

Phonologically Conditioned Affix Order as an Illusory Phenomenon*

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1. Introduction

Phonological conditions on affixation:

- Suppletive allomorphy (e.g., Armenian definite article *-ə* with C-final stem, *-n* with V-final stem (Vaux 1998)); see Paster 2005a, 2006b, to appear a, b
- Blocking (e.g., English *-ize* attaches only to stems with an unstressed final syllable (Raffelsiefen 1996))
- Infix placement (e.g., Tagalog agentive focus affix occurs before the first V (or after the first C) of the stem (Orgun & Sprouse 1999); see Yu 2003, 2007
- Affix order (incl. mobile affixation)*

Claims of “phonologically conditioned affix order” (**PCAO**):

- Ordering of multiple affixes on one side of a root (e.g., Hargus & Tuttle 1997)
- Mobile affixation (e.g., Kim to appear, Noyer 1994, Fulmer 1991)

The (non-)existence of PCAO is crucial to understanding the phonology-morphology interface:

- A model where morphology and phonology operate in tandem predicts PCAO (e.g., OT with ‘P >> M’ (McCarthy & Prince 1993a,b))
- A model where morphology precedes phonology *disallows* PCAO (e.g., Distributed Morphology (Halle & Marantz 1993))

Claims: -There is no such thing as PCAO (Paster 2005b, 2006a, to appear b); apparent cases are coincidental or result from regular phonological processes

- Affix ordering always follows one or more of the following principles:
 - Templates (Bloomfield 1962, Zwicky 1985, Anderson 1986, Simpson & Withgott 1986, Speas 1990, Stump 1992, Inkelas 1993, Hyman & Inkelas 1999, Good 2003)
 - Scope (Rice 2000)
 - Mirror Principle (Baker 1985)

If true PCAO does not exist, this constitutes evidence against models in which morphology and phonology operate in tandem

In this talk, I argue for a model in which:

- Morphology precedes phonology, with *interleaving* as in Lexical Phonology and Morphology (Kiparsky 1982)
- Phonological conditions on affixation occur due to *morphological subcategorization*

Outline of the talk:

- Illustrate McCarthy & Prince’s (1993a,b) P >> M model and the subcategorization approach
- Discuss predictions of each model for PCAO
- Present some possible cases of PCAO, showing how they reduce to external explanations
- Conclude with implications of the lack of PCAO for the two models

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2. The 'P >> M' approach

McCarthy & Prince (1993a, b): P(honological) constraints can outrank M(orphological) constraints in OT

-Although it was assumed from the inception of OT, 'P >> M' is not crucial to OT

-Therefore, rejecting P >> M does not entail rejecting all OT models of phonology/morphology.

Example: In Ulwa (Misumalpan, Nicaragua; Hale & Lacayo Blanco 1989), possessive markers occur immediately after primary stressed syll. (McCarthy & Prince 1993a: 79, 109-110; stress marks added).

(1)	bás-ka	'his/her hair'	siwá,ka,nak	'his/her root'
	sú:,ka,lu	'his/her dog'	kí:-ka	'his/her stone'
	ás,ka,na	'his/her clothes'	saná-ka	'his/her deer'
	sapá:-ka	'his/her forehead'	aná:,ka,la:ka	'his/her chin'

McCarthy & Prince (1993a: 110) propose a P constraint to account for this (**Ft'** is the head foot):

(2) ALIGN-TO-FOOT (Ulwa): Align([POSS]_{Af}, L, Ft', R)

An M constraint (McCarthy & Prince 1993a: 111) designates the possessive affixes as suffixes by aligning them to the right edge of the stem:

(3) ALIGN-IN-STEM: Align ([POSS]_{Af}, R, Stem, R)

The ranking of ALIGN-TO-FOOT (P constraint) over ALIGN-IN-STEM (M constraint) yields the infixation pattern observed in Ulwa:

(4)	/siwanak, ka/	ALIGN-TO-FOOT	ALIGN-IN-STEM	<i>siwa,ka,nak</i> 'his/her root'
a.	(siwa)nak-ka	*!		(McCarthy & Prince p. 112)
b.	☞ (siwa),ka,nak		*	

