

The Silence of Heads*

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1. Introduction.

It is generally agreed that when a lexical item merges with a phrase, the resulting syntactic object {H, XP} has as its head/label the lexical item H (rather than any element contained within the phrase XP).¹ This leaves open the question of what lexical item merges with what phrase. Put another way, what actually heads what (in one derivation or another, in one language or another)? And what are (some of) the principles that determine the answer to this question?

A related question is whether H is pronounced or silent. I will end up suggesting that H is always silent.

2. Complementizers

It is widely thought that in English and similar languages an example of {H, XP} is {*that*, TP},² in which *that* is a lexical item that we call a complementizer, and in which *that* heads {*that*, TP}. Yet Kayne (2010a) argued that English relative clause *that* is not externally merged with TP, but is rather a relative pronoun, in essentially the same sense in which English *which* is a relative pronoun. Both relative *that* and relative *which* are DP-internal determiners that have 'lost' their associated noun in the course of the derivation, whether by raising or deletion.³ They are of course two different kinds of determiners.

If relative *that* is a relative pronoun, then taking relative *that* to be a simple head externally merged high in the sentential domain, as it is in the complementizer analysis of relative *that*,⁴ would be a mistake. Rather, relative *that* must be subject to (wh-)movement from below much as relative *which* is. Just as *which book* is moved in the derivation of:

(1) the book which <book> they were reading

so, from this perspective, is *that book* moved in the derivation of:

(2) the book that <book> they were reading

In both (1) and (2) <book> indicates that the noun *book* was moved along with/pied-piped by *which* or *that* (and subsequently either deleted in situ or moved further). Under this hypothesis relative *that* is not merged with a sentential phrase; instead it is merged with a nominal phrase, as determiners are in general.

¹Cf. Chomsky (2013, 43).

²For the purposes of this discussion, it wouldn't matter if we followed Cinque (1999, 106) and replaced TP by MoodP here, or if, thinking of Rizzi (1997), we replaced TP by, say, FinP.

³Relative pronouns seem to be absent from strictly prenominal relatives, as noted by Downing (1978, 392-4) and Keenan (1985, 149) - for principled reasons, if Kayne (1994, sect. 8.3) is correct in taking relative pronouns to interfere with the leftward movement of the relative IP that is necessary to derive a prenominal relative, at least in languages in which relatives are consistently prenominal.

There are languages whose postnominal relatives seem to consistently lack (visible) relative pronouns. From the text perspective, it may be that those languages are, for reasons to be discovered, unable to strand a determiner in relatives in the way that English can strand *which* or *that*.

⁴Going back to Bresnan (1972).

In Kayne (2010a), I further argued that Romance relative clause *che/que* is also not a complementizer but a relative pronoun, with the difference being (compared with English *that* and *which*) that the Romance morpheme *che/que* is only a subpart of a complex determiner of the *was...für* type,⁵ with Romance *che/que* corresponding specifically to German *was* (and English *what*).

For both English *that* and Romance *che/que*, the claim in that paper was extended beyond relative clauses. The occurrence of English *that* and Romance *che/que* in what we think of as simple sentential complements (whether to verbs, or adjectives, or nouns) was taken to reduce to their occurrence in relatives, insofar as sentential complements are, it was claimed, actually a subtype of relative clause.⁶ Put another way, English *that* and Romance *che/que* are determiner-based relative pronouns even when introducing sentential complements; they are never complementizers in the usual sense of the term, i.e. they are never externally merged with TP or with any sentential category similar to TP.

This approach to finite-clause complementizers, which takes them to be relative pronouns that are not heads in the sentential hierarchy, may carry over to non-finite-clause complementizers like English *for* (which is found introducing both relative clauses and apparently non-relative sentential complements). *For*, too, may turn out to be a subpart of a determiner, again of the *was...für* type,⁷ and perhaps similarly for French *de* and for Italian *di* (despite their differing in syntactic behavior in certain respects from *for*⁸).

If *for*, *de* and *di* do turn out not to be externally merged heads in the CP area (whether via a relative pronoun-type analysis for them or via a more highly articulated analysis of adpositions), we will have reached the conclusion that, at least in the languages under consideration, there are no visible CP-area complementizer heads.⁹ (The heads of the CP area will have turned out to be (largely) silent.¹⁰)

3. Sentence-final particles

The term 'sentence-final particle' has been used for certain morphemes taken to be heads that are externally merged high in the sentential domain, e.g. in Cantonese.¹¹ (Such sentence-final particles

⁵Whose split version is found in dialectal English, e.g.:

i) What did you buy for a car this year?

On *was...für* in non-English Germanic, see Leu (2008).

⁶Cf. in part Rosenbaum's (1967) idea that sentential arguments are accompanied by *it*.

⁷Cf. Kayne (2014a, sect. 8; 2014b); also section 10 below.

⁸Cf. Kayne (1981a).

⁹Cf. to some extent Starke (2004) and Jayaseelan (2008). This conclusion should in turn be related to the observation that the elements we call complementizers usually look like something else (determiners or prepositions), a surprising fact if complementizers were really a category of their own. (Czech *zhe* is interesting in this regard, as Pavel Caha (p.c.) tells me.) It is to be noted that this observation would not be accounted for with any depth of explanation by merely saying that complementizers usually come about via 'grammaticalization'; for relevant discussion, see Kayne (2010a).

Rigau (1984) had argued that the Catalan counterpart *si* of English *if* is not a complementizer. (Extended to *if*, this will require a revision of Kayne's (1991) account of *We're not sure whether/*if to leave or not* and related facts in Romance.)

