Syntactic Limits on Phonological Dominance

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1. Introduction: The puzzle

A Dominant-Recessive Vowel Harmony pattern is one in which vowels in a given language are divided into two classes, and where a morpheme with an underlyingly dominant vowel causes all underlyingly recessive vowels in the word to shift to their dominant counterpart. Dominant-Recessive systems are thus neither directional nor exclusively root-controlled. The dominant feature may be introduced by a root or by an affix, and may spread from right-to-left or left-to right. Interestingly, it has been claimed that dominant prefixes are cross-linguistically unattested (Hall et al. 1974, Baković 2000, Moskal 2015). Existing accounts of this No Dominant Prefix Generalization (NoDomPref) couch the observation as a prefix-suffix asymmetry, which must ultimately be stipulated in one way or another. In this paper, we suggest an alternative, where the account is rooted in syntax: No Dominant High affixes (NoDomHigh), relating this to other proposals that posit syntactic constraints on phonological representations, even word-internally (Newell 2008, Fenger 2020). In a nutshell, the proposal is that certain aspects of the phonological representation are fixed at a syntactically-determined point in the derivation (the first phase), and subsequent operations are restricted in the types of phonological change they may impose on the output of prior cycles. We contend that in the realm of vowel harmony, NoDomHigh offers empirical advantages over NoDomPref, including broader coverage extending to the patterning of suffixes and an account of certain attested dominant prefixes.

Kipsigis (Kalenjin, Southern Nilotic) illustrates. Vowels may be + or − [ATR] (Advanced Tongue Root) (see (1)). A [+ATR] vowel in a word causes all other vowels to become [+ATR] (a.o. Halle & Vergnaud 1981, Baković 2000, Casali 2003, Nevins 2010). Examples are given in (2-5), where the vowel in a morpheme that is dominant is boxed in the underlying form. When a word consists of morphemes that only have [-ATR] vowels, the surface form is identical to the underlying form, (2). However, when a morpheme, like the stem, has a dominant vowel, it causes suffixes (3) and prefixes (4) to become [+ATR] as well. Finally, (5) shows a dominant suffix that alters the vowel quality of the stem and the prefix.[1]

(1) Advanced Tongue Root (ATR) Vowels
[+ATR]: /i,e,ɑ,o,u/ [–ATR]: /ɪ,ɛ,a,ɔ,ʊ/

(2) /ka-ɔ-tʃam/ → kaɔtʃam
PST-2PL-love

(3) /ŋ⌈oː⌋k-ɪ/ → ŋoːgi
dog-DEM

(4) /ka-kɪ-p⌈e⌋t / → kɑgibet
PST-1PL-get.lost

(5) /a-tʃam-⌈e⌋/ → ɑtʃɑme
1SG-love-IPFV

Thus, a system like Kipsigis has bi-directional vowel harmony, since specific vowel qualities can spread to the left, like in example (3), and to the right, as shown in examples (4) and (5). Nevertheless,

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[1] Abbreviations in addition to the standard list in the Leipzig Glossing Conventions are: AP = antipassive, ASS = associative, ASS.MOT = associated motion, COLL = collective, DESID = desiderative, DERIV = derivational, DIR = directional, E = epenthetic (vowel), EMPH = emphatic, FREQ = frequentative, HAB = habitual, INCH = inchoative, INCOMP = incomplete, INESS = inessive, ITER = iterative, IT = itive, MID = middle, NTNS = intensifier, STAT = stative, SUB = subordinate, TH = theme, VENT = ventive. Tone is not indicated in the Kipsigis examples.

 Proceedings of the 40th West Coast Conference on Formal Linguistics, ed. Jiayi Lu et al., 173-181. Somerville, MA: Cascadilla Proceedings Project.

