PARAGUAYAN GUARANÍ IN A PRELIMINARY TYPOLOGY OF FREE AFFIX ORDER

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ABSTRACT. Cross-linguistically, affix order is commonly determined by semantic scope (Rice, 2006) or a morphological template. Less frequently, affix order is free, which means that suffixes can be reordered without a concomitant change in scope. To address the question of what gives rise to and constrains free affix order (FAO), I present a case study of Paraguayan Guaraní (or PG, Tupí-Guaraní, Paraguay, ISO 639-3: gug). I argue that FAO in PG should be analyzed as driven by prosodic factors. The prosodic analysis has previously been proposed only for Chintang (Bickel et al., 2007).

Two major analyses of FAO see the phenomenon as driven by either *morphology* (e. g. Ryan, 2010) or *prosody* (Bickel et al., 2007). The morphological analysis proposes that FAO is a consequence of free variation within the morphological template. The phonological analysis models FAO with prosodic subcategorization for phonologically prominent positions.

I argue that the two analyses make different predictions as to the preconditions for and the extent of FAO. I show that both the morphological and the prosodic profile of FAO are attested. I propose that FAO in PG is an instance of the latter. Thus, I demonstrate that FAO is not a unified phenomenon, but rather should be typologized as driven by either morphological or prosodic factors.

1 INTRODUCTION

Cross-linguistically, the order of affixes often reflects semantic scope, as proposed by Rice (2006), the order of syntactic operations (Baker, 1985), or principles of cognitive relevance (Bybee, 1985).

For example, in Quechua (Peru, ISO 639-5: qwe), the relative order of the causative suffix *-chi* 'CAUS' and the reciprocal suffix *-na* 'RCPR' reflects differences in meaning. If *-na* 'RCPR' attaches after *-chi* 'CAUS,' the reciprocal take high scope (1a). If *-na* 'RCPR' comes before *-chi* 'CAUS,' the causative take high scope (1b). The relevant suffixes are underlined.

(1) Quechua (Peru, ISO 639-5: qwe) (Muysken, 1986)

a. *riku* *-chi* *-na* *-n* *-ku*
see -CAUS -RCPR -3 -PL
RCPR(CAUS): "they make each other see (something)"

b. *riku* *-na* *-chi* *-n* *-ku*
see -RCPR -CAUS -3 -PL
CAUS(RCPR): "they make (them) see each other"

Another common ordering is templatic, which means that the order of affixes is invariant regardless of scope. For example, in Mapuche (Araucanian, Chile, ISO 639-3: arn), *-faluw* 'pretend' always comes before negation *-la* 'NEG,' irrespective of whether this ordering mirrors semantics scope (2a) or counters it (2b).

(2) Mapuche (Araucanian, Chile, ISO 639-3: arn) (Smeets, 1989, p. 348)
pe *-w* *-faluw* *-la* *-e* *-y* *-u*
see -REFL -pretend -NEG -IND.OBJ -IND -AGR

a. NEG(pretend): "I did not pretend to see you."

b. pretend(NEG): "I pretended not to see you."

Other cases of templatic ordering include, for example, the CARP template in Bantu (Africa, ISO 639-5: bnt) in Hyman's (2003) work.

Finally, in some languages the order of at least some suffixes is free without any corresponding change in meaning. For example, in Fuuta Tooro Pulaar (Fula, Senegal, ISO 639-3: fuc) the applicative *-ir* 'APPL' and the causative *-in* 'CAUS' can appear in either order with either scope. This is to say, the causative can scope over the applicative (3) and the applicative can scope over the causative (4) regardless of the order of two suffixes.

(3) Fuuta Tooro Pulaar (Fula, Senegal, ISO 639-3: fuc) (Paster, 2006, p. 182)

a. *o irt -ir -in -ii kam supu o kuddu*
3SG stir -APPL -CAUS -PAST 1SG soup DET spoon

b. *o irt -in -ir -ii kam supu o kuddu*
3SG stir -CAUS -APPL -PAST 1SG soup DET spoon
CAUS(APPL): "he made me stir the soup with a spoon" (I used a spoon)

(4) a. *o irt -in -ir -ii kam supu o laɓi*
3SG stir -CAUS -APPL -PAST 1SG soup DET knife

b. *o irt -ir -in -ii kam supu o laɓi*
3SG stir -APPL -CAUS -PAST 1SG soup DET knife
APPL(CAUS): "he made me stir the soup with a knife" (he used a knife)

I refer to the phenomenon above as free affix order (abbreviated FAO). By FAO, I specifically mean those cases where the order of affixes can be permuted freely, without affecting the scope. In other words, cases where reordering suffixes changes the meaning are *not* instances of free affix order.

