Circumfixation *

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Abstract

This is a survey article on circumfixation understood very broadly. Section 1 discussed all imaginable options on how an affix could be combined with the stem to form a circumfix. Section 2 will discuss possible attestantion of the three available options. Section 3 is an attempt at explanation as to why there are no true monomorphemic circumfixes.
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1 What is or what could be circumfixation

Following the traditional description, prefix precedes the stem, suffix follows the stem, infix lays inside the stem and thus breaks the stem in two parts, interfix lays between two stems, while circumfix circmuscribes the stem, as sketched in (1).

(1) a. prefix – AFFIX-*stem*
b. suffix – *stem*-AFFIX
c. infix – $stem_1$-AFFIX-$stem_1$
d. interfix – $stem_1$-AFFIX-$stem_2$
e. circumfix – AFFIX-*stem*-AFFIX

Circumfixation was described as a phenomenon not just because it is a theoretical option. There are a number of circumfixes in various languages that roughly follow the scheme given in (1e). Looking at the scheme alone, we can see that it allows for more (hypothetical) options. Namely an affix that circumscribes the stem could in principle be a single affix that is realized as two affixes split by the stem, much like a stem can be split in two parts by an infix, (2a), or it could ba a combination of two (independent) affixes, a prefix and a suffix that work together, (2b). A third type of affixation, which could also qualify as a circumfix, if we understand a circumfix as an affix that is both a prefix and a suffix, is an affix that swithes sides and alternates between being a prefix and a suffix and thus occurs on both sides of the stem, just not at the same time, (2c).

(2) a. true (monomorphemic) circumfix – AFFIX_1-*stem*-AFFIX_1

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b. bimorphemic circumfix – AFFIX$_1$-*stem*-AFFIX$_2$
c. alternating affix – AFFIX$_1$-*stem* ~ *stem*-AFFIX$_1$

Following Beard (1998) among others, one of the claims I want to make in this chapter is that the only type of circumfixes we can find in natural languages are bimorphemic circumfixes sketched in (2b), while the other two circumscribing affixes sketched in (2a) and (2c)—true monomorphemic circumfixes and alternating affixes—do not exist in natural languages.

As it is basically impossible to prove something does not exist in any language, all I will try to show is that certain well documented cases of apparent circumfixation are not actual cases of cirfumfixation. This too is in principle impossible to show directly, but we can claim there is an alternative explanation for the cases under discussion and given the simpler solution for the more common cases or reported circumfixes, set a new benchmark for true monomorphemic circumfixes. The idea being that if a true monomorphemic circumfixes indeed existed, it would exist to save some morphonological requirements of a particular language. So it is easily imaginable that if a true circumfix—a single morpheme that is located on both sides of the stem—would really exist, we should also find (monomorphemic) circumfixes that would alternate their shape on the two sides of the stem, something like what is sketched in (3), this would deffinitely prove we are seeing a single affix on both sides of the stem.

(3) (AFFIX-*stem* ~) AFF-*stem*-IX ~ AF-*stem*-FIX (~ *stem*-AFFIX)

This alternation seems obvious enough that it could not simply slip past our eyes. My claim is thus that none of the cases we observe and could potentially be true circumfixes have the properties that would unequivocally show they are true monomorphemic circumfixes.

Given what was said so far, there are arguably no true monomorphemic circumfixes, as stated in the following generalization:

(4) **A single affix has only one attachment site. It is either a prefix, infix, or a suffix to a single stem** (An infix can turn into an exfix through some morphophonological process (or vice-versa) but an affix cannot (freely) alternate between being a prefix or a suffix or appear on both sides at the same time.):
a. *AFF-*stem*-IX (/ AF-*stem*-FIX)
b. *AFFIX-*stem* ~ *stem*-AFFIX

In the remainder of this chapter we'll go over a couple of cases that seem to be close to one or the other unavailable option and show they aren't either. I'll try to explain why we should not find this outcome surprising.

Before we continue I should probably explain how I understand identity of affixes/morphemes. In all theories of word-formation lexicon is populated by morphemes, but theories differ as to how much modification an item from the lexicon can exhibit. If derivation starts in syntax and ultimately the syntactic structure (either through features on a node or through the structure itself) determines which morpheme will be chosen from the lexicon, the identity of the morphemes is linked to what enters the derivation as a unit. A number of morphological processes happen as part of the syntactic derivation and thus operate on structure that isn't yet populated by morphemes, these processes cannot alter the shape of morphemes. If morphology exists as part of the lexicon it similarly uses

items storred in the lexicon they would just enter the derivation of a particular word at a different point. Identity of the morpheme should thus be understood as a separate listing in the lexicon. The shape of the morpheme/affix can be altered by (morpho)phonological process as they follow both the syntactic and the morphological derivation. The main difference between theories comes from what type of processes/rules are allowed. Roughly speaking, if a rule can be established, a single morpheme is at play, but if a rule cannot be established, different morphemes are apparently at play.

