

of capabilities and permissions, whereas the anomaly of (34) reveals that permissions or capabilities to acquire obligations are hard to conceive (see Nauze 2008 for a more detailed explanation along similar lines). From a theoretical perspective, it is important to emphasize that these restrictions are ultimately lexical in nature: if someone knows what permissions and obligations are, he or she will also know what kind of events are likely to be permitted and which ones are likely to be mandatory. The lexical information needed to account for these differences is not exactly extralinguistic or encyclopedic, but rather extra-syntactic. As many other aspects of S-selection, it involves semantic contents interacting with the strictly categorical information provided by C-selection.

A final remark might be in order. The approach I favor in this chapter is “quasi-cartographic” because it grants only partial independence to functional hierarchies as fixed or predetermined sequences of projections. The movement and copying processes that I have introduced are fully compatible with the spirit of the cartographic project, but other aspects of the analysis seem to be only partially compatible with it. These include the free order of functional heads in some areas of the spine, and the existence of local output conditions based on semantic restrictions not to be specified as part of the Aux templates.

It goes without saying that the prefix *quasi-* should be removed from the title of this chapter if the cartographic project is to be interpreted in a broader perspective; namely, as the enterprise of finding out the proper alignment of functional heads, whatever the nature—primitive or derived—of the relevant information turns out to be, and whatever postulates turn out to be necessary to achieve the correct generalizations.

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Externalization and meaningless movement

Guglielmo Cinque

4.1 Introduction

In recent years Chomsky has made the not implausible suggestion that, given the architecture of UG, internal Merge (movement) in narrow syntax should have interpretive effects at both interfaces (PF and LF). See the quotes in (1), (2), and (3):

- (1) “An I-language can be taken to be (at least) a computational procedure that yields an unbounded array of hierarchically structured expressions, **each assigned an interpretation at two interfaces with other internal systems, sensory-motor (SM [PF/PHON]) and conceptual-intentional (CI [LF/SEM]).**” (Chomsky 2015: 5)
- (2) Whenever there is no interpretive effect at LF no movement in narrow syntax should be involved, a paradigm example being “the cross-linguistically variable [...] head-complement structures.” (Chomsky, Gallego, and Ott 2017 (revised in 2019): 15)
- (3) “There is mounting evidence that linear ordering is not part of I-language, though it is of course required by the sensory-motor system. The I-language therefore provides the hierarchical structure, but externalization to SM has to fix order.” (Chomsky, p. 18 in Boechat de Medeiros 2017)

Chomsky’s current position of Merge as yielding unordered sets which are linearized only at PF was actually discussed in Chomsky (1965: 123–6) given proposals in Curry (1961) and Šaumjan and Soboleva (1963) (cf. Hall [Partee] 1964 and Šaumjan 1965) that rewriting rules should yield unordered sets (as in (4)) rather than the ordered strings assumed then by Chomsky (cf. (5)), but he dismissed it at the time as “[n]o proponent of a set-system has given any indication of how the abstract underlying unordered structures are converted into actual strings with surface structures.” (p. 125).¹

¹ As Hall [Partee] (1964) put it: “Šaumjan’s theory seems to rest in part on the assumption that word order is independent of syntactic structure in all languages” (p. 407). Later proponents of an unordered

b. $VP \rightarrow \{V, NP\} = \{NP, V\}$

- (5) a. $S \rightarrow NP \wedge VP$
b. $VP \rightarrow V \wedge NP$

Things could now be different as there is one detailed indication of how unordered hierarchical structures could be converted into actual strings, Kayne's (1994) Linear Correspondence Axiom (LCA). This was Chomsky's position in Chomsky (1995). On p. 340 he says: "We take the LCA to be a principle of the phonological component," which however implied that some meaningless movement in narrow syntax had to be assumed for the derivation of word order differences within one language and across languages.

As this is incompatible with the idea that meaningless movements in narrow syntax (just "to yield the proper hierarchies" Chomsky 2004: 110 and note 27) should be eliminated, things have more recently become less clear as to what mechanisms are responsible for word order differences.

The current lack of an explicit theory of externalization risks taking us back to Chomsky's (1965) dismissal of set-systems.

Though, of course, it is perfectly possible that some externalization mechanism will be found which accounts for the conversion of the universal set-based hierarchical organization to the variety of word orders found within and across languages, the task is anything but trivial. What is sometimes assumed (see (6) and (7)) seems far from being sufficient (also see Kayne 2018, 2020).

- (6) "[T]he physics of speech demand that linguistic units must be pronounced sequentially in time, giving rise, in this case, to just two options: the head either precedes or follows its complements." (Eguren, Fernández-Soriano, and Mendikoetxea 2016: 12)
- (7) "[In Japanese] the VP is linearized with OV order (*John-o sikarta*), whereas a corresponding English VP would surface with VO order (*scolded John*). Interpretation is not affected by this difference, suggesting that the relevant parameter should be a matter of externalization of internally generated expressions alone." (Chomsky, Gallego, and Ott 2017 (revised in 2019): 4)

4.2 Generalizations concerning cross-linguistic word order variation

The idea that the linearization of two unordered elements ($\{XP, Y\}$) can be trivially obtained by having one to either precede or follow the other ($XP > Y$ or $Y > XP$) falls short of a number of generalizations concerning linear order, among which:

underlying structure include Staal (1967: Chap. 1), Sanders (1970, 1975), Hudson (1972), and Bartsch and Vennemann (1972: 38f).

head than to its left?

- b. Why, out of all mathematically possible orders, is only a subset apparently attested?

It also cannot account for why subnominal ellipsis can target a certain modifier only if all constituents below it are also elided.

Here I only briefly discuss the generalizations in (8) (referring to Cinque 2005, 2009, and especially 2023 for more detailed discussion, as well as to Kayne 2011, 2018, and 2020), and devote more time to discuss a third one, which does not appear to be directly connected with word order, but in fact turns out to be dependent on it: Why can subnominal ellipsis target a certain modifier only if all constituents below it (including the lexical head) are also elided? (Cf. Cinque 2012 for a preliminary discussion, elaborated in more detail below.)

I assume that a theory of externalization should be able to derive all of these generalizations.² As movement appears to provide a unified answer to them, there may be some reason to retain at least *some* apparently meaningless movement in narrow syntax, which in turn will allow us to retain the LCA (whether in narrow syntax, perhaps modified along the lines of Kayne 2018, or at PF as in Chomsky 1995: 340 and subsequent works of his).

