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The Final-over-Final Constraint and predictions for diachronic change*

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Following Biberauer, Holmberg & Roberts (2007, 2008), we examine the predictions of the Final-over-Final Constraint (FOFC) for grammatical change and borrowing. As an invariant syntactic principle (cf. Chomsky 1981 and following) FOFC rules out the synchronic possibility of a head-final phrase dominating a categorially alike head-initial phrase. This leads to the diachronic prediction that certain changes should be impossible, regardless of whether contact is involved or not. For example, change from head-final to head-initial order must proceed top-down, whereas change from head-initial to head-final order must proceed bottom-up. Case studies from the history of English, Afrikaans and French seem to support the first of these predictions. Furthermore, it is shown that the presence of an initial head blocks the borrowing of a higher final head, avoiding a FOFC-violation. Evidence for this comes from the position of polarity question heads and complementisers in South Asian languages.

1. Introduction

In word-order terms, the languages of the world can be classified as being either harmonic or disharmonic. The term “harmonic”, originating with Greenberg (1963) (cf. also Hawkins (1983)), refers to a language that is either consistently head-initial or consistently head-final. Within a generative framework, such languages were traditionally easily accounted for by the Head Parameter.

- (1) The **Head Parameter**: $X > YP$ (head-initial languages)
 $YP > X$ (head-final languages)

However, a significant number of languages are not fully harmonic; they contain a mixture of head-initial and head-final phrases. A well-known example of a disharmonic language is German, which has a head-final VP and TP, but a head-initial CP, DP and, for the most part, PP. This is shown in (2):

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- (2) ... daß das Mädchen in München gewohnt hat
 [CP that [TP[VP[DPthe girl] [PP in Munich] lived] has]]
 ‘... that the girl lived in Munich’

The existence of disharmonic word orders indicates that the Head Parameter must be formulated in such a way that it can be set not just in an across-the-board fashion, but also, where necessary, in a category-specific way (cf. Hawkins 1983 for discussion). This leads us to expect that disharmonic orders will be “equal” in the sense that all combinations of mixed headedness should, in principle, be equally available. In reality, however, the empirical record exhibits a striking skewing in respect of the attestation of disharmonic word orders. The following section introduces a generalisation capturing this skewing and then presents data supporting it, along with some apparent counterexamples. Section 3 considers the diachronic predictions made by the generalisation in terms of word-order change, section 4 focuses on the implications for borrowing and section 5 concludes.

2. The Final-over-Final Constraint

Holmberg (2000:124) observes that the following configuration seems to be banned in many languages:

- (3) * β'
 αP β
 α γP where αP is the complement of β and γP is the complement of α

He accounts for this gap by postulating the following constraint:

- (4) The **Final-over-Final Constraint** (FOFC) [First Version]:
 If α is a head-initial phrase and β is a phrase immediately dominating α , then β must be head-initial. If α is a head-final phrase, and β is a phrase immediately dominating α , then β can be head-initial or head-final.

Evidence of the existence of a constraint of the type in (4) comes from a range of clausal and non-clausal contexts in unrelated languages. Thus, for example, Holmberg observes that in Finnish all permutations of the verb, object and auxiliary occur, except for FOFC-violating V-O-AUX (V underlined; O in SMALLCAPS; AUX in **bold**):

- (5) a. Milloin Jussi **olisi** kirjoittanut ROMAANIN? [Aux-V-O]
 when Jussi would-have written novel-DEF
 b. Milloin Jussi **olisi** ROMAANIN kirjoittanut? [Aux-O-V]
 when Jussi would-have novel-DEF written
 c. Milloin Jussi ROMAANIN kirjoittanut **olisi**? [O-V-Aux]
 when Jussi novel-DEF written would-have
 ‘When would Jussi have written a novel?’
 d. * Milloin Jussi kirjoittanut ROMAANIN **olisi**? *[V-O-Aux]
 when Jussi written novel-DEF would-have

The same pattern emerges if we consider both synchronic and historical varieties of Germanic. We illustrate for earlier stages of English (formatting as above; cf. Biberauer, Holmberg & Roberts 2007 for more detailed discussion and illustration):

- (6) O V AUX (“head-final” order in VP and TP, assuming auxiliaries are in T):
 Ða se Wisdom þa ÐIS FITTE asungen hæfde ...
 when the Wisdom then this poem sung had
 ‘When Wisdom had sung this poem ...’
 (*Boethius* 30.68.6; cf. Fischer et al. 2000:143)
- (7) O AUX V (“verb-raising”); cf. Evers 1975 and subsequent work):
 ... þe æfre on gefeohte *HIS HANDA* **wolde afylan**
 ...who ever in battle his hands would defile-INF
 ‘... whoever would defile his hands in battle’
 (*Ælfric’s Lives of Saints* 25.858; cf. Pintzuk 1991:102)
- (8) AUX O V (“verb projection raising”); cf. Haegeman & van Riemsdijk 1986):
 ... þæt hie **mihton** swa bealdlice *GODES GELEAFAN* bodian
 ... that they could so boldly God’s faith preach-INF
 ‘... that they could preach God’s faith so boldly’
 (*The Homilies of the Anglo-Saxon Church* I 232; cf. van Kemenade 1987:179)
- (9) V AUX O (“object extraposition”):
 ... þæt ænig mon atellan **mæge** *EALNE ÐONE DEMM*
 ... that any man relate can all the misery
 ‘... that any man can relate all the misery’
 (*Orosius* 52.6–7; cf. Pintzuk 2002:283)
- (10) AUX V O (“verb raising” combined with “object extraposition”):
 ... þæt he **mot** ehtan *GODRA MANNA*
 ... that he might persecute good men
 ‘... that he might persecute good men’
 (*Wulfstan’s Homilies* 130.37–38; cf. Pintzuk 2002:282)