2 Attested and unattested types of circumfixes

There seems to be consensus in the literature that there are no proper circumfixes of the type mentioned in the previous section in natural languages, so what I am saying here is nothing new. Spencer (1998) describes circumfixation as simultaneous prefixation and suffixation of (for the most part) independently attested prefixes and suffixes, usually with rather different meanings or functions. Similarly Beard (1998) claims circumfixation is "merely extended exponence involving a prefix and a suffix simultaneously." (Beard 1998:p. 62)

2.1 Circumfixes

A well-known example of a circumfix is the German past participle affix *ge*-V-*t* as in (5a). Similar circumfixes are found in many other languages, e.g. the collective circumfix in Dutch (5b), the Tagalog object trigger circumfix (5c), or depending on one's understanding or definition of circumfixes even the Slovenian superlative circumfix, (5d), or etc. (cf. Lieber 1992).

(5) a. mach-en "to do" > **ge**-mach-**t** "done" — German
speil-en "to play" > **ge**-speil-**t** "played"
b. berg "mountain" > **ge**-berg-**te** "mountain range" — Dutch
boom "tree" > **ge**-boom-**te** "woodland"
c. higanti "revenge" > **pag**-higantih-**an** "to take revenge on" — Tagalog
init "heat" > **pag-**init-**an** "to be the subject of agitation or anger"
d. čist "clean" > **naj**-čist-**ejši** "the cleanest" — Slovenian
temen "dark" > **naj**-temn-**ejši** "the darkest"

Both parts of the circumfixes given in (5) exist as either an independent prefix or an independent suffix. So for example, the prefixal part of the Slovenian circumfix *naj-* exists as an independent prefix with comparable somewhat superlative interpretation, (6a), while the suffixal part *-ejši* is the comparative suffix, (6b).

(6) a. prej "earlier" > **naj**-prej "first" — Slovenian
prvo "first" > **naj**-prvo "at first"
b. čist "clean" > čist-**ejši** "cleaner"
temen "dark" > temn-**ejši** "darker"

As shown in (6), the Slovenian two morphemes are not only two separate morphemes, but are also clearly not a single circumfix morpheme, as the two get added onto the base consequtively and their eventual interpretation ends up being compositonal. This is not always the case for "true" circumfixes. Compositionality of the German past participle

is more obscure. *Ge-* is a prefix that forms the irregular past participle also with another suffix, (7a), but it is also used to form collective nouns, (7b), and deverbal nouns, (7c), while the suffix *-t* is also used with verbal stems to from deverbal adjectives, (7d), and to form the third person singular present tense form, (7e).

(7) a. schlaf-en "to sleep" > **ge**-schlaf-en "slept" German
laufen-en "run" > **ge**-lauf-en "run"
b. Rippe "bone" > **Ge**-rippe "skeleton"
Stein "stone" > **Ge**-stein "rock"
c. schenk-en "to gift" > **Ge**-schenk "gift"
red-en "to talk" > **Ge**-rede "chatter"
d. randomisier-en "to randomize" > randomisier-**t** "randomized"
invertieren "invert" > invertier-**t** "inverted"
e. mach-en "to do" > mach-**t** "(s)he does"
sing-en "to sing" > sing-**t** "(s)he sings"

Similarly, the Dutch circumfix *ge-…-te* is composed of an independently existing prefix *ge-*, which is used to form past participles, (8a), and to form deverbal action nouns, (8b), while the suffix *-te* can be the past tense singular suffix for weak verbs, (8c), or the nominalizing suffix attaching to adjectives, as in (8d).

(8) a. gev-en "to give" > **ge**-gev-en "given" Dutch
lop-en "walk" > **ge**-lop-en "walked"
b. bakk-en "to bake" > **ge**-bak "cake"
schenk-en "to gift" > **ge**-schenk "gift"
c. werk-en > werk-**te** "worked"
d. breed "broad" > breed-**te** "width"
lang "long" > leng-**te** "length"

An even more interesting case is presented with the Tagalog circumfixes, of which subparts also exist as separate morphemes, but the two occurences of the same morpheme, do not participate in morphological processes with the same stem. So for example the subparts of the circumfix *pag-…-an*, from (5c) above, are both derivational affixes. The prefix *pag-* is used to form deverbal nouns from verbs prefixed with *mag-*, (9a), while the suffix *-an* is used to form a type of adjectives from nouns, as in (9b) (all Tagalog examples are from Schachter and Otanes 1983).

(9) a. gawa "make" > **pag**-gawa "making" Tagalog
b. putik "mud" > putik-**an** "virtually covered with mud"
dugo "blood" > dugu-**an** "virtually covered with blood"

The Tagalog morphology is very much simplified here as not all affixes can be used with any type of noun/adjective/verb and several of the mentioned affixes can be used with various types of words, but generally, the Tagalog case seems to present a purer form of the circumfix. Although the two parts of the circumfix do exist individually they do not seem to equally productively participate in morphological operation with the same stem. The two parts are used as separate morphemes with (seamingly) different interpretation and with different set of words. The meaning of this purer form of a circumfix is thus at least apparently non-compositional.