Hall et al. (1974) reported that in languages like Kipsigis only suffixes and roots have vowels with a dominant quality. It is now a widely reported claim that dominant prefixes seem to be cross-linguistically unattested (Hall et al. 1974, Baković 2000, Moskal 2015), which Moskal calls the *No Dominant Prefix Hypothesis* (NoDomPref). This is abstractly represented in (6), where a stem can have a dominant vowel, and the quality spreads to the suffix and the prefix; suffixes can change the quality on the stem or the prefix, (6b), but (6c) is unattested.

(6) a. ✓ pref- st[ɛ]m -suff → prɛfstɛmsʊff
b. ✓ pref- stem -s[ʊ]ff → prɛfstɛmsʊff
c. ✗ pr[ɛ]f- stem -suff → prɛfstɛmsʊff

Several proposals have been put forward as accounts for *NoDomPref*. Some of these proposals are supposed to cover prefix-suffix asymmetries more generally, but for the purposes of this paper we only focus on what the claims are with regard to vowel harmony. One type of account deals with the differences between prefixes and suffixes through constraint rankings. Baković (2000: 236-8) proposes that faithfulness constraints in suffixed forms are ranked universally lower than faithfulness constraints in prefixed forms, thereby characterizing the asymmetry between the two types of affixes. Another type of account argues that the juncture between prefixes and the (lexical) root/stem has a different status from that between stem and suffixes (Nespor & Vogel 1986, Moskal 2015, Bogomolets 2020). When prosodic words are built, a suffix will be part of the relevant prosodic unit with the root, whereas the prefixes will not be. This means that the stem and the suffix can prosodically interact with each other, but once this unit is built and prefixes are attached, a prefix cannot alter the prosodic content anymore. For both families of proposals it is not immediately clear why the status of prefixes should be different from the status of suffixes: One could imagine that the ranking of constraints is reversed, or that the juncture in prosodic theories is more special for suffixes than for prefixes. That is, both accounts state that prefixes are special in some way, but there is no account for why this must be so.[2]

Finally, there is a third type of approach that accounts for the *NoDomPref* by assuming that the asymmetry between suffixes and prefixes comes from the syntax. It is independently established that prefixes tend to represent syntactically higher morphemes than suffixes (Julien 2002), and when this observation is coupled with a theory of the syntax-morphology interface where the morphology is interpreted directly from the syntax, and is sensitive to derivational domains, the asymmetry can be explained (Newell 2008). That is, elements in the first domain may have unrestricted phonological interactions, including structure-changing operations, but elements added in later morphosyntactic cycles may be limited in the kinds of interactions that they have with elements of the representation that were fixed on the first cycle. Since prefixes tend to express material outside of the first cycle, there are aspects of the phonological content of material in the first cycle that they cannot alter.

Observe that all three types of proposals mostly focus on the prefixes, and leave, to a large extent, the behaviour of different suffixes aside. However, the third type of proposal, where the asymmetry falls out from syntactic height, makes predictions regarding which suffixes can and cannot be dominant. The work here therefore focuses on potential syntactic influences on the prefix-suffix asymmetry. More precisely, it is predicted that when a suffix expresses syntactic material that is high (similar to the prefixes), they can only be recessive when they participate in vowel harmony (contra Fábregas & Krämer 2020). Thus, the hypothesis we will be testing in this paper is the following:

[2] Baković appeals to the general observation that prefixes tend to be peripheral to suffixes as a kind of functional rationale for why this ranking may be apparently universal, but ultimately acknowledges that his account characterizes but does not explain the NoDomPref generalization. Bogomolets, looking at the phenomenon of lexical accent, also considers a (partial) syntactic motivation for the prefix-suffix asymmetry but ultimately, like Moskal, settles only on a correlation: the special prosodic boundary lines up with a morphosyntactic distinction, though nothing ensures that it must. Bogomolets also considers some prefixes in the languages that she looks at to be 'low' and thus the boundary cannot follow from the morpho-syntax only.

