Circumfixation

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Abstract

Circumfixation is a morphological operation as a result of which an affix appears to surround or circumscribe the stem. There are three possible arrangements of the affixal element and the stem in which the stem is circumscribed by the affix: a single affix can appear simultaneously on both sides of the stem, which is what I call a *monomorphic circumfix*, two independent affixes can be placed each on a different side of the stem, or else an affix could be alternating between a suffix and a prefix, by which it would in a sense also circumscribe the stem, it just would not do so simultaneously. The last-mentioned option results in *mobile affixes*, which are covered in more detail in the article on metathesis. This article goes over various possible attestations of these three patterns and argues the only possible type of circumfixes are bimorphic circumfixes. It further claims that even the bimorphic circumfixes are (most likely) bimorphemic. Theoretical and processing reasons are presented that favor this restriction.

Keywords: affixation, circumfixation, mobile affixes, bimorphic affixes, discontinuous morphology

1 What is or what could be circumfixation

Following the traditional description, a prefix precedes the stem, a suffix follows the stem, an infix lies inside the stem and thus breaks the stem in two parts, an interfix (in the sense of 'linking element') lies between two stems, while a circumfix circumscribes 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 real phenomenon not just because it is a theoretical option. There are a number of affixes in various languages that roughly follow the scheme given in (1e). Typically a circumfix is described as a morpheme that is realized by two morphs/exponents, a prefix and a suffix.

Looking at the scheme in (1e) alone, we can see that it allows for several (hypothetical) options. For instance, an affix that circumscribes the stem could in principle also be a single morph/exponent that is realized in two parts, split by the stem, much like a stem can be split in two parts by an infix, (2a), it could be a combination of two (independent)

affixes/morphs, a prefix and a suffix that work together, (2b), or (if we understand a circumfix as an affix that is both a prefix and a suffix) it could be an affix that switches 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. monomorphic circumfix: /AB/   → A-*stem*-B
     b. bimorphic circumfix: /A/,/B/ → A-*stem*-B
     c. nonsimultaneous circumfix: /AB/   → AB-*stem* ∼ *stem*-AB

(2c) are also called mobile affixes and are covered in another article of this volume. Stump (1993) calls such affixes ambifixes and takes the pair of affixes of an ambifixal pair to be distinct affixes with distinct featural content.[1]

A circumfix is (by definition) a single morpheme, which means, we should understand (2b) as (3a) rather than (3b), where subscribed indexes mark morpheme identity. (3a) is what a monomorphemic bimorphic circumfix should look like, while (3b) shows a bimorphemic bimorphic "circumfix", which is in fact simply a composition of an independently existing prefix and an independently existing suffix. Two morphemes on the opposite sides of a stem whose contribution is clearly compositional are merely two independent affixes surrounding (or circumscribing) the same stem.

(3) a. $/A/_1$, $/B/_1$ → A_1-*stem*-B_1
     b. $/A/_1$, $/B/_2$ → A_1-*stem*-B_2

Note that unlike (3b), (2a) and (3a) present a problem for the classical understanding of a morpheme, as the circumfixes in (2a) and (3a) are not indivisible linguistic elements. In both cases, the morpheme is realized with two exponents—a single morphosyntactic unit appears in two separate positions, split by the stem. A (monomorphic) circumfix is thus just the opposite of an infix, which splits the (otherwise indivisible) stem in two separate units.

Within the current theories that place morphology inside syntax, like Distributed Morphology (Halle and Marantz 1993) or Nanosyntax (Starke 2010), the difference between stems and affixes is made obscure at least for the purpose of a later engine that fixes prosodically suboptimal candidates. Both affixes and stems these affixes attach to are spell-outs of some features on a node or the structure itself. Some linguists, such as Lowenstamm (2010), Simonović (2020), even explicitly argue that there is no structural difference between roots and derivational affixes as they take (derivational) affixes to be roots.

In Prosodic Morphology (McCarthy and Prince 1993) infixation is explained either as a prosodic process that saves some prosodically suboptimal configurations or else as alignment of the relevant morphemes with a prosodic unit (a syllable or a foot) rather than with a morphological unit. In both cases the output of morphology (i.e. the input of phonology) needs not involve infixation and with it discontinuous morphemes. Infixation only surfaces as a result of some prosodic readjustments.

Assuming that any operation that targets stems (or roots) can target also (at least some) affixes (given what we just said, the two are alike if not (structurally) identical), we can imagine that monomorphic circumfixes could surface as a result of some morpho-phonological requirement in a particular language. It thus seems plausible to construct

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[1] Stump (1993) does not use the term 'ambifix', but calls 'ambifixal position class' a (position) class of affixes in which prefixes and suffixes co-exist.

hypothetical examples that would result in an alternation like (4) using the same mechanisms that derive infixation.

(4)   AFFIX-*stem* ∼ AFF-*stem*-IX ∼ AF-*stem*-FIX ∼ *stem*-AFFIX

So for example, if a suffix that consists of two consonants is added to a stem that is a single vowel, the requirement to have onsets could force the suffix to split, as sketched in (5) (additionally suppose that epenthesis and deletion are also disfavoured). Another type of alternation could be observed with a prefix consisting of two vowels that is added to a monoconsonantal stem. Again, in case there is a higher ranking NoCoda constraint and assuming deletion and epenthesis are also disfavored, the prefix can split into a prefix and a suffix as sketched in (6). A third type of alternation could be observed if we have an affix, whose second syllable is aligned with the right edge of the stem. When such an affix is added to a root consisting of a vowel and a consonant (VC), a constraint favoring onsets could force one consonant to move from the right to the left edge of the stem, as sketched in (7).