Among the scopal (1), templatic (2), and free (3-4) affix orders, the last one is by far least common (Caballero, 2010). Given its rarity, a natural question is: What gives rise to free affix order and what constrains it?

To address this question, I present a case study of Paraguayan Guaraní (henceforth PG, Paraguay, ISO 639-3: gug), a heavily agglutinating language of the Tupí-Guaraní family. The case study of PG is significant because it is the only known language other than Chintang (Kiranti, Nepal, ISO 639-3: ctn, Bickel et al., 2007), where—I will argue—FAO is driven by prosodic mechanisms.

There are two major analysis of FAO proposed in previous literature. I refer to these two analyses as *morphological* (exemplified by, e. g., Caballero, 2010; Paster, 2006; Ryan, 2010) and *prosodic* (exemplified by Bickel et al., 2007). The morphological analysis proposes that FAO is a consequence of free variation within the morphological template of a language. The phonological analysis, on the other hand, models FAO with prosodic subcategorization for phonologically prominent positions.

I argue that the two analyses make different predictions as to the extent of free affix ordering within a language as well as the preconditions necessary for FAO to arise. I show that both profiles are attested: while most languages have morphological FAO, some languages have prosodic FAO. In previous literature, the prosodic analysis has only been applied to Chintang (Bickel et al., 2007). In this talk, I propose that FAO in Paraguayan Guaraní is also of the prosodic type.

In doing so, I demonstrate that FAO is not a unified phenomenon. Instead, I propose that it should be typologized as either morphological or prosodic and situate the free affix ordering in Paraguayan Guaraní in that preliminary typology as being of the latter type.

The rest of the talk is structured as follows. In Section 2, I describe the prosodic and morphological structure of the PG verb. In Section 3, I review the morphological analysis of FAO. In Section 4, I review the prosodic analysis and demonstrate that FAO is PG should be analyzed as the latter type.

2 PARAGUAYAN GUARANÍ

2.1 *Background*

Paraguayan Guaraní (Paraguay, ISO 639-3: `gug`) is Tupian language of the Tupí–Guaraní branch, which is the most widely distributed branch of the family. It is an official language of Paraguay (in addition to Spanish) and one of the most widely spoken American languages.

Paraguayan Guaraní is a highly agglutinating language. All syllables are open. Prefixes express agreement categories and valence changing operations, while a plethora of suffixes express other inflectional and derivational categories.[1] All of the PG data were collected by the author.

2.2 *Stressed suffixes*

In this section, I describe the morphological structure of Paraguayan Guaraní's morphologically complex verbs. I show that many of the language's suffixes are stressed and that they can be freely ordered.

First, stress predominantly falls on the last syllable. This generalization holds of all open lexical classes, including—importantly—verbs (5).[2] Phonetically, stress correlates most robustly with pitch, duration, and intensity. Stress is represented with the acute accent.

1 There is little previous scholarship on Paraguayan Guaraní stress and prosody. However, see Gregores and Suárez (1967) for an extensive description of the language's prosodic system, which supports parts of my analysis.

2 There are lexically specified exceptions, e. g. (i).

(i)

a.	*óga*	house	(`gug_ixo_20200910_mmd`)
b.	*atĩa*	sneeze	(`gug_20210401_ixo_mmd`)
c.	*máramo*	never	(`gug_20210401_ixo_mmd`)
d.	*-kuéra*	-PL	(`gug_20210401_ixo_mmd`)

(5)

a.	*mbarakajá*	cat	(gug_mcg_20200923_ejg)
b.	*morotĩ́*	white	(gug_20210401_ixo_mmd)
c.	*guatá*	walk	(gug_20210401_ixo_mmd)

Prefixes express categories such as agreement (6a), valence (6b), and possession (6c). They may not affect stress. Thus, regardless of the prefix, stress remains final.

(6)

a.	b.	c.
a- guatá	*mbo- guatá*	*che- mbarakajá*
A1SG- walk	CAUS- walk	B1SG- cat
"I walk"	"make walk"	"my cat"
		(gug_20210401_ixo_mmd)

Suffixes express various inflectional categories. Many of the language's suffixes are stressed. I this talk, I will focus specifically on the predicate-level stressed suffixes, which include at least the following (7).