Ghomeshi (2001) had Persian *ke* not heading a functional projection. On complementizers that look like the (light) verb *say* in one language or another, see Koopman and Sportiche (1989).

¹⁰On apparent focus and topic heads, see section 13 below.

¹¹See Matthews and Yip (1994, chap. 18).

seem typically to have more interpretive content than what we call complementizers.) For (colloquial) English, one might think of a sentence like:

(3) We're on the list, right?

which has an interpretation close to that of a tag question. A possible analysis would have *right* in (3) analyzed as a 'sentence-final particle' in the above sense. *Right* in (3) would be merged high in the sentential domain as a head. (The position of the phrase *we're on the list* that precedes *right* in (3) might or might not then be due to movement/internal merge.)

A second possibility, though, would relate (3) more directly to:

(4) We're on the list, isn't that right?

by attributing to (3) a derivation containing, in addition to what is visible/audible, a silent ISN'T THAT (I will use capitals to indicate non-pronunciation.) The silence of ISN'T THAT in (3) might then be licensed as a whole, or else piecemeal. If (3) contains silent ISN'T THAT, as in:

(5) we're on the list ISN'T THAT right

then *right* in (3)/(5) is not a sentence-final particle in the usual sense of the term, but rather an adjective akin to the adjective *correct* as in:

(6) Is that correct?

Right in (3)/(5) is then not merged as a high head in the sentential hierarchy; it is a predicate adjective (as in (4) or (6)) that is associated in (3)/(5) with a copula that is silent. If (4) involves leftward movement of the phrase *we're on the list* past *isn't that right*,¹² so would (3), whose derivation would then more specifically include the movement of *we're on the list* past 'ISN'T THAT right'. The main point is that if (3) is essentially parallel in derivation to (4), then *right* in (3) is not a sentence-final particle, i.e. is not a high externally merged head in the way that it might have been thought to be.

A fairly safe conjecture is:

(7) Various elements that might have been taken to be sentence-final particles in various languages actually have

the non-sentence-final-particle status that *right* has in (3)/(4).

The conjecture in (7) is to be interpreted loosely. It states that various other candidates for being sentence-final particles will turn out not to be simple functional heads merged high in the sentential hierarchy,¹³ but instead will turn out to be subparts of more complex constituents of some kind (that may or may not closely match 'isn't that X').

Sentence-final particles have sometimes been noted to (sometimes) occur only in root sentences.¹⁴ This seems also to be true of (3):

(8) *That we're on the list, right, is the question.

(9) *John would like to know whether (or not) we're on the list, right.

(The second of these is possible if *right* is associated with the matrix predicate, but not if *right* is associated with the embedding.) The preceding two examples indicate that the *right* in question cannot occur within an embedded sentence. The next two examples make the same point for *isn't that right*:

(10) *That we're on the list, isn't that right, is the question.

¹²For recent relevant discussion, see Haddican et al. (to appear).

Any analysis will need to come to grips with facts such as the following. Alongside:

i) We're on the list, isn't that so?

there is no interpretively parallel:

ii) *We're on the list, so?

¹³Cf. Tang (2014).

¹⁴Cf. for example Law (2002) and Lin (2014).

(11) *John would like to know whether (or not) we're on the list, isn't that right.
(Again, the second of these is possible, but only if *isn't that right* is associated with the matrix part of the sentence.) Consequently, the restriction to root sentences seen in (8)-(9) is compatible with the linking of (3) to (4).

As a second English example of a putative sentence-final particle, consider:

(12) Where do they live, again?

in which *again* might initially be thought to be a sentence-final particle of the general sort under discussion and to be externally merged high in the sentential domain. But there is an alternative syntactic analysis of (12) that would more transparently capture the interpretation of (12).¹⁵ This alternative analysis would relate (12) to:

(13) ?Where do they live, tell me again?

by taking (12) to contain silent TELL and silent ME.¹⁶ If (12) has an analysis as in:

(14) where do they live TELL ME again

then *again* in (12) is an adverb associated with silent matrix TELL and is not a sentence-final particle externally merged high in the sentential structure.

Somewhat similarly, we might take the apparent Taiwanese sentence-final particle *kong* discussed by Simpson and Wu (2002a; 2002b) to interpretively match, as they suggest, English non-particle *I'm telling you*,¹⁷ as in:

(15) He's here, I'm telling you.

which also seems limited to root sentences:

(16) (*)The fact that he's here, I'm telling you, is very important.

More exactly, (16) can be interpreted as:

(17) I'm telling you that the fact that he's here is very important.

but not as:

(18) The fact that I'm telling you that he's here is very important.

In other words, Taiwanese *kong* may even synchronically correspond to the verbal subpart of *I'm telling you*,¹⁸ rather than being externally merged as a 'sentence-final particle'.

¹⁵Cf. Ross (1970), Sauerland (2009), and Sauerland and Yatsushiro (2014).

¹⁶As always, there are interesting restrictions on silent elements, from the present perspective. (An analysis that attempted to do without silent element here, as, e.g., with late insertion/merge on the semantic side, would have to grapple with all of the same restrictions, while losing the advantage of rich interaction with the syntax.) One restriction is seen in:

- i) Tell me again where they live vs.
- ii) *Again where they live?

which contrasts in turn with:

- iii) ?Again, where do they live?

A second is illustrated by:

- iv) Tell me later where they live vs.
- v) *Where do they live, later?

Relevant here might also be:

- vi) Come again?

¹⁷I am grateful to Audrey Li for discussion of *kong*.

¹⁸Simpson and Wu take *kong* to be a grammaticalized complementizer. From the present perspective, *kong* is a verb whose personal arguments can be silent (cf. in part Ross (1970)) and whose sentential complement can prepose in the notable way they describe. The 'grammaticalization' that *kong* has undergone involves the preceding two properties, rather than a change in category. Cf.