(5)   The affix is aligned with the right edge of the stem and the right edge of the prosodic word, but there is a higher ranking Onset constraint:

   a. $cc_{\text{affix}} + \mathbf{CVCV}_{\text{root}} = \mathbf{CVCV}cc$
   b. $cc_{\text{affix}} + \mathbf{V}_{\text{root}} = /\mathbf{V}cc/ > c\mathbf{V}c$

(6)   The affix is aligned with the left edge of the stem, but there is a higher ranking constraint like Onset or NoCoda:

   a. $vv_{\text{affix}} + \mathbf{CVCV}_{\text{root}} = vv\mathbf{CVCV}$
   b. $vv_{\text{affix}} + \mathbf{C}_{\text{root}} = /vv\mathbf{C}/ > v\mathbf{C}v$

(7)   The second syllable of the affix is aligned with the right edge of the stem, but there is a higher ranking Onset constraint:

   a. $cvcvc_{\text{affix}} + \mathbf{CVCV}_{\text{root}} = cv\mathbf{CV}cvc$
   b. $cvcvc_{\text{affix}} + \mathbf{VC}_{\text{root}} = /cv\mathbf{VC}cvc/ > cvc\mathbf{VC}vc$

These alternations seem so obvious that they could not simply slip past our eyes. One of the claims this article makes is that none of the cases we observe which could potentially involve alternation of this type and could thus qualify for monomorphic circumfixes have the properties that would unequivocally show they are true monomorphic circumfixes.

Corbin (1987/2012) makes an even stronger claim, arguing that none of the circumfixes are really monomorphemic (that is, that neither (2a) nor (3a) exist) so that effectively, all circumfixes that we observe in natural languages are really of the type sketched in (3b) and therefore are not even circumfixes as they do not consist of a single morpheme. This is also what this article would like to claim, namely that the only type of circumfixes we can find in natural languages are bimorphemic bimorphic affixes (that is, circumfixes composed of two co-occurring exponents: an independently existing prefix and an independently existing suffix whose co-occurrence is at some level also compositional).

As it is basically impossible to prove something does not exist in any language, we will not follow a direct route to this claim. This article argues that certain documented cases of apparent monomorphemic or monomorphic circumfixation are not actual cases of such circumfixes. This too is in principle impossible to show directly, but we can claim that there is an alternative explanation for the cases under discussion and, given the existence of a simpler explanation for the more common cases of reported apparent circumfixes,

we can argue that the apparent circumfixes are not true monomorphemic/monomorphic circumfixes.

Given what was said so far, there are arguably no true circumfixes, which can be stated like this:

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

Section 2 goes over several possible attestations of the three available options and section 3 discusses why there are no true circumfixes.

2 Attested and unattested types of circumscribing affixes

There seems to be consensus in the literature that there are no proper monomorphic circumfixes of the type mentioned in the section 1 in natural languages. 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 that circumfixation is "merely extended exponence involving a prefix and a suffix simultaneously." (Beard 1998: 62). Therefore, part of the claim being made here is not new.

2.1 Circumfixes

A well-known example of a circumfix is the German past participle affix *ge*-V-*t* as in (9a). Similar circumfixes are found in many other languages, for example, the collective circumfix in Dutch (9b), the Tagalog object trigger circumfix (9c), the Indonesian nominalizing circumfix (9d), or depending on one's understanding or definition of circumfixes even the Slovenian superlative circumfix, (9e), etc. (cf. Anderson 1992, Lieber 1992).[2]

(9)   a.   German
        (i)   mach-en > **ge**-mach-**t**
            'to do'   'done'
        (ii)   spiel-en > **ge**-spiel-**t**
            'to play'   'played'
    b.   Dutch
        (i)   berg > **ge**-berg-**te**
            'mountain'   'mountain range'
        (ii)   boom > **ge**-boom-**te**
            'tree'   'woodland'
    c.   Tagalog
        (i)   higanti > **pag**-higantih-**an**
            'revenge'   'to take revenge on'
        (ii)   init > **pag-**init-**an**
            'heat'   'to be the subject of agitation or anger'

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[2]Some of the examples in (9) can be understood as cases of parasynthesis. See the article on parasynthesis in this volume for discussion.

d. Indonesian
   (i) bisa > **ke**-bisa-**an**
       'be able' 'capability'
   (ii) tidak mampu > **ke**-tidakmampu-**an**
       'not be able' 'impotence'
e. Slovenian
   (i) čist > **naj**-čist-**ejši**
       'clean' 'the cleanest'
   (ii) temen > **naj**-temn-**ejši**
       'dark' 'the darkest'

Both parts of the circumfixes given in (9) exist as either an independent prefix or an independent suffix. So for example, the suffixal part of the Slovenian circumfix -*ejši* is also the comparative suffix, (10a), while the prefixal part *naj-* exists as an independent prefix with comparable somewhat superlative interpretation, (10b).

(10)   Slovenian

   a. (i) čist > čist-**ejši**
          'clean' 'cleaner'
      (ii) temen > temn-**ejši**
          'dark' 'darker'
   b. (i) prej > **naj**-prej
          'earlier' 'first'
      (ii) prvo > **naj**-prvo
          'first' 'at first'

As shown in (10), the two Slovenian morphemes are not only two separate morphemes, but are also clearly not a single circumfix morpheme, as the two get added onto the base consecutively and their eventual interpretation ends up being clearly compositional. This is not the case for "true" circumfixes.

The German past participle for example is not derived by prefixation or suffixation of a pre-existing suffixed or prefixed stem, but the two parts of the circumfix still exist as independent affixes in the language. *Ge-* is a prefix that forms the irregular past participle also with another suffix, (11a), while the suffix -*t* is also used with verbal stems to form deverbal adjectives and past participles, (11b). The prefix *ge-* or an affix that is homophonous to it is also used to form collective nouns, (12a), and deverbal nouns, (12b), while the suffix -*t* or an affix that is homophonous to it is used to form the third person singular present tense form, (12c). Whether these instances of the two affixes are identical to the prefixal and the suffixal part of the circumfix or just homophonous with them is not something we can prove or disprove at this point. Neither the prefix *ge-* nor the suffix -*t* are obligatory to form past participles, as shown by (11a) and (11b), again suggesting the circumfix *ge-…-t* is not one morphological unit but a composition of two independent affixes.