(7)

a.	*-sé*	want
b.	*-vé*	more
c.	*-pá*	finish
d.	*-mo'ã́*	almost
e.	*-potá*	about to
f.	*-ramó*	recently
g.	*-reí*	in vain
h.	*-gua'ú*	pretend
i.	*-vý*	intend
j.	*-guý*	somewhat, reluctantly
k.	*-ité*	very
l.	*-mí*	PLD (pleading imperative)
m.	*-'í*	DMN (diminutive)

If one of these stressed suffixes attaches, primary stress falls on the last syllable of the suffix, while the last syllable of the stem preserves a degree of secondary stress (8).[3] Secondary stress is represented with the grave accent.

3 The observation that non-final stresses in morphologically complex words are preserved receives support from previous literature. Gregores and Suárez (1967, p. 106) also claim that stems with stressed suffixes retain secondary stress. Nascimento (2008, p. 59) makes the same claim about a related language Guajá.

(8) a. *a-* *guatà* *-sé*
A1SG- walk -want
"I want to walk" (gug_20210401_ixo_mmd)

b. *a-* *guatà* *-vé*
A1SG- walk -more
"I walked more" (gug_20210401_ixo_mmd)

c. *a-* *guatà* *-mo'ã́*
A1SG- walk -almost
"I almost walked" (gug_20210401_ixo_mmd)

When several stressed suffixes attach at once, primary stress stress falls on the last syllable of the last stressed suffix. The other suffixes and the stress retain secondary stress (9).

(9) a. *a-* *guatà* *-sè* *-vé*
A1SG- walk -want -more
"I want to walk more" (gug_20210401_ixo_mmd)

b. *a-* *guatà* *-pà* *-ramó*
A1SG- walk -finish -recently
"I just finished walking" (gug_20210429_ixo_mmd)

c. *o-* *guatà* *-potà* *-sé*
A3- walk -about to -want
"he wanted to start to walk" (gug_20210318_ixo_mmd)

Now, there is almost complete freedom with respect to ordering among the stressed suffixes (10-14).[4] Importantly, the different orders do not reflect scopal differences.

(10) a. *a-* *guatà* *-mo'ã́* *-vé*
A1SG- walk -almost -more
"I planned to continue walking" (gug_ixo_20201203_mmd)

b. *a-* *guatà* *-vè* *-mo'ã́*
A1SG- walk -more -almost

(11) a. *o-* *guatà* *-gua'ù* *-sé*
A3- walk -pretend -want
"he pretends to want to walk" (gug_20210330_ixo_mmd)

b. *o-* *guatà* *-sè* *-gua'ú*
A3- walk -want -pretend

4 Some exceptions include (ii).

(ii) *-sé* 'want' ≺ *vé* 'more,'
-vý 'intend' ≺ *vé* 'more,'
-potá 'about to' ≺ *sé* 'want,' ...

(12) a. *a-* *guatà* *-potà* *-mo'ã́*
A1SG- walk -about to -almost
"I pretend that I'm about to walk" (gug_20210429_ixo_mmd)

b. *a-* *guatà* *-mo'ã̀* *-potá*
A1SG- walk -almost -about to

(13) a. *a-* *guatà* *-pà* *-ramó*
A1SG- walk -finish -recently
"I just finished walking" (gug_20210503_mcg_mmd)

b. *a-* *guatà* *-ramò* *-pá*
A1SG- walk -recently -finish

(14) a. *e-* *guatà* *-reì* *-mí*
IMP- walk -in vain -PLD
"go walk around a little bit" (gug_20210329_mcg_mmd)

b. *e-* *guatà* *-mì* *-reí*
IMP- walk -PLD -in vain

The ability for either suffix order to correspond to either scope is clearly seen when the scenario is carefully controlled for. In (15), a scenario is given in which *-gua'ú* 'pretend' takes scope over *-sé* 'want.' In (16), the scope reverses.

(15) SCENARIO: You took your friend on a walk. He is not enthusiastic, but he does not want to offend you, so he feigns his excitement.

a. *o-* *guatà* *-sè* *-gua'ú*
A3- walk -want -pretend
pretend(want): "he pretends to want to walk" (gug_20210330_ixo_mmd)

b. *o-* *guatà* *-gua'ù* *-sé*
A3- walk -pretend -want

(16) SCENARIO: There is a pretending contest. The participants choose the activity they pretend to do, and the more difficult the activity is to pretend, the more highly rewarded it is. It is most difficult to pretend to walk without actually walking, but if you succeed, you will get a lot of points.

a. *a-* *guatà* *-sè* *-gua'ú*
A1SG- walk -want -pretend
want(pretend): "I want to pretend to walk" (gug_20210330_ixo_mmd)

b. *a-* *guatà* *-gua'ù* *-sé*
A1SG- walk -pretend -want

In either scenario, either order of suffixes is possible, testifying to the fact that semantic scope does not play a role in the ordering of suffixes.