The non-compositionality of such circumfixes is very suggestive for the idea that

each circumfix is really a single morpheme, why would otherwise two independent morphemes be added to the stem to yield a specific non-compositional interpretation. But as there are apparently no reported cases of circumfixes not being composed from otherwise existing affixes, the simpler conclusion seems to be that circumfixes really involve two morphological processes rather than one and that the observed non-compositionality is just apparent as we don't understand the syntax/morphology of that particular language and that particular word-formation process well enough.

There seem to be also theoretical reasons to reject the existence of monomorphemic circumfixes, which I'll get into in section 3, but for now let's just say that if a circumfix was a single morpheme, we would also expect it to participate in various alternations, like for example the one sketched in (3). We would expect similar alternations for the simple reason that otherwise we would not have any evidence of this being a single affix. At least from the perspective of learnability, the only possible circumfix would be one which would not be permanently a circumfix with the same shape. But circumfixes of the type given in (10) do not exist in natural languages or at least haven't been described yet (cf. Marušič 2003).

(10) a. magan + bili > **ma**-bili-**gan** hypothetical Circumfixian
b. magan + akan > **mag**-akan-**an**

Note that Tagalog, for example, has a circumfix like the one given in (10b): *mag-an* and *pag-an*; and that it also has syllable-structure-sensitive morphology, as shown with the infamous *-um* infixation in (11), yet none of the circumfixes reported to exist in Tagalog exhibit any alternation of this sort.

(11) a. ulan "rain" > **um**-ulan "to rain" Tagalog
b. kanta "sing" > k-**um**-anta "to sing"
Data taken from Wikipedia page Tagalog Grammar
(https://en.wikipedia.org/wiki/Tagalog_grammar)

So given that prosodically it should not be inconceivable to have such an alternating circumfix and given the fact that we do not see one we can conclude that neither what we are seeing in Tagalog or any other language that uses circumfixes is an instance of true monomorphemic circumfixes as they arguably do not exist.

2.1.1 Egyptian Arabic

A possible attestation of a circumfix alternating with a single morpheme is observed in sentence negation in Egyptian Arabic. Negation is expressed either with the circumfix *ma-…-š* on the verb as in (12a) or else with a separate prosodic word *miš* in equational sentences with a nominal, adjectival or participial predicate, as shown in (12b).

(12) a. negation on the verb

(i) maktibš
NEG-write-NEG
'I do not write

(ii) mansaaš
NEG-forget-NEG
'I do not forget'

(iii) makatabš
NEG-katab-NEG
'He did not write'

b. copular clauses Egy. Ar.

(i) miš ilbint
NEG girl
'is not the girl'

(ii) miš kibiir
NEG big
'is not big'

(iii) miš maktuub
NEG written
'is not written'

Abdel-Massih (1975/2011)

Given the phonological similarity of the two alternating forms of negation (the circumfix version *ma-…-š* and the independent word *miš* differ only in the quality of the vowel), morphological relatedness seems a given. Arabic is independently a very good candidate to look for similar morphological phenomena because of its discontinuous morphology. Arabic consonantal root is typically considered an underlying morpheme to which vowels are added in a particular non-contiguous pattern (see e.g. McCarthy 1981, Hoberman 1988, Prunet, Béland, and Idrissi 2000). But as argued in Marušič (2003) *miš* should not be seen as a single split morpheme in (12a) and consequently the alternation shown in (12) is not the alternation of the relevant kind discussed above, regardless of the additional difference that this alternation is not conditioned phonologically or morphologically but syntactically. The two parts of the negation affix simply behave as two independent morphemes.

A particularly interesting fact is shown in (13). When two negated verbs are coordinated, the prefixal part of the negative circumfix *ma-* shows up only on the first verb in the coordination, while the suffix *-š* is added to both verbs. The fact that only half of the circumfix can be realized seems like a good argument to treat the two parts of the cicrumfix as two separate morphemes.[1]

(13) ma?araaš wala katabš
ma-read-š or write-š
'He neither read nor wrote' Egyptian Arabic

Marušič (2003) provides two more arguments for the same conclusion that the *ma-…-š* circumfix is not an instance of a monomorphemic circumfix. Even historically, this circumfix is composed of two independent syntactic elements. Supposedly it is derived from the original negative morpheme *ma* and the word *šay?* meaning "thing" which was reduced to *š* and could potentialy present a developmental stage on the negative cycle (van Gelderen 2009) (Marušič 2003, Robert Hoberman p.c.).

(14) Ma aktib šay > *maaktibš*
NEG write thing NEG-write-NEG
"I don't write"

The negative morpheme is thus apparently composed of two independent affixes that surface as a separate prosodic word simply because they are added to a null element. Given that Egyptian Arabic has a null copula (Alharbi 2017), the two affixes end up being attached to one another.

[1] I'm using '?' for the glottal stop in this version of the paper for simplicity reasons.

Without going into the details of syntactic analysis of copular clauses or negation, we can conclude that the observed alternation does not involve a monomorphemic circumfix but rather two independent affixes that incidentally end up realized next to each other because of the phonologically null stem.