(11)   German

   a. (i) schlaf-en > **ge**-schlaf-en
          'to sleep' 'slept'
      (ii) laufen-en > **ge**-lauf-en
          'to run' 'run'

        b.   (i)   randomisier-en > randomisier-**t**
                        'to randomize'   'randomized'
            (ii)   invertier-en > invertier-**t**
                        'invert'   'inverted'

(12)   German
        a.   (i)   Rippe > **Ge**-rippe
                        'bone'   'skeleton'
            (ii)   Stein   > **Ge**-stein
                        'stone'   'rock'
        b.   (i)   schenk-en > **Ge**-schenk
                        'to gift'   'gift'
            (ii)   red-en   > **Ge**-rede
                        'to talk'   'chatter'
        c.   (i)   mach-en > mach-**t**
                        'to do'   '(s)he does'
            (ii)   sing-en   > sing-**t**
                        'to sing'   '(s)he sings'

Similarly, the Dutch circumfix *ge-…-te* is also composed of two independently existing affixes. The prefix *ge-* is used to form deverbal action nouns, (13a), while the suffix *-te* can be the nominalizing suffix attaching to adjectives, as in (13b). Both morphs or affixes that are homophonous to them have other uses as well. The suffix *-te* is also the past tense singular suffix for weak verbs, (14b) while *ge-* is the prefix forming the past participles, (14a). Again, it seems impossible to determine whether the affixes given in (13) and (14) are identical morphemes to the prefixal and the suffixal part of the circumfix in (9b), as they could also be accidentally homophonous morphemes; this is easiest to argue for in (14a) and (14b).

(13)   Dutch
        a.   (i)   bakk-en > **ge**-bak
                        'to bake'   'cake'
            (ii)   schenk-en > **ge**-schenk
                        'to gift'   'gift'
        b.   (i)   breed   > breed-**te**
                        'broad'   'width'
            (ii)   lang   > leng-**te**
                        'long'   'length'

(14)   Dutch
        a.   (i)   gev-en   > **ge**-gev-en
                        'to give'   'given'
            (ii)   lop-en > **ge**-lop-en
                        'walk'   'walked'
        b.   werk-en > werk-**te**
                        'to work'   'worked'

The two currently most popular theories that derive morphology within syntax using standard syntactic operations, Distributed Morphology (Halle and Marantz 1993, Harley

and Noyer 1999: among others) and Nanosyntax (Starke 2010, Caha 2008: among others), have a way to derive seemingly unrelated realizations of the same morpheme/lexical item.

In Distributed Morphology, the Subset Principle allows for a phonological exponent to be inserted into a position even if the vocabulary item matches only a subset of the features specified in that position. This means that an exponent can be used to replace a wide range of sets of features in different positions as long as these sets of features share a common subset of features. So for example, suppose the Dutch prefix *ge-* is specified in the lexicon for some (abstract) feature [x] and that this feature is further present in the syntactic derivation that derives both the collective nouns and the (deverbal) action nouns. This means that the prefix *ge-* would be a candidate for vocabulary insertion in both derivations and could turn out as the winner as long as no other vocabulary item is specified for more features present in that location.

Similarly in Nanosyntax, the Superset Principle allows for a mismatch between what is stored in the lexicon and the syntactic structure an exponent replaces. In contrast to the assumed situation above, we need to assume here that the Dutch prefix *ge-* is stored in the lexicon with a syntactic tree that is more complex than what it replaces, but that in the two derivations that result with *ge-* either realized as a single prefix or as a part of a circumfix, *ge-* could be replacing two different structures that are both included as subsets of the structure stored in the lexicon. As a result, because *ge-* is used with two different syntactic structures, these seem to be two different *ge-*s, but note that this could still be one and the same affix/morpheme in the lexicon.

Without going into the details of morphosyntactic analyses of these forms, let us just assume that given the possibility to realize the same exponent in two distinct derivations where two different sets of features result in two distinct interpretations, we cannot use apparent non-compositionality of the two parts of a circumfix to argue for their monomorphemic status.

2.1.1 Tagalog

Arguably a more intriguing case is presented with the Tagalog circumfix *pag-…-an*, from (9c), repeated here as (15). Subparts of this circumfix also exist as separate morphemes, but the two occurrences of either the prefixal part or the suffixal part of this circumfix do not participate in morphological processes with the same type of stem. The prefix *pag-* is used to form deverbal nouns, (16a), while the suffix *-an* or suffixes that are homophonous to it are used in a number of ways, for example to form a type of adjectives from nouns, as in (16b), to name the place where the action expressed by the root is performed, (16c), to name the tool that is used to measure what is meant by the root, (16d), and also as object or directional trigger on the verb, as in (17). According to (Schachter and Otanes 1983: 286), *-an* is one of the major verbal affixes and behaves when used as an affix morphophonologically exactly like the suffixal part of the circumfix that includes *-an*. (Tagalog examples are from Schachter and Otanes 1983 and Wiktionary).

(15)   Tagalog
      a.   higanti   > **pag**-higantih-**an**
          'revenge'   'to take revenge on'
      b.   init   > **pag-**init-**an**
          'heat'   'to be the subject of agitation or anger'

(16)   Tagalog
    a. (i)   gawa   > **pag**-gawa
                 'make'   'making'
      (ii) basa   > **pag**-basa
                 'read'   'reading'
    b. (i)   putik > putik-**an**
                 'mud'   'virtually covered with mud'
      (ii) dugo   > dugu-**an**
                 'blood'   'virtually covered with blood'
    c.   kain > kain-**an**
                 'eat'   'place where people eat'
    d. (i)   oras   > oras-**an**
                 'time'   'clock, watch'
      (ii) timbang > timbang-**an**
                 'weight' 'weighing scale'

(17)   a.   Buks-**an** mo ang pinto.   Tagalog
           open-AN you the door
           '(You) open the door.' – focus on *the door*
    b.   Binagal-**an** ni Sue ang kotse.   Tagalog
           slow-AN   Sue the car
           'Sue slowed down the car.' – focus on *the car*

The Tagalog morphology is very much simplified here. Both *pag-* and *-an* have other uses as well, and it is not the case that each one of the mentioned affixes is the only affix for the purposes described here. Nevertheless the Tagalog case seems to present a purer form of a circumfix (same is true for the Indonesian circumfix *ke-…-an* from (9d) above). Although the two parts of the circumfix do exist individually they do not seem to participate in morphological operations with the same type of stems equally productively. The two parts are used as separate morphemes with (seemingly) different interpretation and with different set of words. The non-compositionality of such circumfixes suggests that each circumfix is really a single morpheme or even a single exponent. Why would otherwise two independent exponents be added to the stem to yield a specific non-compositional interpretation?