2.3 *Prosodification*

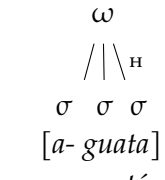
In this section, I argue that the stressed suffixes are separate phonological words. This will be a precondition for analyzing the free affix order in PG as prosodically driven.

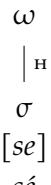
First, I propose that prosodic constituents in PG are right headed—this captures the preponderance of final stress in the language. Thus, a verb

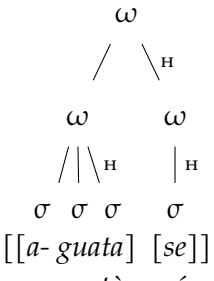
receives final stress because its rightmost syllable is the prosodic head of the word (17a).

Second, I propose that the stressed suffixes, such as *-sé* 'want,' are independently prosodified phonological words (17b). The two together form a non-minimal prosodic word which is headed, again, by the rightmost constituent (17c).[5] Prosodic constituency is represented with brackets [ ]. Headedness is represented with a small cap H.

(17)

a. 

b. 

c. 

Additional evidence in favor of the analysis is adduced by the process of regressive nasal spreading. Specifically, analyzing the suffixes as separate phonological words explains why nasality does not spread from a prosodified nasal suffix onto the verbal stem.

Normally in PG, nasality spreads from stressed nasal vowels leftward, including prefixes (18a). Nasality spreads from stressed nasal vowels within prosodified suffixes, but it does not spread from nasal suffixes onto verb stems (18b). The domain of nasal spreading is shown with wavy underline.

(18)

a. [*o-* *je-* *kytĩ*]
õ- *ñẽ-* *kỹtĩ́*
A3- AGD- cut
"he cut himself"

b. [*a-* *vy'a*] [*mo'ã*]
a- *vy'à* *-mõ'ã́*
A1SG- rejoice almost
"I was almost happy"
(`gug_20210401_ixo_mmd`)

Under the current analysis, the boundaries of regressive nasalization correspond to the boundaries of the minimal phonological word. Prefixes do not form a separate phonological word, so nasality can spread onto prefixes. Suffixes, on the other hand, are prosodified separately, so nasality can spread within the suffix but not outside of it.

5 I am assuming that morphologically complex verbs have recursive prosodic structure. For a motivation of recursive prosodic structure, see Ito and Mester (2009, 2012).

In interim summary, I show that proposed that in Paraguayan Guaraní, the right branch of a prosodic constituent is its head and that the stressed suffixes are independently prosodified phonological words, forming a recursive word with the stem.

3 MORPHOLOGICAL FAO

As we just saw, PG shows free affix order, which means that the order of affixes can be permuted with changing the meaning. FAO is rather uncommon cross-linguistically (Caballero, 2010). Most of the the previous accounts model FAO as free variation with the morphological template of a verb (e. g., Caballero, 2010; Paster, 2006; Ryan, 2010).

First, recall the Quechua data, where the order of suffixes corresponds to their relative semantics scope (19).

(19) Quechua (Peru, ISO 639-5: qwe) (Muysken, 1986)

a. *riku -chi -na -n -ku*
see -CAUS -RCPR -3 -PL
RCPR(CAUS): "they make each other see (something)"

b. *riku -na -chi -n -ku*
see -RCPR -CAUS -3 -PL
CAUS(RCPR): "they make (them) see each other"

This kind of reordering is often attributed to a requirement that the order of affixes often reflects semantic scope (e. g. Rice, 2006). In Optimality Theory, this can be formalized as (20).

(20) SCOPE
Morphological constituency reflects scope.

(Another implementation of this constraint can be found in Zukoff's (to appear) work on the Mirror Alignment Principle.)

Mapuche presents us with a different situation where the order of the two suffixes *-la* 'NEG' and *-faluw* 'pretend' is fixed regardless of the scope (21).