2.1.2 Chukchee

Spencer (1998) notes that although for the most part the prefixal and the suffixal part of a circumifix are independently attested, this is not the case for the negative form of the verb in Chukchee (a Chukotko-Kamchatkan language, spoken in the extreme North-East of Russia) which is formed by "a circumfix *e-…-ke*, neither part of which supposedly occurs elsewhere except in the privative circumfix added to nouns *e-…-ki*, (15) (see also Muravyova 1998).

In Chukchee nominal negation is expressed with a *a-…-ka* or *e-…-ke* circumfix as shown in (15). Choice between the two versions of this circumfix is determined by vowel harmony.

(15) titi 'needle' > e-titi-ke 'without a needle' Chukchee
jatjol 'fox' > a-jatjol-ka 'without a fox'
pipiqəlg 'mouse' > e-pipiqəlg-ə-ke 'without a sister' Spencer (1998)

The two parts of the negative circumfix apparently do not exist separately as individual affixes, but the alternation this circumfix exhibits suggests that it is not a disjoint affix.

Kenstowicz (1994, citing Skorik 1961) reports that Chukchee regularly deletes the first vowel in hiatus, unless the second vowel is a schwa, in which case the schwa is deleted. When this circumfix is added to the vowel initial roots, the hiatus is resolved with an unconditional deletion of the affix vowel, (16). The vowel of the prefix does not show up on the other side of the word even in cases an epenthetic vowel needs to be inserted between the root and the suffix, (16b). If the prefix and the suffix both belong to the same morpheme, to the same (adjacent) string why is it that the prefix (or the prefixal part of the circumfix) is simply deleted?

(16) a. ococ 'leader' > ococ-ka 'without a leader'

b. utt 'wood' > utt-ə-ke 'without wood' Spencer (1998)

Interestingly, the prefix deletes even when the root vowel is a schwa, (17) even though schwa is the weakest vowel in Chukchee in other hiatus resolution contexts.

(17) ən?e 'elder brother" > ən?e-ke 'without my elder brother"
ənpənacgə 'old man" > ənpənacgə-ka 'without the old man" Spencer (1998), Krause 1980)

One way of understanding (17) would be to assume no prefix was added to the stem, since otherwise the schwa would not survive hiatus resolution. But if the prefixal part of the circumfix was not prefixed, why wasn't it realized on the other side of the stem/root?

The simplest anaylsis is to assume the prefix and the suffix of the negative circumfix in Chukchee are two independent affixes each with their own attachment specifications.

2.2 Movable affixes

Affixes that move around the stem have been reported in several languages. I will briefly present three cases that were reported to involve this type of circumscribing affixation: verbal affixes in Afar (Bliese 1981, Fulmer 1991) and Huave (Noyer 2001), and negation in Alabama (Montler and Hardy 1991). Marušič (2003) argues that neither of this involves a productive morphological process that would place the affix around the stem, so that neither of these cases involve proper circumfixes/side-switching affixes.

2.2.1 Afar

In Afar (a Cushitic (Afro-Asiatic) language spoken in Ethiopia and Djibuti) the person, mood, focus and tense verbal affixes are realized as either prefixes or suffixes depending on the stem they attach to. Bliese (1981) divides the Afar verb stems into two classes, the prefixing and the suffixing class. (18) and (19) give examples with the second person affix -t and first person plural affix -n. The consonantal person affix is a prefix to vowel initial roots and a suffix to consonant initial verb roots.

(18) *prefixing stems*

a. t-okm-é
you-eat-perf

b. t-eexeg-é
you-know-perf

c. n-irgic-é
we-see-perf

(19) *suffixing stems* Afar

a. suk-t-é
had-you-perf

b. bah-t-é
bring-you-perf

c. dagi-n-é
be_small-we-pref

(Bliese 1981)

While it is clear that the same or at least superficially homophonous morphemes apparently exist as either prefixes or suffixes in Afar, this is likely not a productive morphological process and as such potentially stems out of the lexicon, where verbs are specified as either prefixal or suffixal. If this "process" is something irregular (stored in the lexicon) it is apparently not part of the grammatical system. Marušič (2003) provides several arguments to argue for this conclusion based on Bliese (1981) and Fulmer (1991).

As noted by Bliese (1981) the two classes of verbs cannot be fully phonologically or morphologically determined. All consonant-initial and all /a/-initial stems belong to the suffixing class, but not all non-low vowel initial stems belong to the prefixing class. Additionally, given that the prefixing class of verbs is a small closed class of verbs, while the suffixing class is much bigger, and productive, the determination into classes indeed seems to be done arbitrarily in the lexicon.

The two classes of verbs do not differ only in where person affixes attach but rather in a number of other morpho-phonological processes. For example the prefixing verbs change their stem vowels to /a/ when they are followed by a certain kind of suffix, while no such vowel changes occur in the suffixing class of verbs. Similarly, in the prefixing class of verbs, mid internal stem vowels raise in the imperative, while no such vowel quality change is observed in the suffixing class verbs.