But given what was said so far, the simpler conclusion seems to be that circumfixes really involve two vocabulary items and thus also two morphological processes rather than one and that the observed non-compositionality is just apparent as we do not understand the syntax/morphology of that particular language and that particular word-formation process well enough. As described above, even though at first sight the meaning of a "true" circumfix is non-compositional, the featural or structural overlap of various structures together with the subset (or superset) principle can lead to situations in which the same exponent gets to be inserted in seemingly unrelated positions.

If the Tagalog circumfix was a single morph, we would expect it to participate in various morphophonological alternations, like for example the one sketched in (18). We want to find such alternations since otherwise we do not have any evidence of this being a single affix. At least from the perspective of learnability, the only possible circumfix is one which alternates and is not always a circumfix with the same shape. But no such alternation has been reported in Tagalog. Actually, circumfixes of the type given in (19)

do not exist in any natural languages or at least have not been reported yet (cf. Marušič 2003).

(18)   AFF-*stem*-IX ∼ AF-*stem*-FIX

(19)   a.   pagan + bili > **pa**-bili-**gan**
         b.   pagan + akan > **pag**-akan-**an**

Note that Tagalog has syllable-structure-sensitive morphology, as shown with the well-known -*um* infixation in (20) (data taken from Schachter and Otanes 1983), yet none of the circumfixes reported to exist in Tagalog exhibit any alternation of this sort.

(20)   Tagalog
         a.   ibig   > **um**-ibig
              'love'   'to (fall in) love'
         b.   labas   > l-**um**-abas
              'outside'   'to come/go outside'

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 what we are seeing in Tagalog is most likely not an instance of a true monomorphic circumfix. We have no evidence at this point to claim these circumfixes are also not monomorphemic, but given the possibility to derive the observed circumfixes using independently existing simpler vocabulary items, the option that Tagalog circumfixes are bimorphemic despite the fact that they consist of two unrelated affixes cannot be excluded.

2.1.2 Egyptian Arabic

A possible attestation of a circumfix alternating with a single morph is observed in sentence negation in Egyptian Arabic. Negation is expressed either with the circumfix *ma-…-š* on the verb as in (21a) or else with a separate prosodic word *miš* in copular clauses with a nominal, adjectival or participial predicate, as shown in (21b).

(21)   Egyptian Arabic

         a.   negation on the verb
              (i)   **ma**-ktib-**š**
                    NEG-write-NEG
                    'I do not write
              (ii) **ma**-nsaa-**š**
                    NEG-forget-NEG
                    'I do not forget'
              (iii) **ma**-katab-**š**
                    NEG-write-NEG
                    'He did not write'

         b.   copular clauses
              (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. The 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: among others). But as argued in Marušič (2003) *miš* should not be seen as a single split morpheme in (21a) and consequently the alternation shown in (21) 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. The prefixal part *ma-* is arguably an emphatic particle (Khalafallah 1969). *Ma-* exists as a (potentially homophonous) prefix also in many other morphological processes in Egyptian Arabic (e.g. it is an imperative prefix and also a nominal prefix in *ma-ktaba* 'library'). The suffixal part *-š(ey)* is said to be the negation (Khalafallah 1969 calls it an allomorph of *miš*).

A particularly interesting fact is shown in (22). 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 circumfix as two separate morphemes.

(22) maʔaraaš wala katabš   Egyptian Arabic
      ma-read-**š** or   write-**š**
      'He neither read nor wrote'

Even historically, this circumfix is composed of two independent syntactic elements. Supposedly it is derived from the original negative morpheme *ma* and the word *šayʔ* 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., Wiktionary).

(23) Ma   aktib šayʔ   > *maaktibš*   Egyptian Arabic
      NEG write thing   NEG-write-NEG
      'I don't write"

The negative morpheme *miš* is thus apparently not a free morpheme, but is really composed of two independent affixes that are affixed to a phonologically null stem. Given that Egyptian Arabic has a null copula (Alharbi 2017), the two affixes end up being attached to one another on the surface.

Without going into the details of a syntactic analysis of copular clauses or negation, we can conclude that the observed alternation does not involve a monomorphic circumfix, as these are apparently two separate morphs that incidentally end up realized affixed to each other because of the phonologically null verbal root:

(24) **ma-** Ø   **-š** kibiir → **miš** kibiir   Egyptian Arabic
      EMPH COP NEG big   NEG big
      'is not big'

Further, given the example (22) and the claim and the identification of these exponents in Khalafallah (1969), we are relatively safe to claim that the negative circumfix in Egyptian Arabic consists of two independent affixes/vocabulary items.

2.1.3 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 expressed with two morphs, a nonalternating suffix *-o* and an affix that alternates between the prefix *ik-*, three types of infixes: *-ki-*, *-kii-*, and *-ik-*, and a suffix: *-k*. This Alternation is thus seemingly of the type discussed above in (4), sketched in (25) involving an apparent circumfix.

(25)   *ik*-STEM-*o* ~ ST-*ik*-EM-*o* ~ ST-*ki(i)*-EM-*o* ~ STEM-*ko*

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 alternating part of negation 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.