As a final, partially similar, example, consider Quebec French, as discussed by Vinet (2000), in which one has interrogative sentences like:

(19) *Ils dorment-tu?* ('they sleep-you' = 'are they sleeping?')

with a postverbal *tu* that looks like the second person familiar singular subject clitic, yet doesn't seem to have any place in the interpretation. One might try to think of this *tu* as being an interrogative particle externally merged in the CP-area, in Rizzi's (1997) sense, or a Force operator, as Vinet suggests.

An alternative would be to take such Quebec French sentences to have something significant in common with English:¹⁹

(20) Are they sleeping, do you know?

with *tu* in (19) now matching the *you* of (20) and corresponding, in Quebec French, to the subject of a silent matrix verb KNOW. (In (19) there is no inversion of *ils* and *dorment*; in addition, the derivation of (19) would, since *-tu* can be followed by VP-material, have to involve remnant movement.)

In Quebec French this *-tu* is limited to yes-no questions (as opposed to *wh*-questions, as Vinet (p.382) points out). This limitation may, from the present perspective, now parallel the contrast between:²⁰

(21) Did he go there, do you know?

and:

(22) (*)Where did he go, do you know?

with the latter having a different intonation and feeling possible to me only as two sentences.

If, in the preceding set of examples, *right*, *again*, *kong* and *tu* are not particles externally merged as high heads in the sentential domain, i.e. they do not correspond to H in any {H, XP} with XP a sentential phrase, then the high sentential heads needed in these examples would again appear to all be silent, as in the discussion of complementizers above.

The next question is, how typical are *right*, *again*, *kong* and *tu* here? If we take them to be typical, the safe conjecture in (7) gives way to the following more controversial pair of conjectures:

(23) All pronounced elements that could have been taken to be sentence-final particles in one language or another actually share the non-sentence-final-particle status that *right*, *again*, *kong* and *tu* share.

(24) The high sentential heads in question in such examples are all silent, in all languages.

To illustrate the point of (24), let us take (12), now with the analysis:

(25) where do they live H TELL ME again

Overt *again* is not a high sentential head, but rather an adverbial modifying silent TELL. The head H in whose specifier position is found, probably as the result of movement, the phrase *where do they live* is silent.²¹

4. Particles of the English *up/down/away* type

In addition to complementizers and sentence-final particles, another familiar set of candidates for being pronounced heads in some {H, XP} that results from external merge are particles such as *up*, *down*, and *away* in English and other languages, especially from the perspective of den Dikken (1995,

Koopman and Sportiche (1989); also section 2. Relevant, in addition, is Etxepare (2010), whose proposal for a silent nominal, rather than verbal *tell/say*, will converge toward the text proposal as the latter brings in Hale and Keyser (1993; 2002).

¹⁹Non-interrogative *you know* might be appropriate for other examples given by Vinet.

²⁰This contrast holds if the matrix verb is *know*, but not if it is *think*.

²¹Possibly, *where do they live* is in the Spec of another silent head H' that is higher than H.

sect. 2.2.2), who takes such particles to head a small clause. However, Collins (2008, 28) takes these particles to rather be modifiers of a silent PLACE, in the manner of Terzi (2010). In addition, Collins has locative particles cooccurring with a silent TO or AT,²² in which case that silent TO or AT might correspond to the H in question, rather than the pronounced particle itself corresponding to H.

A relevant supporting consideration for the view that these particles do not head a small-clause-like phrase that immediately contains the associated object DP (when there is one) is that *away* is almost certainly decomposable into *a-* plus *way*, as suggested by the pair:

(26) Put/Take it away.

(27) Put/Take it aways.

(The latter is non-standard.) This pair recalls:

(28) It's quite a way(s) from here.

in which one can colloquially have (non-plural) *ways* instead of *way*, at least in certain cases.

Taking 'particle' *away(s)* to contain the noun *way(s)* underdetermines the status of *a*, which may be a clitic-like preposition, as in:

(29) They took aboard the supplies.

(30) They set aside some money.

in which the *a-* of *aboard* seems very close to the *on* of:²³

(31) They took the supplies on board.

and the *a-* of *aside* very close to the *to* of:

(32) They set some money to the side.

From this perspective, neither *aboard* nor *aside* nor *away* is a plausible head; all are in fact phrasal.²⁴

As a further consideration tilting in favor of a phrasal analysis of at least some English particles, consider:

(33) He put on his coat/He put his coat on

which almost certainly contains a silent pronoun or reflexive as the object of *on*, with *on* then not heading any phrase of the sort 'on his coat' or 'his coat on'.²⁵

²²Cf. Koopman and Szabolcsi (2000, 221).

It would be natural to extend Collins's proposal to apparently non-locative particles, as in:

i) You'd better finish up that paper.

and to take there to be a silent adposition in (i), too. Cf. Lindner (1981) on the common properties of various instances of *out*.

²³Of note is the fact that *on board* itself can (at least in my English) display particle-like behavior:

i) If we were to take on board the supplies right now,... vs.

ii) *If we were to take onto the ship the supplies right now,...

thereby supporting the idea that particles are phrasal. Cf. the clitic-like movement of 'preposition + pronoun' in Berber (v. Ouhalla (2005)), as well as:

iii) If you want, I'll send on up the sandwiches (right away).

Algeo (2006, 135) has *away* in British English able to be used as *on one's way*.

²⁴On the question whether a pronounced adposition could ever be a projecting head, see section 11 below. (A second possibility for the status of the *a-* subcomponent of *away(s)* would be to take it to be the indefinite article.)

