

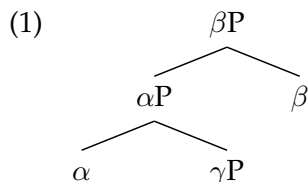
Disharmony and the Final-over-Final Condition in Amahuaca*

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The Final-over-Final Condition (FOFC) rules out head-final projections that immediately dominate head-initial projections. Syntactically inert particles are known to show (apparent) exceptions to FOFC. However, Biberauer (2017) argues that seemingly FOFC-violating particles are compliant with a version of FOFC that is relativized to heads within an extended projection (Biberauer, Holmberg, and Roberts 2014). I present novel data from Amahuaca (Panoan; Peru) in which FOFC is violated by TAM particles within the verbal extended projection. I argue that this FOFC violation cannot be explained by the mechanisms proposed by Biberauer (2017). Instead, a view of FOFC grounded in restrictions on rightward dependencies (Cecchetto 2013; Zeijlstra 2016) predicts the type of exception found in Amahuaca.

1 Introduction

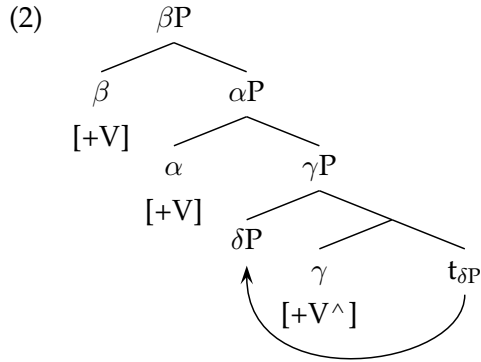
The Final-over-Final Condition (FOFC) is a proposed ban on the type of disharmonic structure seen in (1), where a head-final projection immediately dominates a head-initial projection (Holmberg 2000; Biberauer, Holmberg, and Roberts 2014, a.o.).



In (1), head-final βP immediately dominates head-initial αP , violating FOFC. One prominent account that derives a universal ban within extended projections on the configuration in (1) is put forth by Biberauer, Holmberg, and Roberts (2014) and grounded in Kayne's (1994) Linear Correspondence Axiom (LCA). In this view, head-final structures are not base-generated but are instead derived via movement. The type of roll-up Comp-to-Spec movement assumed to underlie many head-final structures is triggered by a movement diacritic, \wedge , which is introduced by certain lexical heads. Functional heads cannot introduce this movement diacritic. However, they can optionally inherit it from the head of their complement. Since \wedge can only be inherited, not introduced, by functional heads, once the feature is not inherited by a functional head in an extended projection, no higher head will be able to inherit it. This means that once one functional head fails to trigger roll-up

*For their collaboration, I would like to thank the members of the Amahuaca community with whom I have worked. I am also grateful to Amy Rose Deal, audiences at MIT and GLOW 41, three anonymous *LI* reviewers, and the *LI* Squibs and Discussion editors for their helpful feedback. This work was made possible by four Oswald Endangered Language Grants. All errors are mine alone.

movement of its complement, no higher functional head in the extended projection will be able to trigger roll-up movement. The consequence is that no head-initial projection will be dominated by a head-final projection in the same extended projection.¹ Under this type of account, the FOFC-violating structure in (1) cannot be derived via the type of structure in (2).



Here, the head γ bears the feature $[+V^{\wedge}]$. This indicates that it is part of the verbal extended projection and will trigger roll-up movement of its complement, δP , to surface in a head-final order. The functional head α inherits the feature $[+V]$, but not the movement-triggering feature \wedge , from γ . Therefore, its complement does not move, and it remains a head-initial projection. Crucially, once α fails to inherit \wedge , β can no longer inherit \wedge to trigger roll-up movement of its complement. This prevents β from being a head-final projection.