A very strong argument towards this conclusion is offered by the fact that other affixes are also added to the verb stems in the same distribution even though they aren't monoconsonantal as is the case with the benefactive affix that has the prefixal form *Vtt-*

where V represents a copy of the stem initial vowel: e.g. *t-ott-o(o)b'be* "you-benef-heard", *t-ott-oogor're* "you-benef-hit". And most convincingly for our argument this is true also of the affixes that form verbal nouns, which are not even homophonous as prefix and affix. Verbal nouns are formed from prefixal verbs with the prefix *m-*, and from suffixal verbs with a suffix *-o*. In addition to the prefix, prefixal verbs also change all of their vowels to /a/, while no vowels change is observed with suffixal verbs, (20).

(20) a. m-ab'l-a 'seeing' (t-ub'l-e – 'she-see-perf')
m-ak'm-o 'eating' (t-ok'me – 'she-eat-perf')
b. a'b-o 'doing'
da'g-o 'digging'
gey-'t-o 'finding'

These facts suggest verbs are divided into two classes, each associated with a different set of morphological processes. This further suggests the two affixes that we observed to be in alternation are likely two independent affixes, which means the Afar prefix-suffix alternation is not an instance of a true side-switching affixation.

2.2.2 Huave

Noyer (1993) analyzed certain verbal affixes in Huave (a language isolate from Oaxaca, Mexico) as side-switching affixes that migrate to satisfy prosodic markedness constraints. Marušič (2003) argues this view is not entirely correct. I will briefly summarize some of the arguments presented there.

In Huave the theme vowel attaches either to the left or to the right of the verbal root to modify the verbal argument structure. Verbs with suffixal themes are reflexives, middles or statives, (22) while their corresponding prefixed verb is either transitive or causative, (21).

(21) transitive/causative

a. a-wants
CAUS-turn
'drill' (lit. 'make turn around')
b. a-ts'ey
CAUS-go-down
'swallow' (lit. 'make go down')
c. a-wit'
CAUS-rise
'raise'
d. a-ɋnd
CAUS-hang
'(s)he hangs [sth.]'

(22) reflexive/middle/stative Huave

a. wants-a-
turn-REFL
'turn [self] around'
b. ts'ey-e-
go-down-REFL
'get [self] down'
c. wit'-i-
rise-REFL
'rise'
d. ɋnd-o-m
hang-REFL
'(s)he is hanging' (nonpast)
Noyer (1993)

Given that the position of this argument-structure-changing morpheme is apparently syntactically conditioned, we shouldn't worry about the theme vowel, but interestingly, together with the theme vowel other affixes switch positions too. Concretely, the past tense affix *t-* / *-t*, the nonpast tense affix *m-* / *-m*, and the 1st person affix *n-* / *-n*. Noyer (1993) analyzes the positioning of these affixes as a phonological alternation as, as he

claims, these affixes are all specified as a prefix in the lexicon, but in order to satisfy the markedness constraint Final-C (all native verbs end with a consonant in Huave), switch their side of attachement and become suffixes when the theme vowel is a suffix.

All this makes it look like the tense and the 1st person affixes are an instance of circumscribing side-switching affixes, but things are as always a bit more complicated. Marušič (2003) provides several arguments why the side-switching affixes should not be seen as a type of (monomorphemic) circumfixing affixes. The side-swithing affixes are not always the outermost suffixes, as shown in (23). They can be followed by other suffixes which satisfy the Final-C requirement.

(23) a. wit'-i-t-as-on
raise-TH-past-1-aug
'we (incl.) rose' Huave

b. sa-wit'-i-n-on
fut-raise-TH-1-aug
'we (excl.) will rise'

Additionally, there are more affixes that can be realized as either a prefix or a suffix in Huave. So for example person affixes show the same kind of alternating alignment, but they clearly do not involve a single affix unspecified for direction of attachment as the person affixes do not have the same shape in the two positions. (24) gives the atemporal paradigm for the transitive verbs, where the person affixes and the theme vowel are prefixes (Stairs and de Stairs 1981 call this form the indicative) and (25) gives the atemporal paradigm for the reflexive verbs, where the person affixes and the theme vowel are suffixes. The paradigms are taken from Stairs and de Stairs (1981), who do not separate the theme vowel from the person affix, which is why all prefixes are given as either V- or CV- and all suffixes as -VC(...).

(24) atemporal paradigm for trans. Vs

person	singular/dual	plural
1	sa-	sa-...-an
2	i-	i-...-an
1,2	a-	a-...-an
3	a-	a-...-an

(25) atemporal paradigm for refl. Vs

person	singular/dual	plural
1	-an	-anon
2	-ar	-aron
1,2	-amor	-amoots
3	-am	-amoj

As we can see, none of the person affixes for reflexive verbs matches the corresponding person affix in the indicative verbs. Whereas in (24) the non-first person prefixes are all just vowels (no consonant), their suffix correspondents are all at least -VC.

(26) and (27) give the paradigm for the future and the imperfective for transitive and reflexive verb forms respectively. In this case the first person affix and the third person affix share the same consonant appearing as prefix and as suffix on different sides of the theme vowel. Same correspondence is not observed for other affixes.