²⁵In French the particle itself is silent, too, leaving only the French counterpart of *put*:

i) Il a mis son manteau. ('he has put his coat' = 'he has put on his coat')

The contrast in English between:

ii) He took off his coat.

and

From a partially different direction, we can also note:

(34) He walked along the river.

whose French counterpart:

(35) Il marchait le long du fleuve. ('he walked the long of-the river')

clearly has *long* as a noun, thereby increasing the plausibility of taking English *along* to be prepositional *a-* + nominal (or adjectival) *long*.²⁶ If so, then in the particle examples:

(36) They brought along their friends.

(37) They brought their friends along.

along is almost certainly phrasal, too.

The conclusion, then, is that in sentences like:

(38) They put away their books.

there is little likelihood that *away* corresponds to H and *their books* to XP in any instance of {H, XP}, at any point of the derivation. Though particles like *up* and *down* are not visibly built from two morphemes in the way that *away*, *aboard*, *aside* and *along* arguably are, it is plausible that the same conclusion holds for them, as Collins (2008) had suggested.

5. *Need* and other modal-like elements

Since *need* in English can have modal-like behavior:

(39) He needn't leave so early.

(40) *He needsn't leave so early.

(41) *He needn't to leave so early.

it would seem reasonable to think that it should correspond to one of the sentential functional heads in the IP area, in the sense of Cinque (1999).

Yet Harves and Kayne (2012) and Kayne (2007a) have argued, respectively, that transitive verbal *need* cross-linguistically, and modal-like *need* in English, are not primitive verbal elements. Rather, sentences with modal-like *need* or transitive verbal *need* necessarily contain a silent light verb, in the manner of Hale and Keyser (1993; 2002). (The silent light verb in question is more specifically a counterpart of *have*.²⁷) *Need* itself is a nominal element, not a verbal one.

iii) *?He has off his coat

which contrasts in turn with:

iv) He has his coat off

may suggest even more hidden structure in (iv) than in (ii).

A silent pronoun/reflexive associated with *on* is called for in a similar way in the case of:

v) We helped him on with his coat.

(fully acceptable to me, though rejected by some) as well as in (with *off* plus silent pronoun/reflexive):

vi) We helped him off with his coat.

(fully acceptable to me, though less frequently accepted than (v))

²⁶Cf. Kayne's (2014a, sect. 9) proposal that English *ago* is *a-* + *-go*, with *a-* akin to *on* (and *-go* to *going*, with *three years ago* then akin to *going on three years*).

²⁷Taking into account Harves and Kayne (2012) on Finnish, Levinson (2011) on Icelandic, and Halpert and Diercks (2013) on various Bantu languages, silent HAVE may not be directly at the heart of the matter. Rather, it may be that all languages that have a transitive verb corresponding to *need* are languages that either have an accusative Case-assigning verb of possession or else an accusative Case-assigning preposition of possession, with accusative then more central than HAVE itself.

Antonov and Jacques (2014)'s discussion of Estonian suggests an additional licensing possibility

If modal-like *need* is necessarily to be understood as involving a silent HAVE in combination with a nominal *need*, then modal *need* (and similarly for transitive verbal *need*) cannot itself be a head in the sentential projection line in the sense of Cinque (1999) (though silent HAVE might be such a head), contrary to what one might have thought.

Cattaneo (2009, chap. 5) suggests that all modals should have a derivation a la Harves and Kayne (2012) and Kayne (2007a), i.e. akin to what I have just described for English *need*. All modals would then be nominal elements that occur in combination with a light verb (or verbs).²⁸

If this approach to *need* (and perhaps other modals) is on the right track, then instead of being headed by *need*, the modal VP (or vP) in (39) will be headed by a silent light verb, much as English *They laughed*, in the Hale and Keyser (1993; 2002) perspective, has *laugh* as a noun, and a VP/vP headed by a silent light verb, rather than by any pronounced element. *Need* is thus another example in which an initially plausible analysis may turn out not to be correct.

6. Aspect

English progressive sentences like:

(42) They're playing baseball.

were argued by Bolinger (1971) to contain a silent preposition,²⁹ in effect:

(43) they are AT playing baseball

with AT a silent counterpart of *at*. If Bolinger was right/on the right track, then *-ing* itself in (42) is very unlikely to be an aspectual head, in which case any aspectual head present in such sentences would itself be silent (assuming that *be* is also unlikely to count as an aspectual head).

Similarly, consider:

(44) They're in the process of finishing their paper.

(45) They're on the point of resigning in protest.

Although *in the process of* and *on the point of* can be taken to express aspectual notions, these notions would seem to be arrived at compositionally (perhaps with some idiosyncrasy), starting from the nouns *process* and *point* (which are obviously not in the sentential projection line in the sense of Cinque (1999)) and the adpositions *in* and *on*. If there is a projecting, specifically aspectual head in these

for transitive verbal *need*, namely if the language in question has a noun 'need' that can itself license accusative.

Antonov and Jacques (2014) also bring in data from Quechua, but as they note there is a complication due to the fact that the Quechua verb they translate as 'need' actually has 'want' as its primary meaning. (Neil Myler (p.c.) tells me that 'need' may well never be an accurate translation of the Quechua verb in question.)

(Translation problems (and some acceptability judgment problems) arise for Antonov and Jacques's discussion of (Moroccan) Arabic, as brought to my attention by Jamal Ouhalla (p.c.), who suggests that a transitive 'have' may actually be developing in parallel to a transitive 'need', in that language.)

²⁸If Cattaneo is correct, then clitic climbing cannot be restricted to monoclausal environments in quite the sense of Cinque (2004). The extent to which the non-monoclausal approach to clitic climbing of Kayne (1989) is compatible with the proposed syntactic complexity of modals remains to be determined.

