

5 The Generalizations That Characterize Linear Order and What They Follow From

5.1 The Absence of Certain Orders and the Left-Right Asymmetry

As noted at the outset, the widespread idea “that the physics of speech [leaves] just two options: the head either precedes or follows its complements” (Eguren et al. 2016: 12) seems far from being sufficient. Among others it falls short of accounting for the first two generalizations cited in (5) of chapter 1: the systematic absence of certain orders (among the mathematically possible ones), and the fact that there are more ordering possibilities to the right of a lexical Head than to its left (the pervasive left-right asymmetry discussed in Cinque [2009] and briefly taken up in chapter 1, section 1).¹ The first generalization was argued to follow from the articulation of the subprojections of an extended projection and the restriction that only the Head can move within each subprojection, thus excluding orders obtainable if the Head moved out of its subprojection (into another subprojection except for the Head of the extended projections (N(P), V(P), and so on)). The second generalization can instead be seen to follow from the way the Heads, N(P), V(P), and so on raise, either with the *pictures-of-whom* pied piping, which does not alter the hierarchical Merge order of modifiers, or with the *whose-picture* type of piping, which reverses it, or without pied piping, which

relocates the N(P), V(P), and so on above (hence before) the modifiers without altering their order. This is at the basis of the fact that, when all modifiers are on the same side, only one order is possible to the left of a Head (the one derived by a single type of movement: the *pictures-of-whom* pied piping), while to its right two are possible, as a consequence of the fact that two types of movement are available (movement of the Head with a *whose-pictures* pied piping, or movement of the Head without pied piping).

5.2 The Final-over-Final Condition (FOFC)

The idea that linearization reduces to whether a Head precedes or follows its complements is also unable to account for the empirical asymmetry in the domain of word order uncovered in Holmberg (2000), Biberauer et al. (2009, 2014), and Sheehan et al.'s (2017) FOFC,² whether this is an absolute universal or a robust cross-linguistic tendency that accounts for the extreme rarity of certain configurations (as suggested in Philip 2010, 2012; Abels 2013: section 4.2; and Clem 2018, 2020).

While Sheehan et al. (2017) manage to explain away a number of apparent exceptions to the FOFC by restricting α and β to heads of the same extended projection and α to inflecting auxiliaries rather than to invariant particles (see in particular Holmberg 2017 and Biberauer 2017, respectively), there may still be some residual exceptions, which nonetheless do not detract from its importance as an extremely strong cross-linguistic tendency. I will argue that its relevance extends (possibly in weaker form) across the main extended projection and its subprojections (just as Roberts [2017] generalizes it in weaker form across different extended projections). Bona fide exceptions to FOFC may be the final complementizers of the SVO Tibeto-Burman language Hkongso ("The sole instance in my database of a VO language with

by movement of a Head (by itself or through pied piping of one of the two available types), there may be a derivational account of the FOFC. It was noted in section 3.5 that pied piping of the *pictures-of-whom* type is more marked than pied piping of the *whose-pictures* type. This is shown, for example, by the following contrasts in English *wh*-interrogative contexts:³

- (3) a. Whose pictures do you keep in your wallet?
b. ?Pictures of whom do you keep in your wallet?
- (4) a. I wonder whose pictures they published yesterday.
b. *I wonder pictures of whom they published yesterday.

Given the more marked character of the *pictures-of-whom* pied piping and the less marked one of the *whose-pictures* pied piping, it is not unreasonable to think that changing mode from the more marked type to the less marked one bottom up within the same extended projection may be less severely sanctioned than changing mode from the less marked to the more marked one.⁴ In the illustrative derivations in (14) of chapter 3 and (9) of chapter 4 for the more rigid head-initial languages and in (15) of chapter 3 and (10) of chapter 4 for the more rigid head-final ones, the Heads of each extended projections (N(P) PL(P) D(P) K(P) and V(P) Asp(P) T(P) C(P)) move in unison, with the same pied piping mode at every level, from the most deeply embedded domain to the highest one (with the *whose-pictures* type for head-initial languages and the *pictures-of-whom* type for the head-final ones, yielding in the case of the clause the fragments [_{TP} Aux [_{VP} V O]] and [_{TP} [_{VP} O V] Aux], respectively). The question is what happens when a change of pied piping obtains. [_{TP} Aux [_{VP} O V]] involves pied piping of *pictures-of-whom* type in the most deeply embedded domain, VP, and (vacuous) pied piping of the *whose-pictures* type at the next higher level, and is attested, even if less widely than the harmonic derivations [_{TP} Aux [_{VP} V O]] and [_{TP} [_{VP} O V] Aux]. The FOFC-violating structure,⁵ involves instead the less marked *whose-pictures* pied piping in the most deeply

