

Final-over-Final Condition

LING 200B · Ethan Poole · 20 October 2021

1 Introduction

⇒ *Big question*

There is a pervasiveness of certain kinds of left–right asymmetries in syntax (e.g. specifiers are initial, movement is largely leftward). This asymmetry in the linear order raises the question to what extent the underlying structure itself is (a)symmetric.

* An important left–right asymmetry that was discovered recently and has garnered much attention is FOFC:¹

(1) **FINAL-OVER-FINAL CONDITION (FOFC)**

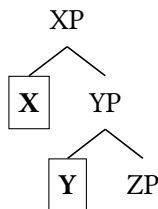
A head-final phrase XP cannot dominate a head-initial YP, where X and Y are heads in the same extended projection.

Alternatively: If XP is head-final, every phrase within the same extended projection that XP dominates must also be head-final.

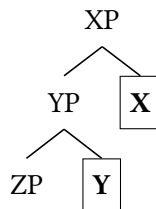
¹ Biberauer et al. (2014); Sheehan et al. (2017), amongst many others.

- Of the following logically-possible configurations, FOFC rules out (5):

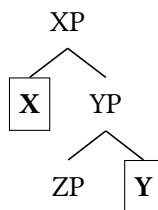
(2) **Initial-over-initial (harmonic)**



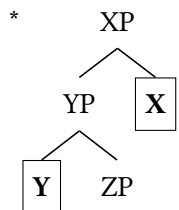
(3) **Final-over-final (harmonic)**



(4) **Initial-over-final (disharmonic)**



(5) **Final-over-initial (disharmonic)**



- Harmonic orders are preferred: most languages are uniformly head-final (e.g. Japanese) or uniformly head-initial (e.g. English).²

- Disharmonic orders are allowed, but they are only allowed if they are initial-over-final (4) and not final-over-initial (5).

⇒ It is the disharmonic orders that interest us—i.e. the exceptions to the general preference for harmonic orders!

• **Roadmap**

The data supporting FOFC → the role of extended projections → background on antisymmetry → Biberauer et al.'s (2014) analysis

² Greenberg (1963); Hawkins (1983); Dryer (1992); Baker (2008)

2 Data

- Biberauer et al. (2014) bring together a variety of old and new data to support FOFC.

2.1 *[V O] Aux in Germanic

- Given {_{AuxP} Aux, {_{VP} V, O }}, there are four logically-possible linear orders:

- | | | |
|--------|---------|--------------------|
| (6) a. | Aux–V–O | <i>harmonic</i> |
| b. | O–V–Aux | <i>harmonic</i> |
| c. | Aux–O–V | <i>disharmonic</i> |
| d. | V–O–Aux | <i>disharmonic</i> |

- The first three of these orders are easily found, but the fourth is unattested:³

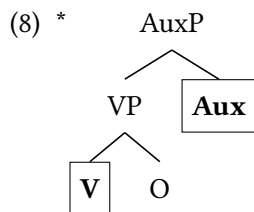
- | | | |
|--------|---|--|
| (7) a. | Aux–V–O: English | |
| | John [has] _{Aux} [read] _V [the book] _O | |
| b. | O–V–Aux: German | |
| | ... dass Johann [das Buch] _O [gelesen] _V [hat] _{Aux} | |
| | that Johann the book read has | |
| | ‘... that Johann has read the book’ | |
| c. | Aux–O–V: West Flemish | |
| | ... da Jan [wilt] _{Aux} [een huis] _O [kopen] _V | |
| | that Johann wants a house buy | |
| | ‘... that Jon wants to buy a house’ | |

³ e.g. Travis (1984); den Besten (1986); Pintzuk (1991, 1999); Kiparsky (1996); Hróarsdóttir (1999, 2000); Fuss and Trips (2002)

- V–Aux–O and O–Aux–V are also attested, but are standardly derived by movement of the object; otherwise, V and O would be adjacent.

