context for its insertion, whereas the non-nominative stem is the elsewhere realization of little *n*. This would certainly be in line with the distribution of the two formants. The tricky thing is that, under the kind of analysis being pursued here, there is no distinguishing feature of the nominative singular that could be used to formulate the contextual restriction — the nominative singular is characterized by the *lack* of features in comparison to the non-nominative cases and the plural.⁴¹ On the other hand, writing a specification for the 'non-nominative' stem formant is made difficult by the fact that it appears in a disjunctive context, whenever there is a marked case *or* plural number. One way to deal with this would be to propose that it is not sensitive to the presence of particular heads, but rather to the presence of *any* marked value. The details will depend among other things on whether singular number is represented as a # with an unmarked value or as the simple lack of a # head.

The facts are crucially different in Tamil, as shown in Table 13. Here again, alternation according to case fails to obtain in the plural, but now it is the nominative stem that shows up for all cases.⁴² Here it is clear that the stem alternant with a marked specification must be the 'non-nominative' one, with the 'nominative' one being the elsewhere. Specifically, we can say that *-att-* is specified to occur in the context of the K_1 head, and then we need to set things up so that the marked plural head interferes with its insertion, e.g. by using hyper-contextual VI-rules along the lines of Moskal & Smith (2016). The 'nominative' stem thus appears throughout the plural.

Table 12: Finnish and Latin plurals.

	Finnish		Latin	
	Sg	Pl	Sg	Pl
NOM	ihmi-nen	ihmi-se-t	hom-ō	hom-in-ēs
GEN	ihmi-se-n	ihmi-s-i-en	hom-in-is	hom-in-um

Table 13: Tamil plurals.

	Sg	Pl
NOM	mar-am	mar-aṅ-ga
Acc	mar-att-ai	mar-aṅ-ga -ai

⁴¹ Note that this point is unaffected if we adopt Caha's (2009) version, where there is a K head present in nominatives. Even for Caha, the nominative contrasts with all other cases by *lacking* any of the higher K heads. The head found in the nominative is also found in all higher cases, so it is equally impossible to write a specific rule to apply only to nominatives by referring to this lowest K head.

⁴² The shift of /m/ to /ŋ/, both here and in Table 14, is due to phonologically regular assimilation.

Now, one analysis we might have considered for the facts from the Tamil plural would be that there is a requirement that a case marker can only trigger the marked stem formant when it appears adjacent to it (again following Embick 2010; Bobaljik 2012: and others). The intervening overt plural marker would disrupt the adjacency, thus blocking the triggering of the *-att-* stem and leading to the insertion of unmarked *-am-*. Important facts from the Tamil pronouns, however, show that literal adjacency isn't required for conditioning allomorphy. They also provide even more direct support for the role of case specifically (as opposed to the mere presence of a suffix) in triggering stem allomorphy in the language. Consider the 2nd person forms in Table 14.⁴³ The *nii(n)* alternant appears in the nominative, both singular and plural. But unlike with the nouns, the alternative *on-* is found throughout the obliques, i.e. not just in the singular, but also in the plural. We can analyze this by again having the VI for *on-* be directly sensitive to the presence of the K_1 head, but we must set things up so that, unlike in the nouns, the intervention of the plural # head does not bleed its application. However exactly we ultimately analyze the distinction between nouns and pronouns here — and this will clearly need to be connected to the discussion after (16) above — it is clear that in Tamil the allomorphy must be sensitive specifically to case, not just to the presence or absence of structure in general.

I will conclude this section on plurals with a couple of general and comparative comments. First, the data show that our theory must allow for a certain amount of cross-linguistic variation in case-based stem alternation behaviors in the plural. Second, this variation cannot be reduced, as might have seemed promising, to differences in the expression of case and number. One might have hoped to tie the behavior in Latin and the other Indo-European languages — where we get 'non-nominative' forms throughout the plural — to the fact that case and number are fusional in these languages. This would have fit in with the fact that Tamil — where case and number are marked by distinct, segmentable suffixes — has the 'nominative' form throughout the plural. The problem comes from Finnish, which like Tamil has segmentable case and number suffixes, but like Indo-European generalizes the 'non-nominative' stem form throughout the plural. Thus it seems that we must attribute the difference in plural behaviors, as I have done here, to differences in the contextual specification for the marked stem formant — the presence of any following head with a marked value in Latin and Finnish, versus the presence of specifically the K_1 head in Tamil.⁴⁴

Table 14: Tamil 2nd person pronouns.