Crucially, every permutation of Aux, V and O is attested, except for the FOFC-violating V-O-AUX order (see i.a. den Besten 1986, Travis 1984:157–8, Kiparsky 1996:168–171, Pintzuk 1991, 1999, Hróarsdóttir 2000, Fuss & Trips 2002 for discussion).

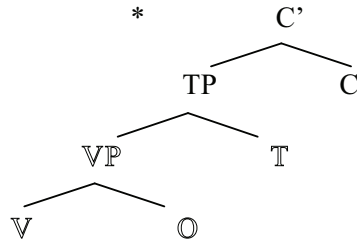
Haddican (2004) observes that the same gap occurs in Basque:

- (11) a. Jon-ek ez **dio** Miren-i *EGIA* esan [Aux-O-V]
 Jon-ERG not AUX Miren-DAT truth say-PERF
 ‘Jon has not told Miren the truth’
 b. Jon-ek ez **dio** esan Miren-i *EGIA* [Aux-V-O]
 Jon-ERG not AUX say-PERF Miren-DAT truth
 ‘Jon has not told Miren the truth’
- (12) a. Jon-ek Miren-i *EGIA* esan **dio** [O-V-Aux]
 Jon-ERG Miren-DAT truth say-PERF AUX
 ‘Jon has told Miren the truth’

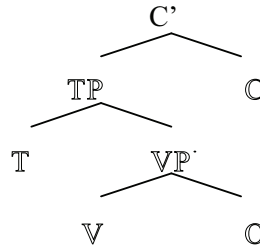
- b. *Jon-ek esan Miren-i EGIA **dio** [***V-O-Aux**]
 Jon-ERG say-PERF Miren-DAT truth AUX

Furthermore, it is not only in this domain that we find such word-order gaps. It has been observed that VO languages cross-linguistically do not have clause-final complementisers (cf. Hawkins 1990:256–7, Dryer 1992:102). Although at first sight, this does not seem to be ruled out by FOFC as stated above, as C does not directly dominate VP, on closer inspection it emerges that a final C in a VO language necessarily violates FOFC at some point in structures in which it occurs. Consider the following:

- (13) a. *_{CP} [_{TP} [_{VP} V O] T] C] – violates FOFC ($\alpha = V, \beta = T$)



- b. *_{CP} [_{TP} T [_{VP} V O]] C] – violates FOFC ($\alpha = T, \beta = C$)



In (13a), a structure with a head-final CP and a head-final TP, the head-final TP dominates a head-initial VP, leading to a FOFC violation of the type already discussed above. In (13b), a structure with a head-final CP dominates a head-initial TP, leading to a FOFC violation at the CP/TP level. Biberauer, Holmberg & Roberts/BHR (2007, 2008) discuss a range of further structures excluded by FOFC, not only in the clausal domain, but also in the context of nominals, underlining the general nature of the gap characterised by (4). Furthermore, Cecchetto (2008) shows that FOFC also holds in the domain of sign languages, thereby confirming the non-modality-specific nature of this grammatical constraint (cf. Sandler & Lillo-Martin 2006 for recent overview discussion of further formal parallels between signed and spoken languages).

Although there is thus significant empirical support for FOFC, there are also apparent exceptions. For example in German, a head-final VP can dominate a head-initial DP (14a) or head-initial PP (14b)

- (14) a. Er hat [_{VP}[_{DP} das Buch] gelesen]
 he has the book read
 ‘He read the book’
 b. Sie ist [_{VP}[_{PP} nach Berlin] gefahren]
 she is to Berlin driven
 ‘She went to Berlin’

BHR argue that such exceptions can be accounted for if FOFC is modified, such that it only holds over XPs that are categorially non-distinct. Although the notion of ‘categorial distinctness’ is by no means straightforward, in the German case it is clear that the VP is a verbal category, whereas the DP, and perhaps the PP, should be considered nominal. By contrast, both (inflected) auxiliaries and verbs are verbal, while Cs are thought to encode typically verbal features like [finiteness] and are thus at least in part verbal too (cf. Biberauer, Newton & Sheehan 2008a,b for further discussion); consequently, we would expect FOFC to hold in this case.