* Takeaway

In Germanic—a language family well-known for its wide range of word orders in the verbal domain—, all logically-possible orders of Aux, V, and O are attested, *except for one*—precisely the disharmonic order ruled out by FOFC:



2.2 The distribution of complementizers

- Given {_{CP} C, {_{VP} V, O }}, there are four logically-possible linear orders:

- | | | |
|--------|-------|--------------------|
| (9) a. | C–V–O | <i>harmonic</i> |
| b. | O–V–C | <i>harmonic</i> |
| c. | C–O–V | <i>disharmonic</i> |
| d. | V–O–C | <i>disharmonic</i> |

- The two harmonic orders are, unsurprisingly, well-attested:

(10) a. **C–V–O: English**

Bill said [[that]_C Mary [read]_V [the book]_O]

b. **O–V–C: Japanese**

Bill-ga [CP[TP Mary-ga John-ni sono hon-o watasita] **to**] itta (koto).
 Bill-NOM Mary-NOM John-DAT that book-ACC handed that said (fact)
 ‘Bill said that Mary handed that book to John.’
 (Fukui and Saito 1998:443)

- There are also OV-languages with initial complementizers:

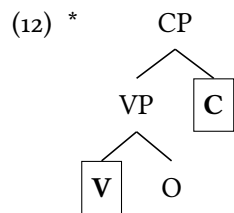
(11) **Latin**

a. Ubii Caesarem orant [CP **ut** sibi parcat].
 Ubii.NOM Caesar.ACC beg.3PL.PRES C selves.DAT spare.3SG.SUBJ.PRES
 ‘The Ubii beg Caesar to spare them.’

b. Accidit perincommode [**quod** eum nusquam vidisti].
 happened.3SG.PERF unfortunately C him nowhere saw.2SG.PERF
 ‘It is unfortunate that you didn’t see him anywhere.’
 (see Roberts 2007:162–163 for sources and discussion)

* However, the fourth logical possibility, VO-languages with final complementizers, appears not to be attested— precisely the disharmonic order ruled out by FOFC:^{4,5}

⁴ e.g. Hawkins (1990, 2004);
 Dryer (1992); Kayne (2000)



⁵ (12) is an oversimplification. As Biberauer et al. note, the disharmony can be from either the TP-level or the CP-level.

- **The World Atlas of Language Structures (WALS)**

- WALS does not have a typology of clausal subordinators in relation to the clause that they introduce.
- However, it does have a typology of “adverbial subordinators”, some of which are certainly complementizers.
- In this typology, there is a notable skew:

(13) a.	sub–V–O: 305 languages	<i>harmonic</i>
b.	O–V–sub: 91 languages	<i>harmonic</i>
c.	sub–O–V: 61 languages	<i>disharmonic</i>
d.	V–O–sub: 2 languages	<i>disharmonic</i>

- The two exceptions are Buduma (Afro-Asiatic) and Guajajara (Tupi-Guaraní).
- Relatedly, while subordinating suffixes are found in OV-languages, there is only one known VO-language with subordinating suffixes: the Australian language Yindjibarndi.

- **TerraLing (my addition)**

- TerraLing has a property for the position of the complementizer in relation to the clause, though (in practice) particles often get lumped into this category.
- In TerraLing, there are only five OV-languages with clause-final complementizers, with only Shupamem having example data:
 - * Bandial (Jola, Senegal)
 - * Ilokano (Philippine)
 - * One (Torricelli, Papua New Guinea)
 - * Shupamem (Grassfields Bantu, Cameroon)
 - * Titan (Oceanic, Papua New Guinea)

- * **Takeaway from the typology**

- At best, there are eight counterexamples to *V–O–C. These cases require closer investigation.
- ⇒ However, the overall asymmetry in the distribution of logically-possible combinations of orders is clear and supports FOFC.
- I suspect that many (if not all) of these cases have been misidentified. Unfortunately, these languages are hard (if not impossible) to access.
- For example, the Shupamem “complementizer” *ne* in the TerraLing data is likely a focus marker of some kind. Canonical clausal subordination in Shupamem involves the clause-initial complementizer *mi*:

(14) **Shupamem**

- a. mfon ria [**mi** i ton pit]
king said that 3SG burned war
‘The king said that he won the war’
- b. a pa mon yuwo mfon fu **ne**
FOC COPULA child REL king called ??
‘It is the child that the king called’

- * **Obligatory extraposition**

- OV-languages with initial complementizers systematically extrapose their CP complements:

(15) **German**

- a. **Finite clauses extrapose**
Er hat gewusst, [dass sie kommen]
he has known that they come
‘He knew that they’re coming’
- b. *Er hat [dass sie kommen] gewusst
he has that they come known
- c. **Nonfinite clauses do not extrapose**
... dass Hans [sich zu rasieren] schien
that Hans SELF to shave seemed
‘...that Hans seemed to shave himself’

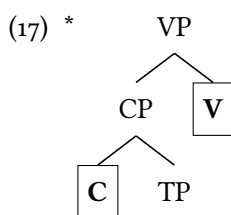
- Interestingly, in languages that allow deletion of the complementizer, extraposition is still required even when the complementizer is deleted:⁶

⁶ Put differently, complementizer deletion counterbleeds obligatory extraposition.