(26) fut. and imperf. – trans. Vs

	singular/dual	plural
1	na-	na-...-an
2	me-	me-...-an
1,2	ma-	ma-...-aats
3	ma-	ma-...-üw

(27) fut. and imperf. – refl. Vs

	singular/dual	plural
1	-an	-anon
2	-amear	-amearon
1,2	-amor	-amoots
3	-am	-amoj

The conclusion that Huave prefixes and suffixes for the same role are one and the same affix seems unwarranted. Clearly some of the side-switching affixes are different affixes when they are realized as prefixes and suffixes such as the first person singular affixes in (24) and (25) . The simpler proposal seems to be that different argument structure of verbs means these are located within different syntactic structure, which further determines the attachment of different affixes and as the affixes attach to different verbal stem, they need not be the same affix. As explained above, in my understanding of identity, if this was a single affix, this should be a single element entering the derivation and being repositioned because of some morphophonological requirements. So as morphophonological requirements cannot be stated, it cannot be that the prefix and the suffix are a single element.

The claim is that the observed side-swiching affixation in Huave is not a coonsequence of a productive morphophonological process or that this isn't an instance of an affix switching sides to satisfy some morphophonological constraints, but that what we are seeing is an instance of two different affixes each with their own alignment/attachment specifications.

2.2.3 Alabama

Alabama, a Native American language, has a threefold alternation in the expression of negation (Montler and Hardy 1991, De Lacy 2000). The Alabama verbal negation is composed of two affixes, a nonalternating suffix -*o* and an affix that alternates between the prefix *ik*-, three types of infixes: -*ki*-, -*kii*-, and -*ik*-, and a suffix: -*ki* (and also -ikko).

Montler and Hardy (1991) claim that this alternation is phonologically conditioned and that the shape of the affix can be determined from the phonological shape of the stem with the assumption that the underlying form of the affix is unspecified for linear order, so that the affix is really just a set of two segments {/k/, /i/} , and with a general constraint on Alabama verbs – namely the requirement that the last two syllables form a heavy-light frame, an uneven trochee – a (H, L) foot.

(28) shows the three realizations of the infix. In all three cases the afirmative verb ends with an uneven trochee. In all three cases the negative affix is aligned with the left edge of the R-aligned foot. When the onset of the last syllable is *k*, the negative infix is -*ik*-, creating a geminate (28a). When the penultimate syllable of the affirmative form is a CVC sequence, the infix is -*ki*- as in (28b) and when the penultimate syllable has a long vowel, the mora of the vowel is taken over to the negative infix -*kii*-, (28c).

(28) a. afaaka > afaíkko 'laugh' Alabama
naaɬiika > naɬiíkko 'talk'
liska > lisíkko 'beat'
b. bassi > bakísso 'poor'
lokba > lokíkbo 'hot'
c. pakaama > pakakíimo 'tame'
ooti > okíito 'kindle' Montler and Hardy (1991)

The negative morpheme is realized suffixed to the root when the verb root ends with a consonant or long vowel followed by the affirmative suffix -*li* (29a) or when the verb ends with two light syllables as in (29b). The negation affix deletes the affirmative suffix -*li*.

(29) a. bit-li > bítko 'hit' Alabama

alkomoo-li > alkomóóko 'hug'

b. isi > ísko 'take'
hocifa > hocífko 'name'
hap-li-ci > hapkííco 'bathe someone' Montler and Hardy (1991)

Alabama also uses periphrastic negation, which is limited to a small set of aparently unrelated words, (30). Conditioning of periphrastic negation does not seem phonological.

(30) ootoba > ootoba-tíkko 'dream' Alabama
ola > ola-tíkko 'ring, sound'
owwatta > owwatta-tíkko 'hunt'
oolamiita > oolamiita-tíkko 'speak many languages' Montler and Hardy (1991)

When the verb root is monosyllabic, the infix -*ki*-, because it is aligned in the penultimate position, with the left edge of the R-aligned foot, ends up in word initial position, seamingly as a prefix, (31). All monosyllabic CV roots behave alike. Montler and Hardy claim the prefix is additionally "limited to the very small set of words with the rare CV root shape" (1991:5).

(31) pa > íkpo 'eat' Alabama
mo > íkmo 'pick' Montler and Hardy (1991)

Note that the observed alternation seems like a relatively common exfix~infix alternation, merely an instance of an infix being exposed to the edge because the root lacks the segments that otherwise let this infix be realized as an infix.

A Summary of all different environments is given in (32).

(32) a. prefix: [CV] > [ikCo]
b. infix: …VVCV] > …VkiiCo]
c. infix: …VCCV] > …VkiCCo]
d. infix: …CkV] > …Cikko]
e. infix: …VkV] > …Vikko]
f. suffix: …(C)VCV] > …(C)VCko]
g. suffix: …(C)VV] > …(C)VVko]
h. suffix: …(C)VC] > …(C)VCko]

The negative verbs always ends with -*o*, which at first sight seems to constitute the second part of the negative morpheme. Montler and Hardy (1991) already argue against this and provide several arguments, why negation should really be just -*ik*- and not -*ik*- + -*o*. If -*o* does express negation, we need to check the relation between the two affixes giving the negative meaning, -*o* and -*ki*-. Concretely, are these two independent affixes or potentially just two parts of a single affix.