(5)	/sapa:, ka/	ALIGN-TO-FOOT	ALIGN-IN-STEM	<i>sapa:-ka</i> 'his/her forehead'
a.	☞ (sapa:)-ka			
b.	sa,ka,pa:	*!	*	

3. The subcategorization approach

In a subcategorization model (Lieber 1980, Kiparsky 1982a,b, Selkirk 1982, Inkelas 1990, Orgun 1996, Yu 2003, 2007, Paster 2006b), affixation satisfies missing elements required by the affix's lexical entry.

-Affix placement (prefix vs. suffix, order, infix location) is determined by the affix's *subcat frame*.

-Affixes can subcategorize for phonological elements.

Example: Ulwa infix placement results from the subcategorization of the possessive marker for a phonological element, namely the head foot:

(6) [[(Ft')] -ka ...]

4. Predictions for PCAO

(7) Predictions of P >> M for PCAO

- Phonological principles can yield orderings at odds with other principles (i.e., PCAO exists).
- Entire morphemes, not just segments, may be phonologically ordered.
- A sequence of multiple affixes may be reordered for reasons of phonological optimization.
- PCAO results from externally motivated P constraints.

- (8) Predictions of subcategorization approach for PCAO
- (a) True PCAO does not exist.
 - (b) Segments belonging to affixes may undergo phonological metathesis, but entire affixes cannot.
 - (c) No case exists in which multiple affixes are phonologically ordered with respect to each other.
 - (d) Phonological conditions on the placement of affixes may or may not be optimizing.

PCAO results when phonology causes an affix to be realized in a position other than where morphology would otherwise put it.

Example: In Doyayo (Adamawa-Ubangi, Cameroon; Wiering & Wiering 1994), a series of verb suffixes is ordered by scope, except that the *-m* pluralizing suffix is first in any combination:

- | | | | | |
|-----|-----------------|-----------------------------------|---------------------------------|---------------------------------------|
| (9) | haa- m | ‘(several) are sour’ | ϵ - m | ‘sing (many)’ |
| | haa- m-z | ‘(several) turned sour (rapidly)’ | $\epsilon\epsilon$ - m-l | ‘sing (many) (over a period of time)’ |
| | *haa-z-m | | * $\epsilon\epsilon$ -l-m | |

In addition, *-m* occurs before the final consonant of a C-final verb root.

- | | | | | |
|------|-----------------|-------------------------------|-----------------|-------------------------|
| (10) | tus | ‘spit out’ | kab | ‘catch’ |
| | tu, m ,s | ‘spit out (several)’ (*tus-m) | ka, m ,b | ‘catch (many)’ (*kab-m) |

The generalization that [m] occurs first in any cluster is surface-true in Doyayo, so the location of the *-m* suffix follows from a general phonological property of the language.

Doyayo thus exhibits “fake PCAO”.

5. Does “real” PCAO exist?

5.1 Relative ordering of multiple affixes

Paster (2006a) presents results of a cross-linguistic search for cases of phonological affix order.

-From a study of hundreds of languages, only 5 possible cases of the phenomenon emerged (in Doyayo, Witsuwit’en, Washo, Awtuw, and Fula/Pulaar)

Example: In Witsuwit’en (Athapaskan, British Columbia; Hargus & Tuttle 1997: 207), the *s-* Negative prefix usually occurs inside the Tense/Aspect prefix.

- | | | |
|------|--|--|
| (11) | we-c’- <u>ϵ-s-η</u> <u>ϵn?</u> | we-ts’- <u>ϵ-s-tl’</u> <u>et</u> |
| | Neg-Unsp.Obj- Prog-Neg-see | Neg-1pl- Impf-Neg-fart |
| | ‘s/he doesn’t see anything’ | ‘we’re not farting’ |

But with ‘inner’ subjects, *s-* occurs *outside* the Tense/Aspect prefix, which avoids a complex coda.