(16) **Hindi-Urdu**

- a. He knows (**that**) they are coming.
 - b. usee (**yah**) maluum hai [**ki** vee aa rahee haiN].
3SG.DAT this known is that 3PL come PROG are
'He/She knows that they are coming.'
 - c. *usee [(**ki**) vee aa rahee haiN] maluum hai.
3SG.DAT that 3PL come PROG are known is
'He/She knows that they are coming.'
- (Davison 2007:177)

- This oddity of the word order appears to be a FOFC-compliance strategy, as leaving the CP in situ would violate FOFC:



2.3 The nominal domain

- **Finnish (*maailman kaunein kieli*)**

- Finnish has postnominal complements and adjuncts, including relative clauses, but it also has postpositions:

- (18) a. käynti nurkan takana
visit corner.GEN behind
'the/a visit around the corner'
- b. [NP käynti [PP nurkan takana]]

- (19) a. raja maitten välillä
border countries between
'the/a border between the countries'
- b. [NP raja [PP maitten välillä]]

- Some Finnish adpositions can be either prepositions or postpositions:⁷

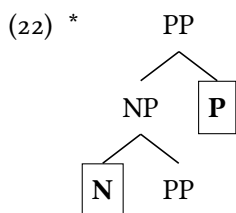
- (20) a. yli rajan
across border
- b. rajan yli
border across
- Both: 'across the border'

⁷ To the best of my knowledge, the variable adpositions in Finnish are all caseless. Most, but not all, postpositions are case-marked.

- If the DP/NP complement of *yli* itself has a postnominal complement or adjunct, *yli* must be a preposition and not a postposition:

- (21) a. *yli* [rajan maitten välillä]
 across border countries between
 ‘across the border between the countries’
 b. *[rajan maitten välillä] *yli*
 border countries between across

⇒ Biberauer et al. argue that this restriction follows from FOFC:



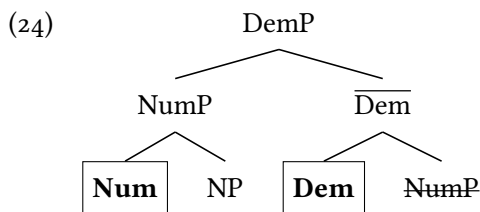
⇒ The Finnish data are important because they show that FOFC holds *within* individual languages, not just typologically.

• **Universal 20**

- “When any or all of the items (demonstrative, numeral and descriptive adjective) precede the noun, they are always found in that order. If they follow, the order is either the same or its exact opposite.” (Greenberg 1963:87)
- Setting aside APs for the sake of simplicity, given {_{DemP} Dem, {_{NumP} Num, NP }}, below are the attested orders within a nominal:

- (23) a. Dem > Num > N *harmonic*
 b. N > Num > Dem *harmonic*
 c. Dem > N > Num *disharmonic*
 d. *Num > N > Dem *disharmonic*
 e. N > Dem > Num *move N*

- The pattern in (23d) could be derived by moving NumP to [Spec, DemP], but this would violate FOFC:



2.4 Other evidence

- *[V O] Aux in Finnish, Basque, Kaaps, Latin

• **Diachrony**

- Change from head-final to head-initial order in the clause must go “top-down”:

- (25) [[[O V] T] C] → [C [[O V] T]] → [C [T [O V]]] → [C [T [V O]]]

- Change from head-initial to head-final order in the clause must go “bottom-up”:

$$(26) [C [T [V O]]] \rightarrow [C [T [O V]]] \rightarrow [C [[O V] T]] \rightarrow [[[O V] T] C]$$

- For example: Many Indo-Aryan languages with a polar particle have also developed a final complementizer over time, but only did so if this polar particle was not head-initial. Under the assumption that CPs dominate PolPs, this pattern again follows immediately from FOFC.

2.5 Breaking FOFC

- Sometimes FOFC is not “surface-true” because independent syntactic processes have moved elements around.