Like many proposed universals, FOFC is well-known to be subject to certain apparent violations, whose status has been discussed by a number of authors (e.g. Zeijlstra 2016; Erlewine 2017; Sheehan et al. 2017). The LCA-based account of Biberauer, Holmberg, and Roberts (2014) predicts that apparent violations should not actually involve functional heads in a selection relationship within a single extended projection, because of the way the generalization is derived. While recent work in this vein recognizes several potential paths to apparent FOFC violations (Sheehan et al. 2017), none of these routes are taken to involve derivations that instantiate the structure in (1) within a single extended projection, despite surface appearances. Some other approaches to FOFC have argued that the configuration in (1) is actually attested, but that the scarcity of FOFC-violating structures is due to some other constraint. It has been proposed, for instance, that FOFC should be viewed as a strong tendency that arises due to processing pressures (Hawkins 1994²). Another family of approaches assumes that FOFC-violating structures can be generated by the syntax but that linearization principles prevent them from being linearized in a way that reflects their underlying final-over-initial structure unless the two relevant heads are in separate domains (Sheehan 2013a,b; Richards 2016; Erlewine 2017). Still other approaches assume that FOFC-violating structures are exceedingly rare because they typically involve a violation

¹The relativization to extended projections is necessary to account for data such as the well-formedness of head-initial DPs selected by a head-final V in many languages. The movement diacritic \wedge is inherited along with a $[\pm V]$ feature that indicates whether the extended projection is verbal ($[+V]$) or nominal ($[-V]$).

²Hawkins 1994 predates the coinage of the term *FOFC* but notes that FOFC-violating disharmonic structures should be dispreferred compared to other types of disharmony.

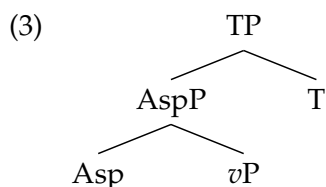
of a universal restriction on backward dependencies or rightward movement (Cecchetto 2013; Zeijlstra 2016).

In this squib, I present novel data from Amahuaca (Panoan; Peru) in which FOFC is violated. I argue that this FOFC violation is a true instantiation of the type of structure in (1) involving two heads within the verbal extended projection. The Amahuaca pattern is of special interest for studying the motivations of FOFC because, as I will argue, it is not derived via any of the mechanisms that Biberauer (2017) argues are responsible for seeming FOFC violations involving “particles” crosslinguistically. I argue that the type of counterexample presented by Amahuaca is exactly the type of FOFC violation predicted to exist by an account under which FOFC arises, not because the type of structure in (1) cannot be derived, but because of constraints on rightward dependencies (Cecchetto 2013; Zeijlstra 2016). The Amahuaca data thus support an analysis whereby FOFC does result from constraints on movement, but not on roll-up movement, as proposed by Biberauer, Holmberg, and Roberts (2014). Instead, the type of movement that must be constrained is rightward movement (Ackema and Neeleman 2002; Abels and Neeleman 2012).

2 Amahuaca clausal syntax and FOFC

Amahuaca is an endangered Panoan language, spoken in Peru and Brazil by approximately 500 speakers (Eberhard, Simons, and Fennig 2021). All data come from my fieldwork with native speakers in Sepahua, Peru, between 2015 and 2018.

In matrix clauses in Amahuaca, all heads in the verbal extended projection are head-final, with the exception of AspP and CP. While CP is FOFC-compliant (it is not dominated by any higher head-final head within its extended projection), AspP is immediately dominated by head-final TP, resulting in the FOFC violation that is of interest here, illustrated in (3).



In order to see that head-final TP is truly problematic for FOFC, we must first explore the clausal syntax of Amahuaca in more depth. There are three projections that serve as “landmarks,” so to speak, in the Amahuaca clause. Their position is always fixed with respect to other elements. These three projections are C, Asp, and T.