- | | | |
|------|--|---|
| (12) | we-c’-[ϵ]- <u>s-ϵ-xw-η</u> <u>ϵn?</u> | we-s- <u>ϵ-xw-tl’</u> <u>et</u> |
| | Neg-Unsp.Obj-[Epenth]- Neg-Prog-2pl-see | Neg- Neg-Impf-2pl-fart |
| | ‘you (pl.) don’t see anything’ | ‘you (pl.) aren’t farting’ |

H&T: normal order (Neg-T/A-) changes to make *s-* a coda, unless this would create a complex coda.

- (13) *COMPLEX (P)
 ALIGN-CODA-S_{NEG}: S_{NEG} should be a coda. (M)
 TENSE-STEM: Align the right edge of the Tense prefix to the left edge of the verb stem. (M)
 NEG-STEM: Align the right edge of the Negative prefix to the left edge of the verb stem. (M)

Ranking: *COMPLEX >> ALIGN-CODA-S_{NEG} >> TENSE-STEM >> NEG-STEM.

Alternative analysis of Witsuwit'en: phonological metathesis.

- The output of the morphology/syntax is T/A-Neg-, followed by metathesis to repair complex codas, reversing the order of the *segments* of the affixes but not the affixes themselves.
- i.e., this is “fake PCAO”

A related example: “Exfixation” in Hamer (South Omotic, Ethiopia; Lydall 1976:408-409 via Zoll 1996)

(14)	a.	isin	‘sorghum’	isin- ta	‘small amount of sorghum’
		rac	‘Rac (clan)’	ratca	‘Rac man’
	b.	oto	‘calf’	oto- no	‘all calves’
		isin	‘sorghum’	isin- no	‘all sorghum’
		rac	‘Rac (clan)’	ranco	‘all Rac’

Coda condition: ‘Noncoronal place must open into a vowel’ (Zoll 1996: 176)

Zoll’s analysis: CODA-CONDITION >> NO-INTERVENING (a variant on ANCHOR/ALIGN that places the suffix at the right edge of the word)

Hamer exhibits straightforward metathesis on a par with the Witsuwit'en example, but where it is clear that the affix starts out as a true suffix and undergoes regular, purely phonological metathesis.

Zoll refers to this as “exfixation” but in fact it is not a special case at all; it follows directly from a model where morphology precedes phonology.

Remaining possible examples from Paster (2006a): Washo (which seems not to require P >> M since the effects are local; more data are needed) and Awtuw (where the ordering in question is more likely templatic than phonological, since the phonological explanation would account only for a subset of the examples)

Another putative case: Warlmanpa (Pama-Nyungan, Australia; discussed by Wolf (2008: 228-229))

- Reflexive *-nyanu* follows most person/number markers, but *precedes* the second person *-n*
- Following Noyer (1994), Wolf relates this to *-n* being C-final (unlike other person/number markers)
- Wolf proposes that the affix order changes due to a constraint against geminates or against sonorant geminates, which would be violated by **-n-nyanu*
- Problem: the data are equally compatible with a (morphological) templatic pairwise ordering between these two suffixes having nothing to do with their shape

Across-the-board affix reordering for phonological optimization (e.g., along a scale) is not attested.

- Only one language, Gombe Fula (Arnott 1970), exhibits a possible case of comprehensive phonological reordering.

An example of comprehensive phonological reordering?: Arnott (1970: 366) claims that consonantal verb suffixes in Gombe Fula (West Atlantic, Nigeria) are ordered phonologically by the formula ‘TDNR’:

(15)	T-D-R			
		’o-ja6- t-id-ir -an-ii-yam	depte ’e	semmbé
		3sg-take-INT-COM-MOD-dative-past-1sg	books with	force
		‘He snatched all my books from me by brute force’ (p. 367)		
(16)	T-N-R			
		’o-yam- ɗ-it-in-ir -ii-mo	lekki	gokki kesi
		3sg _i -healthy-DEN-REV-CAU-MOD-past-3sg _j	medicine	other new
		‘He _i cured him _j with some new medicine’ (p. 368)		