- **Example: German**

- In German, negation can appear at the end of matrix clauses:

(27) Du verstehst mich nicht
 you understand me not
 ‘You don’t understand me’

- If *nicht* heads a NegP projection, this looks like a violation of FOFC:

(28) [_{NegP} [_{VP} understand me] not]

- However, it is generally agreed that these structures involve verb movement to C as part of V2 (verb second) and object shift over negation:⁸

(29) [_{CP} you C+understand [_{TP} ___ T [_{XP} me X [_{NegP} not [_{VP} ___]]]]]]

⁸ Technically, V raises to T, which raises to C.

⇒ **Takeaway**

When we encounter apparent counterexamples to FOFC, we have to be certain that other syntactic processes are not at play. This is, of course, tricky and must be carried out on a case-by-case basis.

3 The role of the extended projection

- A head-initial DP or PP may be immediately dominated by a head-final VP in many OV-languages:

(30) **German**

- Johann hat [_{VP}[_{DP} einen Mann] gesehen].
 Johann has a man seen
 ‘Johann has seen a man.’
- Johann ist [_{VP}[_{PP} nach Berlin] gefahren].
 Johann is to Berlin gone
 ‘Johann has gone to Berlin.’

* FOFC must be evaluated within *extended projections*.

- **Particles**

- One prominent class of potential counterexamples to FOFC involves sentence-final particles in otherwise head-initial languages:

(31) a. **Mandarin**
 Hongjian xihuan zhe ben shu **ma**?
 Hongjian like this CL book Q
 ‘Does Hongjian like this book?’
 (Li 2006:13)

b. **Fongbe**
 Kòkú yró Kòfí à?
 Koku call.PERF Kofi Q
 ‘Did Koku call Kofi?’
 (Aboh 2004:318)

c. **San Lucas Quiavini Zapotec**
 B-da’uh Gye’eihlly gueht èee?
 PERF-eat Mike tortilla Q
 ‘Did Mike eat tortillas?’
 (Lee 2005:91)

- Interestingly, even in head-initial languages with clause-final particles, subordinating Cs are clause-initial:

(32) **Vietnamese**
 a. Tân mua gì the?
 Tân buy what Q
 ‘What did Tân buy?’
 b. Anh đã nói (rằng) cô ta không tin.
 PRN ANT say that PRN NEG PRT believe
 ‘He said that she didn’t believe (him).’

⇒ Biberauer et al. (2014) argue that these elements are ACATEGORIAL. Thus, they are not part of any extended projection and thus do not factor into FOFC.⁹

⁹ This is, I think, the most unappealing part of the paper and is what deserves the most follow-up.

4 Analysis

4.1 Background

⇒ **Big question**

How is syntactic structure linearized? Where is it determined that two terminal nodes should be linearized in a particular order?

- **The symmetric view (what we have been assuming)**¹⁰

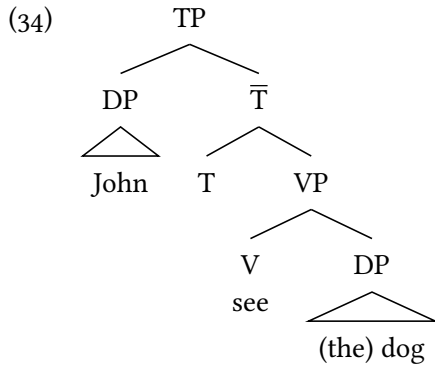
- **Hypothesis**

Syntax does *not* have access to notions like leftward or rightward. Syntactic structures are purely hierarchical in nature.

- Under this view, the sentences in (33) are structurally identical (modulo case and agreement):

¹⁰ e.g. Chomsky (1986); Abels and Neeleman (2012)

- (33) a. **English**
John saw the dog.
- b. **Hindi-Urdu**
John-ne kuttaa dekhaa
John-ERG dog saw
'John saw a/the dog.'



- Only at PF is it determined whether the head of the VP is spelled out to the left of its complement or to its right.