First, let us examine the C projection.³ Amahuaca has a second position clitic =*mun* that appears in all and only matrix declarative clauses. It displays syntactic second-position effects: it must be preceded by exactly one syntactic constituent, regardless of that constituent’s prosodic size. This is illustrated in (4), with an initial DP, an initial PP, and an

³I use C as a label of convenience. This projection has properties of Rizzi’s (1997) Force but also of Focus, as narrow-focused constituents move to its specifier (Clem 2019b). For the purpose of the current analysis, it is not crucial which head in the left periphery is lexicalized by Amahuaca =*mun*.

initial CP.⁴

- (4) a. Initial DP
[Xano=n hino]=**mun** jiri=hi=ki=nu.
woman=GEN dog=C eat=IPFV=3.PRES=DECL
'The woman's dog is eating.'
- b. Initial PP
[Nihi muran]=**mun** joni=n jiriti vuna=xo=nu.
forest inside=C man=ERG food look.for=3.PST=DECL
'The man looked for food in the woods.'
- c. Initial CP
[Hino koshi ka=kun]=**mun** Juan=nun Maria yohi=xo=nu.
dog quickly go=DS=C Juan=ERG Maria say=3.PST=DECL
'Juan told Maria that the dog had run.'

The type of second-position effects exhibited by =*mun* are consistent with this element being quite high in the left periphery, as is the fact that it disappears in embedded and interrogative contexts. The position of =*mun* therefore suggests that matrix C is a head-initial projection in Amahuaca.⁵

The second clausal landmark in Amahuaca is the cluster of tense and mood clitics that appears at the far right edge of the clause. These two clitics always surface in the order tense-mood and always appear clause-finally, modulo prosodically offset right-dislocation. The mood clitic takes the form =*nu* in declarative clauses. The morphemes that instantiate T show person agreement with the subject, as seen in (5), and they encode a present vs. past distinction, as seen in (6).

- (5) a. Hiya=x=**mun** hun rakuu=**ku**=nu.
1SG=NOM=C 1SG be.afraid=1.PST=DECL
'I was afraid.'
- b. Vaku=x=**mun** rakuu=**xo**=nu.
child=NOM=C be.afraid=3.PST=DECL
'The child was afraid.'
- (6) a. Jaa=x=**mun** pakuu=hi jan=**ki**=nu.
3SG=NOM=C fall=IPFV 3SG=3.PRES=DECL
'She/He is falling.'
- b. Jaa=x=**mun** jan pakuu=**ki**=nu.
3SG=NOM=C 3SG fall=3.PRES=DECL
'She/He fell.' (just now)

⁴The following glossing abbreviations are used throughout: 1 = first person, 3 = third person, C = complementizer, DECL = declarative, DS = different subject, ERG = ergative, GEN = genitive, HAB = habitual, IPFV = imperfective, NOM = nominative, PRES = present, PST = past, SG = singular.

⁵See, for example, Black 1992, Wilder and Čavar 1994, King 1996, Tomić 1996, and Paul 2001 for similar analyses of syntactically placed second-position clitics as heading a head-initial projection in the C domain.

- c. Jaa=x=mun jan pakuu=**xo**=nu.
 3SG=NOM=C 3SG fall=3.PST=DECL
 ‘She/He fell.’ (earlier)

In (5), =*ku* and =*xo* indicate the person of the subject (=ku, first person; =xo, third person). (6a) is a present tense sentence, as indicated by the tense marker =*ki*, with imperfective aspect (=hi). (6b) and (6c) illustrate a minimal contrast between the present tense marker =*ki* and the past tense marker =*xo* with perfective aspect, which is unmarked. The alternation between present and past tense indicates a more recent vs. a temporally more distant event; the recent past interpretation of the sentence with present tense marking arises due to the perfective aspect.⁶ The full paradigm of tense markers is given in table 1. The meaning of these markers as well as the fact that they show subject agreement is consistent with their being in T. The clause-final position of these morphemes thus suggests that T (along with Mood) is subject to head-final linearization in Amahuaca.

Table 1: Tense markers

	Subject person		
	1	2	3
Present	=ka	=ki	=ki
Past	=ku	=ku	=xo

The third landmark of the Amahuaca clause is aspect. The overt aspect markers in Amahuaca indicate imperfective (=hi), perfect (=hax), habitual (=nox), and prospective (=katzi). When aspect is not overtly marked, sentences receive a perfective interpretation, as in (6b) and (6c). Examples illustrating a contrast in aspect markers are given in (7).