TDNR order could be phonologically optimizing (Paster 2001) since it corresponds to the sonority hierarchy (see, for example, Ladefoged 1982):

(17)	t	d	n	r
	voiceless	voiced	nasals	liquids
	stops	stops		
	sonority →			

A closer look at Fula/Pulaar

Arnott lists ten consonantal suffixes or ‘extensions’ in Gombe Fula (p. 334; examples pp. 340-364)

(18)	Shape	Label	Example
	-t	Reversive (REVERS)	taar- t -a ‘untie’
	-t	Repetitive (REPET)	soor- t -o ‘sell again’
	-t	Reflexive (REFLEX)	ndaar- t -o ‘look at oneself’
	-t	Retaliative (RETAL)	jal- t -o ‘laugh at... in turn’
	-t	Intensive (INTENS)	yan- t -a ‘fall heavily’
	-d	Associative (ASSOC)	nast- id -a ‘enter together’
	-d	Comprehensive (COMPR)	janng- id -a ‘read, learn all...’
	-n	Causative (CAUS)	woy- n -a ‘cause to cry’
	-r	Modal (MODAL)	be-mah- ir -i di ‘they built them with’
	-r	Locative (LOCAT)	’o-’yiw- r -ii ‘he came from’

Arnott (1970) presents 5 pairwise combinations exhibiting TDNR order.

Examples:

(19) a.	T precedes D			
	’o-ma66- it-id -ii	jolde	fuu	
	3sg-close-REVERS-COMPR-past	doors	all	
	‘He opened all the doors’ (p. 367)			
b.	T precedes N, N precedes R			
	’o-yam- d-it-in-ir -ii-mo	lekki	gokki	kesi
	3sg _i -healthy-denominative-REVERS-CAUS-MODAL-past-3sg _j	medicine	other	new
	‘He _i cured him _j with some new medicine’ (p. 368)			
c.	T precedes R			
	’o-ma66- it-ir -ii	yolnde	hakkiil	
	3sg-close-REVERS-MODAL-past	door	slowly	
	‘He opened the door slowly’ (p. 367)			
d.	D precedes R			
	no-njood- od-or -too-mi	’e	ma66e	
	how-sit-ASSOC-MODAL-rel.fut-1sg	with	3pl	
	‘How shall I sit/live with them?’ (p. 367)			

Arnott (1970) presents 4 pairwise combinations that do not obey the TDNR generalization.

<i>Examples:</i>			
(20)	a.	D precedes T	
		mi-wol- d-it -at-aa	'e ma66e
		1sg-speak-COMPR-REPET-fut-neg	with 3pl
		'I won't speak with them again' (p. 368)	
	b.	N precedes T	
		mi-hul- n-it -oo-mo	
		1sg-fear-CAUS-RETAL-subjunctive-3sg	
		'(If he frightens me,) I'll frighten him in turn' (p. 368)	
	c.	N precedes D	d. R precedes D
		'o-nyaam- n-id -ii-dfi	mi-yaa- r-id -ii-dfi
		3sg-eat-CAUS-COMPR-past-3pl	1sg-take-MODAL-COMPR-past-3pl
		'He fed them all' (p. 368)	'I took them all' (p. 368)

Arnott p. 367: "Variation from the usual order seems to be confined to cases where the basic radical and first extension... frequently occur together as an extended radical..."

Lexicalized forms often have idiomatic meanings not predictable from the meaning of their parts, yet these forms do not have idiomatic meanings. These 'exceptional' forms will be addressed again later.

A hypothetical P >> M account of Gomba Fula affix order

P constraint prohibits decrease in sonority from one suffix to the next:

(21) *FALLINGSONORITY (EXT): Within EXT, when any consonant C₁ precedes consonant C₂, C₂ may not be less sonorous than C₁.

M constraint (SCOPE; Condoravdi & Kiparsky 1998) requires order to correspond to scope.

(22) SCOPE: Morphological constituency reflects scope.

The ranking P >> M selects forms with the TDNR order, even when the order violates SCOPE.