	2 Sg	2 Pl
NOM	nii	niiŋ-gaɭ
ACC	on-ai	oŋ-gaɭ-ai
GEN	on	oŋ-gaɭ
DAT	on-akku	oŋ-gaɭ-ukku

⁴³ Similar patterns are found in the 1st person (exclusive) forms *naan/en* and the anaphor *taan/tann*.

⁴⁴ Note that I am crucially *not* claiming that number heads can have different status for locality purposes in different languages. As a reviewer points out, such a scenario would open up the possibility that case heads could also differ with respect to locality across languages, undermining my account of the NSAG. The number head is universally sufficiently local to little *n* to potentially trigger allomorphy on it, just as the lowest of the case heads is. Where languages (and specific nouns) differ is in the form of the contextual specifications for allomorphy of *n*. In some, the marked stem formant is sensitive specifically to the lowest case head, and thus the stem alternation ignores the singular/plural distinction. In other languages, the marked stem formant is sensitive to the presence of *any* functional head with a marked value, thus either the lowest case head or a plural number can trigger it. All of these possibilities are crucially compatible with a unified theory of locality, and even with a universal inventory of functional heads if we so desire.

Third, even though the VIs for Latin and Finnish may in the end make no direct reference to case in general or the K_1 head in particular, the NSAG is still upheld here. Case is relevant indirectly, as the case heads count, alongside plural number, among the potential satisfiers for the condition of a following head with a marked value. This yields the sensitivity to case, and the specific restrictions of the NSAG still fall out of our locality story, as it is only the K_1 head distinguishing accusative from nominative that will be close enough to be visible. We thus still rule out a more specific VI introducing an additional stem formant in more marked cases. Fourth, note that this furnishes an additional argument for the version of the case hierarchy here, where the nominative is the total lack of K heads. The VI rule for Latin and Finnish only really works if the difference between nominative and everything else amounts to the presence or absence of marked case heads. If we adopted Caha's (2009) version with a dedicated nominative head, it would be especially difficult to prevent that head from triggering the marked stem formant. Again, the VI for that stem formant cannot be specified to be sensitive specifically to the head distinguishing accusative from nominative, or any other specific case head, because it must also be sensitive to the plural # head.

6.3 Potential counterexamples

Zompí (2017), in response to an earlier version of the work presented here, introduces some potential counterexamples to the NSAG from Ancient Greek. First, he suggests that the Ablaut patterns shown with a number of nouns like 'father', with nominative *patér*, accusative *patér-a*, genitive *patr-ós*, present a challenge for the kind of phonological implementation that I must adopt in order to allow them to circumvent the NSAG. In particular, this is because the different stem-vowel configurations don't just track specific case suffixes, but also depend on the lexical noun. Zompí is correct to note that such an account cannot be fully evaluated in the absence of a worked out analysis, but the prospects for success are arguably considerably better than he suggests. What we need is for the exponents for the different cases to be able to vary in whether they include floating material that triggers the vowel changes of ablaut, depending on the lexical identity of the noun they attach to. So the genitive is *-os* plus a floating trigger for deletion of a stem vowel with *patér*, but *-os* without such a trigger with *astér* 'star', which has the genitive form *astér-os*.⁴⁵ But in the end this is not really different from saying that, with nouns of a certain class including *pólis* 'city', the genitive ending has the form *-eōs* rather than *-os*. Therefore, I do not see any real obstacle to an analysis along these lines. Analyses of this type will be discussed in more detail in 6.4 below, in particular footnote 53.

Zompí's second type of potential counterexample is more difficult to defuse. These are the so-called heteroclite adjectives, as in Table 15, which show a clear stem alternation that violates the NSAG.⁴⁶ The word for 'much' shows a stem *polý-*, plus the normal endings

Table 15: Ancient Greek heteroclites, masculine singular.

	'big'	'much'
NOM	méga-s	polý-s
ACC	méga-n	polý-n
GEN	megál-û	poll-û

⁴⁵ With both nouns, the nominative will have a floating trigger for lengthening.