4.2.1 Why are there more ordering possibilities to the right of a lexical head than to its left?

Natural languages show a pervasive left-right asymmetry:

Order of demonstratives, numerals, and adjectives (Greenberg 1963: 87; Cinque 2005)

- (9) a. Dem > Num > A > N (English, Malayalam...)
b. *A > Num > Dem > N 0
c. N > Dem > Num > A (Abu; Kikuyu...)
d. N > A > Num > Dem (Gungbe, Thai...)

Order of attributive adjectives (not derived from RCs) (Hetzron 1978; Plank 2003: 11f)

- (10) a. $A_{\text{size}} > A_{\text{color}} > A_{\text{nationality}} > N$ (English, Serbo-Croatian...)
b. * $A_{\text{nationality}} > A_{\text{color}} > A_{\text{size}} > N$ 0
c. $N > A_{\text{size}} > A_{\text{color}} > A_{\text{nationality}}$ (Welsh, Irish, Maltese...)
d. $N > A_{\text{nationality}} > A_{\text{color}} > A_{\text{size}}$ (Indonesian, Yoruba...)

² Incidentally, it is not clear how direct linearization theories for the DP like that of Kremers (2009), which does not dispense entirely with meaningless movement, and that of Hall (2015), which has to assume different Merge structures for the DP, can derive these generalizations.

- (11) a. Adv_{no longer} > Adv_{always} > Adv_{completely} > V (English, Chinese...)
 b. *Adv_{completely} > Adv_{always} > Adv_{no longer} > V 0
 c. V > Adv_{no longer} > Adv_{always} > Adv_{completely} ((main clause) German, Italian...)
 d. V > Adv_{completely} > Adv_{always} > Adv_{no longer} (Malagasy, Niuean...)

This is also what we find with the relative order of circumstantial PPs. If we limit ourselves to Time, Place, and Manner PPs, whose order has been investigated from a cross-linguistic perspective, we find the same pattern:³

Order of circumstantial PPs (Boisson 1981; Cinque 2006; Hinterhölzl 2002; Schweikert 2005)

- (12) a. Time > Place > Manner V (Basque, Nambikuara...)
 b. *Manner > Place > Time > V 0
 c. V > Time > Place > Manner (Otomi, V/2 clause German)
 d. V > Manner > Place > Time (Vietnamese, Yoruba...)

This is also what we find with the order of (speech act) Mood, Tense, and Aspect with respect to the V (see Bybee 1985; Foley & Van Valin 1984; Cinque 1999, 2014, and the text below):

Order of (speech act) Mood, Tense, and Aspect morphemes (Cinque 2014)

- (13) a. Mood Tense Aspect V (Nama, Yoruba...)
 b. *Aspect Tense Mood V 0
 c. V Mood Tense Aspect (Comox...)
 d. V Aspect Tense Mood (Korean, Malayalam...)

If one considers the relative order of auxiliary and restructuring (or clause union) verbs (Cinque 2006) with respect to each other and to the lexical verb, one finds a similar pattern. See Koopman and Szabolcsi (2000), Nilsen and Vinokurova (2000), Wurmbrand (2004), Barbiers (2005), and Svenonius (2006):

Order of auxiliary and “restructuring” verbs (Koopman & Szabolcsi 2000: 80f; Abels 2016: 205)

- (14) a. Aux RestrV₂ RestrV₁ V (Hungarian, Standard Dutch...)
 b. *RestrV₁ RestrV₂ Aux V 0
 c. V Aux RestrV₂ RestrV₁ (Hungarian, Standard Dutch...)
 d. V RestrV₁ RestrV₂ Aux (Hungarian, West Frisian...)

³ On the interference of focus on the canonical order of circumstantial PPs and possible diagnostics for the canonical order, see Cinque (2002), Schweikert (2005).

a single language with respect to the ordering of certain elements. To take two examples, Terzi (1999) notes that in front of the verb in Modern Greek only the order in which the dative clitic precedes the accusative clitic is admitted, while after the V either order of the two clitics is possible (see (15)):

Order of (dative and accusative) clitics in Modern Greek (Terzi 1999: 86)

- (15) a. mou to edoses
 me_{DAT} it_{ACC} gave.2SG
 ‘you gave it to me’
 b. *to mou edoses
 it_{ACC} me_{DAT} gave.2SG
 c. Dos’ mou to
 give me_{DAT} it_{ACC}
 ‘give it to me!’
 d. Dos’ to mou
 give it_{ACC} me_{DAT}
 ‘give it to me!’

Ordóñez (2002) mentions that “Occitan varieties reported in the literature by Teulat (1976) show that while the order is rigid in preverbal position as shown in [(16)a] it might be reversed in postverbal position in [(16)b], which recalls the patterns found in Greek” (p. 217) (for additional cases and interesting discussion see Zompì 2019):

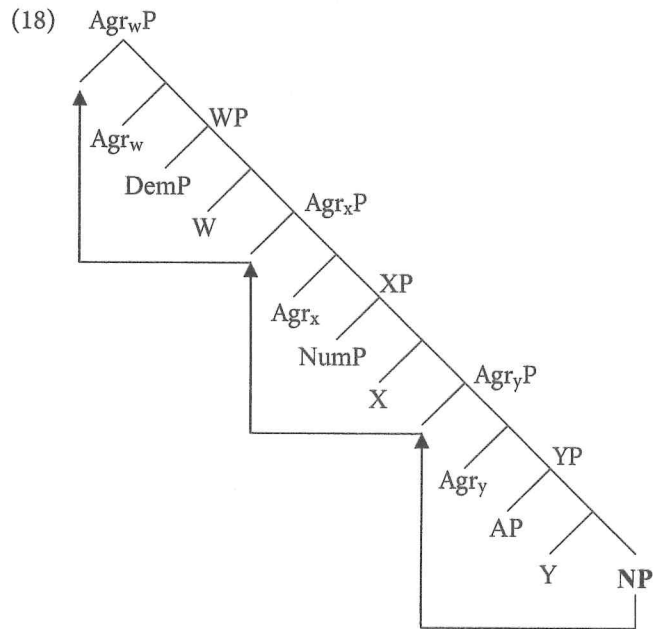
- (16) a. *Lo me/*me lo dussèt pas veire* (Occitan—Ordóñez 2002: 217)
 lo(ACC) me(DAT) let not see
 ‘You did not let me see it.’
 b. *Daussa-m lo*
 let me(DAT) it(ACC)
 ‘Let me it.’
 c. *Daussa-lo me*
 let lo(ACC) me(DAT)
 ‘Let me it.’