(23) **'o-irt-**in-ir**-ii kam supu 'o kuddu 'He made me stir the soup with a spoon'¹
CAUS-MODAL

/irt, -r, -n/	*FALLINGSONORITY(EXT)	SCOPE
a. irt-ir-in-	*!	
b. irt-in-ir		*

Problem: Arnott provides no examples where Scope is violated.

Fuuta Tooro Pulaar (spoken near Matam, Senegal)

As detailed in Paster (2005b), I investigated the question of the TDNR ordering with a native speaker of a dialect related to Gomba Fula.

¹ This form is not attested, but constructed based on Arnott's generalization for the sake of the argument.

Consonantal extensions of Fuuta Tooro Pulaar

(24)	Shape	Label	Example
-t		Separative/Reversive (SEPAR)	mi-udd- it -ii ² baafal ngal 'I opened the door' (<'close')
-t		Repetitive (REPET)	'o-haal- t -ii 'he spoke again'
-d		Comprehensive/Associative (COMPR)	mi-udd- id -ii baafe de 'I closed all the doors'
-n		Causative (CAUS)	mi-jang- in -ii 'I taught'
-r		Modal/Instrumental/Locative (MODAL)	mi-dog- r -ii pade 'I ran with shoes'

In combinations of extensions, order generally corresponds to semantic 'scope' (broadly defined).

-The suffix with widest scope occurs furthest from the root.

Pairwise combinations exhibiting both possible orderings, with corresponding meaning change:

-T (Separative) and D; T (Repetitive) and D; T (Repetitive) and N

Examples:

With plural object, Separative suffix denotes iterative action. Comprehensive denotes simultaneous action.

When Comprehensive occurs outside Separative (a), simultaneous action reading results. When Separative occurs outside Comprehensive (b), iterative reading results.

(25) a. T-D		b. D-T
'o-sok- t-id -ii	baafe de fof	'o-sok- d-it -ii
3sg-lock-SEPAR-COMPR-past	doors det. all	3sg-lock-COMPR-SEPAR-past
'He unlocked all the doors (at once)'		doors det. all
		'He unlocked all the doors (in sequence)'

When Comprehensive occurs outside Repetitive (a), Repetitive has narrow scope, resulting in 'different subject' reading. When Repetitive occurs outside Comprehensive (b), Repetitive has scope over Comprehensive, and 'same subject' reading results.

(26) a. T-D		b. D-T
min-cok- t-id -ii	baafal ngal	mi-yaa- d-it -ii
1pl-lock-REPET-COMPR-past	door det.	1sg-go-COMPR-REPET-past with 3sg
'We all locked the door again together'		'I went again with her'
(Someone else locked it before)		(I went with her before)

When Causative occurs outside Repetitive (a), Causative has scope over Repetitive, so the subject causes the repeated action, but not necessarily the original action. When Repetitive occurs outside Causative (b), Repetitive has scope over Causative, and the same subject causes both the original and repeated actions.

(27) a. T-N		b. N-T
'o-sood- it-in -ii-een	defterende	'o-sood- in-it -ii-een
3sg-buy-REPET-CAUS-past-1pl	book det.	3sg-buy-CAUS-REPET-past-1pl
'She made us buy the book again'		'She made us buy the book again'
(We bought it before voluntarily)		(She made us buy it before)

-Other pairwise combinations (Separative T with N, Separative T with R) occur in a fixed order consistent with the scope generalization.

-One pairwise combination (Repetitive T with R) occurs in a fixed order sometimes inconsistent with scope.

-Two combinations (D with N, and D with R) exhibit variable order that is not inconsistent with scope.

-One combination (N with R) exhibits variable order sometimes inconsistent with scope.

² In this and examples to follow, <c> = IPA [tʃ]; <j> = [dʒ]; <y> = [j]; <ny> = [ɲ]; and <sh> = [ʃ].

Three generalizations regarding the ordering of consonantal verb suffixes in Fuuta Tooro Pulaar:

- (28) a. Repetitive *-t* precedes Modal *-r* regardless of their relative scope.
 b. Causative *-n* and Modal *-r* are freely ordered with each other regardless of their scope.
 c. Otherwise, order is determined by scope.