One argument showing the two parts are independent comes from cases in which the suffixal part isn't realized. Lupardus (1982) argues the final -*o* in (33a) is part of the tense affix -*lo* as tense affixes come after the negative -*o*, as shown in ((33b).

(33) a. stałkíyalo (< ist-ał=kí=(i)ya-lo) 'He is not going. ahead'
b. hokífnolo (< ho=kí=fna-o-lo) 'He will not smell it'

Swanton (1922) reports the final -*o* is not present in some negated verbs as for example in (34).

(34) tcopa ‘to purchase’ > tcokipa ‘not to purchase’
notca ‘to sleep’ > iknotca, iknotco ‘not to sleep sound’

We can thus conclude that the two patterns seemingly present in Alabama, side switching and disjoint affixation, remain unattested.

3 Theoretical explanation

As we have seen, certain cases reported in the literature that potentially involve circumscribing affixation do not involve either in any prodiuctive way. The generalization stated above, repeated here as (35), is thus confirmed. Each affix has only one attachment option. The attachment site can be to a number of positions in the root/stem (these need not be edge positions), but affixes cannot change their location of attachment.

(35) **A single affix has only one attachment site. It is either a prefix, infix, or a suffix to a single stem** (An infix can turn into an exfix through some morphophonological process (or vice-versa) but an affix cannot (freely) alternate between being a prefix or a suffix or appear on both sides at the same time.):
a. *AFF-*stem*-IX (/ AF-*stem*-FIX)
b. *AFFIX-*stem* ~ *stem*-AFFIX

I will try to briefly explain why this makes sense also theoretically and from a more psycholinguistic point of view. I will not go over all available theories of morphology trying to evaluate them against this generalization, I will simply show that certain theories that place morphology (at least partially) within syntax have no problems with this generalization.

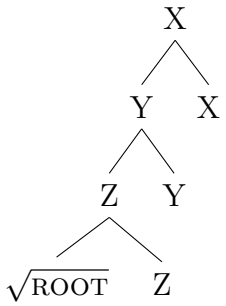
3.1 Underivability

Any theory that derives word-formation in syntax will be at least partially safe. If affixes are spell-outs of heads or phrases, they can only be located at one side of the stem at a time. They could act together so to speak, by circumscribing the same stem, but such a circumfix would still be just two independent affixes. There is no necessity for these affixes to exist elsewhere, but they certainly can exist also in other morphological processes. Given that affixes spell-out specific features (either organized inside the same head or located within a syntactic structure), one would expect these features to be relevant for the interpretation of individual affixes even when they work together, but both types of syntactic theories Distributed Morphology [DM] (Halle and Marantz 1993, Harley and Noyer 1999, Embick and Noyer 2007), which spells out heads, and Nanosyntax (Starke 2010, Caha 2009), which spells out phrases, do not predict things would always be like this. In DM a morpheme can spell out only a subset of features present in a particular head, therefore the same morpheme can in principle spell out different sets of features. Similarly in Nanosyntax, the structure stored in the lexicon for a particular morpheme needs to be the superset of the structure which it spells out, so again, each morpheme could spell-out multiple structures, so it need not always end up having the same “interpretation”.

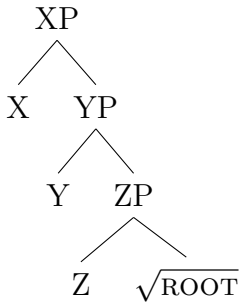
Side switching affixation (arguably less obviously unavailable) seems easily derivable in DM. If an affix is the spell-out of (/a subset of) features on a syntactic head, the same affix coud easily be realized as either a prefix or a suffix depending on the relative

structural position against the stem. As explained by Embick and Noyer (2007), syntax determines whether these affixes will end up as prefixes or suffixes. The complex head depicted in (36) will produce suffixes, while the simple structure in (37) will produce prefixes, but the shape of the affixes themselves should be the same in both cases.