(26) shows the three realizations of the infix. In all three cases the affirmative verb ends with an uneven trochee. In all three cases the alternating part of the negative affix is aligned with the left edge of a R-aligned foot. When the onset of the last syllable is *k*, the negative infix is *-ik-*, creating a geminate (26a). When the penultimate syllable of the affirmative form is a CVC sequence not followed by *k*, the infix is *-ki-* as in (26b) and when the penultimate syllable has a long vowel not followed by *k*, the mora of the vowel is taken over to the negative infix *-kii-*, (26c).

(26)   a.   afaaka 'laugh' > afa-**ík**-k-**o**   Alabama
              naałiika 'talk' > nałi-**ík**-k-**o**
              liska 'beat'   > lis-**ík**-k-**o**
        b.   bassi 'poor'   > ba-**kí**-ss-**o**
              lokba 'hot'   > lo-**kí**-kb-**o**
        c.   pakaama 'tame' > paka-**kíi**-m-**o**
              ooti 'kindle'   > o-**kíi**-t-**o**   Montler and Hardy (1991)

The negative morpheme is realized suffixed directly onto the root when the root ends on a consonant or a long vowel and the affirmative form of the verb additionally contains the affirmative suffix *-li* (27a). The negative morpheme is realized as a suffix also when the verb ends in two light syllables as in (27b).[3] In both cases the negative affix occupies the same position as the affirmative suffix *-li*.[4]

(27)   a.   bit-li 'hit'   > bít-**ko**   Alabama
              alkomoo-li 'hug' > alkomóó-**ko**
        b.   isi 'take'   > ís-**ko**
              hocifa 'name' > hocíf-**ko**   Montler and Hardy (1991)

---

[3]It is not clear how these affirmative forms satisfy the requirement that the last two syllables form an uneven trochee.

[4]When one of the the two light syllables is the affirmative *-li*, *-li* is also not realized while the negative morpheme is realized in its position as the *-kii-* infix:

(i)   hap-li-ci 'bathe someone' > hap-**kíí**-c-**o**

When the verb root is monosyllabic, the infix *-ki-* ends up in word initial position, seemingly as a prefix, (28), as it is aligned in the penultimate position, with the left edge of the R-aligned foot. All monosyllabic CV roots behave alike. Montler and Hardy claim that this prefixal realization is additionally "limited to the very small set of words with the rare CV root shape" (Montler and Hardy 1991: 5).

(28)   pa 'eat'   > **ík**-p-**o**   Alabama
        mo 'pick' > **ík**-m-**o**   Montler and Hardy (1991)

Alabama also uses periphrastic negation, which is limited to a small set of apparently unrelated words, (29). Conditioning of periphrastic negation does not seem phonological.

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

A summary of all different environments is given in (30).

(30)   a.   prefix: [CV] > [**ikCo**]
        b.   infix: ...kV] > ...**ikko**]
        c.   infix: ...VVCV] > ...V**kiiCo**]
        d.   infix: ...VCCV] > ...V**kiCCo**]
        e.   suffix: ...(C)VCV] > ...(C)VC**ko**]
        f.   suffix: ...(C)VV-*li*] > ...(C)VV**ko**]
        g.   suffix: ...(C)VC-*li*] > ...(C)VC**ko**]

The suffix *-o* at first sight seems to constitute the second part of the negative morpheme, making Alabama negation a circumfix. Montler and Hardy (1991) already argue against this and provide several arguments, why negation should really be just *-ik-* and not *-ik-* + *-o*. Similarly Lupardus (1982) takes the two affixes as separate and lists *-ki-* as the negative auxiliary and *-o* as a negative particle.

   In some cases the suffixal part *-o* is not realized in negated verbs as for example in (31a). Lupardus (1982) argues that the final *-o* in (31a) is part of the tense affix *-lo* as tense affixes follow the negative *-o*, as shown in (31b). (Lupardus 1982: 169) lists a number of cases where *-o* is not realized and argues that all such examples "indicate a future condition" suggesting *-o* is associated with a specific interpretation, featural composition or structural position.

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

Other cases where the suffixal part is not realized are reported in Swanton (1922). In examples (32) the final *-o* is either not realized or else is realized only optionally.

(32)   tcopa 'to purchase' > tco**ki**pa 'not to purchase'   Alabama
        notca 'to sleep'   > **ik**-notca, **ik**-notc-**o** 'not to sleep sound'

There are other uses of the morph *-o* (or a homophonous morph) in Alabama. Lupardus

(1982) and Davis and Hardy (1988) note an aspectual affix *-o* and an emphatic affix *-o*.

Assuming *-o* and *-ik/ki* are two separate morphemes/vocabulary items and assuming *-o* potentially does not even mark negation but something else, the observed alternation of the negative affix *-kí-* turns out to be 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 make this affix an infix. What is special about this alternation is that this infix when it is realized as an exfix sometimes surfaces as a suffix and sometimes as a prefix.

2.1.4 Chukchee

Spencer (1998) notes that although for the most part the prefixal and the suffixal part of reported circumfixes 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 northeast 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*," (Spencer 1998: 129) (see also Muravyova 1998).

Nominal negation expressed with a *a-…-ka* or *e-…-ke* circumfix is shown in (33). The choice between the two versions of this circumfix is determined by vowel harmony.

(33)   titi   > **e**-titi-**ke**   Chukchee
          'needle'   'without a needle'
          jatjol > **a**-jatjol-**ka**
          'fox'   'without a fox'
          pipiqəlg > **e**-pipiqəlg-ə-**ke**
          'mouse'   '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 vowel initial roots, the hiatus is resolved with an unconditional deletion of the affix vowel, (34). The vowel of the prefix does not show up on the other side of the word even in cases where it would avoid having to insert an epenthetic vowel between the root and the suffix, (34b). 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?