A similar pattern is apparently found (in those languages in which they overtly combine) with the order of locative (“at”) and directional (“to,” “from”) prepositions:⁴

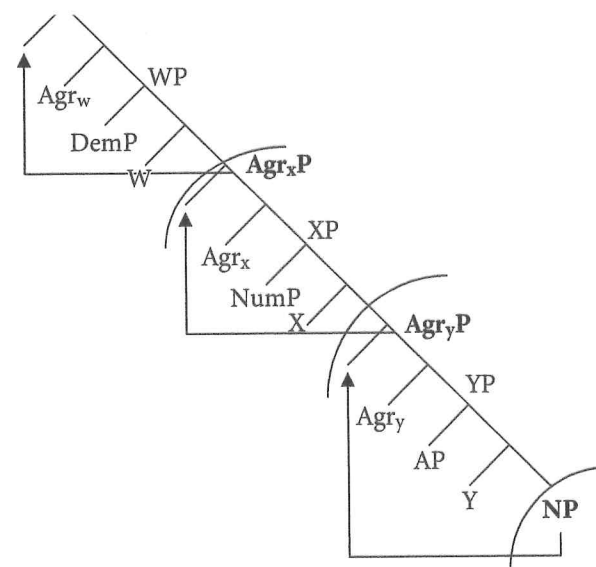
⁴ The other two possible orders of the three elements P_{Dir} P_{Loc} NP are also attested: P_{Dir} NP P_{Loc} in Taba (Austronesian—Bowden n.d. *ap-po bbuk li* ‘(lit.) to-down book at’ (onto the book)), and P_{Loc} NP P_{Dir} in Zina Kotoko (Chadic—Tourneux 2003: 294 *à ji kàskú kí* ‘LOC inside market toward’ (toward the market)).

- (17) a. $P_{DIR} P_{LOC} NP$ (Romanian: *Ion vine de la școală* '(lit.) Ion comes from at school (from school)')
- b. $*P_{LOC} P_{DIR} NP$ 0
- c. $NP P_{DIR} P_{LOC}$ (Iatmul (Papuan): *gay-at-ba* '(lit.) house-to-at (to the house)')
- d. $NP P_{LOC} P_{DIR}$ (Jero (Tibeto-Burman): *thalu=na=k* 'where=LOC=SOURCE (from where)')

The three possible orders are virtually the same order, either literally the same if we abstract from the position of the lexical category, or the mirror order (which is at a more abstract level the same order). This pattern can be made sense of if we take the unique order found to the left of the lexical head to reflect the order of Merge and the two orders found to the right of the head to be a function of the different way the head of the construction (VP, NP, etc.) moves around the complements/modifiers merged above it (either by itself or via the *whose*-pictures pied-piping).⁵



⁵ Another left–right asymmetry which it is not clear how externalization at PF could derive is the typological generalization that relative *wh*-pronouns are possible in post-nominal but not in pre-nominal relative clauses (Downing 1978: 392ff; Keenan 1985: 149; Kayne 1994: 93; Cinque 2020: §2.2).



4.2.2 Why, out of all mathematically possible orders, is only a subset apparently attested?

For example, out of the 24 possible orders of the four elements Demonstrative, Numeral, Adjective, and Noun, only 14 appear to be attested cross-linguistically (Cinque 2005 and in preparation). See (20):⁶

- (20)
- | | | | | |
|------|-----|-----|-----|---|
| a. ✓ | Dem | Num | A | N |
| b. ✓ | Dem | Num | N | A |
| c. ✓ | Dem | N | Num | A |
| d. ✓ | N | Dem | Num | A |

⁶ Although Dryer (2018) claims that some of the orders that Cinque's (2005) account of Greenberg's Universal 20 ruled out are actually attested in at least a few languages, in Cinque (in preparation) I argue, on the basis of the same sources utilized by Dryer and of additional ones, that none of the putative counterexamples is real. In every one of those languages the unexpected order is not the only possible order of demonstrative, numeral, adjective, and noun. Other orders co-exist in the language which conform to one of the 14 orders admitted by Cinque's (2005) account. Hence, none of them is a convincing counterexample. In a larger sample of over 2000 languages I have found no evidence that one of the 10 orders excluded in Cinque (2005), if available, is the **only** order possible. In other terms only 14 orders are attested as the only possible order in some language, which suggests to me that only 14 orders are genuinely possible (I refer to Cinque in preparation for detailed discussion).

f.	*	Num	Dem	N	A
g.	*	Num	N	Dem	A
h.	*	N	Num	Dem	A

i.	*	A	Dem	Num	N
l.	*	A	Dem	N	Num
m.	✓	A	N	Dem	Num
n.	✓	N	A	Dem	Num

o.	*	Dem	A	Num	N
p.	✓	Dem	A	N	Num
q.	✓	Dem	N	A	Num
r.	✓	N	Dem	A	Num

s.	*	Num	A	Dem	N
t.	✓	Num	A	N	Dem
u.	✓	Num	N	A	Dem
v.	✓	N	Num	A	Dem

w.	*	A	Num	Dem	N
x.	*	A	Num	N	Dem
y.	✓	A	N	Num	Dem
z.	✓	<u>N</u>	<u>A</u>	<u>Num</u>	<u>Dem</u>

As suggested in Cinque (2005) the pattern can be derived by imposing a more stringent condition on the movement analysis which was shown to derive the left–right asymmetries just seen: *No constituent can move except for constituents containing the lexical head of the construction.*⁷

Similarly, the orders in violation of the Final-Over-Final Constraint of Biberauer, Holmberg, and Roberts (2014) and Sheehan, Biberauer, Roberts, and Holmberg (2017), which appear to be unattested (or vanishingly rare) cross-linguistically, pose a problem that any theory of externalization must be able to account for. See Cinque (2023) for further discussion.

⁷ Whether the order Dem Num A N is derived by moving nothing (as in Cinque 2005), or by moving the lexical projection in the other type of pied piping (*pictures-of-whom*) (as in my later work—Cinque 2017, 2023) is not relevant here.

if all constituents below it (including the lexical head) are also elided?