(21) Mapuche (Araucanian, Chile, ISO 639-3: arn) (Smeets, 1989, p. 348)
pe -w -faluw -la -e -y -u
see -REFL -pretend -NEG -IND.OBJ -IND -AGR

a. NEG(pretend): "I did not pretend to see you."

b. pretend(NEG): "I pretended not to see you."

In the morphological model, fixed affix order can be captured with morphotactic constraints, which enforce pair-wise suffix order (e. g. Paster, 2006). The form of the morphotactic constraints is schematized in (22).

(22) x-y
Assign a violation mark when affix y precedes affix x.

Specifically, in Mapuche, the constraint *FALUW-LA* outranks SCOPE (23).

(23) Mapuche constraint ranking
FALUW-LA ⟫ SCOPE

As a consequence, the negative *-la* 'NEG' always ends up surfacing to the right of *-faluw* 'pretend,' regardless of the input scope (24-25).

(24)	(*pe -w -faluw*) *-la* see -REFL -pretend -NEG :	*FALUW-LA* ⟫	SCOPE
☞ i.	*pe-w-faluw-la*		
ii.	*pe-w-la-faluw*	*!	*

NEG(pretend): "I did not pretend to see you."

(25)	(*pe -w -la*) *-faluw* see -REFL -NEG pretend :	*FALUW-LA* ⟫	SCOPE
☞ i.	*pe-w-faluw-la*		*
ii.	*pe-w-la-faluw*	*!	

pretend(NEG): "I pretended not to see you."

Finally, in Fuuta Tooro Pulaar, the applicative *-ir* 'APPL' and the causative *-in* 'CAUS' can appear in either order with either scope (26-27).

(26) Fuuta Tooro Pulaar (Fula, Senegal, ISO 639-3: fuc) (Paster, 2006, p. 182)
a. *o irt -ir -in -ii kam supu o kuddu*
3SG stir -APPL -CAUS -PAST 1SG soup DET spoon
b. *o irt -in -ir -ii kam supu o kuddu*
3SG stir -CAUS -APPL -PAST 1SG soup DET spoon
CAUS(APPL): "he made me stir the soup with a spoon" (I used a spoon)

(27) a. *o irt -in -ir -ii kam supu o laɓi*
3SG stir -CAUS -APPL -PAST 1SG soup DET knife

b. *o irt -ir -in -ii kam supu o laɓi*
3SG stir -APPL -CAUS -PAST 1SG soup DET knife
APPL(CAUS): "he made me stir the soup with a knife" (he used a knife)

Thus, Fuuta Tooro Pulaar shows free affix order. In the morphological model, free affix order is modeled with freely ranked morphotactic constraints (∼). In Pulaar, the freely ranked constraints are *IR-IN* and *IN-IR*. Both morphotactic constraints are ranked above Scope (28).

(28) Fuuta Tooro Pulaar constraint ranking
IR-IN ∼ *IN-IR* ⟩⟩ SCOPE

The free ranking of the morphotactic constraints means that when the output is evaluated either ranking can be used. Since the SCOPE is ranked below

Thus, both orders are possible for both scopes. Either suffix order is possible when the causative *-in* 'CAUS' takes scope over the applicative *-ir* 'APPL' (29-30).

(29)		(*irt -ir*) *-in* stir -APPL -CAUS :	*IR-IN* ⟩⟩	*IN-IR* ⟩⟩	SCOPE
☞	i.	*irt-ir-in*		*	
	ii.	*irt-in-ir*	*!		*

CAUS(APPL): "he made me stir the soup with a spoon" (I used a spoon)

(30)		(*irt -ir*) *-in* stir -APPL -CAUS :	*IN-IR* ⟩⟩	*IR-IN* ⟩⟩	SCOPE
	i.	*irt-ir-in*	*!		
☞	ii.	*irt-in-ir*		*	*

CAUS(APPL): "he made me stir the soup with a spoon" (I used a spoon)

Likewise, either suffix order is possible when the applicative *-ir* 'APPL' take scope over the causative *-in* 'CAUS' (31-32).

(31)		(*irt -in*) *-ir* stir -CAUS -APPL :	*IN-IR* ⟩⟩	*IR-IN* ⟩⟩	SCOPE
	i.	*irt-ir-in*	*!		*
☞	ii.	*irt-in-ir*		*	

APPL(CAUS): "he made me stir the soup with a knife" (he used a knife)

(32)	(*irt -in*) *-ir* stir -CAUS -APPL	:	*IR-IN* ⟩⟩	*IN-IR* ⟩⟩	SCOPE
☞ i.	*irt-ir-in*			*	*
ii.	*irt-in-ir*		*!		