A further class of exceptions comes from clause-final particles. Many VO languages have clause-final force particles (e.g. Mandarin Chinese, Sre, Mon, Copala Trique):

- (15) a. Hufei chi-le sheme **ma**? [Mandarin Chinese]
 Hufei eat-ASP thing Q_{YES/NO}
 ‘Did Hufei eat anything?’
- b. drùsĭ mâ zâ jaa **rá** [Lugbara, Nilo-Saharan]
 tomorrow I meat eat AFFIRMATIVE
 ‘Tomorrow I will eat meat’ (cf. Heine & Nurse 2000:208)

Systematic positional differences between “full” and particle forms of a given type of element (e.g. auxiliary, complementiser, etc.) in some of the languages with clause-final particles suggest that the Greenbergian approach to particles, in terms of which these are systematically excluded from word-order placement generalisations on account of their peculiar properties (cf. Greenberg 1963), may be well-founded. Consider (16), which shows that inflected auxiliaries are barred from the clause-final position in which (uninflected) auxiliary particles obligatorily appear:

- (16) a. yə- ca dəyo **lo** [Bwe, Karen]
 1SG-see picture ASP
 ‘I am looking at a picture’
- b. ce-dɔ̃ mɪ **jə-khó** phi má nɔ̃ (***jə-khó**)
 3- say COMP 3-FUT take what
 ‘What did he say that he would take?’

We leave aside here the specific nature of the currently still ill-understood peculiarities that may justify ignoring (apparently) FOFC-violating structures containing particles (but see Biberauer, Newton & Sheehan 2008a for further discussion).

In summary, then, empirical evidence from a wide range of languages suggests that FOFC, as stated in (17), is an absolute principle which acts as a universal constraint on synchronic grammars.

(17) **The Final-over-Final Constraint (FOFC) [Final Version]:**

If α is a head-initial phrase and β is a categorially non-distinct phrase immediately dominating α , then β must be head-initial. If α is a head-final phrase, and β is a phrase immediately dominating α , then β can be head-initial or head-final.

As a universal constraint on synchronic grammars, we expect FOFC not only to constrain synchronic grammars, but also to play a role in acquisition, restricting the types of grammars that can be acquired and, thereby, also the types of diachronic change that are possible. The rest of this paper will consider FOFC’s role in diachronic change, both where contact is and is not part of the picture.

3. FOFC and diachronic change

If, as proposed in the previous section, FOFC is a universal constraint on synchronic grammars, then this has important implications for syntactic change. In terms of an influential view in the field of diachronic syntax (see in particular Lightfoot 1999 and cf. Roberts 2007 for discussion), syntactic change should be seen as a random walk through parametric space. On this view, any syntactic change is possible if the primary linguistic data (PLD) to which the language learner is exposed provides the appropriate evidence or trigger for it. However, universal constraints on grammar, such as FOFC, which categorically rule out certain structures, suggest that there may, in addition, be UG-imposed structural constraints that determine specific pathways of syntactic change.¹

If FOFC is a universal constraint, then it is operative not only in today's languages, but also in all languages of the past, i.e. FOFC must apply at every stage of a language's history. This predicts that a FOFC-violating order should never be able to develop, even transitionally as part of a larger series of changes. Bearing this in mind, FOFC allows us to make predictions about pathways of syntactic change. For example, when a language changes from being predominantly head-final (OV) to predominantly head-initial (VO), this change must proceed top-down, as illustrated in (18):

$$(18) \quad [[[\text{O V}] \text{T}] \text{C}] \rightarrow [\text{C} [[\text{O V}] \text{T}]] \rightarrow [\text{C} [\text{T} [\text{O V}]]] \rightarrow [\text{C} [\text{T} [\text{V O}]]]$$

As shown above, FOFC requires that CP must change first, giving C-TP order in place of TP-C order. The TP can then follow, giving T-VP in place of VP-T order. Only once these two changes are at the very least underway (see below) can the VP start to exhibit variation, possibly ultimately leading to change from OV to VO. If the change proceeded in the opposite direction, with the VP undergoing the change first, this would give rise to V-O-T and V-O-C, orders that are ruled out by FOFC, as discussed above.

Likewise for the opposite change, i.e., from head-initial (VO) to head-final (OV), FOFC predicts that this must proceed bottom-up. The VP must change first, followed by TP, then CP:

$$(19) \quad [\text{C} [\text{T} [\text{V O}]]] \rightarrow [\text{C} [\text{T} [\text{O V}]]] \rightarrow [\text{C} [[\text{O V}] \text{T}]] \rightarrow [[[\text{O V}] \text{T}] \text{C}]$$

A change in the opposite direction, beginning with the CP or the TP would result in the FOFC-violating V-O-C or V-O-T orders from the outset.

The first of these predictions is borne out within the history of Indo-European. The change from OV to VO is well attested in both the Germanic and Romance branches and in both cases the change seems to follow the FOFC-determined pathway.²

3.1 OV to VO in the history of English

Although Modern English is very predominantly a head-initial language, this was not always the case. Like Modern German, Old English was predominantly head-final; therefore, English has

¹ Our use of *UG* here is deliberately vague and should not be read as an indication of our commitment to the view that FOFC is a hard-wired invariant principle of UG. The precise locus of the factor(s) imposing FOFC on synchronic grammars is the subject of on-going research, with both the possibility that this constraint may be the consequence of interface considerations and that it may follow from the interaction of a combination of the "three factors" specified in Chomsky (2005) currently receiving attention. See Sheehan (2008) for discussion of the former and Biberauer (2008a) on the latter.