(34)   a.   ococ   + / a-ka/ > ococ-**ka**   Chukchee
             'leader'   NEG   'without a leader'
        b.   utt   + / e-ke/ > utt-ə-**ke**   /   *utt-**e**-**ke**
             'wood'   NEG   'without wood'   Spencer (1998)

Interestingly, the prefix deletes even when the root vowel is a schwa, (35) even though schwa is the weakest vowel in Chukchee in other hiatus resolution contexts.

(35)   ənʔe   > ənʔe-ke   Chukchee
          'elder brother'   'without my elder brother'
          ənpənacgə > ənpənacgə-ka
          'old man'   'without the old man'   Spencer (1998), Krause (1979)

One way of understanding (34) and (35) would be to assume no prefix is added to the stem, since otherwise the schwa would not survive hiatus resolution in (35). But if the prefixal part of the circumfix is not prefixed in these cases, why is it not realized on the other side of the stem/root in (34b)?

These facts suggest the negative circumfix in Chukchee is not a single morph but rather consist of two separate exponents, the prefix vowel and the suffix *-ke/ki*. At the same time we have no evidence to claim the two affixes are introduced either as two vocabulary items or at the same time as a single vocabulary item.

Note that even though the two parts of the negative circumfix do not exist as separate independent affixes in Chukchee, the two parts of the circumfix could actually be complex themselves. The fact that the verbal and the nominal negation differ in the final vowel, as reported in Spencer (1998), suggests the suffixal part of the negative circumfix is probably decomposable into *-k-* and the final vowel. Assuming this split, we can no longer make the claim that no part of the negative circumfix exists as a separate independent affix as *-k* is a suffix both in the verbal and in the nominal paradigms: *-k* is (among other things) the locative singular nominal affix and the first-person singular aorist verbal affix in the indicative, imperative and subjunctive paradigms (cf. Muravyova 1998).

Thus an analysis taking the prefixal and the suffixal part of the negative circumfix in Chukchee to be independent (potentially complex) exponents is still possible (and as argued below theoretically preferred).

2.2 Mobile affixes

Affixes that move around the stem have been reported in several languages (e.g. in Fula, see Stump 1993; Armenian, see Bezrukov and Dolatian 2020 etc.). Here, only two cases that were reported to involve this type of circumscribing affixation are briefly presented: verbal affixes in Afar (Bliese 1981, Fulmer 1991) and in Huave (Noyer 2001, Kim 2010). Mobile affixes are covered in the article on Metathesis; here we will only discuss them briefly explaining why they do not present a counterargument to the claim made in (8).

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 to which they attach. Bliese (1981) divides the Afar verb stems into two classes, the prefixing and the suffixing class. (36) and (37) give examples with the second person affix *-t* and the first-person plural affix *-n*. The consonantal person affix is a prefix to vowel-initial roots and a suffix to consonant-initial verb roots (see also Fulmer 1991).

(36)	*prefixing stems*	(37)	*suffixing stems*	Afar
	a. **t**-okm-é		a. suk-**t**-é	
	you-eat-perf		had-you-perf	
	b. **t**-eexeg-é		b. bah-**t**-é	
	you-know-perf		bring-you-perf	
	c. **n**-irgic-é		c. dagi-**n**-é	
	we-see-perf		be_small-we-pref	

(Bliese 1981)

At first sight the alternation between (36) and (37) could be easily explained by some phonological requirement to have onsets that forces the consonantal affix from the suffixal position to the beginning of the stem. In OT terms we could say that the markedness constraint ONSET dominates ALIGN(Affix, Right).

While it is clear that the same or at least superficially homophonous morphemes apparently exist as either prefixes or suffixes in Afar, this is probably not a productive morphological process. We can try to understand it as a (morpho)phonological process, that is, as a case of phonologically conditioned alternation. This means that the mobile affixes still have a single attachment site, that is, they are either suffixes that become prefixes or vice versa, but it also seems possible that this alternation is not really part of the grammatical system, but rather stems from the lexicon, where verbs are specified as either prefixal or suffixal (cf. Marušič 2003).

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, which then affects morphosyntactic behavior of these roots and affixes.

The two classes of verbs do not differ only in where person affixes attach but rather in a number of other morphophonological 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 of verbs.

A very strong argument for treating the Afar mobile affixes as two distinct morphological elements, participating in distinct morphological processes is offered by the fact that there are other affixes also added to the verb stems in the same distribution either as prefixes or as suffixes even though these affixes are not monoconsonantal and thus their attachment as either a prefix or a suffix does not help the stem avoid a phonologically undesired shape 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 surprisingly this is true also of the affixes that form verbal nouns, which are not even homophonous as prefix and suffix. Verbal nouns are formed from prefixal verbs with the prefix *m-*, and from suffixal verbs with a suffix *-o*. In addition to the nominalizing prefix, prefixal verbs also change all of their vowels to /a/, while no vowel change is observed in nominalizations of suffixal verbs, (38).

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

These data suggest Afar verbs are divided into two classes, each associated with a different set of morphological processes involving different sets of morphemes. This further suggests the two affixes that we observed to be in (potentially phonologically conditioned) alternation could also be two independent affixes, which means the Afar prefix–suffix alternation is not an instance of an affixation where a single affix would

have variable attachment specifications.

2.2.2 Huave

In Huave (a language isolate from Oaxaca, Mexico) certain verbal affixes (not all) attach either as suffixes or prefixes to the stem and are as such characterized as mobile affixes. Noyer (1993), Kim (2010) argue that these affixes switch sides to satisfy prosodic markedness constraints (see also Zukoff 2021:for a slightly different analysis).

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, (40) while their corresponding prefixed verb is either transitive or causative, (39).

(39) 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**-rǫnd
        CAUS-hang
        '(s)he hangs [sth.]'