As this point does not immediately appear to be connected with linear order and its movement derivation I will proceed in three steps.

First I mention certain restrictions on subnominal ellipsis noted in the literature.

Second I consider certain facts corroborating the proposal in the literature that ellipsis depends on prior movement.

Third I will provide more detailed evidence for the generalization and argue that it follows from the same, more stringent, conditions on movement that derive the left–right asymmetry in the linearization of Greenberg’s (1963) Universal 20.

4.3.1 Restrictions on subnominal ellipsis (first part)

Emonds (2012: 330) noted that in (21) neither a quantifier nor an adjective can be silent (and interpreted as present) when the noun is pronounced:

- (21) Can we hire [any young applicants] or [two applicants with tied scores]?

(Emonds 2012: 330)

Not interpretable as: Can we hire **any** two applicants with tied scores?

Nor as: Can we hire two **young** applicants with tied scores?

Kayne (2012: 78) noted that a sentence like (22)

- (22) Mary has written four papers, whereas John has only written squibs.

cannot be interpreted as ‘Mary has written four papers, whereas John has only written four squibs’ and proposes:

- (23) Numerals cannot be left silent unless their (following) associated noun is also left silent.

In Cinque (2012) I suggested, for reasons to be reviewed below, that this condition should be generalized to:⁸

- (24) No nominal modifier can be silent (and interpreted as present) unless all constituents below it (including the head) are also silent.

⁸ See Collins (2015a: 60) for a systematic exception to this generalization under particular conditions (of coordination, parallelism, and focus), which will be taken up later. Also see Kayne (2012: 78fn13) for the following observation: “If sentences like *Seventeen linguists and physicists attended the talk* allow an interpretation in which 34 people attended (which for me is marginal at best), then coordinate structures will fall outside [(23)].” David Adger (pers. comm.) cannot get this meaning at all.

cial property of ellipsis: its dependence on the prior movement to a left-peripheral position of the constituent to be subelided (Kayne 2006, 2012).⁹ Under the present account the generalization in (24) will be seen to follow from the condition on movement mentioned above (“No constituent can move except for constituents containing the lexical head of the construction”).

4.3.2 A movement approach to ellipsis

Evidence that ellipsis depends on the prior movement to a left-peripheral position of the constituent to be elided appears to be supported by various phenomena. One is represented by the German “Vorfeld-deletion” pattern in (25) (Ross 1982), also known as “Topic Drop,”

- (25) a. Ich habe das schon gesehen
I have it already seen
- b. *Ich habe __ schon gesehen
I have already seen
- c. Das habe ich schon gesehen
It have I already seen
- d. __ Habe ich schon gesehen
Have I already seen
'I have already seen it'

and the similar pattern found in Dutch (see Koopman 2000: 352), and other Germanic languages (see Sigurðsson 2011: §2)

As (25)b shows, in German it is not possible to delete a DP in situ, but deletion becomes apparently possible when the first position of the clause, which must otherwise be filled by a constituent, is not filled. This becomes understandable, as the works cited suggest, if deletion (non-pronunciation) of the DP in (25)d occurs after the DP has raised to the first position of the clause.

Another piece of evidence for the same general conclusion comes from an exception to the clitic second requirement on clitics such as the auxiliary *bych* or the reflexive pronoun *si* in Czech. They may occur in first position when a

⁹ Kayne (2012: 79) hypothesizes that concerning (23) “there might be a link to familiar left-branch effects, as in: **Three John has sisters*.” Below I relate ellipsis to the independent generalization on movement that derives the attested orders of demonstrative, numeral, adjective, and noun in Greenberg’s Universal 20 (cf. Cinque 2005, 2023). It remains to be seen whether Attributive Comparative Deletion (**Erik drives a more expensive car than Polly drives a motorcycle*) might also be reducible to the same generalization (see Kennedy & Merchant 2000 and Bacsikai-Atkari 2018 for discussion of such cases and related complexities). On “deletion” being related to movement also see Johnson (2001) and Nteli-theos (2004), as well as Rizzi (1994).

See (26)a and b:

- (26) a. Bych netvrđil.
would.1SG not.claim
'I wouldn't claim it'
- b. Si myslíš
REFL think.2SG
'That's what you think'

As explicitly observed in Toman (1996) this should be related to the possibility of not pronouncing the pronominal *to* after moving it to first position as in (27), a fact which recalls, he notes, the German Vorfeld-deletion illustrated in (25) above:

- (27) a. To bych netvrđil (= (26)a)
b. To si myslíš (= (26)b)

As with Germanic “Vorfeld-deletion,” crucially, *to* in Czech cannot be deleted in situ; namely when some other constituent fills the first position. See (28), kindly provided by Lucie Medová Taraldsen:

- (28) a. *dnes bych __ netvrđil
today would.1SG not.claim
'Today I wouldn't claim it'
- b. *dnes si __ myslíš
today REFL think.2SG
'Today that's what you think'

Further evidence comes from the Principle C effects observed for Chinese, Japanese, Korean, and (Brazilian) Portuguese in Huang (1984: 538ff). For example, the impossibility of understanding the unpronounced object in (29) in Brazilian Portuguese as referring to the same individual as the matrix subject can be made sense of if the pronominal object is \bar{A} -moved to a topic position of the matrix clause as a prerequisite for its non-pronunciation, as illustrated in (30) (for, in that case, the variable left by the movement of the object ends up being c-commanded by the coindexed subject):

- (29) João disse que Pedro viu __ (cf. Huang 1984: 541)
João said that Pedro saw
(ungrammatical if understood as 'João_i said that Pedro saw him_i';
grammatical if __ is understood as referring to an individual mentioned
in the previous discourse. If __ were a non-pronounced pronominal in
situ coindexed with *João* one would expect that interpretation to be
available, contrary to fact.)

- (30) *[pro_i [João_i disse que Pedro viu ___i]]

ellipsis of designated elements, not involving the presence of an antecedent; what used to be called “specified deletion” (see for example Den Besten 1981: 1).