(7) **No Dominant High Affix Hypothesis**:
Syntactically high affixes can only be recessive

This means that under a syntactic analysis to dominance in vowel harmony it is predicted that any affix that is high (whether it is a suffix or a prefix), it will be recessive. The remainder of the paper first explains in more detail what a syntactic analysis would look like, and how it makes specific predictions regarding which affixes can be dominant (Section 2). We test this prediction in the verbal domain of three languages in three families (Kipsigis, Nilotic; Diola-Fogny, Niger-Congo; Chukchi, Chukotko-Kamchatkan) that have played a role in this debate (Section. 3). Finally, we discuss cases that at first glance look problematic, but which require more investigation (Section 4).

2. A syntactic account

Several proposals have been put forward where syntactic phases can have an effect in the morphology and phonology (Marvin 2003, Newell 2008, Fenger 2020: a.o). Put differently, in the mapping from syntax to phonology, word building is sensitive to the domains in the syntax. Specifically, we assume, following various works(Aelbrecht 2010, Wurmbrand 2014, Aelbrecht & Harwood 2015, Harwood 2015: a.o.), that the clause internal domain in the syntax can be Aspect. Before showing the structural representations and steps of the derivation, we consider a piece of evidence that word building seems to make a stop after aspect. One domain where this is visible is for stress assignment in Turkish verbs. Stress is generally expressed at the end of the word in this language (Lees 1961, Kornfilt 1997, Kabak & Vogel 2001: a.o). With regard to verbs, stress falls generally on a suffix, which indicates the edge of the word. That is, stress can fall on any verbal affix, when it is the only affix present on the verb. This is shown for two affixes in (8): stress can fall on the causative, or the progressive. When there are multiple morphemes present, the stress falls on the outermost affix. This is shown in (8c) for the combination of the progressive and the causative. Thus, even though the causative can be stressed, it is not when the progressive follows this morpheme.

(8) a. koş-ˈ**tur**
run-CAUS
‘make run’

b. kal-ˈ**ıyor**
stay-PROG
‘s/he is staying’

c. bit-**ir**-ˈ**iyor**
finish-CAUS-PROG
‘s/he is finishing’

Even though stress generally shifts in combinations of morphemes, there are certain restrictions, specifically when there are aspectual morphemes involved. Specifically, stress can never pass aspect in the verbal domain, (9). Thus, stress can fall on the past tense morpheme, it cannot do so when there is an aspectual morpheme present, (9b-9c).

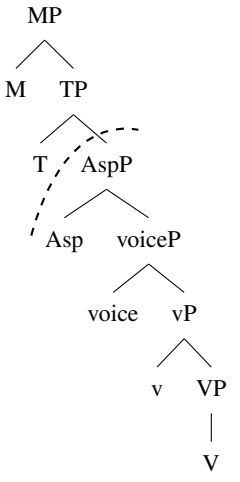
(9) a. kal-ˈ**du**
stay-PST
’stayed’

b. kal-ˈ**ıyor-du**
stay-PROG-PST
‘was staying’

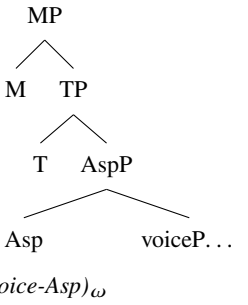
c. konuş-ˈ**ur-du-lar**
speak-HAB-PST-3.PL
‘they used to speak’

This has been taken as evidence that word building makes a stop after aspect. Combined with the idea that syntactically there is a cut-off point after aspect as well, the theory of syntax-phonology mapping is then as follows. The underlying structure is schematically represented in (10a), where the phase head is indicated with a dashed line between aspect and tense. When the phase heads send material to the interfaces, the X^0 inside the phase are spelled out,and treated as a unit in the phonology (10b). We take this to mean that certain aspects of the phonology are fixed at this point, and that subsequent phonological operations are limited in the changes they can effect to this unit. In Turkish, stress is fixed at this point.

(10) a.



b.