²⁹Cf. the discussion in Collins (2008, note 13), which contains the idea that *-ing* could be a light noun, forcing raising to spec,AT, in a way that is orthogonal to the main point of the text.

examples, it is therefore very likely to be a silent one.³⁰ By extension, it may be that there are no pronounced projecting aspectual heads, i.e. no pronounced aspectual heads corresponding to H in {H, XP}, in the sentential projection line, contrary to appearances.

In this vein (cf. also the earlier discussion of English particles), the aspect-like *up* of:³¹

(46) You should drink your milk right up.

may be associated with silent elements that make it similar to:

(47) ?You should drink your milk right up to the end of it.

with *it* taking *your milk* as antecedent. Putting this another way, (46) is to be thought of as:

(48) you should drink your milk right up TO THE END OF IT

with silent IT having *your milk* as its antecedent. If (48) is on the right track, then *up* in (46) is more likely to be part of a PP 'up TO THE END OF IT' than it is to be a sentential aspectual head.

7. Tense

Partee (1973) called attention to analogies between tenses and pronouns. A variant of Partee's idea would focus, instead, on analogies between tenses and demonstratives, as suggested especially by languages with multiple past or future tenses distinguished by distance from the present,³² in analogy (it would seem) to demonstratives being distinguished in terms of (some notion of) distance from the speaker. The demonstrative facet of tense might then be expressed as follows.

What we think of as a tense morpheme is in fact a demonstrative morpheme restricted to cooccurring with a silent noun TIME. A sentence like:

(49) They called yesterday.

would at first approximation correspond to:

(50) they call AT -ed TIME yesterday

The *-ed* is the restricted demonstrative morpheme in question, akin to *that* (apart from the restriction to TIME), and [AT -ed TIME] in (50) is a PP parallel to *at that time*.³³

The plausibility of there being a silent AT in (49)/(50) is enhanced by pairs like:³⁴

(51) Back at that time, they were all happy.

(52) Back then, they were all happy.

alongside the impossibility of:

(53) *Back at then, they were all happy.

suggesting that (52), too, contains a silent AT.

The plausibility of there being a silent TIME in (49)/(50) is seen clearly if we consider sentences like:

(54) They'll leave soon.

³⁰Bolinger's approach to English carries over to at least some other languages, to judge by Laka (2006) and Coon (2010). (The text discussion is related to a possible point of weakness in the cartography approach, whose category labels often appear to be too complex to be plausible primitives.)

³¹Cf. perhaps the Slavic aspectual particles/prefixes discussed by Łazarczyk (2010).

³²As in Great Lakes Bantu languages - cf. Nurse and Muzale (1999, 527). For relevant discussion of 'remoteness' morphemes, see Rimell (2005).

³³In which case there would be redundancy in a sentence like:

i) They called at that time yesterday.

If demonstratives are phrasal, as argued by Leu (2007), *-ed* must be accompanied by silent elements specific to demonstratives, in addition to being accompanied by silent AT and TIME.

³⁴Cf. Katz and Postal (1964, 134). For a different view, see Larson (1985).

which almost certainly contains as a subpart:³⁵

(55) AT A soon TIME

as supported by the relative acceptability of:

(56) ?They'll leave at the soonest time possible.

in which *soon* cooccurs with overt *time*.

The contrast between (56) and the unacceptable:

(57) *They'll leave at a soon time.

is probably to be related to the high position within DP of superlatives as compared with simple adjectives, which is also seen in English in the contrast:

(58) They're the best of friends.

(59) *They're good of friends.

and in Persian, in the fact that only superlative adjectives are prenominal.³⁶ This special positional character of superlatives is also seen in English in:³⁷

(60) ?Of all the students, John's the one who's written the fewest number of good papers this year.

vs.:

(61) *John's written (a) few number of good papers this year.

The linked unacceptability of (61) and (57) (vs. the linked acceptability of (60) and (56)) may in turn be related to the fact that (50) has no fully overt exact counterpart:³⁸

(62) *They call at -ed time yesterday.

(Since there are no superlative demonstratives, we would not expect a counterpart with tense to (60) or (56).)

The analogy between tense and demonstratives leads, then, to the conclusion illustrated in effect in (50), namely that the pronounced tense morpheme *-ed*, which might be thought of as a clitic/affixal variant of *then*, is not itself a projecting head in the sentential domain, and therefore does not correspond to the H of a sentential {H, XP} in the way usually thought.³⁹

8. Adjectives and adverbs

³⁵On other instances of TIME, see Kayne (2003; 2014).

³⁶Cf. Ghomeshi (1996, 145).

³⁷Cf. Kayne (2005a) on the presence of silent NUMBER modified by *few* in:

i) John's written (a) few good papers this year.

Stephanie Harves (p.c.) tells me that she accepts:

ii) the few number of friends that I have

though not:

iii) *I have a few number of friends

suggesting that at least for some speakers the definite article has a role to play here that is independent of superlative *-est*.

³⁸In the following:

i) They called at that time yesterday.

there must now be two PPs containing the noun *time*/TIME, with one perhaps modifying the other.

³⁹Whether tense morphemes project at all reduces now to the question whether demonstratives project DP-internally, which they cannot, strictly speaking, if they are phrasal.

Cinque's (1999; 2010) work on adverbs and adjectives leads to the conclusion, in his terms, that both adverbs and adjectives sit, for the most part, in specifier positions whose corresponding head is silent.⁴⁰ This conclusion converges with one aspect of the preceding sections of this paper; in {H, XP}, H is silent in a substantial number of cases.