⁴⁶ I give only a subset of the masculine singular forms, which are enough to demonstrate the NSAG-violating pattern. The neuter singulars show the same alternation, while the feminine singular and the entire plural are inflected regularly based on the stems in the genitive singular masculine.

of an *-y*-stem adjective of the 3rd declension, alternating with a stem *poll-*, plus the normal endings of an adjective of the 1st and 2nd declensions. The word for ‘big’ alternates between *mega-* and *megal-* along with a similar shift in inflection class. The problem, of course, is that the result is in both cases an AAB pattern, but where the nominative and accusative are clearly not syncretic. According to the NSAG, this should not be possible, and for these facts I do not, at the moment, have a secure response. It is thus possible that they constitute genuine counterexamples and will require revisions to what I have said about the NSAG. I will however note three points which may allow an alternative analysis consistent with my approach or, at the very least, limit the changes they will necessitate.

First, it may be relevant that it is not just the form of the stem that is alternating, but also the inflectional class of the following endings. Inflectional classes in general interact heavily with the stem formants, but they are clearly distinct from them, and their representation in the structure must be somewhere between that of the stem formants that we have placed in little *n* and the case heads. It is thus conceivable that they could be playing a mediating role to allow the triggering of stem alternations like we see in Table 15, which would otherwise violate locality.⁴⁷ Second, I have proposed the NSAG as a constraint on stem allomorphy in *nouns*, whereas the heteroclitics in Table 15 are *adjectives*, so technically they aren’t counterexamples to the NSAG as stated. This may seem like a weak excuse, especially since the inflection of adjectives is almost entirely parallel to that of nouns in languages like Ancient Greek and Latin. However, there is an important difference, which is that adjectives, unlike nouns, change aspects of their inflection, including their inflection class, in order to implement gender concord. Again, the expression of gender and inflection class is distinct from the choice of stem formants, but still clearly related. It is thus not unreasonable to think that adjectives might have some additional source of flexibility in the regulation of their stem formants (which would presumably be in little *a*, parallel to the nominal ones in little *n*) that exempts them from a strict version of the NSAG.⁴⁸

That we might be able to devise an account of the patterns in Table 15 without modifying the NSAG based on the role of inflectional class and gender flexibility in adjectives remains entirely speculative and will require careful work to flesh out and test. Nonetheless, even if we eventually must recognize those data as legitimate counterexamples to the NSAG, the amount we will have to retreat on the claims made in this paper is limited. This is because, as Zompí (2017) himself notes, they would only demonstrate that the *AAB part was mistaken. Even in Ancient Greek, we still find no clear examples of ABC or ABA patterns. Now, the lack of ABC in our data may well be an accident in that case. As Bobaljik (2012) discusses with respect to adjectival comparison, even if they are technically possible, ABC patterns should be far less frequent than the others, as they require two irregularly specified forms rather than one. Furthermore, there are theoretical reasons to think that, if AAB is possible, ABC should be possible as well. If the genitive can trigger a special form to get AAB, it should also be able to trigger a special form in a noun that additionally has a special accusative form, yielding ABC. Thus

⁴⁷ In other words, we could imagine a sort of successive-cyclic triggering of irregularity, such that the K_2 head found in the genitive and above triggers a particular representation of inflectional class, which in turn triggers a particular allomorph of little *n*.

⁴⁸ One interesting possibility suggested by an anonymous reviewer is based on the observation that the case, number and gender features find their way onto adjectives in a rather different way than they do onto nouns, i.e. they are copied there from the relevant nouns via some sort of concord operation. It could well be that this operation simply copies all of the relevant features onto a single head, rather than recapitulating the entire hierarchical structure. In this case, the locality constraints on allomorphy with nouns would simply not apply to adjectives. See Preminger (2017) for some relevant discussion of how feature geometries might be handled by valuation operations.

the fact that we haven't found any clear instances of ABC yet in case-based noun stem allomorphy may just be because our sample size is not large enough. The complete lack of ABA examples would however remain, and this is actually the most important part of the NSAG. The combination of ABB with *ABA already provides the motivation for most of our analysis — the proposal that noun stem alternations amount to allomorphy for little *n* together with the assumption of a representation of case categories involving structural containment. The only part that falls by the wayside without *AAB and *ABC is the need for a (potentially) cyclic head H immediately below the series of K heads.