Conclusion: Pulaar affix ordering is not phonological

Furthermore, all of Arnott's (1970) examples *including the 'exceptional' forms* are consistent with the Scope principle (Rice 2000):

(29)	T precedes R	
	'o-ma66- it-ir -ii	yolnde hakkiil
	3sg-close-REVERS-MODAL-past	door slowly
	'He opened the door slowly' (Arnott 1970: 367)	

Since no example violates Scope, we have no evidence for a non-Scope principle playing any role. Furthermore, the scope-based analysis explains the exceptional (non-TDNR) forms.

Result: Pulaar/Fula does not exhibit PCAO. Order is scope-driven, with some exceptions in Fuuta Tooro Pulaar that are arbitrary, not phonologically conditioned.

This can be modeled, e.g., in OT morphology (without $P \gg M$) by ranking pairwise TEMPLATE constraints over SCOPE (see Paster 2005b).

5.2 Mobile affixation

In Huave (isolate, Mexico; Noyer 1994, Kim to appear), certain affixes can occur as prefixes or suffixes depending on the base of attachment, apparently in order to create CV sequences (exx. from Kim to appear).

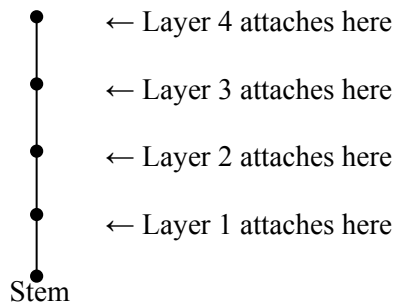
- (30) a. **š-i-n-a**-ndjak 'I will speak'
 1-FUT-1SUB-TV-speak
- b. čut-**un** '(that) I sit'
 sit-1SUB
- c. **t-a**-ndjak-**as** 'I spoke'
 CPL-TV-speak-1
- d. čut-**ut-u-s** 'I sat down'
 sit-CPL-ITR-1

Mobile affixes occur as prefixes when the base is V-initial, but as suffixes when the base is C-initial, in which case a vowel may be epenthesized since non-final syllables are "strictly" (C)V (final syllables are (C)V(C)).

Kim's analysis: *COMPLEX >> DEP >> ALIGN-R >> ALIGN-L

[L4	[L3	[L2	[L1	[Stem]	L1]	L2]	L3]	L4]
Prefix	Mobile	Prefix	Mobile		Mobile	Suffix	Mobile	Suffix

Affix hierarchy for Huave (Kim to appear):



“...affix hierarchy in all languages is determined in the morphology/morphosyntax, and ...phonological conditions on affix order are universally limited to the domain of affix placement.”

Alternative analysis: mobile affixes are “floating” (i.e., not associated to the CV skeleton)

Rose (1995): problem in Chaha affix order is solved by positing an “extended template” to which the floating segments of subject markers attach from left to right following regular association conventions.

-See also Hale 2001 on Athapaskan

This idea could work for Huave due to its rigid syllable structure, if we assume the template is extended incrementally at each Layer:



The floating affixes scan from left to right and associate to the first appropriate slot in the template; empty V slots between filled C-slots are filled via epenthesis.

If this analysis works, the Huave example is consistent with a Morphology > Phonology model

In Afar (Cushitic, Ethiopia; Fulmer 1991), some affixes (e.g., 2nd person *t*) occur as prefixes when root begins with a non-low vowel, but as suffixes elsewhere:

- (32) **t**-okm-é ‘you ate’ ab-**t**-é ‘you did’
t-ifric-é ‘you wrote’ yab-**t**-à ‘you speak’

No phonological well-formedness constraint is readily available explain the distribution, so any P constraint will likely be similar to a subcategorization frame in its arbitrariness.

Proposal: there are two different *t* affixes (and others that behave similarly) – a prefix that right-subcategorizes for a [-low] vowel at the beginning of the root, and an “elsewhere” suffix.