9. Determiners

Leu (2014) argues that most determiners are phrasal, rather than being simple heads.⁴¹ If they are phrasal, then they themselves clearly cannot project as heads, i.e. they do not correspond to H in any {H, XP}. Leu takes that position for determiners in general (e.g. for *every*, for *which* and for demonstratives), apart from the definite article itself. At the same time, he notes that in some cases the definite article in some languages seems to depend on the presence of another subpart of what we call DP. For example, in Slovenian⁴² there is a prenominal definite article that appears only preceding a prenominal adjective. Leu's interpretation of this (and of comparable facts in Swiss German and in some Scandinavian languages) is that this definite article forms a constituent with the prenominal AP and that it does not head the containing DP. If so, then the DPs in question in these languages must have a silent D, as many languages do in a more obvious way (e.g. English bare plurals).⁴³

There may be instances of a similar phenomenon in (standard) English, too:

(63) *John would like a one.

(64) *John would like a one that's blue.

(65) John would like a blue one.

Following Leu's reasoning, the indefinite article in (65) may form a constituent with *blue* that does not contain *one*:

(66) [a blue] one

in which case *a* in (65) does not head the DP *a blue one* (whose head must therefore be silent).

A possible generalization from the discussion in this section would be that pronounced *the* and *a* never correspond to the head of what we call DP (whatever the exact constituent structure and whatever silent elements might be present). Whether such a generalization is tenable remains to be seen. If it is tenable, then DPs have silent heads to a greater extent than usually thought.

10. Adpositions I. *De* and *Of*

In non-polarity contexts, the French preposition *de* ('of') can appear DP-initially only if followed by a prenominal adjective:⁴⁴

(67) Marie achète de bons livres. ('M buys of good books' = 'M buys good books')

(68) *Marie achète de livres.

(69) *Marie achète de livres qui sont bons. ('M buys of books that are good')

⁴⁰This conclusion is orthogonal to the question whether adjectives and adverbs reach their specifier positions by external or by internal merge.

Pereltsvaig (2007) argues that properties of Russian adjectives support the existence of DP in Russian, despite the absence of overt articles of the English kind.

⁴¹Cf. Charnavel (2011) on French counterparts of *the same*, i.e. *le même*, and of *a common/a single*, i.e. *un même*.

⁴²Cf. Marušič and Žaucer (2006).

⁴³On silent Ds, cf. Longobardi (1994).

⁴⁴In addition, the adjective must be plural - cf. Pollock (1998).

This contrast recalls the preceding discussion of (63)-(65). It suggests, for (67), the constituent structure shown in:

(70) [de bons] livres

in which case *de* in (67) is clearly (especially given antisymmetry) not the head of *de bons livres*.

More than (67), colloquial French would have, with a definite article following *de* (*des* = *de* + *les*):

(71) Marie achète des bons livres. ('M buys of-the good books' = 'M buys good books')

(72) Marie achète de la bonne bière. ('M buys of the good beer' = 'M buys good beer')

With the definite article thus added, an adjective is not required:

(73) Marie achète des livres.

(74) Marie achète de la bière.

Despite this, it is, given (70), plausible to take (72) to contain *de la bonne* as a constituent:

(75) [de la bonne] bière

in which case *de* would again not be the head of the whole phrase, in this case *de la bonne bière*.

Plausible in turn, given both (70) and (75), is to take French phrases like:

(76) quelqu'un de célèbre ('someone of famous' = 'someone famous')

to be as in:

(77) quelqu'un [de célèbre]

and to simultaneously take *de* not to be the head of the whole phrase *quelqu'un de célèbre*,⁴⁵ but rather to be within a relative-clause-like constituent *de célèbre* (a 'reduced relative clause'). From this perspective, *de la bonne* in (75)/(72) and *de bons* in (70)/(67) would be prenominal reduced relative clauses of a particular sort.⁴⁶ If so, then in all of (67), (72) and (76), the D head would itself be silent.

The analysis suggested here for (76), in which French *de* introduces a reduced relative, cannot be mechanically transposed to English, if only because English disallows (for reasons that remain to be discovered) a word-for-word counterpart of (76), as well as exact counterparts of (67) and (72):

(78) someone (*of) famous

(79) Mary is buying (*of) good books.

(80) Mary is buying (*of the) good beer.

Yet English *of* does arguably introduce a relative clause in cases like:⁴⁷

(81) You have a funny way of wording your letters.

There are (at least) two specific reasons for thinking that *of wording your letters* in (81) is a subtype of relative clause. One is that the *of*-phrase cannot be omitted:⁴⁸

(82) *You have a funny way.

which recalls:

(83) We would prefer the ones *(that are on the table).

The second reason is that in:

(84) You have a different way of wording each type of letter, don't you?

it is perfectly natural to interpret *each* as having scope over *a different*. Both of these properties of (81) can be understood to follow from a relative clause analysis of the raising type. *A funny way* and a

⁴⁵Contrary to Kayne (1994, sect. 8.1).

⁴⁶This is compatible with Cinque's (2010) claim that some prenominal adjectives are reduced relatives, and others not.

⁴⁷Cf. Kayne (2008a).

⁴⁸It may be that (i) contains a silent *of*-phrase and/or that the *way* in (i) is distinct from that of the text example:

(i) You have a funny way about you.

different way (both accompanied by a silent counterpart of *in*, and possibly without the indefinite article) originate within the embedding:

(85) ...wording your letters IN a funny way

(86) ...wording each type of letter IN a different way

The phrases *a funny way* and *a different way* raise to become, derivationally speaking, the head of the relative. The natural scope interpretation of (84) is licensed prior to that raising, in the manner of 'reconstruction'. The unacceptability of (82) will follow on the assumption that in (81) *a funny way* must originate within an embedded sentence, very much as *headway* must in:

(87) Everybody is admiring the headway *(that we made).