- (7) a. Kuntii=mun choka=**hi** xano=ki=nu.
 pot=C wash=IPFV woman=3.PRES=DECL
 ‘The woman is washing a pot.’
 b. Kuntii=mun choka=**nox** xano=ki=nu.
 pot=C wash=HAB woman=3.PRES=DECL
 ‘The woman washes pots.’

Notice in (7) that aspect (along with the verb) appears in a sentence-medial position to the left of the subject. The object can also follow aspect and must appear to the right of the subject when it does so (Clem 2019b).⁷ Adjuncts cannot follow aspect. I argue in Clem 2019b that caseless subjects and objects that remain within *vP* are the only arguments that

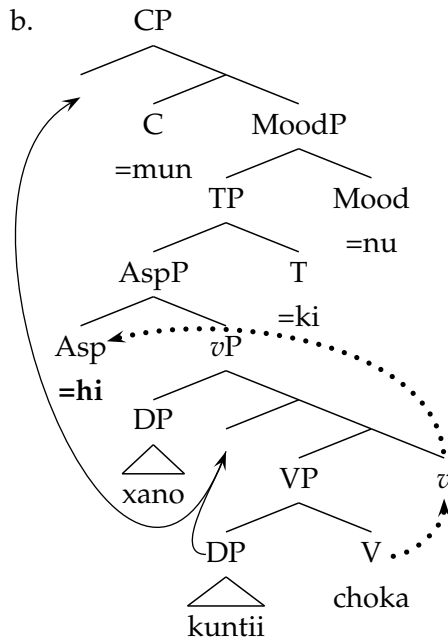
⁶Note that the past interpretation of present perfective corresponds to De Wit’s (2017) “retrospective strategy” of present perfective resolution.

⁷The fact that only post-aspect word order is rigid in Amahuaca is reminiscent of the Kiowa postverbal word order facts discussed by Adger, Harbour, and Watkins (2009). However, Amahuaca does not lend itself to the FOFC-compliant, Mirror Theory analysis offered for Kiowa since a mirror-image reversal of the subject and object is not observed after aspect in Amahuaca. The subject must precede the object when both follow aspect, which is the expected *vP*-internal order if both arguments are introduced as leftward specifiers.

can appear to the right of aspect. Therefore, when the subject appears to the right of aspect marking, as in (7), it is because the subject remains in its base-generated position in *Spec,vP*. The most straightforward way to account for the fact that aspect marking can appear to the left of *vP*-internal material is to assume that *Asp* is a head-initial projection. I assume that the verb appears in this position with aspect marking due to head movement of *V* through *v* to *Asp*. The derivation for (7a) is illustrated in (8).⁸

- (8) a. [_{CP} Kuntii=*mun* [_{TP}[_{AspP} choka=*hi* [_{vP} xano t_O t_V t_v]]=*ki*]=*nu*.]
 pot=C wash=IPFV woman =3.PRES=DECL

‘The woman is washing a pot.’



In (8), the subject remains in *Spec,vP*, the verb undergoes head movement to head-initial *Asp*, and the object moves to *Spec,CP* for information-structural reasons (Clem 2019b).

The fact that *vP* material appears to the right of aspect marking indicates that *Asp* is not head-final. Under the assumptions of the LCA, its complement does not undergo movement to *Spec,AspP*. Problematic from the point of view of FOFC, then, is that *T* is head-final.⁹ All clause-internal material except for the higher Mood clitic appears to the

⁸In sentences that lack overt aspect marking, the verb appears immediately to the left of tense. This suggests that *V* (and potentially *v*) may be a head-final projection, as represented in (8), but nothing crucial hinges on this assumption.