This does involve redundancy, but cf. Chimariko (Northern Hokan, California; Dixon 1910) which had a set of pronominal markers that occurred as prefixes to vowel-initial stems but suffixes to consonant-initial stems (exx. from Conathan 2002: 20) (‘sets’ are lexically conditioned, occurring with different classes of verbs)

- (33) Set I: /y-ama/ ‘I eat’ /kow-ʔi/ ‘I holler’
 Set II: /čhu-iman-damu-t/ ‘I fell down’ /čheleʔ-či-t/ ‘I am black’

The form of the prefix vs. suffix is different in both sets, so this is suppletive allomorphy, not mobile affixation

Note that this analysis does not entail that the phonological identity between the allomorphs (in Afar or Chimariko) is coincidental – they likely have a shared etymology

Wolf (2008: 229-230) dismisses the Huave and Afar examples as “rather dubious” following Marušič (2003).

Wolf identifies as “[p]robably the most convincing example” a case in Choctaw (Muskogean, Mississippi/Oklahoma; Broadwell 2006, Stemberger & Bernhardt 1999):

-The Instantaneous aspect marker *-h* always occurs to the right of the penultimate vowel of the stem (exx. are from Wolf 2008: 230, citing Stemberger & Bernhardt 1999; √ indicates the root)

- (34) Plain h-grade
- a. √pisa-či → pisahči ‘show’
- b. √pisa → pihsa ‘see’
- √ona → ohna ‘arrive’
- c. sa-√bi → sahbi ‘he kills me’
- či-√bi → čihbi ‘he kills you’

- With respect to the root, *-h* can be a suffix (a), an infix (b), or a prefix (c)
- On the surface, this therefore seems to qualify as phonologically conditioned mobile affixation
- However, this does not require P >> M and is in fact predicted by a subcategorization approach
 - First, *-h-* may be an infix that subcategorizes for the final CV
 - Alternatively, *-h-* may be an infix that subcategorizes for the penultimate V of the stem or the *head foot*, since the ‘*h-grade*’ accents the penult (Broadwell 2006: 165). We can assume *-h-* is added last does not ‘see’ the internal morphological structure of the stem but merely seeks out the head foot.
 - Alternatively, it may be possible to analyze *h* as a floating feature that simply docks onto the penultimate V, in effect phonetically preaspirating the following C. This seems plausible given that the penultimate vowel is accented.
- Under any of these analyses, no special mechanism is needed to account for the position of *h*.

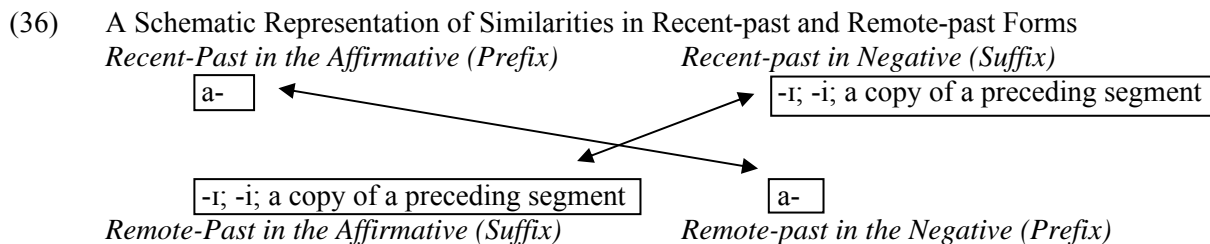
An excursus on Asante Twi

-Stump (2006), stating a generalization that has commonly been made about Akan/Twi morphology (see also Schachter and Fromkin 1968, Saah 1994, Ofori 2006a,b):

“In Twi, negative verb forms exhibit an apparent reversal in tense morphology: the tense morphology of negative past-tense forms is that of affirmative perfect-tense forms, and that of negative perfect-tense forms is that of affirmative past-tense forms (*mè-bísá-è* ‘I asked’, *m-à-bísá* ‘I have asked’, but *m-à-m-bísá* ‘I didn’t ask’, *mè-m-bísá-è* ‘I haven’t asked’).”