² Evidence of the second pathway (VO to OV) can be found in the Ethiopian Semitic languages, which have seemingly changed from head-initial to head-final due to contact with Cushitic. See Biberauer, Newton & Sheehan (2008a) for discussion.

clearly undergone a change from head-final to head-initial within its recorded history. FOFC predicts that the first stage of this change should affect the CP. From the earliest attested evidence of Germanic, we only find head-initial CPs.³ Crucially, however, initial complementisers may appear with both head-initial and head-final TPs and VPs (although, as we saw above, not in the FOFC violating V-O-Aux order). This is shown in the examples below (formatting as above).⁴

- (20) a. ... þæt Darius *HIE* mid gefeohte secan **wolde** [O-V-AUX]
 ...that Darius them for battle visit wanted
 ‘... that Darius wanted to seek them out for a battle’
 (*Orosius* 45.31; cf. van Kemenade 1987:16)
- b. V-O-AUX unattested (cf. Pintzuk 1991, 1999)
- c. ... þæt hie **mihton** swa bealdlice GODES GELEAFAN bodian [AUX-O-V]
 ...that they could so boldly God’s faith preach
 ‘...that they could preach God’s faith so boldly’
 (*The Homilies of the Anglo-Saxon Church* I 232; cf. van Kemenade 1987:179)
- d. ... þæt he **mot** ehtan GODRA MANNA [AUX-V-O]
 ...that he might persecute good men
 ‘... that he might persecute good men’
 (*Wulfstan’s Homilies* 130.37-38; Pintzuk 2002:282)

Here we see that a final TP may only combine with a final VP (cf. (20a)), whereas an initial TP has two combination possibilities, being able to combine both with a final VP as in (20c) and with an initial VP as in (20d). The availability of (20d) at a stage at which (20c)-type structures are still attested indicates that variation in VP order becomes possible as soon as head-initial TP becomes available. Crucially, however, head-initial VPs are strictly limited to head-initial TP structures.

Turning next to the TP, Pintzuk (1991, 1999) proposes that the transition from T-final to T-initial was a gradual process, progressing throughout the Old English period until early Middle English, when it reached completion. Variation within the VP, between OV and VO order, continues until the Late Middle English period (formatting as before):

- (21) a. þæt ne **haue** noht HERE SINNES forleten [AUX-O-V]
 who NEG have not their sins forsaken
 ‘...who have not forsaken their sins’
 (from *Trinity Homilies* 67.934; cf. Kroch & Taylor 2000:154)
- b. oðet he **habbe** izetted ou AL ðET 3E WULLED [AUX-V-O]
 until he has granted you all that you desire
 ‘Until he has granted you all that you desire’
 (from: *Ancrene Riwle*, cited in Kroch & Taylor 2000:145)

³ It is not clear that Germanic, or in fact Proto-Indo-European, ever had clause-final complementisers. See Kiparsky (1995) for more detail on this point.

⁴ Following the predominant practice in the existing literature, we make the simplifying assumption that auxiliaries in earlier English were T-elements and that the position of auxiliaries therefore signals the headedness of TP. It is, however, likely that auxiliaries in earlier English differed from their modern counterparts in being merged lower in the clausal domain (cf. Roberts 1985 and much following work). For the purposes of the current discussion, this simplification is harmless since the crucial consideration for us is that higher initially head-final verbal phrases must undergo change before VP does; this holds, regardless of whether auxiliaries are merged in v, T or some other functional verbal projection. Crucially, it also holds if the relevant elements are in fact lexical Vs selecting a reduced complement clause (cf. Biberauer & Roberts 2006 for discussion of restructuring structures in earlier English, and Biberauer & Roberts 2008 for discussion of the consequences of “reduced” clausal structure in the FOFC context).

It seems then, that the shift from OV to VO order in the history of English proceeded top-down exactly as FOFC predicts. Biberauer, Newton & Sheehan (2008b) show how the same is true of word-order change in Yiddish and Icelandic.

3.2 OV to VO in the history of French

The development of VO order in French seems to have followed a similar pattern. Like the early Germanic languages, Latin exhibits only head-initial CPs:

- (22) accidit perincommode **quod** eum nusquam vidisti
 happened.3SG unfortunately that him nowhere saw.2SG
 ‘It is unfortunate that you didn’t see him anywhere’ (Cicero, *At.* 1, 17, 2; BHR 2007:93)

The development of the TP in Romance languages is somewhat more complicated than in Germanic, as most “auxiliary” meanings in Latin were expressed morphologically rather than by means of auxiliaries (cf. Benveniste 1968 and Ledgeway to appear for overview discussion). Classical Latin does, however, feature one compound tense, namely the perfect passive. As (23) illustrates, the auxiliary element in this structure, *esse* (“to be”), could either precede or follow the participle:

- (23) a. illa quae cum rege **est** pugnata
 that.NOM which.NOM with king.ABL is fought
 ‘that (battle) which was fought with the king’ (Cicero; cf. Ledgeway to appear:8)
 b. diu pugnatum **est**
 long-time fought is
 ‘There was a long battle’ (Caesar; cf. Ledgeway to appear:8)