(40) 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. rǫnd-**o**-m
        hang-REFL
        '(s)he is hanging' (nonpast)
        Noyer (1993)

Given that the argument-structure-changing morpheme is apparently syntactically conditioned, its realization as either a prefix or else a suffix is most likely linked to two different syntactic structures. Huave has a left-to-right vowel harmony, which is why the theme vowel matches the stem vowel when it is suffixed but surfaces as the default vowel [a] when it is a prefix (Noyer 1993: 70). Interestingly, together with the theme vowel certain other affixes switch positions too. Concretely, these are the past tense affix *t-* / *-t*, the nonpast tense affix *m-* / *-m*, and the first person affix *n-* / *-n*, as shown in (41) and (42) which give the person paradigm for the future and the imperfective for transitive and reflexive verb forms respectively. 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(...).

(41) future and imperfect – transitive verbs

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

(42) future and imperfect – reflexive verbs

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

Noyer (1993) analyses the positioning of these affixes as a phonological alternation. 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 attachment and become suffixes when the theme vowel is a suffix. Kim (2010), analysing a different Huave variety than Noyer (1993), suggests all mobile affixes in Huave are suffixes that become prefixes whenever prefixation would avoid the need for vowel epenthesis.

The details of the analysis of Huave mobile affixes are not relevant for the point made here. Both Noyer (1993) and Kim (2010) argue that the Huave mobile affixes are underlyingly either prefixes or suffixes that switch sides to satisfy some prosodic markedness constraint or avoid some violation of such a constraint. Underlyingly thus, these affixes have a single attachment site, either as prefixes (following Noyer 1993) or suffixes (following Kim 2010).

Alternatively we could see them as affixes specified for attachment to the theme vowel without explicit direction specification. That is, mobile affixes always attach to the theme vowel, but as the theme vowel is in some cases a prefix and in some cases a suffix, mobile affixes need to switch sides with it.

3 Theoretical explanation

As we have seen, certain cases reported in the literature that potentially involve circumscribing affixation are not necessarily cases of monomorphic or monomorphemic circumfixes. The (descriptive) claim stated above, repeated here as (43), is not disproved. Each affix indeed seems to have only one attachment option.[5]

(43)   **A single morpheme has only one attachment site. It is either a prefix, an 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 and appear on both sides at the same time.): *AFF-*stem*-IX (/ AF-*stem*-FIX)

Section 3.1 offers brief speculations why this also makes sense theoretically and from a more psycholinguistic point of view. It will not cover all the available theories of morphology, but rather trying to evaluate them against the claim in (43), it will simply show that certain theories that place morphology (at least partially) within syntax have no problems with it. Morphophonology will be ignored at this point as some of the phenomena that are reported to exist, such as mobile affixes, clearly can be derived within Prosodic Morphology.

3.1 Underivability

Any theory that derives word-formation in syntax will be at least partially safe. If each affix spells-out a single head or a single phrase, it can only be located at one side of the stem at a time, given that a single head can only either precede or follow the root or the stem to which it attaches. A lexical item could in principle have complex phonology consisting of two separate exponents, each with its own attachment specification, but this potentially seems a problematic assumption as this would probably be the only

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[5]Eulàlia Bonet (p.c.) pointed out this seems to be the case also for floating morphemes or the so-called featural affixation (cf. Akinlabi 2011). Even though they are realized on a stem, they are typically assumed to be essentially prefixes or suffixes. See the article on Non-segmental morphology in this Companion volume.

type of exponence where a single syntactic element would spell-out two "independent" phonological units.[6]

The problem with circumfixes is that even though the two affixes that act together to form a circumfix exist in other morphological processes of that language (at least typically this is the case), it is not obvious how their interpretation/role is combined to yield the interpretation/role of the circumfix they form. 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 on the other hand, both theories deriving word-structure from within syntax, Distributed Morphology (Halle and Marantz 1993, Harley and Noyer 1999, 2003, Embick and Noyer 2007), which says the units of spell-out are heads, and Nanosyntax (Starke 2010, Caha 2009), which says the units of spell-out are phrases, have a way around this problem.

In Distributed Morphology a morpheme can spell out only a subset of features present in a particular head, therefore the same vocabulary item/morpheme can end up replacing different sets of features located in different heads. Similarly in Nanosyntax, the structure stored in the lexicon for a particular vocabulary item/morpheme needs to be the superset of the structure which it spells out, so again, each morpheme can spell out different structures, so it need not always end up having the same exact interpretation/role. But as vocabulary items are (always or at least typically) single phonological units, regardless of the superset/subset principle both theories can only derive bimorphemic bimorphic circumfixes.[7]

Mobile affixation where switching is phonologically conditioned is not problematic. A suffix is inserted at vocabulary insertion/spell-out always at the same position relative to the stem. Such an affix can get repositioned later in the course of the PF derivation; nothing prevents that. But the two theories differ on whether they also allow mobile affixes that are not phonologically conditioned. In Distributed Morphology, if an affix is the spell-out of a (sub)set of features on a syntactic head, the same affix could easily be realized as either a prefix or a suffix depending on the relative structural position against the stem, as a consequence of a special linearization operation, fission, and also as a consequence of post-syntactic movement operations like Local Dislocation (Embick and Noyer 2007). The complex head depicted in (44) could in principle end up producing either prefixes or suffixes.

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[6]It is not difficult to think of potentially related cases which all typically receive a different analysis. E.g. the English present perfect tense is marked by the auxiliary and the participial ending on the verb, both are standardly associated with different heads; definiteness in German is marked by the overt definite article and weak declination on the adjective, again the source of the two exponents is never the same head; negation in French is marked by two negative particles *ne …pas*, for which two separate syntactic positions are assumed etc.
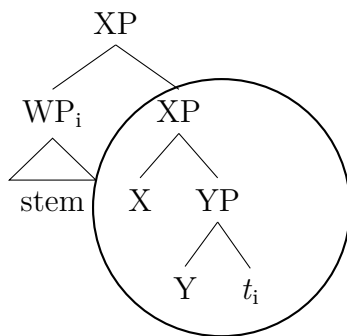
[7]Distributed Morphology in principle allows a single morpheme to have more than one phonological exponent (Embick and Noyer 2007), a mechanism used to derive phenomena called morpheme fission. It is not clear whether circumfixes could also be considered and derived as an instance of morpheme fission within Distributed Morphology.