Related evidence that ellipsis involves the previous movement of the elided material is the fact that (at least certain types of) ellipses appear to be constrained by conditions on movement like those responsible for islands. This is the case for the non-pronunciation of the object in Portuguese seen in (29), which cannot be found within islands, and which can license a parasitic gap (see Raposo 1986: 381ff). It is also apparent in the fact, noted in Rizzi (1982: 75fn32), that (verbal) gapping in Italian can affect the second conjunct of two coordinated indirect questions (extraction out of which is possible in Italian) but cannot affect the second conjunct of an otherwise formally identical conjunction of free relatives (extraction out of which is impossible in Italian). See (31)a–b (I assume that movement of the unpronounced phrase in (31) is outside of the second conjunct, CP in (31)a and DP, crossing over CP, in (31)b):¹⁰

- (31) a. Non ho ancora capito [[_{CP} chi ha telefonato a Maria] e
 [_{CP} chi _____ a Giuliana]]
 Not I.have yet understood who has called M. and who G.
 b. *Ho punito [[_{DP}[_{CP} chi ha telefonato a Maria] e
 [_{DP}[_{CP}chi _____ a Giuliana]]]]
 I.have punished who has called M. and who G.

4.4 A generalization concerning DP-internal ellipsis

DP-internal ellipsis is known to be subject to a number of language-specific restrictions (for example, the impossibility of deleting the NP after an adjective in English (*Give me the red *(one).*), as opposed to Italian (*Dammi la __ rossa.*). Here, I will not be concerned with this type of condition, but will concentrate on a specific, arguably universal, condition governing those DP-internal ellipses that abide to the language-specific conditions; this universal condition ultimately determines the possible and impossible interpretations of the ellipsis. In first approximation, the generalization, which I later try to derive from a more general condition on DP-internal movement, is that the non-pronounced material obligatorily involves the NP, and optionally any constituent containing it (which is non-distinct from a comparable “antecedent”). In other words, some element

¹⁰ Neijt’s (1979) generalization that the “remnants” of gapping must be able to undergo A’-movement in non-reduced clauses suggests that in gapping they undergo A’-movement (to the Spec of FocusP, NegP, etc.) before the verbal remnant is deleted (see Broekhuis 2018; Broekhuis & Bayer 2018). What we suggest here, on the basis of the contrast in (31), is that the verbal remnant is also A’-moved out of the second conjunct (as this proves to be possible in (31)a but not in (31)b).

element is also silent.

In order to evaluate the correctness of the proposed generalization I first consider the case of pre-nominal modifiers (Section 4.4.1), and then that of post-nominal modifiers (Section 4.4.2). In Section 4.4.3 a refinement of the generalization will then be presented and some of its implications discussed. Section 4.4.4 concludes.

4.4.1 Pre-nominal modifiers

Consider the following examples from Italian (for each I list the possible and impossible interpretations; deleted parts are marked by strikethrough):

Cardinal numerals

- (32) a. Quei due studenti sono più alti di questi ~~due studenti~~/ studenti
 Those two students are taller than these ~~two students~~/students
 b. Quei due studenti sono più alti di questi *~~due professori~~¹¹
 Those two students are taller than these *~~two~~ professors

Ordinal numerals

- (33) a. La mia prima sconfitta è venuta dopo la sua ~~prima sconfitta~~/sconfitta
 My first defeat came after his ~~first defeat~~/defeat
 b. La mia prima sconfitta è venuta dopo la sua *~~prima~~ vittoria
 My first defeat came after his *~~first~~ victory

Multal/paucal quantifiers

- (34) a. Con i suoi molti sostenitori e i tuoi ~~molti sostenitori~~/sostenitori...
 With his many supporters and yours ~~many supporters~~/supporters...
 b. Con i suoi molti sostenitori e i tuoi *~~molti~~ seguaci...
 With his many supporters and your *~~many~~ followers...

Pre-cardinal adjectives

Prossimo (or *scorso*) ‘next (or last)’

- (35) a. i loro prossimi due incontri e i nostri ~~prossimi due incontri~~/
 ~~due incontri~~/incontri
 Lit. the their next two matches and the ours ~~next two matches~~/
 ~~two matches~~/matches
 b. i loro prossimi due incontri e i nostri *~~prossimi~~ due allenamenti
 Lit. the their next two matches and the our *~~next~~ two coachings

¹¹ As noted, this fact is observed for English in Kayne (2012: §4).

- (36) a. i nostri soliti tre clienti e i vostri ~~(soliti)~~ (tre) clienti
Lit. the our usual three customers and the your ~~(usual)~~ (three) customers
b. i nostri soliti tre clienti e i vostri *~~soliti~~ tre fornitori
Lit. the our usual three customers and the your *~~usual~~ three suppliers

solo/unico/altro 'only/unique/other'

- (37) a. i vostri soli/unic/altri sostenitori e i ~~nostri soli/unic/~~
~~altri sostenitori/~~ sostenitori
Lit. the your only/other supporters and the our ~~only/unique/~~
~~other supporters/~~ supporters
b. i vostri soli/unic/altri sostenitori e i nostri *~~soli/unic/~~ altri amici
Lit. the your only/other supporters and our *~~only/unique/~~ other friends

'rimanente/restante' 'remaining'

- (38) a. Vanno letti tutti i rimanenti dieci capitoli, e tutti
(i ~~rimanenti~~) (dieci) capitoli entro la prossima settimana
All the remaining ten chapters have to be read, and all
(the ~~remaining~~) (ten) chapters by next week
b. Vanno letti tutti i rimanenti dieci capitoli e tutti i *~~rimanenti~~
dieci commenti entro la prossima settimana
All the remaining ten chapters have to be read and all the *~~remaining~~
ten commentaries by next week

*Post-cardinal adjectives*¹²

- (39) a. le mie principali preoccupazioni e le sue ~~principali preoccupazioni/~~
~~preoccupazioni~~
my main worries and his ~~main worries/~~ worries
b. le mie principali preoccupazioni e le sue *~~principali~~ paure
my main worries and his *~~main~~ fears

*Demonstratives*¹³

- (40) a. All these bonuses are available and all ~~these bonuses~~, incidentally, are
completely free of charge.
b. All these bonuses are available and all *~~these~~ offers are completely
free of charge.

¹² These correspond to those adjectives that in Cinque (2010b) and references cited there are referred to as "direct modification" adjectives (arguably those not deriving from relative clauses), which are the only ones that can appear either pre-nominally or postnominally.