The auxiliary *habere* develops in later Latin, and, like *esse*, its position is variable but the unmarked option seems for it to appear clause-finally (Bauer 1995:104–7). This is to be expected as the preferred position of the lexical verb, from which the auxiliary *habere* grammaticalised, is clause-final (cf. *i.a.* Bauer 1995:89–92):⁵

- (24) a. haec omnia probatum **habemus**
 these all.NOM.PL tried.NOM.SG have.1PL
 ‘We have tried all these things’ (Oribas; cf. Ledgeway to appear:62)
 b. sicut parabolatum **habuistis**
 thus spoken had.2PL
 ‘Thus you had spoken’ (*Form. Merkel.* cited in Ledgeway to appear:62)

As part of the transition from Vulgar Latin to French, both the TP and the VP became fixed as head-initial. Bauer (1995:106) suggests that this change progressed in exactly the order predicted by FOFC, with the TP becoming head-initial before the VP:

- (25) “Whereas the ordering *habeo/sum* + participle prevailed in twelfth century Old French, the development towards the modern structure, where the direct object follows the compound verb [[*habeo/j’ai* [participle] [direct object]] is a development of Middle French.

⁵ The grammaticalisation of the Romance future tense (see Roberts & Roussou 2003:48–57), formed from infinitive+*habere* also suggests that, in this construction at least, the auxiliary *habere* appeared clause-finally.

Accordingly, the structure (a) *epistulam scriptam habeo / je possède une lettre écrite* ‘I possess a written letter’ changed first into (b) *habeo epistulam scriptam / j’ai une lettre écrite* and then into (c) *j’ai écrit une lettre* ‘I wrote a letter’, where the direct object follows the auxiliary and the participle”

Although there is clearly a great deal more work to be done in determining the exact details of the change from OV to VO in French, with the relevant data possibly being absent from the attested record (Adam Ledgeway, p.c.), the basic evidence presented above is suggestive of a that change followed the pathway predicted by FOFC.

3.3 Word-order variation in Afrikaans

FOFC pathways are not only demonstrated by diachronic change, but also by synchronic variation. In Modern Spoken Afrikaans (MSA), we find both verb-final (26a) and “verb-early” (26b) embedded clauses:

- (26) a. Ek weet dat sy [_{VP} dikwels Chopin gespeel] **het** (verb-final structure)
 I know that she often Chopin played have
 ‘I know that she has often played Chopin’
- b. Ek weet dat sy **het** [_{VP} dikwels Chopin gespeel] (“verb-early” structure)
 I know that she have often Chopin played
 ‘I know that she has often played Chopin’

(26a) represents the older pattern, i.e., the “correct” one prescribed by grammars; the “verb early” construction is an innovation (the equivalent structure is barred in all varieties of Dutch). However, both structures are common in MSA and they are interpretively identical. In contrast, “verb-early” constructions with main verbs are far less common and necessarily have a “main-clause” interpretation (cf. *i.a.* Holmberg & Platzack 1995 on so-called *embedded root phenomena* in V2 languages).

- (27) Hy dink dat sy [_{VP} **speel** altyd Chopin]
 he think that she play always Chopin
 ‘He thinks that she always plays Chopin’

Since (27)-type structures systematically behave differently to the “verb early” ones in (26), Biberauer (2003) proposes that only the former involve V2; the alternations in (26)-type structures, by contrast, feature auxiliaries located in T. As such, they constitute evidence that MSA permits both final ((26a)) and initial ((26b)) TP structures. Crucially, however, MSA does not permit initial VPs, as earlier English, for example, did (cf. (20c, d) above). This seems to be directly attributable to the salience of particle verbs in MSA (cf. Ponelis 1993). As argued by Lightfoot (1979 and following), particles serve as “signposts” signalling the location of the verb with respect to the object: where a particle precedes the object, as in VO languages, the acquirer can conclude that VP is initial; where it follows, as in OV languages, VP must be final. Against this background, robust attestation of particle verbs in the MSA input would be expected to contribute a clear signal to the acquirer that the system being acquired involves a final VP. That this reasoning is correct is strongly suggested by the fact that Kaaps, a variety of Afrikaans spoken in the Cape in which English borrowings/substitutions have drastically reduced the number of particle verbs, permits initial VPs in the presence of an initial TP. As in the earlier English case, initial VP is not compatible with final TP. The relevant facts are illustrated in (28):

- (28) a. Ek **het** [VP gekry R1400 van die Revenue] [AUX-V-O]
 I have received R1400 from the Revenue
 ‘I have received R1400 from the Receiver of Revenue’
 [Standard Afrikaans: *Ek het R1400 van die Department van Inkomste gekry* [O-V-AUX]]
 b. *dat ek [VP gekry R1400 van die Revenue] **het** [*V-O-AUX]
 that I received R1400 from the Revenue have
 ‘I have received R1400 from the Receiver of the Revenue’

Kaaps, then, appears to be one step further along the FOFC-predicted pathway than MSA. Crucially, this state of affairs reflects the fact that FOFC is not itself a driver of syntactic change, but merely a constraint which defines possible and impossible diachronic pathways. For change to occur, it needs, as Longobardi (2001:278) points out, to be the “well-motivated consequence of other types of change (phonological changes and semantic changes, including the appearance/disappearance of whole lexical items) or, recursively, of other syntactic changes” (cf. also Keenan 2002 on this so-called *Inertia Principle*). Syntax, then, does not change unless there is specific input (which we might think of as a ‘cue’ – cf. i.a. Lightfoot 1991, 1999, Dresher 1999) signalling to the acquirer that a grammar different to that initially acquired by the previous generation should be postulated (cf. Roberts 2007 for recent overview discussion of this general approach to syntactic change). In the following section, we will consider a further example of word-order-related change that clearly involved a prior change, this time from typologically very different languages.