Another potential set of counterexamples which have been pointed out to me by Pavel Caha (p.c.) come from certain plural forms in Classical Armenian (described e.g. in Caha 2013; 2016). Table 16 reproduces the relevant sub-paradigms. The thing to note are the vocalic elements segmented out before the case markers in the dative and instrumental forms, *-a-*, *-o-* and *-i-*, respectively in our three example nouns. These are traditionally regarded as 'theme' vowels, characteristic of the different inflectional classes of the language. The potential challenge for the NSAG goes as follows. If we regard these theme vowels as stem formants, they must be alternating with null formants in the nominative, accusative and locative forms.⁴⁹ The fact that the switch from the null formant to the various vocalic ones happens not between the nominative and accusative, but between the locative and the dative, means that we are looking at a series of AAB patterns here (or, more specifically, AAABB), not ABB. Under the assumption that the various theme vowels are exponents of little *n*, we would thus have a clear set of counterexamples to the NSAG.

Again, however, there is reason to doubt that we have a real problem for the NSAG. Note first that, as with the Ancient Greek cases above, even if these turn out to be legitimate examples of AAB patterns, we still find no ABA, thus the core of the analysis would remain, and we would only have to give up the locality story with the head H. More than this, however, there is some evidence that alternations involving thematic suffixes have a crucially different status than stem allomorphy in the sense intended here, and should be analyzed in a different way such that we do not expect the NSAG to apply. In particular, the thematic suffixes appear to be a regular part of the inflection of most nouns in Classical Armenian, much like the thematic vowels *o*, *a* and *e* of nouns in Spanish and Italian. They are not a restricted irregularity that characterizes certain specific lexical nouns, but rather a systematic portion of the nominal inflectional system. Again, like the Romance theme vowels, the particular thematic vowel that shows up is of course sensitive to the identity of the lexical noun, but this is a matter of the nouns being sorted into a

Table 16: Armenian plural nouns.

	'nations'	'rivers'	'words'
NOM	azg-k'	get-k'	ban-k'
ACC	azg-s	get-s	ban-s
LOC	azg-s	get-s	ban-s
DAT	azg-a-c'	get-o-c'	ban-i-c'
INS	azg-a-wk'	get-o-wk'	ban-i-wk'

⁴⁹ The alternative would be to say that they actually are just parts of the respective case endings, which happen to show allomorphy for inflectional class membership, but this would miss a number of generalizations. E.g. it would be an accident that the vocalic portion of the case ending is the same for both dative and instrumental with each noun and, even worse, that the non-vocalic portion of the endings is the same across classes.

limited set of inflectional classes, not a matter of individual lexical idiosyncrasies. This of course brings us again to the question of the proper theoretical treatment of inflectional classes, for which I am not in a position to make a detailed proposal. What I would like to suggest, however, is that the Classical Armenian themes realize material that is crucially outside of little *n*. This means that they will be more local to the various case heads than *n* itself, and thus able to be sensitive to distinctions beyond that between nominative and accusative, allowing the observed AAB patterns.⁵⁰ It also means that they will be further out from the root, hence explaining the more limited degree to which they show irregularities that are highly lexically specific, as compared to the kind of noun stem alternations I've focussed on in this paper.⁵¹ It is thus important for understanding and evaluating the NSAG to distinguish between stems in the traditional descriptive sense and stem formants in the technical sense of (potentially allomorphic) exponents of the little *n* head.

6.4 Morphologically triggered ≠ allomorphy

Now that I have made my analysis of stem allomorphy explicit in terms of the exponence of little *n*, I can also be more precise about how we can identify alternations as being 'phonological' in the relevant sense and thus not subject to the NSAG. In the discussion of Finnish *katu* above, I noted that an alternation with a plausible phonological trigger won't necessarily respect the NSAG. However, the analysis proposed here makes it clear that, even if the trigger is morphosyntactic, the NSAG may still not be on the hook. Rather, what really matters is the *implementation* of the alternation. If it is in terms of allomorphy for little *n*, it will be subject to the NSAG, because of how the contextual sensitivity of VI rules is constrained. However, if the alternation is implemented in terms of a phonological element or process — even if morphosyntactically triggered — it will not be subject to the NSAG, but to whatever (apparently less strict) conditions apply to such phonological processes. Embick (2012) makes the related argument that, if a pattern of morphological alternation seems to violate independently motivated principles for the locality of conditions on allomorphy, this should be taken as evidence that it must be phonologically implemented rather than true allomorphy.