⁹The accounts of FOFC offered by Richards (2016) and Erlewine (2017) assume that FOFC is phase-bound. A head-final phase head can select a head-initial complement since its complement will be linearized separately. If a phase-bound approach was entertained for Amahuaca, *T* would have to be the lower phase head. This is at odds with the fact that DPs on the *vP* edge are accessible pivots for Amahuaca switch-reference, which is phase-bound (Clem 2019a). Additionally, an indirect agreement account involving the switch-reference probe being able to probe features of lower arguments that are present on phase heads via previous Agree operations predicts potentially unbounded switch-reference dependencies in clause chains, which does not match the attested locality patterns. *T* is thus too high in the clause to be the lower phase head.

left of T. Thus, on Biberauer, Holmberg, and Roberts’s (2014) proposal, T must be able to trigger roll-up movement of its complement. At the same time, though, the theory also makes it impossible for T to inherit the roll-up movement diacritic \wedge if Asp did not bear this feature. Therefore, the disharmonic heads Asp and T instantiate a true FOFC-violating structure.

3 The “exceptionality” of particles

As noted earlier, there are many seeming exceptions to FOFC that have been argued to not actually involve the type of structure in (1). One generalization that can be made about many of these apparent exceptions is that they involve “particles,” elements that are relatively inert syntactically. Biberauer (2017) argues that purportedly FOFC-violating structures of the form [[Head-Complement] . . . Particle] (H-C...Part) are typically actually FOFC-compliant due to specific properties of their underlying syntax that allow the appearance of FOFC to arise without instantiating the structure in (1). This line of argumentation is attractive, given the apparent FOFC violation seen in Amahuaca, because the heads involved are morphophonological clitics that always appear in a fixed structural position (i.e. “particles”). Specifically, it is attractive to treat Asp as the relevant head, vP as its complement, and T as the seemingly FOFC-violating particle. In this section, I will demonstrate that none of the potential avenues that Biberauer explores for avoiding a true FOFC violation in H-C...Part structures can account for the FOFC-violating Amahuaca structure in (3). Thus, the Amahuaca data remain unaccounted for under a theory that assumes that FOFC is a result of constraints on roll-up movement.

The first way of deriving a FOFC-compliant H-C...Part order that we will consider assumes that the particle is an adverb, rather than a head in the clausal spine. Biberauer (2017) proposes that many noninflecting tense-aspect-mood elements are truly adverbial rather than being functional heads in the extended verbal projection. These adverbial particles are often doubled by a functional head that encodes a less-specific temporal meaning. The Amahuaca data do not easily lend themselves to this type of view. First of all, T, the FOFC-violating particle, inflects for the person of the subject, as demonstrated again in (9).¹⁰ This is unexpected if it is an adverb, rather than a functional head.¹¹

¹⁰Inflection on T is also potentially problematic for the PF-linearization approach to FOFC argued for by Sheehan (2013a,b). Under this type of approach, T could be specified to follow Asp via selection, and Asp could similarly be specified to precede its complement. However, no order between T and vP -internal material would be specified on the basis of c -selection. Instead, Sheehan’s revised version of the LCA would be invoked to determine order. Since T asymmetrically c -commands material inside the vP , such as in-situ subjects, it should linearly precede this material, incorrectly predicting that the subject should obligatorily follow tense and mood in examples like (8). One way to derive an H-C...Part surface order under this view is to assume that the complement of the head-final head is atomized. However, if the complement of T were atomized, T should not be able to probe its complement (Sheehan 2013a:442) to result in subject agreement.

¹¹Of course, some languages have been argued to have agreeing adverbs. Interestingly, some instances of the Panoan phenomenon of participant agreement (Valenzuela 2003) could be analyzed as involving an agreeing adverb. However, even if these structures do involve an adverb that agrees, rather than some reduced clausal constituent, the adverb agrees only in case, not in the person of the subject. Therefore, if the elements argued to be in T were adverbs, they would be unusual in being the only adverbs in Amahuaca that agree in person and not in case.

- (9) a. Koshi=*mun ka=hi hun=**ka**=nu.*
 quickly=C go=IPFV 1SG=1.PRES=DECL
 ‘I am running.’
- b. Koshi=*mun ka=hi jan=**ki**=nu.*
 quickly=C go=IPFV 3SG=3.PRES=DECL
 ‘She/He is running.’