APPL(CAUS): "he made me stir the soup with a knife" (he used a knife)

Now, assuming that the learner is predisposed to learn the order of suffixes which corresponds to semantic scope, and that they will not posit constraints for which they do not have evidence, scopal affix order has the simplest grammar (1 constraint), templatic affix order is more complex (2 constraints), and FAO is the most complex (3 constraints). This is schematized in Table 1.

ORDER	GRAMMAR	COMPLEXITY	FREQUENCY
SCOPAL	SCOPE	low	high
TEMPLATIC	X-Y ⟩⟩ SCOPE	higher	lower
FREE	X-Y ∼ Y-X ⟩⟩ SCOPE	highest	lowest

Table 1: Affix ordering in morphology (ORDER and GRAMMAR columns based on Ryan, 2010).

Furthermore, assuming that higher complexity correlates inversely with frequency, the morphological model predicts that FAO should be the least common of the three affix orders.

The prediction of the morphological model is generally borne out. Cross-linguistically, FAO is rare. In languages with FAO, it is often restricted to only a couple of morphemes.

In Chichewa (Bantu, Malawi, ISO 693-3: `nya`), for example, FAO obtains only in two instances: (1) the reciprocal *-an* 'REC' and the causative *-its* 'CAUS' can be variably ordered to express a causativized reciprocal (Hyman, 2003, p. 251), and (2) the applicative *-il* 'APP' and the passive *-idw* 'PASS' can be variably ordered when the applicative introduces a locative expression (Hyman, 2003, p. 253).

In Choguita Rarámuri (or CR, Uto-Aztecan, Mexico, ISO 639-3: `tar`), only three suffixes (the causative *-ti* 'CAUS,' the associated motion *-si* 'MOT,' and the desiderative *-nale* 'DESID') can be variably ordered (Caballero, 2010, p. 190).

In Fuuta Tooro Pulaar, only two suffixes (the causative *-n* 'CAUS' and the applicative *-r* 'APPL') can be variably ordered (Paster, 2006, p. 183). These observations are summarized in Table 2.

LANGUAGE	FREELY ORDERED AFFIXES	
Chichewa	*-an* 'REC' ~ *-its* 'CAUS' (when CAUS scopes over REC)	
	-il 'APPL' ~ *-idw* 'PASS' (when APPL introduces a locative)	(Hyman, 2003, p. 251)
CR	*-ti* 'CAUS' ~ *-si* 'MOT'	
	-si 'MOT' ~ *-nale* 'DES'	
	-ti 'CAUS' ~ *-nale* 'DES'	(Caballero, 2010, p. 190)
Pulaar	*-n* 'CAUS' ~ *-r* 'APPL'	(Paster, 2006, p. 183)

Table 2: Exhaustive list of freely ordered affixes in three languages.

In summary, the morphological model analyses FAO with freely ranked morphosyntactic constraints. This model associates FAO with the most complex grammar, predicting that it is difficult to learn and therefore rare.

4 PROSODIC FAO

Now, I turn to prosodic model, in which the phenomenon of FAO is analyzed as subcategorization for prosodically prominent positions.

The prosodic model has been proposed by Bickel et al. (2007) to account for free affix order in Chintang (Kiranti, Nepal, ISO 639-3: `ctn`). Chintang is remarkable in that, unlike in most other languages, all of Chintang prefixes participate in free ordering. Thus, for example, give any three prefixes, all 3! = 6 orders are possible (33).

(33) Chintang (Kiranti, Nepal, ISO 639-3: `ctn`) (Bickel et al., 2007, p. 44)

a. *u-* *kha-* *ma-* *cop* *-yokt* *-e*
   3NS.A- 1NS.P- NEG- see -NEG -PAST
b. *u-* *ma-* *kha-* *cop* *-yokt* *-e*
c. *kha-* *u-* *ma-* *cop* *-yokt* *-e*
d. *kha-* *ma-* *u-* *cop* *-yokt* *-e*
e. *ma-* *u-* *kha-* *cop* *-yokt* *-e*
f. *ma-* *kha-* *u-* *cop* *-yokt* *-e*

"they didn't see us"

Importantly, Bickel et al. (2007) show that the Chintang prefixes are independently prosodified: they have an onset requirement (underlyingly vowel-initial prefixes are realized with an initial glottal stop) and they can serve as hosts for Chintang endoclitics (pp. 56–58). The properties distinguish prefixes from suffixes, which do not have initial glottal stops and do not host endoclitics.