The pattern of consonant gradation in Estonian, historically related to the Finnish *katu* pattern but synchronically distinct in a number of important points, illustrates this nicely (the Estonian data come from Prince 1980). Consider the inflection of 'story' in Table 17. On the surface, we have an alternation that does not respect the NSAG, with one stem *jutt-* found in the nominative and partitive, and another *jut-* in the accusative and genitive.

Table 17: Estonian 'story'.

NOM	jutt
ACC	jut-u
GEN	jut-u
PART	jutt-u

⁵⁰ In other words, the portion of the NSAG that depends on the locality boundary established by the H head does not apply to them. The portion dependent on the containment analysis of the cases and general principles of allomorphy crucially still will apply, correctly ruling out ABA patterns.

⁵¹ Note that, in general, the morphological indications of inflection class come outside of nominal derivational and irregular stem-forming material. In Romance, e.g., the theme vowels appear outside of derivational suffixes, and in Latin, the various bits of morphology characteristic of the 3rd declension come outside of alternating stem formants like *-ō/in-* in *homō* and *-us/er-* in *genus*. It is thus quite reasonable to not only distinguish inflectional class and thematic suffixes from the stem-formants in little *n* that are subject to the NSAG, but to put them in a position that is further removed from the lexical root and more local to the representation of case.

Sound changes have obliterated the original phonological conditioning for the alternation, so the simple story we told for Finnish consonant gradation won't work. Rather, it seems that the alternation must indeed be sensitive to the morphosyntactic identity of the case categories involved.

Nonetheless, the effect of the alternation can be understood as a straightforward phonological process. The difference between the two stems amounts to lengthening or shortening of the stem-final consonant, thus it need not be analyzed as allomorphy for little *n*. Indeed, Prince (1980) and Caha (2009) propose accounts in terms of a phonological shortening rule, a trigger for which is contained in the suffixes in the accusative and genitive, but crucially not in the suffix for the partitive. In the system of Bye & Svenonius (2012), this could be implemented by saying that the particular exponent we see here for the accusative, for example, contains a segmental /u/, plus a floating autosegmental feature that is prespecified to be associated with the stem-final consonant (cluster).⁵² When added to the other features on that consonant, this feature creates a configuration that violates some relatively highly ranked constraint of the phonology of the language, such that the optimal solution is degemination. The exponent for the partitive, on the other hand, contains only the segmental /u/ without the floating feature. The relevant conflict thus never arises, degemination is not triggered, and the underlying long consonant surfaces, just as it does in the unsuffixed nominative. All of this means that there is no allomorphic alternation between two distinct stem-formants underlying *jutt-* and *jut-*. Rather, there is just one underlying stem form *jutt-*, which may or may not be shortened due to interactions with the phonology of following suffixes. The case-based stem alternation we see on the surface is implemented not in terms of allomorphy for stem-formants in little *n*, but in terms of case suffixes that modify the shape of the material they attach to. We thus have no expectation that the NSAG will apply, and the variation we see in the stem shape cannot constitute a counterexample to the generalization. Analyses in a similar spirit can arguably deal with a number of superficially problematic stem alternations in several other languages.⁵³

Of course, if this sort of mechanism were unconstrained, we could use it to 'explain away' any recalcitrant facts we come across and void the NSAG of any real empirical content. Clearly, we ultimately need an explicit theory of what kinds of phonologically implemented readjustments can and cannot apply to stems that we can use to diagnose whether a specific alternation could be phonologically implemented or must result from actual allomorphy. I will not attempt to formalize the relevant constraints here, because this goes beyond my own expertise and will in any case require extensive investigation. The idea, however, is that the morphologically triggered phonological processes are limited to things like lengthening, shortening and perhaps manipulation of a limited number of phonological features that can be implemented in terms of autosegmental manipulation

⁵² It is entirely possible that the segmental /u/ and the floating feature that triggers shortening are exponents of distinct nodes, given that e.g. other nouns have different vowels showing up in the accusative, but still have the stem-shortening effect. All that matters for present purposes is that the shortening is associated with (some portion of) the structure associated with the case heads, not allomorphy for the little *n* head. Note that if non-segmental material is inserted under little *n* in some language, we would expect that any allomorphy it shows is subject to the NSAG.