4. FOFC and borrowing

Contact-induced change is of particular interest in the present context as it has sometimes been suggested that this type of change, in contrast to the non-contact-induced variety, may result in typologically unusual linguistic systems. Harris & Campbell (1995:239), for example, claim that typologically rare word orders are often the result of contact-induced change, implying that the latter might fall beyond the remit of typological universals. Nonetheless, while it might be the case that ‘exotic’ word orders often arise as a result of borrowing, there is no reason to believe that borrowings will be immune to grammatical constraints (cf. also Bower 2006 for a discussion). As far as FOFC is concerned, initial empirical research suggests that borrowing with word-order implications is constrained in exactly the same way as change which may be less directly contact-induced (cf. the discussion in the previous section). We will consider just one case study here.

The South Asian linguistic area provides an excellent testing ground for FOFC’s effect on borrowing as the more rigidly head-final Dravidian languages have a long history of contact with the more disharmonic Indo-Aryan languages. According to Hock & Joseph (1996:61), there is controversy over when Indo-Aryan and Dravidian first came into contact, but it is uncontroversial that they came to “structurally converge after multilingual contact extending over several millennia”. Due to this long history of complex contact, it is often impossible to pinpoint the exact sequences of change, but there are clear patterns across the area, which are due neither to geographic nor genetic factors. Pending further historical work, we take these synchronic patterns as evidence of historical patterns of borrowing between the two language families.

It is well known that Indo-Aryan languages show variation in the placement of complementisers and polarity question particles (cf. Masica 1991, Bayer 1999, 2001, Davison 2007). What is generally accepted is that Indo-Aryan borrowed final quotative complementisers from Dravidian, either very early on (Kuiper 1974) or at a late stage of contact (Meenakshi 1986), or perhaps both. In fact, while Sanskrit did have the final complementiser *iti* (*ti/tti* in Middle Indo-Aryan), this was later lost and no obvious cognate occurs in any of the modern Indo-Aryan languages

(Meenakshi 1986, Southworth 2005).⁶ Instead, Modern Indo-Aryan languages either lack a final complementiser altogether or display final complementisers either of the quotative type, typically derived from the verb to say (Bangla *bole* ‘saying’), or from the demonstrative root (Marathi *asa* ‘such’) or both (Bayer 1999, 2001, Masica 1991, Davison 2007). Figure 1 shows the distribution of these complementisers (Cs)⁷, based on appendix A of Davison (2007).

Figure 1 – Distribution of final complementisers in Indo-Aryan

No final C	Final C from ‘saying’	Final C from demonstrative
Hindi/Urdu, Panjabi, Sindhi, Kashmiri, Maithili, Kurmali	Sinhala, Dhivehi, Marathi, Nepali, Dakkhini Hindi, Assamese, Bangla, Oriya	Marathi, Gujarati

Note that all modern Indic languages (with the exception of Sinhala, spoken in Sri Lanka) also have an initial C, the origins of which are moot, and not to be discussed at length here (cf. Bayer 1999, 2001, Meenakshi 1986 for some discussion).⁸ For our purposes, the central point is that the real variation in the languages under consideration is in the availability of a final C. All Indic languages share with Dravidian the potential ‘cue’ [[O V] say] as they are verb-final. It is thus mysterious why only some have developed a final C. The split is not obviously geographic or historic, although this is difficult to determine given the long history of contact and the fact that minority Dravidian languages are still spoken in some Northern areas.⁹ There does, however, seem to be a clear syntactic commonality underpinning the languages which lack final C. Davison’s (2007) observation is that those Indo-Aryan languages which lack a final complementiser are exactly those which have an initial Polarity question head (Pol) of the type illustrated here for Hindi-Urdu and Panjabi:

- (29) (kyaa) aap wahaaN aa-ee-Ngii? [Hindi-Urdu]
 POL you there coming-FUT-2PL
 ‘Are you coming there?’ (Davison 2007:182)

⁶ Southworth (2005) also notes that the Munda languages, which constitute a branch of the Austro-Asiatic language family, exhibit a similar pattern so the borrowing might not necessarily have been from Dravidian. This is not crucial for our purposes as the Munda languages would also represent a typologically distinct borrowing source.