From this perspective, English has finite relatives introduced by *that* (or sometimes zero) or a *wh*-phrase; it has infinitival relatives introduced by *for* or *to* or a prepositional *wh*-phrase; and now we see that English has gerundial relatives introduced by *of*. Gerundial relatives cannot be introduced by an overt *wh*-phrase of any sort, e.g.:

(88) *You have a funny way in which wording your letters.

though this property is almost certainly not specific to these relatives, but is rather shared with embedded interrogatives:

(89) *We've been wondering (about) where going this summer.

reflecting a general property of English gerunds.⁴⁹

In section 2 above, I suggested that *that* and *for* in relative clauses (and sentential complements) might each be a relative pronoun, i.e. a determiner in the case of *that*, and a subpart of a determiner in the case of *for*. If (81) and (84) contain relative clauses introduced by *of*, the question arises as to the possible relative pronoun status of *of*, in those sentences. Most plausibly, *of*, like *for*, would correspond to only a subpart of a determiner.⁵⁰ If so, then in (81) and (84) *of* can clearly not be the H of {H, XP}, where XP is the gerund phrase. (The head of *of wording your letters* in (81) must be silent, and the same holds for the head of *of wording each letter* in (84).)

That *of* in (81) and (84) may turn out not to be a pronounced head of the gerund phrase might seem to be of limited import, insofar as such gerundial relatives represent only a small portion of cases in which *of* appears to correspond to a pronounced head. A larger and better-known class of cases involves derived nominals such as:

(90) the removal of the evidence

⁴⁹Despite which, there is some evidence that gerunds allow successive cyclic movement - see Kayne (1981b).

The unacceptability of the text example without *about* might be related to:

(i) *We've been wondering the time.

though an analysis based on Case (cf. Pesetsky (1993)) would have to come to grips with examples like:

(ii) John has been wondering if we should leave right away, and we've been wondering the same thing.

as he notes.

⁵⁰The whole determiner might be *what in the way of*, thinking in part of German *was für* and in part of the following counterpart in English:

i) What are you planning to buy in the way of a car this year?

These, too, have been argued to be relative clause structures by Collins (2006) and Kayne (2008a). If they are, then the *of* in (90) is plausibly a relative pronoun in the same way as the *of* of (81) and (84), and is not the head of *of the evidence*.⁵¹ (If so, the head of *of the evidence* must be silent.)

11. Adpositions II.

In the spirit of Baker (1985; 1988), Halle and Marantz (1993), Kayne (1994, sect. 4.5) Julien (2002), Starke (2009), and Cinque and Rizzi (2010), among others, I have been following the hypothesis according to which the atomic elements of the lexicon, as far as merge is concerned, are no bigger than single morphemes. (This hypothesis came up most explicitly in the discussion of particles like *away* in section 4.) Another way to put this is to say that candidates for H in {H, XP} must be monomorphemic. If so, then adpositions that are bimorphemic (and for which the term ‘adposition’ is, strictly speaking, misleading) are precluded from corresponding to H in {H, XP}. One relevant example is seen in English in:

(91) despite that
whose similarity to:

(92) in spite of that
makes it virtually certain that *despite* contains the morpheme *spite* and therefore also a morpheme *de-*
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A second example is seen in the set:

(93) behind, before, below, between, beyond
which are almost certainly to be analyzed as containing a *be-* morpheme in addition to *hind* (cf. *hindsight*, *hindquarters*), *fore* (cf. *come to the fore*), *low*, *-tween* (cf. *twin*) and *-yond* (cf. *yonder*). A third is:

(94) without, within
with a component morpheme *with-* (cf. *withhold*) that pairs with either *out* or *in*. A fourth arguably involves the same *a-* mentioned earlier in section 4 in the discussion of *away* as *a- + way*. This *a-* is found in prepositions in cases like:

(95) atop the mountain
(96) astride the horse

If the preceding is on the right track, we could think of *despite*, *behind*, *before*, *below*, *between*, *beyond*, *without*, *within*, *atop* and *astride* (and others like them) as ‘complex prepositions’ associated with a constituent structure such as:

(97) [a- top] H the mountain
with H a silent head. Alternatively, this H (or perhaps *a-* itself) might occur in some or all of these cases in a structure more like:

(98) a- H [top the mountain]
with ‘top the mountain’ a construct-state-like phrase.⁵³

⁵¹Whether this relative pronoun analysis of *of* can extend to cases like *a large number of mistakes* and/or to (non-standard) *He should of left* (Kayne (1997)) remains to be worked out. If *of* is a relative pronoun, then it is not a ‘linker’ in the sense of den Dikken (2006).

⁵²Some English allows *in despite of*, suggesting that *despite that* might be ‘IN despite that’, with a silent counterpart of *in*. Interesting questions arise here concerning the appearance vs. non-appearance of *of*, especially when one takes into account *on board the ship*.

⁵³Cf. Longobardi (1996).

Whether a comparable constituent structure should be envisaged for the monomorphemic prepositions *to*, *at*, *by*, *with* is an open question.⁵⁴ (If it should be, then Kayne's (1999; 2004) proposal that adpositions are merged outside VP will need to be revised. This open question includes that of English *by* in passives, as discussed by Collins (2005) in terms of Voice.⁵⁵)

The partial similarity between *and* and certain instances of *with* discussed in Kayne (1994, sect. 6.3), following Lakoff and Peters (1969), suggests the possibility that *and* might be an adposition and therefore fall under the preceding discussion.⁵⁶ The existence in English of *or else*, as in:

(99) You'd better do it. Or else (they will).

is of interest, insofar as *else* is normally restricted to cooccurring with light nouns:

(100) something else, everybody else, noplacelike else
or with the arguably (even) more complex *where* and *one*.⁵⁷

(101) nowhere else, elsewhere, everyone else

The possibility therefore arises that *or else* involves at least as much extra material as a silent light noun, in which case *or* would very likely not be a projecting head with a sentential complement, even when it appears to be.