⁵³ Examples include the more complicated consonant gradation facts in Northern Saami (Svenonius 2008), Ablaut-type alternations in Sanskrit and Ancient Greek (Johnston 1996) and Umlaut-type alternations in the (old) Germanic languages, as well as case-related variation in the suprasegmental shape of noun stems in a wide range of languages. The general strategy is for the exponence of certain nodes, crucially including case nodes, to include floating, underspecified phonological material (morae, C or V slots, floating suprasegmental elements etc.), which is then accommodated autosegmentally, modifying the basic stem shape in various ways. This can derive the appearance that a process is being triggered by a morphosyntactic category or environment. See Bye & Svenonius (2012) for a lengthy treatment of this approach for dealing with apparent morphological processes.

of defective material posited as part of the exponence of certain nodes (again, see Bye & Svenonius 2012: for extensive discussion). We can get a sense of the limits by considering cases where such processes applying to a single underlying stem form could *not* derive the observed alternations, and allomorphy must be posited instead. Note for example that Estonian has a parallel alternation to the one in Finnish *ihminen* in its cognate *inimene*, as shown in Table 18. Again, there is no straightforward operation, motivated in Estonian phonology, or otherwise formulable in terms of the accommodation of defective floating material, which would change *-ne* to *-se* or vice versa. If we wanted to argue that the alternation here is phonologically implemented, we would have to make an explicit proposal about constraints or operations that could have such an effect, show that it is consistent with the other facts of Estonian phonology, and defend it against alternative analyses. I cannot demonstrate that this is impossible, but it certainly seems unlikely to succeed in this case. This means that we must assume that *-ne* and *-se* are distinct exponents, competing for insertion in the little *n* node, with the allomorphy between them sensitive to the case of the noun. As such, we expect it to respect the NSAG, and indeed — unlike the phonologically implementable alternation with the word meaning ‘story’ — it does.

Given these criteria, certain alternations which we might have liked to include in the evidentiary basis for the NSAG should actually be set aside as potentially phonologically implemented. E.g. the Tamil alternation in nouns like *viidu/viitt-* is easily described in phonological terms, and there are other alternations involving gemination in the language, which are best analyzed in terms of a floating underspecified consonant slot (see Sundaresan & McFadden 2017 on such an alternation related to transitivity in verbs). As with Latin *lapis*, though the alternation here would be consistent with the NSAG, it may be phonologically implemented rather than being actual allomorphy for the little *n* head. Thus it is not actually covered by the generalization and cannot be counted as support for it.

7 Conclusion

In this paper I have provided basic empirical support for the Nominative Stem-Allomorphy Generalization, according to which irregular stem allomorphy on nouns can be sensitive to the distinction between nominative (as well as systematically syncretic cases) and all other cases, but not to any distinctions among the other cases. I have shown that this subsumes a type *ABA pattern, but also *ABC and *AAB (with qualifications), and argued that this tells us something important about both the structure of nouns and their stems and of the representation of case categories. Finally, I have proposed a specific account of the NSAG, where the relevant stem alternations reduce to allomorphy for little *n*, conditioned by the presence of case heads. This is restricted by locality in such a way that while the head distinguishing nominative from all other cases is visible, higher heads marking further distinctions are on the other side of a relevant locality boundary, thus capturing the special status of the nominative. I have left a number of questions open, especially on points of implementational detail in the analysis, but more generally on how the account can be made precise so as to make the right predictions for the related but distinct behavior of pronominal suppletion for case.

Table 18: Estonian ‘person’.

NOM	inime-ne
ACC	inime-se
PART	inime-se-t

Abbreviations

1 = 1st person, 2 = 2nd person, ABS = absolutive, ACC = accusative, DAT = dative, DEF = definite, ERG = ergative, INESS = inessive, INS = instrumental, M = masculine, NOM = nominative, OBL = oblique, PART = partitive, PL = plural, SG = singular, SOC = sociative

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Competing Interests

The author has no competing interests to declare.

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