¹³ Given that in Italian a universal quantifier modifying an NP must be followed by either a definite article or a demonstrative, the "delectability" of a demonstrative in the presence of a bare NP modified by a universal quantifier cannot be checked. English, however, allows one to construct the relevant context.

Being the next to the highest modifier of the nominal extended projection (below integrated non-restrictive relative clauses—see Section 4.4.2), universal quantifiers of the *tutti* (*e tre*) 'all (three of)' type, can never appear silent as there will always be a pronounced lower modifier (and/or the NP):

- (41) Tutti (*e tre*) quei bambini sono stati più fortunati di *~~tutti~~ (*e tre*) questi
All (three of) those children have been luckier than *~~all~~ (*three of*) these
(bambini).
(children).

4.4.2 Post-nominal modifiers

Post-nominal adjectives

- (42) a. le mie preoccupazioni principali e le sue ~~preoccupazioni principali/~~
~~preoccupazioni~~
Lit. my worries main and his ~~worries main/~~ worries
b. le mie preoccupazioni principali e le sue paure *~~principali~~
Lit. my worries main and his fears *~~main~~
(43) a. quei vasi cinesi lì e questi ~~vasi cinesi/~~ vasi
Lit. those vases Chinese there and these ~~vases Chinese/~~ vases
b. Quei vasi cinesi lì e questi quadri *~~cinesi~~ qui
Those vases Chinese there and these paintings *~~Chinese~~ here

Participial relative clauses

It seems that, whether interpreted restrictively or non-restrictively, participial (reduced) relative clauses cannot be understood as present and unpronounced if the N is pronounced. See (45):

- (44) a. Dopo questi articoli appena arrivati leggerò gli altri ~~articoli appena~~
~~arrivati~~
After these articles just arrived I'll read the others ~~articles just arrived~~
After these articles just arrived I'll read those newspapers
b. Dopo questi articoli appena arrivati leggerò quei giornali
(*~~appena arrivati~~)
After these articles just arrived I'll read those newspapers
(*~~just arrived~~)

Restrictive relative clauses

As Lobeck (1995:43) notes, "a [restrictive] relative clause can either be included in the ellipsis or can remain outside it" (see (45)a–b), provided, we add, that the head N is also silent (see (45)c. and the Italian examples in (46)):

Mary enjoyed [_{NP} those [e]] even more ([e] = cards (that her students sent her))

- b. Even though these cards that her students sent her were funny, Mary liked [_{NP}those [e] that her parents gave her] even more ([e] = cards)¹⁴
- c. Even though these cards that her students sent her were funny, Mary enjoyed [_{NP} those cards] even more (=/= those cards that her students sent her)
- (46) a. Il primo articolo che ho letto e l'altro (~~articolo~~) (~~che ho letto~~)...¹⁵
The first article that I read and the second (article that I read)
- b. Il primo articolo che ho letto e l'altro libro (~~*che ho letto~~)
The first article that I read and the other book (~~*that I have read~~)

Non-restrictive relative clauses

As noted in McCawley (1998: 445), non-restrictive relatives, as opposed to restrictive relatives, cannot be interpreted as being part of an ellipsis site.¹⁶ Compare (45)a–(46)a with (47):

- (47) Questo violino, che è probabilmente di Stradivari, è meno buono di quello violino, ~~*che è probabilmente di Stradivari~~.
This violin, which probably is by Stradivari, is less good than that violin, ~~*which probably is by Stradivari~~.

Prepositional phrases

If nouns do not have complements (Kayne 2008: §9), nor do they assign theta roles, the expectation is that apparently selected PPs and non-selected (adjunct) PPs

¹⁴ This and similar cases with other post-nominal modifiers recall Gapping in the clause; yet, while VP Ellipsis and (verbal) Gapping are subject to different conditions, the latter being arguably derived via Across-The-Board (ATB) movement (cf. Johnson 2009 and references cited there), Yoshida et al. (2012) observe that DP-internal Ellipsis and Nominal Gapping are subject to exactly the same conditions, and show properties that cannot be derived via ATB movement but only by ellipsis (here, movement of the non-ATB type).

¹⁵ Note that, differently from ordinal numerals and “other,” which are arguably higher than restrictive relatives, and thus do not block the ellipsis of the relative clause together with the head N (cf. (23)a), cardinal numerals, which are arguably lower than restrictive relatives, do block the ellipsis of the relative clause:

- (i) I tre articoli che ho letto e questi altri due ~~articoli~~ ~~*che ho letto~~
The three articles that I have read and these other two (articles) (~~*that I have read~~)

¹⁶ He gives the contrast between (i)a and b:

- (i) a. Tom has a violin which once belonged to Heifetz, and Jane has one ~~violin which once belonged to Heifetz~~ too
b. Tom has a violin, which once belonged to Heifetz, and Jane has one ~~violin, which once belonged to Heifetz~~, too

Cf. (48) and (49):

- (48) a. La sua descrizione della casa e la tua ~~descrizione della casa~~
the his description of.the house and the yours ~~description of.the house~~
b. La sua descrizione della casa e la tua idea (~~*della casa~~)
the his description of.the house and the your idea (~~*of.the house~~)
- (49) a. Il vostro appartamento sul lago è costato più del loro ~~appartamento~~
(~~sul lago~~)
Your apartment on the lake has cost more than theirs ~~apartment~~
(~~on the lake~~)
b. Il vostro appartamento sul lago è costato più della mia casa
(~~*sul lago~~)
Your apartment on the lake has cost more than my house
(~~*on the lake~~)

This does not mean necessarily that apparently selected and non-selected PPs are merged in the same position. There seems in fact to be evidence that the former are merged lower than the latter (see Section 4.4.4 below and McCawley 1998).