• **The antisymmetric view**^{11 12}

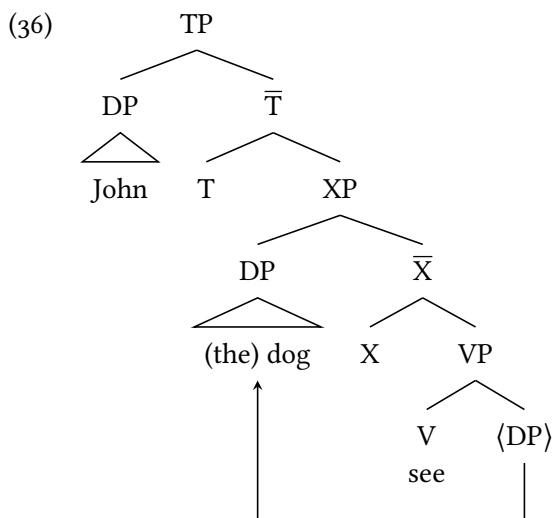
- **Hypothesis**

Left-right orderings are determined within the syntactic structure. Left-right orderings reflect asymmetric c-command.

(35) **THE LINEAR CORRESPONDENCE AXIOM (LCA)**

α precedes β iff α asymmetrically c-commands β , or α is contained in γ , where γ asymmetrically c-commands β . [Kayne 1994]

- Under this view, the sentences in (33) reflect different structures. In Hindi-Urdu, the object must move to a higher position that c-commands the verb:¹³



⇒ **In a nutshell**

The symmetric view is (arguably) simpler, but the antisymmetric view gives us a straightforward account of left-right asymmetries (e.g. specifiers are initial, movement is leftwards, FOFC).

¹¹ e.g. Kayne (1994, 2000); Koopman and Szabolcsi (2000); Moro (2000)

¹² This is "Antisymmetry" in a nutshell. However, most proponents of Antisymmetry assume a number of other specific hypotheses, e.g. no head movement. We can and should tease these hypotheses apart, though.

¹³ We of course have to ask what this XP is, but it does not matter for our purposes here.

4.2 The proposal

- **Basic intuition**

- According to FOFC, head-final order is more constrained than head-initial order:
 - * Head-final can dominate only head-final.
 - * Head-initial can dominate head-initial or head-final.
 - Under the LCA, head-final order is derivationally more complex than head-initial order, as it necessarily involves an extra step of movement.
- ⇒ Head-final order is more constrained because it is derivationally more complex.

- * **Biberauer et al.'s (2014) proposal**

- Head-finality (HF) is encoded on lexical heads, e.g. V and N;
 - Head-finality = move the complement to the specifier position à la the LCA;¹⁴
- (37) $[_{XP} YP [X_{HF}^0 \text{ — }]]$
-
- Head-finality ‘percolates’ up an extended projection up to some point x ;
 - This point x is parameterized on a language-by-language basis;
 - Once head-finality stops projecting, the remainder of the extended projection upwards is head-initial; and
 - If a lexical head X selects for YP , where YP is in the extended projection of X and X is encoded for head-finality, then head-finality must percolate up to YP .¹⁵

¹⁴ Abels (2003) argues that such movement is ruled out by *antilocality*.

- **Example: English and other harmonically head-initial languages**

- (38) a. V: no head-finality
 b. N: no head-finality

¹⁵ This is an odd point of their analysis. It does not fit well with the idea of head-finality percolating up, and it can be ‘voided’ by, e.g., extraposition of YP .

- **Example: Japanese and other harmonically head-final languages**

- (39) a. V: head-finality; percolates up to C
 b. N: head-finality; percolates up to D

- (40) a. $[_{VP} V_{HF} O]$
 b. $[_{VP} O [V_{HF} \text{ — } O]]$
 c. $[_{TP} T_{HF} [_{VP} O [V_{HF} \text{ — } O]]]$
 d. $[_{TP} [_{VP} O [V_{HF} \text{ — } O]] [T_{HF} \text{ — } VP]]$
 e. $[_{CP} C_{HF} [_{TP} [_{VP} O [V_{HF} \text{ — } O]] [T_{HF} \text{ — } VP]]]$
 f. $[_{CP} [_{TP} [_{VP} [O] [V_{HF} \text{ — } O]] [T_{HF} \text{ — } VP]] [C_{HF} \text{ — } TP]]$
-

• **Example: German, Hindi-Urdu, Turkish**

- (41) a. V: head-finality; percolates up to T
 b. N: no head-finality

- (42) a. $[_{VP} V_{HF} O]$
 b. $[_{VP} O [V_{HF} \text{---} O]]$
 c. $[_{TP} T_{HF} [_{VP} O [V_{HF} \text{---} O]]]$
 d. $[_{TP} [_{VP} O [V_{HF} \text{---} O]] [T_{HF} \text{---} VP]]$
 e. $[_{CP} [C] [_{TP} [_{VP} [O] [V_{HF} \text{---} O]] [T_{HF} \text{---} VP]]]$

⇒ **Deriving FOFC**

A final-over-initial structure cannot be generated because it would require either:

- “going back” to head-finality after it has stopped percolating, or
- encoding head-finality on a functional head.