⁷ Although we will abbreviate *complementiser* as *C*, as is commonly done in Chomskyan work, it should be noted that we do not intend this abbreviation to be read as an indication of our interpreting the C-elements in the languages under discussion as Cs equivalent to English-style complementisers. As seems fairly clear from the examples that follow, the elements in question would seem to lexicalise a rather different *sub-portion* of Rizzi’s (1997) articulated CP to the finite Cs familiar from Germanic and Romance. For example, while English *that* seems to encode both Force and Finiteness, with the result that we might think of it as a syncretised Force-Finiteness element (cf. Giorgi & Pianesi 1991), the Marathi and Hindi-Urdu Cs illustrated in (32–33) only seem to encode subordination, which may be a (sub-)species of Force (cf. Biberauer, Newton & Sheehan 2008b for further discussion).

⁸ Although it is commonly assumed that *ki*-complementisers in Hindi-Urdu and other Indo-Aryan languages (minus the Eastern branch) are a borrowing from Persian (Kellogg 1893), the initial complementiser *kimti/kiti* is also attested in the Inscriptional Prakrits, and might be the actual source of the modern form (Meenakshi 1986:212). Moreover, *ki* is similar in form to the *wh*-paradigm, which has served as a source for complementisers in Romance, Slavic and Greek branches of Indo-European (cf. Bayer 2001). Interestingly, Persian *ke* has been passed on to one Indo-European language as well as at least three other language families through contact: Indo-European (Asia Minor Greek), Altaic (several Turkic languages, Kartvelian (Laz), Nakho-Daghestanian (Lezgian)), and (Northern) Dravidian (Brahui) (cf. Haig 2001 for discussion).

⁹ Although there is evidence for very strong historical links between some of the languages and Dravidian (i.e. Marathi), this cannot be said of all of the languages which have successfully borrowed a final C. Nepali, for example, would not fit into this category according to Malla (1981).

- (30) (kii) tuslīi ajj káanii suNaavoge? [Panjabi]
 POL you today story tell.FUT.2MP
 ‘Will you tell a story today?’ (Davison 2007:181, citing Bhatia 1993:5)

Other languages in the area have non-initial Pol heads, which occur in final position or in final/medial position, but crucially never initially:

- (31) a. to kal parat aalaa kaa(y)? [Marathi]
 he yesterday back come.PST.3MS POL
 b. *kaa(y) to kal parat aalaa
 POL he yesterday back come.PAST.3MS
 ‘Did he come back yesterday?’ (Davison 2007:182, citing Pandharipande 1997:8)

- (32) a. modhu aS-be ki (na)? [Bangla]
 Madhu come-FUT POL not
 ‘Will/Won’t Madhu come?’
 b. modhu ki aS-be?
 Madhu POL come-FUT
 ‘Will Madhu come?’¹⁰
 c. *ki modhu aS-be?
 POL Madhu come-FUT (Davison 2007:192, attributed to P. Dasgupta p.c.)

Previous research has led to the hypothesis that C is uniformly higher than the Pol head involved in yes/no questions (Laka 1994, Rizzi 2001, Holmberg 2003, but cf. Biberauer 2008b for the positing of a higher polarity head involved in negation). In fact, there is good evidence from Indic that C dominates Pol. In many, but not quite all of the modern languages (the exceptions being Bangla and other Eastern Indic languages), Pol can co-occur with C in embedded clauses. Where this happens, final Pol precedes final C, whereas initial Pol follows initial C, and the reverse orders are ungrammatical, as shown for Hindi-Urdu:

- (33) [[to kal parat aalaa kaa(y)] mhaaNun/asa] [Marathi]
 he yesterday back come-.PST.3MS POL QUOT /such
 raam malaa witSaarat hotaa
 Ram I-DAT ask.PROG be.PST.3MS
 ‘Ram was asking me whether/if he came back yesterday’
 (Davison (2007:184), attributed to R. Pandharipande)
- (34) a. us-nee puuc-aa [ki [kyaa tum aa-oogee]] [Hindi-Urdu]
 3SG-ERG ask-PERF that POL you come-FUT
 ‘He asked whether you will come’
 b. *us-nee puuc-aa [kyaa ki tum aa-oogee]
 3SG-ERG ask-PERF POL that you come-FUT
 ‘He asked whether you will come’ (Davison (2007:183))

¹⁰ The positioning of the polarity head appears to be connected to focus, according to Davison (2007). In Marathi, at least, the position of the question particle alters the focus of the question: post-subject positioning such as that seen in (32b) would mean ‘Will it be Madhu who comes?’ (cf. Nayudu 2008). It is not clear whether this is also true of Bangla.