Collins (2015a, b and pers. comm.) points out that under certain conditions (in coordinate or comparative structures with full parallelism, and contrastive focus)¹⁷ RCs and PPs can be deleted and understood as present. See for example:

- (50) a. In eastern European countries there are more boys who smoke than girls ~~who smoke~~
b. At the party, I saw three boys who I know and one girl (~~who I know~~)
c. I read one book about Chomsky and two papers (~~about Chomsky~~)

Perhaps the difference between adjectives, numerals, multal/paucal quantifiers and demonstratives (which cannot be deleted under identity and understood as present) vs. RCs and PPs (which can, under the mentioned conditions) could be related to the fact that the latter move independently of the NP to the front of the DP¹⁸ vs. adjectives, numerals, multal/paucal quantifiers, demonstratives which

¹⁷ See the difference between (i)a, with identity (and parallelism), and (i)b, without identity (from Collins 2015a: 59); and that between (i)a with parallelism (and identity) and (ii) without parallelism:

- (i) a. There are more women who are married than men <who are married>
b. There are more women who have a husband than men <*who have a wife>
(ii) There are more women who are married than men <*who are married> would have liked

¹⁸ This is apparent in head-final languages, where complement and circumstantial PPs and (optionally) RCs appear before demonstratives, numerals, adjectives, and the N (suggesting movement from their Merge position), while they appear to the far right of the NP in head-initial languages, due to the same movement plus the additional one of the remnant, typical of this class of languages (see Adger 2013, Cinque 2017, and references cited there). Complement and circumstantial PPs and RCs can also appear “extraposed”; another piece of evidence that they move independently of the NP (again unlike adjectives, numerals, multal/paucal quantifiers and demonstratives: *Books have been*

constituent comprising the NP. So only the former can be deleted and understood as present even if the NP and other modifiers are pronounced in situ.

4.4.3 A refinement of the generalization and its derivation

All of the cases of pre- and post-nominal modifiers considered so far show that they cannot be silent unless the head N (more accurately, the NP) is also silent. But this is, strictly speaking, not sufficient, as the examples in (51)–(52), among others, show. Even if the head N is silent a certain modifier cannot be unpronounced and understood as present if a lower modifier is pronounced.

- (51) a. La seconda giornata feriale e la (*seconda) (giornata) festiva
the second day working and the (*second) (day) festive
'the second working day and the festive one'
b. I miei unici due errori e i tuoi (*unici) due (errori)
the my unique two mistakes and your *unique two mistakes
'my only two mistakes and your two'
c. La loro altra vittoria esterna e la nostra (*altra) (vittoria) casalinga
the their other victory external and the our (*other) (victory) internal
'their other external victory and our (other) internal one'
- (52) a. Lui ha comprato i tre tavolini tondi più cari ed io i due (tavolini)
rettangolari (*più cari).
He has bought the three most expensive round tables and I the two
rectangular ones (*least expensive)
b. Lui ha comprato i tre tavolini tondi più cari ed io i due (tavolini)
(tondi) meno cari.
He has bought the three most expensive round tables and I the two
least expensive.

What all of these cases suggest is that:

- (53) "A modifier cannot be left silent (*even if the head N (NP) is silent*) in case some other modifier which is merged lower in the nominal extended projection than the silent modifier is pronounced."

In other words, a nominal modifier can be silent only if the NP and all other modifiers which are merged between the NP and the modifier in question are also silent (i.e., if it makes up a silent constituent with the NP and all other modifiers in between it and the NP).

*published [about Chomsky]/[that criticize Chomsky] vs. Books have been published *these/* (more than) three/* (very)many/* (very) awful.* This for the reviewer does not seem to hold of "complement" PPs of deverbal nouns (**The destruction was immense of the city*). Clearly, a more detailed study is needed.

'only'; hence also the cardinal must be silent for *unici* to be understood as present. The same holds for *seconda* in (51)a and *altra* in (51)c. They cannot be understood as present because another modifier, which is merged lower than them (*festiva* and *casalinga*, respectively), is pronounced.

Granting its correctness, why should this particular generalization hold?

We know that movement can only affect constituents, which makes a movement analysis of DP-internal ellipsis, where only constituents can be silent, naturally attractive (because of its unifying character). What remains to be understood is why of all DP-internal constituents only those that contain the (unmoved) NP can be silent.

I suggest that this is due to the very same, more stringent, set of principles which in Cinque (2005) I claimed derive, through DP-internal movement, the possible canonical orders of Dem, Num, A, and N in the languages of the world; namely the parameters in (54)b i) to iv), applied to a Merge structure like (54)a):

- (54) a. Order of Merge: [RC_{nonrestr.} . [Q_{univ.} . [Dem. . [RC_{restr.} . [Num. . [AP. . NP]]]]]]¹⁹
b. Parameters of movement:
(i) NP movement plus pied-piping of the *whose pictures*-type or
(ii) NP movement without pied-piping, or
(iii) NP movement plus pied-piping of the *pictures of whom*-type
(iv) Neither head movement nor movement of a phrase not containing the (overt) NP are possible (except for special, focus-related, movements of phrases to a DP initial position in certain languages).²⁰

The reason why a nominal modifier can be silent, and understood as present, only if the NP and all other modifiers which are merged between it and the NP are also silent is the fact that in order to be elided that nominal modifier cannot move by itself but must move within a constituent containing the NP and all other modifiers below it. In other words the same requirement that accounts for the actually attested orders of demonstrative, numeral, adjective, and noun, also appears to account for which nominal elements can be silent and understood as present; a unification of apparently disparate phenomena that is made possible by the arguable conclusion that ellipsis is dependent on the prior movement of the to-be-elided material.

¹⁹ This is only a simplified fragment of the internal structure of nominal phrases. See Cinque (2023) for a more accurate, though still partial, picture.

²⁰ See for example the marked AP movement above demonstratives in languages like Chinese (Zhang 2015) and Bangla (Guha 2017 and references cited there).

The fact noted above that a non-restrictive relative clause cannot be silent (unpronounced but understood as present) follows from the refined generalization in (53) if (integrated) non-restrictive relative clauses²¹ are merged higher than all other nominal modifiers, as argued in Cinque (2008, 2020: §3.5).

This is because the remnant will necessarily contain a pronounced modifier which is lower than the non-restrictive relative clause.²²

Even if apparently selected and non-selected PPs behave alike when they are the exclusive target of ellipsis (recall exx. (48) and (49) above), some ellipsis facts seem to indicate that they may be merged at different heights in the extended projection of the NP.

For example, while the apparently selected PP *di linguistica* ‘of linguistics’ in (55)a is (virtually obligatorily) part of the ellipsis site, the adjunct PP *con invito* in (55)b is very marginally part of the ellipsis site, if at all:²³

- (55) a. Gli studenti di linguistica con invito e quelli ~~studenti di linguistica~~ senza invito
The students of linguistics with an invitation and those ~~students of linguistics~~ without
- b. Gli studenti di linguistica con invito e quelli ~~studenti di chimica con invito~~
The students of linguistics with an invitation and those ~~students of chemistry with an invitation~~

A particular expectation concerns subnominal ellipsis in languages with the following order of nominal modifiers: N Dem Num A₁ A₂.