Additionally, the element in T does not encode a highly specific temporal meaning as is often the case for adverbial expressions; it encodes only a simple present vs. past distinction. Further, the enclitic argued to instantiate T is not doubled by another auxiliary-like element in the structure that encodes tense – it is the only overt encoding of tense in the sentence. In all of these respects, T in Amahuaca behaves like a standard tense head and unlike a temporal adverb.

The second FOFC-compliant path to an H-C...Part order involves a structure where the head-initial projection is not the complement of the particle. This can arise in two different ways. First, functional structure can intervene between the two elements, such that the head-final projection does not immediately dominate the head-initial projection. If there is more functional structure, the type of movement that derives the H-C...Part order may not actually involve Comp-to-Spec roll-up movement. However, there is no evidence in Amahuaca for any intervening functional structure between Asp and T (nor are there many plausible candidates crosslinguistically for such a head). Second, such a configuration can occur if the particle is actually structurally lower than the head-initial head. In Amahuaca, the relevant head is Asp and the particle is T. There is no evidence that T is lower than Asp, and to posit this would violate Cinque’s (1999) hierarchies.

The third type of structure in which an H-C...Part order can arise without violating FOFC is one where the particle is not within the same extended projection as the head. This can be because the particle’s categorial feature is distinct from the head’s or because the particle lacks a categorial feature altogether.¹² Evidence that an element lacks a categorial feature specification can come from its ability to appear in various structural configurations and to select complements of various categories (Biberauer 2017). However, Amahuaca T consistently appears in the same clause-final position, and it selects a verbal ([+V]) complement. Some evidence that the complement of T is consistently [+V] comes from nonverbal predication. In nonverbal predication structures that lack a [+V] element, T is absent, as seen in (10a).

¹²In addition to discussing acategorial final particles, Biberauer (2017) notes that initial acategorial particles can lead to superficial FOFC violations. She argues that in a head-final language, an acategorial particle merged at the phase edge will be linearized initially. When further head-final heads in the extended projection are merged above it, the appearance of a FOFC violation will result. At first glance, Amahuaca Asp might appear to be an instance of this type of initial particle. However, like T, Asp consistently surfaces in the same structural position, rather than having the more unrestricted distribution that might be expected of an acategorial particle. Further, unlike more adverbial temporal clitics, the true aspect markers that surface in matrix clauses may not occur in relative clauses or switch-reference clauses (Clem 2019a:19); this sensitivity to clause type suggests that they are heads in the extended projection of the verb rather than acategorial particles.

- (10) a. Vakoma=mun hitziz=nu.
 water=C hot=DECL
 ‘The water is hot.’
- b. Vakoma=mun hitziz ja=xo=nu.
 water=C hot be=3.PST=DECL
 ‘The water was hot.’

In (10a), no tense marker appears with the nonverbal predicate *hitziz* ‘hot’. By contrast, in (10b), where the past tense marker =*xo* is used, the verb *ja* ‘be’ appears as well. This distribution thus suggests that, not only does T have a categorial specification, but it has the same categorial specification as its complement – namely, [+V].

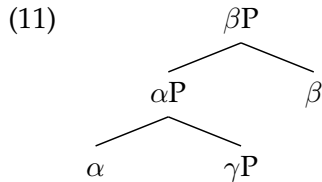
The final means that Biberauer (2017) proposes to arrive at a FOFC-compliant H-C...Part structure involves the particle being present only at PF and not in the narrow syntax. Some negative concord particles that appear to violate FOFC can potentially be analyzed as PF reflexes of agreement with another negative element in the clause. However, this type of solution seems problematic for Amahuaca. While it is true that Amahuaca T realizes subject agreement, which may be postsyntactic (Bobaljik 2008), T also encodes a present vs. past distinction that is not encoded by another element in the clause. Therefore, there is little independent motivation for analyzing it as a concord element.