If vowel quality in dominant-recessive systems is among the phonological processes that are fixed at this point, then we would predict an asymmetry that to some extent overlaps with NoDomPref, but is slightly different.[3] Rather than referring to a prefix-suffix asymmetry as such, the proposal would be that affixes within the first phase (i.e., lower than T in the verb) would be able to be dominant as they are in first Spell Out domain, but affixes at T and above would not be able to change the quality of vowels in the first domain, including that of the root or stem. In other words, affixes higher than Asp cannot be dominant: NoDomHigh.

The remainder of this paper explores the differences between NoDomPref and NoDomHigh. To begin with, a theory of affix 'height' is needed. As a first approximation, we assume that derivational affixes are low (i.e., within the same phase that contains the root) and that inflectional affixes may split into low (Aspect, voice) and high (Tense, Mood, Agreement). To the extent that prefixes tend to express higher categories than suffixes (Julien 2002), both NoDomPref and NoDomHigh converge on the core cases: both exclude dominant inflectional prefixes and both admit recessive low (derivational and aspectual) suffixes. But the two approaches differ in two respects: (i) under NoDomHigh, dominant prefixes should be possible so long as they are low, e.g., derivational, and (ii) NoDomPref places no restrictions on suffixes, where NoDomHigh excludes dominant high suffixes. These differences are schematized in Table 1. We examine these differences in the next section.

	high INFL	low DERIV	ROOT	low DERIV,ASP	high INFL
low-high	✗	✓		✓	✗
prefix-suffix	✗	✗		✓	✓

Table 1: Patterns for generalizations

3. Case Studies

We consider now the verbal morphology of three languages from different families that have figured in the discussion of dominant-recessive vowel harmony. For each language, we classified all the verbal affixes in the available descriptive sources as either low or high (to the extent possible using the criteria identified above) and as dominant or recessive, where this can be determined in the grammars. The following tables reflect the outcome of this exercise. In addition to the numbers of attested prefixes and suffixes in each category, we have also given abbreviations of the features represented by the affixes in

[3] We do not claim that all phonological properties are fixed at the first phase, and leave open the important issue of what distinguishes phonological properties are fixed at the phase level, such as vowel quality, from those that remain open to be affected by subsequent phonological material, such as tone.

each cell so the reader may see what categories we have taken to be high and low. Numbers given with a plus in parentheses were not in the primary source consulted but added on the basis of a wider literature search and/or field notes, with a question mark indicating uncertainty in classification.

We begin with Kipsigis, a Kalenjin (Niolitc) language, chosen since this is the language group for which the original generalization in terms of a prefix-suffix asymmetry was made in Hall et al. (1974). The table in (11) presents the number of dominant and recessive affixes in Kipsigis, based on Toweett (1979) and verified by the first author's field notes.

(11) The Kipsigis (Kalenjin) verb

	INFL	DERIV	ROOT	DERIV	INFL	
					ASP	AGR
DOM	Ø	Ø		n = 4 APPL, AP VENT, PL	n = 1	Ø
REC	n = 9 PST(3) NEG(1) AGR(5)	Ø(+1?)		n = 7 ASS.MOT(2), IT INSTR, MID STAT, CAUS	Ø	n = 1 AGR

It is easy to see why Kipsigis would be seen in terms of a prefix-suffix asymmetry: there are no dominant prefixes, while there are five dominant suffixes. However, it is also the case that all prefixes in the original source express high inflectional categories. Conversely, there are vanishingly few inflectional suffixes: only two, of which moreover the only dominant one is the low category, aspect. Thus Kipsigis is actually consistent with both characterizations and so indeterminate between NoDomPref and NoDomHigh.

A slightly more complex picture is presented by Diola-Fogny (Niger-Congo), for which morpheme counts from Sapir (1965) and Casali (2018) are given in (12):

(12) The Diola-Fogny verb

	INFL	DERIV	ROOT*	DERIV	INFL	
					ASP	AGR
DOM	Ø	Ø		n = 4(+2) DIR, NEG VENT, ASP?	Ø	
REC	n = 10 FUT(2) EMPH(1) AGR(7)	Ø		n = 3(+5) REFL, INSTR INCH, ITER STAT, CAUS	n = 2 HAB INCOMP	n = 13 AGR(8) PST(3) SUB, NEG

While the situation with the prefixes is similar to Kipsigis (and likewise indeterminate between the two competing approaches), Diola-Fogny has a richer inventory of suffixes. While all 10 high prefixes are recessive, so too are the even more numerous (13) high inflectional suffixes. Only the NoDomHigh approach accounts for this as a single generalization. Put differently, NoDomHigh accounts for the recessive nature of all 23 high inflectional affixes, where NoDomPref provides an account only of the prefixes, slightly less than half of the affixes.