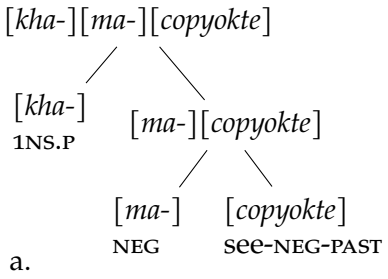
Bickel et al. (2007) use this property of Chintang to propose an analysis where the Chintang FAO is a consequence of subcategorization. In their account, Chintang prefixes subcategorize for a prosodically prominent position, i. e. the phonological word to their right (34). For a compatible treatment of affixation, see e. g. Kalin's (2020) work.

(34) SUBCATEGORIZATION IN CHINTANG
Prefixes attach to the left edge of a prosodic word:
prefix : __ [ ]$_{\omega}$.

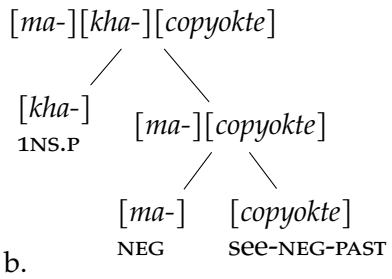
Following Yu (2007), Bickel et al. (2007) assume that only edges and prosodically prominent positions can be subcategorized for. Thus, the fact that prefixes in Chintang are independently prosodified is a necessary prerequisite for this account. It also explains why Chintang's rampant freely ordered affixation is not the cross-linguistic norm—in most languages, affixes are not prosodic words separate from the stems.

This subcategorization frame derives the free ordering of Chintang prefixes. Consider a verb with any two prefixes (35). Assume that the verb [*copyokte*] 'see-NEG-PAST' first combines with one prefix [*ma-*] 'NEG.' Another prefix, e. g. [*kha-*] '1NS.P,' may then, in accordance with its subcategorization frame, attach to [*ma-*] 'NEG' (38a). It may, however, also infix by attaching to [*copyokte*] 'see-NEG-PAST' (38b). Thus, free affix order obtains.[6]

(35) a.



b.



Now, note that Bickel et al.'s (2007) treatment of FAO differs from the analyses in the previous section. Bickel et al. (2007) do not use ranked

6 If the attachment of [*ma-*] 'NEG' follows [*kha-*] '1NS.P,' the same reasoning applies; free affix order order results in either case.

templatic constraints to derive the free affix order in Chintang. Instead, they propose that Chintang FAO takes place in phonology (due to prosodic subcategorization), not in morphology.

It would be possible to model Chintang FAO morphologically. This would require proposing freely ranked constraints which specify order for each pair of prefixes (36). The squiggly arrow (⇜) connects different prefix orders with constraint rankings which generate them.

(36) a. [*u-*] [*kha-*] [*ma-*] [*cop -yokt -e*]
3NS.A- 1NS.P- NEG- see -NEG -PAST
⇜ *U-KHA* ⟫ *KHA-U, KHA-MA* ⟫ *MA-KHA*

b. [*u*] [*ma*] [*kha*] [*cop -yokt -e*]
⇜ *U-MA* ⟫ *MA-U, MA-KHA* ⟫ *KHA-MA*

c. [*kha*] [*u*] [*ma*] [*cop -yokt -e*]
⇜ *KHA-U* ⟫ *U-KHA, U-MA* ⟫ *MA-U*

d. [*kha*] [*ma*] [*u*] [*cop -yokt -e*]
⇜ *KHA-MA* ⟫ *MA-KHA, MA-U* ⟫ *U-MA*

e. [*ma*] [*u*] [*kha*] [*cop -yokt -e*]
⇜ *MA-U* ⟫ *U-MA, U-KHA* ⟫ *KHA-U*

f. [*ma*] [*kha*] [*u*] [*cop -yokt -e*]
⇜ *MA-KHA* ⟫ *KHA-MA, KHA-U* ⟫ *U-KHA*

While this yields the correct outputs, it requires stipulating morphotactic constraints for each pair of affixes and misses the central generalization: free ordering of prefixes in Chintang is the norm, not the exception. The subcategorization account captures this generalization by allowing prefixes to freely "infix." The morphological account, on the other hand, would essentially equate to listing each possible ordering of prefixes one by one.