embedded domain, VP, followed by the more marked *pictures-of-whom* pied piping type at the next higher level. Though apparently attested in at least some cases, this is an extremely rare case, where the rarity can be imputed to the change from a less marked to a more marked option.⁶

From the present perspective, one might think that languages involving the more marked *pictures-of-whom* pied piping mode (SOV/OSV/OVS) should be fewer than those involving the putatively less marked *whose-pictures* pied piping mode (VOS/VSO/SVO). Yet the two groups are more or less equally represented (see the counts, and references, reported in Cinque [2013b: 70 and reproduced here in n7]).⁷

5.3 The Rarity of Certain Orders

The rarity of 2-3-1 orders in verb clusters (Svenonius 2007: section 4; Abels 2013) also appears to be amenable to a FOFC-violating derivation. Recall the fact that to obtain that specific order the V(P) and Mod(P) move via the (vacuous) *whose-pictures* pied piping mode, and Aux(P) moves via the *pictures-of-whom* pied piping mode (as illustrated in (31) of chapter 4). This implies a change from the less marked *whose-pictures* pied piping occurring in the more deeply embedded layers to the more marked *pictures-of-whom* pied piping in the top one. None of the other orders have one such transition from a less marked to a more marked derivational option.

I am also tempted to interpret the contrast between (5a) and (5b), noted in Hinterhölzl (2006b: section 6.3), and the generalization that he draws (“The formation of right-branching verb clusters is also subject to the following condition. Once a right-branching structure is introduced at one level . . . the structure has to be right-branching also at the next level” [175]), as a consequence of the sanctioned status of a change from the *whose-pictures* pied piping mode, which creates right-branching structures, to the

pictures-of-whom pied piping, which gives rise to left-branching ones.

- (5) a. weil er den Text [wird [müssen [lesen können]]]
 since he the text will must read can
 ‘since he will have to be able to read the text’
 b. ??/*weil er den Text [[müssen [lesen können]] wird]
 since he the text must read can will

If we turn to the Heads of the subprojections of the nominal extended projection seen in chapter 2 (e.g., A of AP, ‘color’ of NP_{color}, classifier of ClassifierP, base of CardinalP), we find a similar situation. One order out of the possible ones, that involving a change from the less marked (*whose-pictures*) to the more marked (*pictures-of-whom*) pied-piping mode, is the rarest order.

Recall from section 2.5 Dryer’s (2008: 62) observation that the order adjective-degree word N is uncommon (unattested in Tibeto-Burman), while the other three orders, degree word-adjective N, N degree word-adjective, and N adjective-degree word, are quite common (an observation corroborated by the WALS correlations with OV/VO reported in (4) of chapter 3 if OV commonly correlates with N final and VO with N initial). Example (4d) is the least represented, the reason for that being that the order [NP_{AP} adjective degree word] N] involves movement of the adjective across its degree word specifier via pied piping of the *whose-pictures* type in the most deeply embedded domain AP, while N in the immediately higher domain NP moves with the *pictures-of-whom* pied piping mode, without crossing over the AP (thus changing from a less marked option to a more marked one).