Given that the NP has raised by itself above the modifiers, it is to be expected that only the noun, and not the noun plus the numeral or the noun plus the numeral and the adjectives can be interpreted as present if the demonstrative is pronounced, because N Num A₁ (A₂) is not a constituent without the demonstrative:

²¹ These differ from *non-integrated* non-restrictive relative clauses, which appear to be outside of the DP they modify altogether (Cinque 2008).

²² The question remains why the entire DP cannot be elided under non-distinctness with an antecedent; namely, why (i) (in languages like Italian) is ill-formed despite the fact that it is a constituent containing the unmoved NP:

(i) Se quei tre ragazzi si comporteranno meglio, Gianni inviterà ~~quei tre ragazzi~~
If those three boys behave better, Gianni will invite ~~those three boys~~

Perhaps, in languages like Italian, as opposed to languages like Portuguese (see ex. (29) above), the entire extended projection cannot move to a position in front of the clause and then “delete” there. Italian does not have English-type Topicalization but only Clitic Left Dislocation, whence the grammaticality of (i) with an object resumptive clitic: ... Gianni li inviterà.

²³ As noted, PPs are not merged lower than N. Arguments and adjunct DPs merged above N are attracted by a P in a high position of the extended nominal projection and (in head-initial languages) are crossed over by the remnant. See Kayne (2000, 2002, 2004) and Cinque (2005: fn.34).

Similarly, when the noun is followed by the demonstrative and an adjective (N Dem A), N and A are expected not to be deletable stranding the demonstrative:

- (57) N Dem A and *N Dem A²⁴

These expectations appear to be confirmed. In Kipsigis, a Nilotic Kalenjin language spoken in Kenya, whose DP internal order is Noun—Demonstrative (which is enclitic)—Numeral—Adjective (Kouneli 2019a, b and pers. comm.²⁵) this is what we find:

- (58) a. kaarii-chuun somok leel-ach ak chu
houses-those three white-pl and these
‘those three white houses and these’
Interpretation: ‘those three white houses and these houses/*these three houses/*these three white houses/*these white houses’
- b. kaarii-chuun leel-ach ak chu
houses-those white-pl and these
‘those white houses and these’
Interpretation: ‘those white houses and these houses/*these white houses’

As Pavel Caha observes, this account presupposes that the movement feeding deletion should be subsequent to the movement responsible for the canonical order of words. Apparently (and problematically) different are the ellipsis cases reported in Adger et al. (2021) for Kĩtharaka, another N Dem Num A language belonging to Central Bantu. In Kĩtharaka, which also allows the alternative order N Dem A Num, one can elide a constituent containing AP and excluding Num, but not vice versa. See (59) and (60):

- (59) Ngaakamata mathaandũkũ mathatũ maanene na Mũtegi akamate
maĩrĩ (slide 24)
I-will-carry 6-boxes 6-three a6-big and Mũtegi will-carry 6-two
‘I will carry six large boxes and Mũtegi will carry two (large boxes/*two boxes)’
- (60) Nkamatiĩte mathaandũkũ maanene mĩrongo yĩrĩ, inĩ wegũ ũtirakamata
maanini (slide 25)
I-have-carried 6-boxes a6-large 4-unit 4-two but you have-not-carried

²⁴ And the same should hold when N raises above Num and A. The expectation is that N and A should not be deletable stranding the numeral: N Num A and *N Num A (thanks to David Adger for asking me about this case, which I did not test).

²⁵ I thank Maria Kouneli and her Kipsigis informants for these examples and judgments. Kipsigis has demonstrative spreading, with adjectives arguably being reduced relative clauses (possibly corresponding to Cinque’s 2010b indirect modification adjectives—cf. Kouneli 2019b: §1).

In (59), the AP is recoverable while in (60) the numeral is not recoverable. Here ellipsis appears to have to apply before the N raises so as to make up a constituent with the adjective. But more research on other N Dem Num A languages is needed before any firm conclusion can be reached.

4.5 Conclusion

To summarize, I have discussed three generalizations characterizing word order ((1) *the pervasive left–right asymmetry of natural languages*, (2) *the attested vs. unattested orders of modifiers in the DP*—which are discussed in more detail in Cinque 2023—and (3) *the possible vs. impossible ellipses in the DP*).²⁶ The derivation of these generalizations requires movements that apparently have no LF effects, needed, nonetheless, to build the right hierarchical structures for the LCA to yield the proper linear orders. Any externalization mechanism should be able, I think, to account for these word order generalizations. So far no externalization mechanism which does away with meaningless movements and the LCA has been proposed that does that.²⁷

Let me conclude with a tentative conjecture. The apparently “meaningless” movements needed “to yield the proper hierarchies” (Chomsky 2004: 110 and note 27) that can give rise to the linearization of head-initial/head-final constructions/languages under the LCA (with a clear effect on the PF side) may perhaps be taken to also have an effect on the LF side if we think that these movements are needed to characterize the extended projection of NP, VP, etc., as categorially nominal, verbal, etc. on the LF side. Alternatively, if these movement chains are taken to be triggered by uninterpretable features, as Richard Kayne suggested, like expletive chains, they can be taken to be neglected at LF (as in Sportiche 2016—also see Chomsky, Gallego, and Ott 2017: fn.12).²⁸

²⁶ As noted by Ur Shlonsky, the same conditions that derive the latter generalization concerning ellipsis appear to hold of *en/ne*-cliticization in Romance.

²⁷ Evidence that narrow syntax must include meaningless movements to feed the possible linear orders attested in the languages of the world is also provided in Kayne (2018, 2020).

²⁸ But as Dominique Sportiche (pers. comm.) reminds me, the conception of Neglect proposed by him “is meant to hold of *en/ne*-cliticization and is thus incompatible with the idea that movement must have both PF and LF effects. Such an idea would lead to the strange result that *wh*-movement or A-movement may, but need not, have interpretive effects. Assuming both mandatory PF and LF effects would lead to the view that *wh*-movement or A-movement are either in syntax, or outside of it, depending on their effect on LF. This strikes me as implausible (what is more plausible perhaps is that movement must have some effects either at PF or at LF).”

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