- | | |
|---|--|
| <p>(35) a. Past</p> <p>wó bísá-à àsèm ‘you asked something’</p> <p>mì bísá-à àsèm ‘I asked something’</p> | <p>c. Negative Past</p> <p>w é-m-bísá àsèm ‘you didn’t ask something’</p> <p>m è-m-bísá àsèm ‘I didn’t ask something’</p> |
| <p>b. Perfect</p> <p>w é-bísá àsèm ‘you have asked something’</p> <p>m è-bísá àsèm ‘I have asked something’</p> | <p>d. Negative Perfect</p> <p>wó m-bísá-à àsèm ‘you haven’t asked something’</p> <p>mì m-bísá-à àsèm ‘I haven’t asked something’</p> |

-Ofori (2006b: 22) schematizes the situation as follows (Ofori’s ‘Recent-past’ = Perfect; ‘Remote-past’ = Past):



-While the sources cited above analyze the pattern as a ‘replacement’, ‘reversal’, etc., Ofori analyzes all four of the affixes in (1) as having the same underlying form; namely, a single mora (2006b: 22):

-When the preceding segment is a consonant, the default vowel is [i]/[ɪ]:

- (40) èntúntúm ì-wó fùfù ‘a mosquito is pounding fufu’
 èntúntúm ì-bìsá àsèm ‘a mosquito is asking something’

-Assumption #2: the Past marker becomes a prefix in the Negative due to a homophony avoidance constraint

-Some have disputed homophony avoidance constraints in synchronic grammar
 (Paster 2007, Mondon in progress; see also Gessner and Hansson 2004).

-Problem: Ofori ignores tone

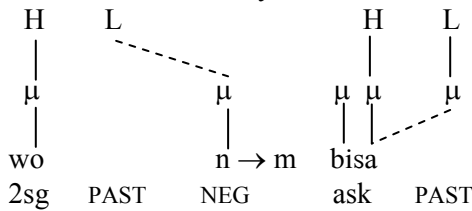
-A partial morphological analysis of Asante Twi (see Paster in prep for more):

- (41) /L-/ Past (replaces root tone) /-ù/ Past (Aff.) /a-/ Past (Neg.)
 /H-/ Perfect (replaces root tone) /-ù/ Perfect (Neg.) /a-/ Perfect (Aff.)
 /n-/ Negative

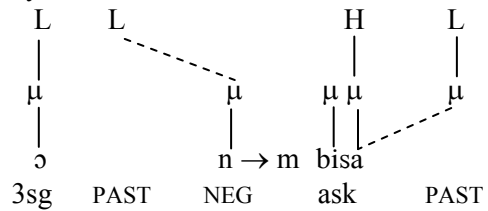
- (42) a. Negative Perfect
 wó m-bìsá-à àsèm ‘you haven’t asked something’ yè m-bìsá-à àsèm ‘we haven’t asked something’

b. Hypothetical *suffixed* Negative Past forms

*wó m-bìsá-à àsèm ‘you haven’t asked something’



*yè m-bìsá-à àsèm ‘we didn’t ask something’



Summary of cross-linguistic findings for PCAO

(43)	Prediction	P >> M	Subcategorization
(a)	PCAO exists	Yes	✓ No
(b)	What can be metathesized?	Segments & morphemes	✓ Segments
(c)	PCAO involving multiple affixes	Yes	✓ No
(d)	Phonological affix placement always optimizing	Yes	✓ No

6. Conclusion

There is no example of PCAO (either in the order of multiple affixes or in mobile affixation) that necessitates a P >> M analysis. Putative cases of PCAO turn out to be “fake PCAO” or not PCAO at all.

Affix ordering can be driven by syntactic/semantic principles and/or arbitrary templates, but not by phonology.

Affix *placement* can be affected by phonology via subcategorization for phonological elements, but this will produce only local effects (e.g. infix placement) rather than radical ‘reshuffling’ of multiple morphemes for phonological well-formedness.

Therefore, it can still be maintained that morphology feeds phonology

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