(44)   STEM-*suffix* / *prefix*-STEM

```
            X
           / \
          Y   X
         / \
        Z   Y
       / \
   √ROOT   Z
```
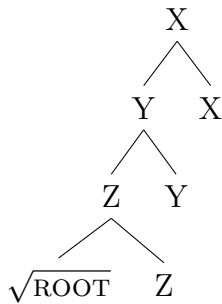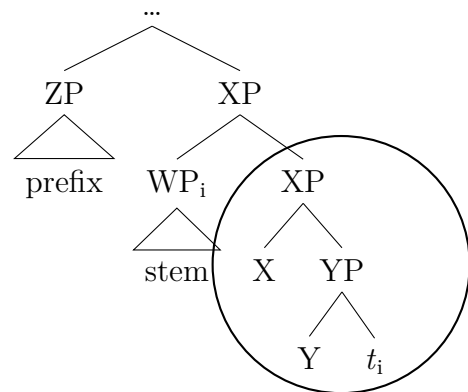
Nanosyntax on the other hand argues that spell-out is phrasal. Spell-out applies after each (successful) merge operation, where if a lexically stored tree matches a syntactic node, that node is spelled-out. A suffix needs the stem to move to its left, as shown in (45), where the WP spells-out as the stem and the XP (the entire circled part) as the suffix. The most straightforward way to derive prefixes is if they are phrasal specifiers, as in (46) (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 morphologically conditioned mobile affixes are potentially underivable.

(45)   STEM-*suffix*

```
           XP
          /  \
       WPᵢ    XP
       /\    /  \
     stem   X   YP
               /  \
              Y    tᵢ
```

(46)   *prefix*-STEM

```
            …
           /  \
         ZP    XP
        /\    /  \
    prefix  WPᵢ   XP
            /\   /  \
          stem  X   YP
                   /  \
                  Y    tᵢ
```

Any syntactic approach to morphology will need to say something about infixes (cf. morphcom037 on Infixation), as they clearly cannot result from spell-out of syntactic structure. So even syntactic theories need to leave some space for morphophonological (re)ordering of affixes. Could there be phonological (re)ordering that would result in monomorphemic or monomorphic circumfixes? Marušič (2003) claims morphophonological theories like Prosodic Morphology (McCarthy and Prince 1993) have a problem of overgeneration of unattested patterns like the hypothetical alternations presented in (5)–(7), which is why affix attachment should be regulated and consequently restricted by syntax.

3.2 Learnability

In section 2.1.1 it is suggested circumfixes most likely create a learnability problem. How can we acquire a form and the interpretation of something that is always separate, always split 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 learners assume this is one affix if they have no evidence to treat it as a single affix? The only way for a proper circumfix to exist would be to alternate, such as negation in Egyptian Arabic (section 2.1.2) or negation in Alabama (section 2.1.3), for which we have seen that both are most likely composed of two (independent) affixes each realizing a different set of features or different syntactic structure.

3.3 Processing

There seems to be also a processing reason to disfavor monomorphic and also monomorphemic circumfixes and mobile 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 1963).

Hawkins and Cutler (1988) claim that the preference for suffixes comes out from properties of lexical access in speech understanding. The beginning 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 and Paccia-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 affixes and stems 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, processing the affix first is not optimal.

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 to some degree also with mobile affixes). In order to successfully separate the variable position affix or the 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 showing how problematic the existence of monomorphemic circumfixes is comes from the difference in processing prefixed and suffixed words. According to Colé, 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. Colé et al. actually claim that only suffixed words are accessed via the root, which means there is a clear processing difference between prefixed and suffixed words. If a single morphological process involves an alternation involving 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 enters the morphological derivation with the same morpheme is expected to behave comparably when being processed.

Psycholinguistic evidence shows that an alternation involving changes in positioning such as the alternation between a simple 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 exclude completely these variable position affix alternation, but they certainly point in this direction.

4   Conclusion

On a purely descriptive level, circumfixes or morphological elements that involve two disjoint affixes, a prefix and a suffix, apparently exist. But upon closer inspection, we cannot confirm that these instances of simultaneous prefixation and suffixation really involve a single vocabulary item/morpheme with two separate morphs/exponents. That is, a circumfix should by definition be a single vocabulary item/morpheme that is realized as two morphs/exponents on two sides of the stem, but it is not clear that the circumfixes we observe in natural languages really involve a single vocabulary item/morpheme.

Of the cases we have observed where an affix appears on both sides of the stem simultaneously, none involve alternation where only parts of a single morph would switch sides creating a clear case of a monomorphic circumfix. Most (if not all) of the cases involve affixes that also exist as independent prefixes and suffixes but oftentimes with unrelated interpretation. As there are theoretical and processing reasons to disfavour monomorphemic circumfixes (i.e. morphemes/vocabulary items that would bring in two exponents simultaneously), whenever there is a way to derive circumfixes as composed from affixes already present in a particular language (given that such partial affixes do exist), this analysis should be favoured over (or seen as superior to) an analysis proposing a concrete circumfix as a single morpheme realizing two exponents.

Affixes that appear as a whole on either one or the other side of the stem, called mobile affixes, are either conditioned phonologically or seem to be idiosyncratic. Even though these affixes present a problem for morphological processing, they are not uncommon and have been reported to exist in several languages (Fula, Armenian, Huave, Afar, etc.).

The principal claim of this article was that (true) circumfixes do not exist. Cases that are hard to explain differently as they involve affixes that do not seem to exist elsewhere in that language (like the Chukchee negation) are really few, and as it is claimed here probably poorly understood. Circumfixes are disfavored as they bring in a processing complication, but as they are also (potentially) underivable in morphosyntactic theories, perhaps everything will be fine in the end.

Acknowledgments

See also

SEE ALSO: morphcom037; morphcom041; morphcom050; morphcom051; morphcom054; morphcom060

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