The same point can be made from Chukchi (Chukotko-Kamchatkan), shown in (13), with base morpheme counts from Dunn (1999), supplemented (in square brackets) with examples from Bogoras (1922), Skorik (1977), and Weinstein (n.d.).

(13) The Chukchi verb

	INFL	DERIV	ROOT*	DERIV	INFL	
					ASP	AGR
DOM	Ø	Ø(+3?)		n=2(+6?) INCH	Ø	
REC	n=12 FUT, COND(2) STAT(2) AGR(8)	n = 6 CAUS, APPL AP, RECP NTNS, ...		n = 9 DESID, ITER COLL, A.P. TH, ...	n=2 PROG TH	n = 18 ACTIVE(11) STAT(7)

Like Diola-Fogny and unlike Kipsigis, Chukchi has a rich inventory of inflectional suffixes, and has more suffixes than it has prefixes. Notably, all inflectional affixes are recessive. For those higher than aspect, the NoDomPref generalization is accurate, but accounts for only 2/5 of the affixes (12/30) covered correctly by the NoDomHigh proposal. On the strength of this, NoDomHigh is a stronger proposal, with broader empirical coverage and consistent with the verbal inflection of Chukchi, as well as that of Diola-Fogny and Kipsigis. All else equal, NoDomHigh should thus be preferred on these grounds.

But Chukchi might add an additional point, not seen in Diola-Fogny, regarding the prefixes. Dunn's description lists no dominant verbal prefixes of any sort, but other descriptions contain morphemes described as domainant prefixes, apparently in violation of the putative NoDomPref generalization. An illustrative example, with the intensifier prefix *kət-* is given in (14):[4]

(14) /k͡ət-ɣənt-**e**t-rkən-**i**-tək/ → kət-ɣənt-**a**t-rkən-**e**-tək
NTNS-run-DERIV-ASP-E-2PL
'Run!' (Skorik 1977:77)

We have so far found three such prefixes, all, like the intensifier, derivational rather than inflectional, compatible with the NoDomHigh proposal and problematic for the NoDomPref generalization.[5]

As far as the verbal systems of these three languages are concerned, we see that the prefix-suffix asymmetry seen in Kipsigis can be better cast as a special case of a broader generalization, stated in terms of high versus low affixes: NoDomHigh. This generalization encompasses all of the inflectional prefixes considered, but extends as well to the even larger class of high inflectional suffixes. The near absence of dominant prefixes is in part an accident of the cross-linguistic tendency for prefixes to be high, rather than a special property of prefixes as such. Potential evidence in favour of that view comes from the handful of apparent derivational prefixes in Chukchi, some of which are indeed dominant.

4. Challenges: High Dominant Affixes?

In this section, we present certain cases which, at first glance, look problematic for our 'No Dominant High Affix Hypothesis'. These all involve affixes which are dominant despite potentially being high in their domain, and they seem to fall into two categories: i) affixes in the nominal/adjectival domain, and ii) fusional morphemes. We discuss ways in which we can make sense of these data in our theory, but we emphasize that these thoughts are preliminary, and should rather be seen as avenues for further research.

The first two puzzles come from Kipsigis and Chukchi, languages that we already discussed in the previous section. In Kipsigis, the markers *-eːn* and *-iːn*, used in plural agreement of adjectives (15) and

[4] This illustrates the widely discussed aspect of the Chukotko-Kamchatkan languages that some morphemes with no full vowels are lexically/diacritically specified as [+dominant] (see Kenstowicz 1979: among others).