In conclusion, none of the special properties of particles and their surrounding environment discussed by Biberauer (2017) apply to the Amahuaca example of Asp and T. Thus, an analysis of Amahuaca T as an adverb (for example) could of course be posited to save the FOFC universal, but only in a manner that chips away substantially at the falsifiability of the universal claim. If we use independent diagnostics to probe matters such as adverb status, the Amahuaca configuration seems to involve a true violation of FOFC within the verbal extended projection.

4 Rightward dependencies and FOFC

Cecchetto (2013) and Zeijlstra (2016) both offer alternative accounts of FOFC that do not take it to result from the LCA and constraints on roll-up movement; rather, they assume it results from the restricted nature of rightward dependencies. Cecchetto (2013) proposes that the Right Roof Constraint (a locality condition on rightward movement) and FOFC can be given a unified treatment if backward dependencies (e.g. movement and selection) cannot cross phrase boundaries. If a head-final head is in a direct selectional relationship with an element within its complement, rather than the entire complement phrase, the result will be an illicit rightward dependency that crosses a phrase boundary. Thus, under this account FOFC is expected to hold when the heads involved are in direct selectional relationships, but is expected to show exceptions if a head-final head is in a selectional relationship with a head-initial phrase as its complement (such as when a final verb selects a head-initial DP complement). Zeijlstra (2016) argues that there is a ban on rightward movement (Abels and Neeleman 2012) and specifically assumes that rightward head movement must not cross dependents of the moving head, because this type of illicit movement creates conflicting linearization statements (Ackema and Neeleman 2002). Therefore, FOFC is expected to hold when there is head movement between the heads in-

volved, but is expected to show exceptions if a head-final head is never a movement target for the head-initial head of its complement. While these two accounts differ in their predictions, both predict that the classic FOFC-violating structure in (11) will be impossible if β is a movement target for α . For Cecchetto (2013) this configuration may arise if β selects αP rather than α , and for Zeijlstra (2016) this configuration will be possible so long as α does not undergo movement across its dependent γP .



Both of these approaches predict that the type of final-over-initial structure found in Amahuaca should be attested. Under both accounts, head-final structures can be base-generated, rather than being derived via roll-up movement. For Zeijlstra (2016), what matters is that there is no movement between head-initial and head-final heads. In Amahuaca, there is no evidence that T (β) is ever a movement target for Asp (α), meaning that no illicit rightward head movement is needed to account for the Amahuaca pattern. For Cecchetto (2013), it is important that head-final heads do not directly select the head of their complement. The lack of head movement between Asp and T and the fact that both aspect and tense morphology are agglutinating in Amahuaca rather than fusional both align with the predictions that Cecchetto’s account makes regarding the looser relationship between head-final heads and the heads of their complements.¹³

5 Conclusion

To summarize, the FOFC-violating structure instantiated by Amahuaca Asp and T is not predicted by accounts such as that of Biberauer, Holmberg, and Roberts (2014), which relies on the LCA to derive a universal ban on final-over-initial structures within an extended projection. However, the Amahuaca-type configuration where there is no illicit rightward dependency between a higher head-final head and a lower head-initial head within its extended projection is exactly the type of exception to FOFC predicted to exist by Cecchetto (2013) and Zeijlstra (2016), who rely on general constraints on rightward dependency formation. Therefore, the Amahuaca data provide empirical support for treating FOFC as the consequence of a restriction on rightward movement, rather than as a configuration that cannot be derived due to constraints on roll-up movement.

¹³One place where the predictions of these two accounts diverge is with string-vacuous rightward head movement. Since the moving head would move out of its phrase, this type of movement is disallowed by Cecchetto’s (2013) model. However, since this movement does not cross a dependent of the moving head (or any overt material), Zeijlstra’s (2016) model allows it. As shown in (8), I assume that V-to-*v* head movement is rightward, which would be disallowed under the assumptions made by Cecchetto (2013). While it may be possible to avoid positing this step of rightward head movement, it has been argued that rightward head movement indeed exists in some languages (see, e.g., Han, Lidz, and Musolino 2007), suggesting that Cecchetto’s (2013) model may be too restrictive.

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