A similar case is represented by the extremely rare order [[base multiplier] N], which, as observed in note 14 of chapter 2, Greenberg (1989: 106) and Hurford (2003: 596) reported as being absent from their samples (as opposed to [[multiplier base] N], [N [base multiplier]], and [N [multiplier base]]). It is however

found at least in Rongga. Once again the extreme rarity of this order may be related to the fact that the Head of the complex numeral, the base, moves with (vacuous) *whose-pictures* pied piping across the multiplier while the noun moves in the higher domain with the *pictures-of-whom* pied piping, involving a change of pied piping from a less marked option to a more marked option (which seems to invariably yield the worst result).⁸

Another case is that of [[CLF Num] N] (cf. (3d) of chapter 2), which Greenberg (1972: 28–30, 1975: 29) says is less common (together with [N [CLF Num]]) than [[Num CLF] N] and [N [Num CLF]], with movement of the Head of the embedded domain, CLF, via the *whose-pictures* pied piping and movement of the Head of a higher domain, the N, via the *pictures-of-whom* pied piping.

In the case of the order between an ordinal morpheme and the cardinal (to yield an ordinal numeral) and N ((5) of chapter 2), Tatsumi (2020) lists several languages for the harmonic orders [[Card Ord] N] and [N [Ord Card]], with N and Ord as the Heads of their respective projections, somewhat fewer languages for the nonharmonic order [N [Card Ord]], and just one language for the order [[Ord Card] N] (Àhàn, though few others can be added—see chapter 2, n18). It thus appears that the rarest orders ([[A_i degree word t_i] N], [[base_i multiplier t_i] N], [[CLF_i Num t_i] N], [[Ord_i Card t_i] N]) are the ones reminiscent of a FOFC-violating pattern.

Concerning the order between the measure word, the adjective, and the N ((7) of chapter 2), and that between the adjective of color, the noun ‘color’, and the lexical N ((9) of chapter 2), I am not aware of any systematic counts, but there are some suggestive cues that the FOFC-reminiscent orders [[A_i measure phrase t_i] N] (see (7d)), and [[‘color’_i A_{color} t_i] N] (see (9d)) are quite marked (they are found in Chinese and Russian, but only under some kind of emphasis, or in nonordinary styles [see notes 28 and 34 of chapter 2]).

The increasing rarity of the nonharmonic orders of Demonstrative Numeral Adjective and Noun (see (6c)—(6p) of chapter 3)

needs to be looked into to determine whether it is due to more and more marked derivational choices.

5.4 Meaningless Movement

To capture the generalizations in (5) of chapter 1, meaningless movement in narrow syntax appears to be crucially involved “to yield the proper hierarchies” (Chomsky 2004: 110) that may provide the correct linear orders under the LCA. As already noted, meaningless movement is often rejected because movement in narrow syntax, it is assumed, should have both PF and LF consequences; whence the idea that linear order is not in the purview of narrow syntax but is a matter of some externalization mechanism (to be specified). This question however remains open because there appear to be numerous cases where meaningless movement is actually needed in the derivation of the neutral order of sentences and phrases. To the various cases discussed by Kayne (2018: sections 3 and 10, 2020a: sections 2 and 11), one can add the case of Punjabi (Indo-Aryan, SOV), where “adverbials are generally placed at the preverbal position following a direct object” (Bhatia 1993: 93), as shown in (6):

- (6) ó pañjaabii sadaa can_gii boldii ai.
she Punjabi always good.F.SG speak.PRES.F.SG is
‘She always speaks Punjabi well.’

Here, movement of the object is involved to obtain the canonical order from a position close to the verb to a position above certain adverbs, without any incidence on the meaning of the structure.

Another clear case is the obligatory movement of the DP complement of an adjective across a degree modifier of the adjective. See the Swedish case discussed in notes 43 and 44 of chapter 4, and the analogous case found in German:⁹

- (7) a. Ein mir_i völlig t_i ungeläufiges Wort
(cf. Riemsdijk 1983: 229)
A to.me completely unfamiliar word
b. *Ein völlig mir ungeläufiges Wort
A completely to.me unfamiliar word
'A completely unfamiliar word to me'

Once again, this type of movement to build the canonical order has no semantic import.