[5] The other two are *əm-* 'all, whole' (Skorik 1961: 271) and *ʔaqa-* 'impossible to' (Weinstein n.d.). It should be noted that all three morphemes, like many other derivational affixes in Chukchi, are at least historically related to independent roots, and thus an analysis in terms of compounding might also be possible, but this is not clear - some affixes show phonological differences to their cognate roots. As a property root, *kət* is given as recessive in Volodin & Skorik (1997: 26). We thank Alex Vaxman for his assistance with this portion of the research.

participles (16) respectively, are dominant despite spelling out agreement features, i.e. high inflectional material.

(15) /mʊgʊl-[eː]n/ → mugule:n
round-PL

(16) /jaːt-aːt-[iː]n/ → jɑːtɑːtiːn
open-PTCP-PL

In Chukchi, there are dominant case affixes, such as the associative circumfix in (17) and the dative/allative suffix in (18); since case morphology usually spells out heads that are high in the nominal domain, these data look challenging for our hypothesis.

(17) *Associative circumfix in Chukchi*
/ɣ[e]-kʔeli-m[a]/ → ɣakʔalema
ASS-hat-ASS
'with a hat' (Dunn 1999:332)

(18) *Dative/Allative suffix in Chukchi*
/umk-čəku-ɣt[ə]/ → omkəčəkoɣtə
bush-INESS-ALL
'into the bushes' (Dunn 1999:283)

However, the structure that we proposed in (10a), where Aspect is the relevant phase head, makes no claims about phases/domains beyond verbs. In other words, according to our theory, no affix can be dominant if it spells out a head higher than the head introducing a phase boundary, but it is possible that this head is different (or absent altogether) in the nominal and adjectival domains. We hypothesize that this is indeed the case: there is no phase head similar to Aspect in the nominal and adjectival domain, which would explain the Kipsigis and Chukchi data above.[6] It is worth noting that a similar claim has been made by Bobaljik (2008: fn.7), albeit tentatively. More specifically, Bobaljik (2008) discusses a noun-verb asymmetry in epenthesis in Itelmen (Chukotko-Kamchatkan), which he accounts for by arguing that epenthesis applies cyclically in verbs, but not in nouns; he then speculates that the lack of cyclicity in nouns may be due to the lack of a phase boundary in the nominal domain. Asymmetries between nouns and verbs are well-documented (e.g. Bobaljik 2008, Smith 2011, Hyman 2019), with a cross-linguistic tendency for nouns to show more phonological distinctions (and thus less 'regularity') than verbs (Smith 2011). It is thus an interesting topic for further research whether (at least some of) those asymmetries can be explained by different phasal heads in the nominal and verbal domains.

The next interesting puzzle comes from Karimojong (Eastern Nilotic; Uganda), where ATR harmony can be triggered by "the TAM marker which is at the right edge of the verb" (Lesley-Neuman 2007: p.33), i.e. the rightmost inflectional suffix in the template shown in (19). Both the peripheral position of this affix and its characterization as 'inflectional' make it a candidate for the spellout of a high head, contra the predictions of our hypothesis.

(19) *Template of the Karimojong verb*:
INFL - DER - ROOT - DER - DER - INFL

What is interesting about the Karimojong case is that these peripheral TAM markers are always fusional and express: Voice, Aspect (=low heads in our classification), Tense, Mood, and Agreement (=high heads in our classification). An example is given in (20), where the rightmost suffix spells out (passive) voice, tense, mood and agreement.