Where C is initial and Pol is final, the two can still co-occur:

- (35) raam maalaa witSaarat hotaa [ki to kal parat [Marathi]
 Ram I.DAT ask.PROG. be.PST.3MS that he yesterday back
 aalaa kaa(y)]
 come.PST.3MS POL
 ‘Ram was asking me whether/if he came back yesterday’
 (Davison (2007:184), attributed to R. Pandharipande)

This is not problematic from the perspective of FOFC as, assuming that C is higher than Pol, this represents an inverse FOFC order, which is permitted by UG:

- (36) [CP C [PolP [TP] Pol]]
-
- ```

 graph TD
 CP[CP] --- C1[C]
 CP --- PolP[PolP]
 PolP --- TP[TP]
 PolP --- Pol[Pol]
 TP --- C2[C]
 TP --- Pol2[Pol]

```

On our assumptions, though, an initial Pol *should* block the borrowing/development of a final C as this would lead to the FOFC-violating structure in (37):

- (37) \* [CP [PolP Pol [TP]] C ]
- 
- ```

    graph TD
      CP[CP] --- PolP[PolP]
      CP --- C[C]
      PolP --- Pol[Pol]
      PolP --- TP1[TP]
      TP1 --- Pol2[Pol]
      TP1 --- TP2[TP]
  
```

This prediction appears to hold quite robustly in the area. As Davison shows at length, no language in the South Asian linguistic area has both initial Pol and final C, although all three of the other possible combinations readily occur. Hindi-Urdu, for example has not developed a final C of any kind, from either a verbal or demonstrative source. Thus both types of final C lead to ungrammaticality as shown in (38):¹¹

- (38) *usee [[vee aa rahee haiN] yah/kah-kar] maalum hai [Hindi-Urdu]
 3SG.DAT 3PL come PROG are this/say-PRT known is
 ‘He/she knows that they are coming’ (Davison 2007:178)

Figure 2, adapted from appendix B of Davison (2007), shows the pattern in the relevant area. In type A languages, the borrowing of a final C has been blocked by the presence of an

¹¹ Bhatt & Takahashi (2008) note that Hindi-Urdu postpositions are also unable to take finite clausal complements and this is potentially another instance of the same effect: the Pol head, whether overt or not, blocks the possibility of a final selecting (i.e. higher) head, regardless of whether this selector is verbal or adpositional. On the assumption that selectors share the property of being [-N] (cf. Chomsky 1981), this can be related to the categorial non-distinctness desideratum entailed by the FOFC constraint (cf. (17)). It is also worth noting that if a *null* Pol head can indeed, as is speculated above, “count” for FOFC purposes – barring the postulation of a FOFC-violating structure – this constraint cannot be ascribed to processing considerations (cf. Cecchetto 2008 for one proposal along these lines).

initial Pol, with the result that type D languages, which would be the FOFC-violating type, are unattested.

Figure 2 –Polarity heads and complementisers in South Asia

Type	Position of Pol	Position of C	Languages
A	Initial	Initial Only	Hindi-Urdu, Panjabi, Kashmiri, Sindhi, Maithili, Kurmali
B	Final/Medial	Initial and Final	Marathi, Gujarati, Assamese, Bangla, Dakhini Hindi, Oriya, Nepali (plus some North Dravidian languages, i.e. Brahui)
C	Final/Medial	Final Only	Sinhala (plus most Dravidian languages)
D	Initial	Final	Unattested in the area

(adapted from Davison 2007 appendix B)

In fact, there is evidence from *WALS* that this pattern is not limited to South Asia, but is replicated throughout the languages of the world (cf. Dryer 2005a, 2005b). From a sample of 195 languages, the numbers of languages roughly equivalent to type A-D languages are as follows:¹²

Figure 3 Typological positioning of Polarity heads and complementisers

Type	Position of Pol	Position of C	Number of Languages (genera: families)
A	Initial	Initial Only	72:35:13
B	Final	Initial	74:40:16
C	Final	Final Only	45:33:20
D	Initial	Final	4:3:3

Clearly there is a skewing in the data here, with large numbers of genetically diverse languages of types A-C. FOFC-violating type D is not, however, completely unattested. Four languages from three language families all found in South America are of this type: Tacana and Ese Ejja (Tacanan), Gavião (Tupi) and Resígaro (Arawakan). In fact, all of these languages appear to nominalise their embedded clauses (cf. Moore 1989 on Gavião, Allin 1976 on Resígaro and Ottaviano 1980 on Tacana) and so this might be the reason why FOFC does not appear to apply. Further research is required to establish exactly what the relationship between clausal nominalization and FOFC really is.

There is thus good evidence that FOFC constrains the borrowing of final complementisers in Indo-Aryan. While Indic languages with final Pol heads were free to borrow/develop final complementisers, the languages with initial Pol were not as the borrowing of a final C would have led to a FOFC violation. Further evidence that this is what is at stake in Indic comes from typological trends, which appear to behave in the same way.

¹² The data given are actually for “position of polar question particles” and “order of adverbial subordinator and clause”. The data have been cleansed to make them more comparable with the Indic facts, with other values such as second-position question particles removed. Dryer uses the term *adverbial subordinators* to refer to “*because, although, when, while, and if*”. While these subordinators often pattern with the positioning of more unequivocal C-elements such as *that*, this is not always the case. For this reason, these data are taken to be suggestive only (cf. also the discussion in note 7).

5. Conclusion

The aim of this paper was to argue that FOFC, a universally valid syntactic principle in the domain of word order, constrains synchronic grammars and therefore also diachronic change, regardless of whether this is triggered by contact or not. Evidence suggests that FOFC-based predictions hold in the history of English, Afrikaans and, insofar as relevant data are available, Romance. Moreover, patterns of final-complementiser borrowing in Indic languages also seem to be attributable to FOFC, the former being blocked by the presence of an initial Pol head lower in the clause.

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