(36) STEM-*suffix*

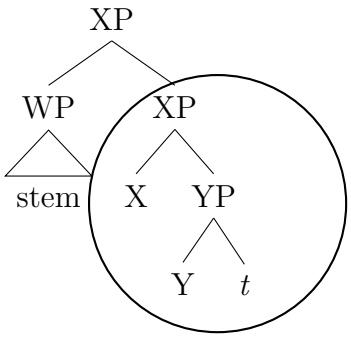


(37) *prefix*-STEM

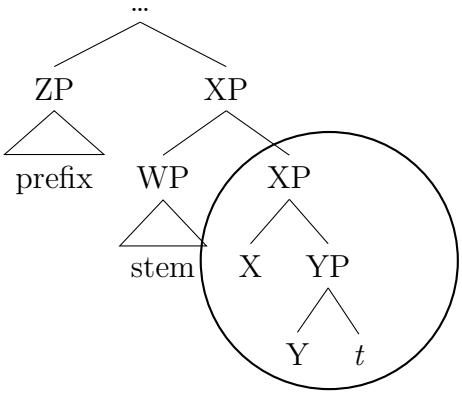


Nanosyntax on the other hand argues spell-out is phrasal. Spell-out applies after each (successfull) merge operation, where if a lexically storred tree matches a syntactic node, that node is spelled-out. A suffix needs the stem to move to its left, as shown in (38), where the WP spells-out as the stem while the XP (the entire circled part) as the suffix. The most straightforward way to derive prefixes is if they are phrasal specifiers, as in (39) (cf. Baunaz and Lander 2018, Caha 2011). Given that in this way they are independent phrases (they can be moved to this position from a position dominated by XP, but then the stem would need to be a phrase generated in the specifier position), it is not likely they can ever match the structure stored for suffixes, which represent part of the functional sequence on top of a lexical category, so side-switching affixes seem underivable.

(38) STEM-*suffix*



(39) *prefix*-STEM



Any syntactic approach to morphology will need to say something about infixes (cf. morphcom037, Infixation), as they clearly cannot result from spell-out of syntactic structure. So even syntactic theories need to leave some space for morphophonological reordering of affixes. Could there be phonological reordering that would result in circumfixes? Marušič (2003) claims morphophonological theories like McCarthy and Prince (1993) have a problem restricting the predicted patterns, this is true for both monomorphemic circumfixation and side-switching affixes, which is why affix attachment might better be restricted by syntax.

3.2 Learnability

In Section 2.1 I noted circumfixes most likely create a learnability problem. How can we acquire a form and the interpretation of something that is always separate, always in two parts. An infix can exist and does not affect the learnability of stems, because the same stem exists also without that infix, but if a circumfix is always surrounding a phonologically non-empty root/base, it is always disjoint. Why would the learner assume this is one affix if he has no evidence to treat it as a single affix? The only way for a proper circumfix to exist would be to alternate, e.g. like negation in Egyptian Arabic (in Section 2.1.1), for which we have seen that it is composed of two (independent) affixes.

3.3 Processing

There seems to be also a processing reason to disfavor monomorphemic circumfixes and side-swithching affixes. Typological studies show that across human languages suffixes are much more common than prefixes and both are much more common than infixes. There are languages that have no prefixes – but there seems to be no language with exclusive prefixation (Greenberg 1966).

Hawkins and Cutler (1988) claim that the preference for suffixes comes out from properties of lexical access in speech understanding. The begining of the word is its most salient part. It therefore makes most sense to use the left edge of words for their recognition. Psychological experiments (Cooper 1980, cited in Hawkins and Cutler 1988) showed that speakers are aware of the importance of word beginnings and try not to distort them.

It is also not surprising that although both affix and stem must be processed, they are processed separately. Studies show that stems are processed before affixes. The effect of a suffix often cannot be determined without knowing what stem it has combined with, while the feedback from the affix is not of value in constraining lexical access. Therefore it makes no sense to process the affix first.

Infrequency of infixing is also predicted from processing facts: languages are reluctant to break up structural units both in syntax and morphology. Adjacency of immediate constituents facilitates processing. In this respect disjoint affixes seem the worst. Hall (1992) argues that processing reasons do not allow (monomorphemic) circumfixation.

A sort of Catch-22 situation can be observed with monomorphemic circumfixes and side-switching affixes. In order to successfully separate the variable position or disjoint affix from the stem, we have to first process the stem, which we cannot do until we have separated the affix from the stem.

Further evidence against disjoint or side switching affixes comes from the difference in processing prefixed and suffixed word. According to Cole, Beauvillain, and Segui (1989) prefixed words bias whole word access because the word starts with the prefix and this is what enters into the search. With suffixed words, the first thing to hit our ears is the root, which is why they bias root based access. Cole et al. actually claim that only suffixed words are accessed via the root.

Following Cole et al. (1989) there is thus potentially a processing difference between prefixed and suffixed words. If a single morphological process involves an alternation between a suffix and a prefix or a disjoint affix then a single morphological affixation is predicted to have two different paths of processing. This seems counterintuitive. The same lexical category that enter the morphological derivation with the same morpheme would behave so differently?

Psycholinguistic evidence shows that an alternation involving changes in positioning such as the alternation between an exfix and a disjoint affix or an alternation between a suffix and a prefix creates a number of processing problems. Processing reasons cannot be said to completely exclude these variable position affix alternation, but they certainly point in this direction. Variation of this type clearly exists but to a very limited degree and is arguably never a productive morphological process.

4 Conclusion

On a purely descriptive level, we can confirm that we see all of the theoretically predicted patterns. There are affixes that apear on both sides of the stem both simultaneously and in combination with different stems, as far as we can tell, none of these affixations is a productive process.

Circumfixes seem prycholinguistically disfavored as they bring in a processing complication, but as they are also underivable in morphological theories that use syntax to explain word-formation, maybe everything is fine in the end.

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