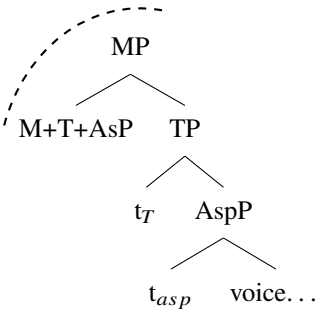
(20) ɛ-to-dóŋ-ɑn-ɑkín-**jò**
3S/P-CAUS-pinch-FREQ-DAT-**PASS.PRS.3S/P** (Lesley-Neuman 2007: p.16)

These data exemplify the challenge posed by fusional morphology more generally: which head do fusional exponents spell out? If they simultaneously spell out multiple heads, which mechanism is responsible for fusion and what are its effects on domain determination? It is necessary to find answers to these questions to fully understand the Karimojong data, but at least two solutions seem plausible at this

[6] In the case of Kipsigis, there is independent evidence from suppletion which also points towards the adjectival plural marker *-e:n* being in the same domain as the root. The adjective *o:* 'big' is suppletive in the presence of the plural marker: *e:tʃ-e:n* 'big(pl)'.

point. First, it is possible that the dominant suffixes spell out Voice heads (=low), which have different allomorphs conditioned by tense and mood. Second, if head movement is involved in the creation of fused morphemes, as illustrated in (21), there is the possibility of domain extension along the lines of den Dikken (2007) and Bobaljik & Wurmbrand (2013), among others.

(21)



While the cases discussed so far could receive a systematic explanation, we close this section by pointing out the existence of affixes whose syntactic height cannot be easily determined based on descriptions in traditional grammars. An example of this challenge comes from Turkana, which belongs to the Eastern Nilotic family, same as Karimojong. According to the description in Dimmendaal (n.d.), the verb has a slot that hosts number agreement with subjects. This number agreement morpheme has many allomorphs, two of which (*t-è*, *t-o*) are dominant. If these affixes spell out standard (high) number agreement, these data are also problematic for our hypothesis. However, the two dominant affixes are used in specific aspectual environments: *t-è* in combination with the aspectual marker *-e* and *t-o* with dynamic verbs (in the indicative). The question that arises thus is whether these are really high agreement morphemes or morphemes (low) in the Aspect area (perhaps related to pluractionality). These data highlight the need for a careful syntactic investigation of the relevant affixes in studies of vowel harmony.[7]

5. Conclusion

Recent theories of the syntax(-morphology)-phonology interface provide a model in which some phonological properties (e.g. Turkish stress or Japanese pitch accent) are fixed at the first phase/cycle within a word (e.g. Newell 2008, Fenger 2020). In this paper, we have extended the empirical domain of these theories by investigating languages with a dominant-recessive system of vowel harmony. The prediction made is that affixes that spell out of heads higher than the phase boundary (=introduced by the Aspect head in the verbal domain) should not be able to change the vowel quality of earlier vowels. This leads to the *No Dominant High Affix Hypothesis*, which we have argued provides a promising alternative to the *No Dominant Prefixes Generalization*, an established generalization with no explanation. While there is overlap for the core cases (since prefixes tend to spell out high/inflectional material), our hypothesis provides additional empirical coverage since it can explain why almost all inflectional suffixes are recessive and why some dominant (derivational) prefixes are attested.

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[7] Both Turkana and Karimojong are special among languages with dominant-recessive harmony systems in having dominant [-ATR] morphemes (=morphemes with [-ATR] vowels which cause all other vowels to become [-ATR]) in addition to dominant [+ATR] morphemes. In other words, dominance cannot be stated in purely phonological terms in those languages. There is therefore the possibility that the existence of (potentially) high dominant affixes is somehow related to this property of their harmony system; it is, however, not clear what this relationship would be.

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Proceedings of the 40th West Coast Conference on Formal Linguistics

edited by Jiayi Lu, Erika Petersen, Anissa Zaitsu, and Boris Harizanov

Cascadilla Proceedings Project Somerville, MA 2024

ISBN 978-1-57473-482-9 hardback

Ordering information

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Kouneli, Maria, Paula Fenger, and Jonathan David Bobaljik. 2024. Syntactic Limits on Phonological Dominance. In *Proceedings of the 40th West Coast Conference on Formal Linguistics*, ed. Jiayi Lu et al., 173-181. Somerville, MA: Cascadilla Proceedings Project. www.lingref.com, document #3709.