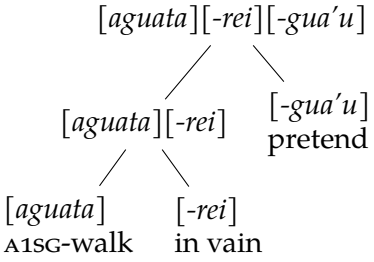
I propose to port Bickel et al.'s (2007) account to Paraguayan Guaraní freely ordered suffixes. In PG, like in Chintang, affixes are independently prosodified. Likewise, in both languages, free ordering is the norm, not the exception.

This can be captured by saying that all PG suffixes subcategorize for phonological words to their left (37).

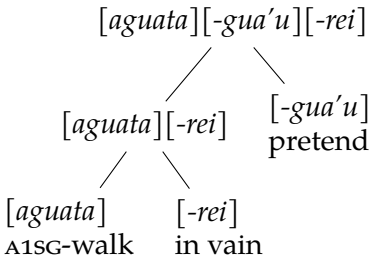
(37) SUBCATEGORIZATION IN PARAGUAYAN GUARANÍ
Suffixes attach to the right edge of a prosodic word:
suffix : [ ]$_\omega$ __.

This subcategorization frame derives the free ordering of PG suffixes in a way parallel to Chintang. The outer suffix can attach after the inner suffix (38a), but it can also attach directly to the stem (38b).

(38) a.



b.



One can adapt Bickel et al.'s (2007) account to PG because PG affixes are, as I argued earlier, independently prosodified. Doing so captures the fact that almost any two affixes can be freely ordered without having to list all the different permutations as freely ranked morphotactic constraints.

MORPHOLOGICAL FAO	PROSODIC FAO
Chichewa	Paraguayan Guaraní
Choguita Rarámuri	Chintang
Fuuta Tooro Pulaar	
…	

Table 3: Languages by type of free affix order.

In short, I propose that free affix order in PG has the same source as in Chintang. In both languages, FAO is driven by prosody. This sets these two language aside from other cases of FAO described in previous literature, which are driven by morphology (Table 3).

5 CONCLUSIONS

To conclude, I proposed that free affix order is not a unified phenomenon. Rather, it falls in one of two typologically distinct categories: morphological FAO and prosodic FAO. Table 4 summarizes the differences between the two systems.

Most previously described systems are of the morphological type (e. g. Caballero, 2010; Paster, 2006; Ryan, 2010). In the morphological FAO, free ordering is a matter of free variation within the morphological template. Assuming that the order of each pair of affixes needs to be learned separately,

FAO TYPE:	MORPHOLOGICAL	PROSODIC
AFFIXES NEED BE ω?	NO	YES
% OF FREELY ORDERED AFFIXES	LOW	~100%

Table 4: Morphological and prosodic FAO compared.

ordering affixes freely in morphology involves learning a complex grammar. This correctly predicts that morphological FAO is rare.

However, morphological FAO does not have any prosodic perquisites, which means it might arise regardless of whether the affixes are independent prosodic words or not.

The other type of FAO is conditioned by prosody, not morphology. This system characterizes Chintang and Paraguayan Guaraní. In systems with prosodic FAO, the free ordering is a consequence of the fact that affixes subcategorize for prosodically prominent positions, which allows any affix to freely infix. Thus, in systems with phonological FAO, free ordering is rampant (not restricted to particular affixes).

However, for prosodic FAO to arise, affixes need to be independently prosodified. Thus, prosodic FAO is cross-linguistically rare; so far only two languages have been shown to be fall in this category.[7]

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7 A third potential candidate for a language with phonological FAO is Hill Mari (Uralic, Russia, ISO 639-3: `mrj`). In Mari, suffixes exponing plurality and possession (as well as case) are generally freely ordered (iii). Luutonen (1997) observes that "[i]n Mari, the plural morphemes *šamâč*, *βlak*, and *βlä* have many characteristics that make them resemble words rather than affixes" (p. 24). Specifically, the plural markers do not vowel-harmonize with the stem and resist resyllabification (Luutonen, 1997). This suggests that Mari nominal stems and plural markers are also independently prosodified, both serving as bases for infixation.

(iii) Hill Mari (Uralic, Russia, ISO 639-3: `mrj`) (Luutonen, 1997, p. 32)

a. [*olma*] [*-βlä*] *-em*
apple -PL -my
"my apples"

b. [*olma*] *-em* [*-βlä*]
apple -my -PL
"my apples"

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