- (43) a. $[_{VP} V O]$
 b. $*[_{TP} T_{HF} [_{VP} V O]]$
 c. $*[_{TP} [_{VP} [V] [O]] [T_{HF} \text{---} VP]]$

4.3 Formalizing the proposal

* **Ingredients**¹⁶

- ❶ Add features to motivate head-finality movement (i.e. linearization movement):

- (44) Where X bears $[\bullet_{HF}\bullet]$, $[\bullet_{HF}\bullet]$ is satisfied by moving the complement of XP to the specifier of XP.

Biberauer et al. (2014): \wedge

- ❷ Allow $[\bullet_{HF}\bullet]$ to be bundled with another feature:

- (45) Where X bears $[\bullet_{Y\oplus HF}\bullet]$, $[\bullet_{Y\oplus HF}\bullet]$ is satisfied by merging X with YP ($[\bullet_Y\bullet]$) and then moving YP to [Spec, XP] ($[\bullet_{HF}\bullet]$).

Biberauer et al. (2014): $[X^\wedge]$

- ❸ Decompose N and V:

- (46) a. $[+v] = V = [v]$
 b. $[-v] = N = [N]$

- ❹ Specify how $[\bullet_{HF}\bullet]$ percolates up an extended projection:

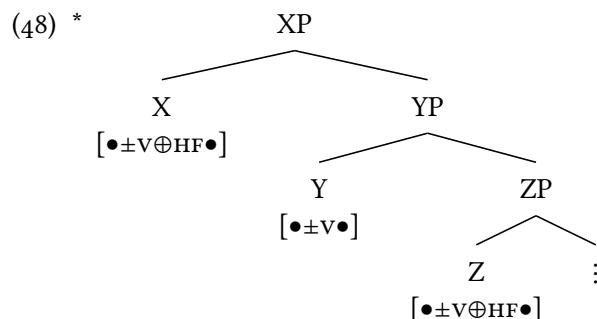
- (47) If a head X_i in the extended projection EP of a lexical head L, EP(L), has $[\bullet_{HF}\bullet]$ bundled with its $[\bullet_{\pm v}\bullet]$ -feature, then so does X_{i+1} , where X_{i+1} is selected by X_i in EP(L).

¹⁶ For expository purposes and for course-internal consistency, I have adopted a very different notation than Biberauer et al. (2014).

- ⑤ Encode parametric variation in terms of the highest head in the extended projection that selects for $[\bullet\pm v\oplus HF\bullet]$.

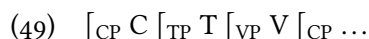
⇒ **Putting everything together**

Given (47) and the locality of selection (i.e. siblinghood), structures like (43) are ruled out, thereby deriving FOFC:



- **Across clauses**

- Biberauer et al. (2014) adopt a slightly atypical notion of extended projection, where the two CPs below would belong to the same extended projection:



- This assumption rules out complementizer-initial CPs in a head-final VP, which would violate FOFC and which is systematically rescued by extraposing the CP.

- **Discussion of the formalization**¹⁷

- Biberauer et al. (2014) argue that $[\pm v]$ is both (i) the categorizing feature that defines an extended projection and (ii) the feature that drives selection.
- It is not clear how this is intended to work, since extended projections are strictly ordered according to an *fseq*.
- For example, if C bears $[\bullet+v\bullet]$, why must it combine with T and not V?
- Moreover, they characterize the analysis in terms of bottom-up percolation of head-finality, but the actual analysis is formulated top-down. This is essentially a restatement of FOFC.
- Other movement-triggering features can be interspersed with $[\bullet HF \bullet]$, which seems desirable, but their interaction is not fully spelled out in the paper.

¹⁷ You should take these issues—and issues with any paper, really—not as an indictment of the paper, but as inspiration for what some of the ‘next steps’ are. Papers are not perfect, and papers cannot accomplish everything. Insights and predictions are the currency that matters. They drive future research!

What to read if you want to learn more?

- Sheehan et al. (2017): The FOFC monograph
- Hedde Zeijlstra’s work exploring a symmetric approach to FOFC (manuscript on his website)
- Abels and Neeleman (2012): An interesting paper arguing against the LCA

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