If Internal Merge is the unmarked form of Merge,¹⁰ it comes in a sense for free (subject to whatever governs the forms Internal Merge can take, with pied piping of the two types or no pied piping), and might well be available for functions other than the discourse-/information-related ones. Suppose that the head of each (sub)projection has to internally merge to the top of its (sub)projection (perhaps something that might be seen as even having some “categorial/semantic” function). This would open up the possibility for Internal Merge “to yield the proper hierarchies” that permit the LCA to apply (whether in narrow syntax or at S-M).

In this perspective the bewildering variation in word order among languages might not be an imperfection, It could be just a side-effect of the central displacement property of UG.

5.5 Language Change and Language Acquisition

Concerning syntactic change, if it is indeed the case that the documented changes from one order to another have in essence occurred unidirectionally, from SOV to SVO to VSO/VOS (the rare cases of change from SVO to SOV being possibly due to language contact) (Gell-Mann and Ruhlen 2011 and references cited there), then the more marked character of the *pictures-of-whom* pied piping mode, involved in the derivation of SOV languages, might provide some rationale for it.¹¹ Change from a more marked derivational option (SOV) to a less marked one (SVO,

involving the *whose-pictures* pied piping mode at least partially) is favored over the reverse change. Biberauer et al. (2017: section 2.6) and Roberts (2019: section 2.3.5) consider word order change from an FOFC perspective, saying that the rare changes from head-initial to head-final “must go ‘bottom up,’ starting at VP, then affecting TP, and then affecting CP” (21). If the change proceeded “top down,” reversing first C from initial to final, there would be an FOFC violation (and indeed they cite one case of putative change from head-initial to head-final that complies with the expectation [22]). The opposite holds with changes from head-final to head-initial, which starts with CP, then TP, and finally VP (they cite the history of English and the development of the Romance languages from Latin as bearing out these expectations). From the present perspective there are identical expectations. If every derivation starts with the Head of the extended projection (VP), only changes from the more marked *pictures-of-whom* to the less marked *whose-pictures* pied piping will be favored. Hence in changes from a head-final to a head-initial word order the change cannot start from the VP (\rightarrow VO), because one would then go, in the next layer up, from a less marked option (*whose-picture* pied piping) to a more marked one (*pictures-of-whom* pied piping). So they should affect first the highest layer and proceed downward. In the rarer changes from a head-initial to a head-final word order the change must instead affect first the VP (\rightarrow OV), because then moving up the change would be from a more marked option (*pictures-of-whom* pied piping) to a less marked one (*whose-pictures* pied piping).

As to language acquisition, if the Heads of the extended projections and subprojections (and their hierarchy and selectional properties) are part of the lexicon of UG, if movement of the Heads, by themselves or via the two pied piping modes, is part of UG (together with the features triggering one or the other type of movement), and if Kayne’s LCA is also part of UG, then the task of the children is substantially facilitated. What they have to

figure out is just the specific movements and the features determining them that lead under the LCA to the linear order of the language they are exposed to. So, for example, the Malagasy order of the adverbs in (25) of chapter 4, where the rightmost corresponds to the highest, the penultimate to the next highest down, and so on, indicates under the LCA that the VP has raised consistently above them with the *whose-pictures* pied piping mode. The Italian order in (24) of chapter 4 indicates instead that the VP has raised above them without pied piping (thus not reversing their order under the LCA). Similarly the order of VSO Peñoles Mixtec in (i) of note 14 of chapter 4 indicates that the VP has raised above the manner adverb with (vacuous) *whose-pictures* pied piping and that the higher PAST Head has also raised via the same pied piping mode above the epistemic adverb and the pronominal subject. The corresponding English sentence *He probably plowed well* indicates instead that the VP has raised without pied piping just above the low manner adverb, remaining lower than the higher epistemic adverb and the subject. In Cinque (2017: section 4.4) I submitted that acquisition may be guided by a default assumption that once the lexical category is attracted in one of the three modes (*whose-pictures* pied piping, *pictures-of-whom* pied piping or without pied piping), the default expectation is that it (or any other category of the same verbal or nominal type) will continue to move in the same mode, up to disconfirmation.¹² This may even lead (in few cases, as seen) to almost perfect cross-category harmony if the default expectation of a uniform attribution of the pied piping feature is not contradicted by the primary linguistic data.

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