12. Derivational Suffixes

The relative clause approach to derived nominals such as *the removal of the evidence* mentioned in the discussion of (90) does not require taking *-al* there to be a projecting head, especially if *-al* is itself what is relativized. It is plausible to think that as goes *-al*, so go nominal *-ion*, *-ing*, *-ness*, and *-ity*. (Verbal *-en*, *-ify*, *-ize* may be light verbs.) The morpheme *-ish* might be phrasal like *more or less*;⁵⁸ the morpheme *-less* as in *shoeless* might be phrasal in the way that *without* is. In other words, it might be that none of these suffixes are projecting heads in the way usually assumed.⁵⁹

13. Focus and Topic projections

The Gungbe topic head discussed by Aboh (2004, sect. 8.1.3) and Rizzi (1997) might be a form of copula, thinking of (the imperfect analogy with) English cleft sentences. If it is, then the question of whether there are pronounced projecting heads related to topic projections becomes a(n open) question concerning the projecting ability of the copula. Whether other overt morphemes that appear to be focus or topic heads can be analyzed in this way remains to be seen.⁶⁰

⁵⁴What we call Case morphemes may (often) be a subtype of this latter class of adpositions; for recent relevant discussion, see Pesetsky (2014).

If applicative morphemes of the Bantu sort are subtypes of adpositions, then they probably fall into this latter class, too.

⁵⁵It remains unclear how to integrate into Collins's perspective the passive *by*-like morpheme, namely *par*, that occurs without a participle (but with an infinitive) in French causatives - cf. Kayne (1975, sect. 3.5) - in a way that recalls German and Dutch IPP sentences.

⁵⁶The implications for the restrictions on the (apparent) coordination of heads discussed in Kayne (1994, sect. 6.2) remain to be explored.

⁵⁷On *where* and *place*, see Kayne (2007b).

⁵⁸Cf. Duncan (2014).

⁵⁹Going back to Williams (1981).

⁶⁰Kayne's (1994, Preface) analysis of Japanese *-wa* as a sentential head will have to be revised, if there can be no such projecting heads.

Where the *-t-* of French subject clitic inversion fits in is not clear, though if projecting heads are necessarily silent, then Kayne and Pollock's (2012; 2014) analysis of this *-t-* will need to be revised.

14. Agreement morphemes

Following in part Hale (1973) and related work, it seems likely that (at least) first and second person agreement morphemes of the sort widely found in European languages are (incorporated) pronouns. If such pronominal agreement morphemes therefore originate in or within an argument position,⁶¹ they clearly cannot be pronounced sentential heads in the way proposed by Pollock (1989) (although his arguments that they be separate from T will still hold). There could, though, be a corresponding sentential head that is silent, just as third person agreement often is.⁶²

In some languages, in some cases, there is a verbal number (plural) agreement morpheme that is clearly distinct from person agreement. Almost certainly similar is Spanish plural *-n* and Italian plural *-n(o)*.⁶³ And arguably similar is the English *-s* discussed by Paddock (1990) for (Vernacular) Newfoundland English, which allows both of the following:

(102) It bees cold here. (generalization/ multiple instances)

(103) 'Tis cold here. (present time)

Paddock suggests more specifically that the *-s* of (102) is the verbal counterpart to the plural *-s* found with nouns. This suggestion of Paddock's would be compatible with having this *-s* being a functional head in the sentential hierarchy (cf. also Shlonsky (1989)).

Alternatively, thinking in part of the discussion of tense morphemes in section 7, it might be that the *-s* of (102) is part of a larger phrase akin to *many times*:

(104) it be MANY TIME --s cold here

in which case this *-s* would not be part of the sentential projection line. Whether this kind of analysis can be extended (with modification) to plural morphemes that appear to function only as agreement morphemes (i.e. that appear to be 'uninterpretable') remains to be seen.

15. Silent (Sentential) Heads I

In many of the preceding sections, e.g. in the discussion of complementizers, of sentence-final particles, of *need*, of aspect, of tense, of focus and topic, and of agreement morphemes, we have seen that familiar analyses with a pronounced head H (with complement XP, as in {H, XP}) in the sentential projection line may give way to alternative analyses in which that pronounced head is no longer in the sentential projection line. Instead the corresponding head is silent.

Combining this with the observation that many of the sentential heads in Cinque's (1999) analysis of adverbs are silent, we arrive at the following conclusion:

(105) Sentential heads are very often silent.

which seems to differ only in degree from the widespread view that sentential heads can sometimes be silent.

⁶¹Cf. also Poletto (2000) on subject clitics of the North Italian type. Whether these subject clitics and pronominal agreement morphemes adjoin to a silent head or move to a Spec position is a separate question.

Pronominal object clitics, too, are very likely to originate in or within argument position, as in Kayne (1975), in which case they cannot be pronounced sentential heads, contrary to Sportiche (1995) and Cuervo (2003). For an argument that at least some pronominal object clitics are actually phrasal, see Kayne (2008b). For an argument that object clitics of different persons move to different heights, see Săvescu-Ciucivara (2009).

⁶²Cf. Harris (1969) on Spanish third person singular verbal agreement.

⁶³On French plural *-ent*, see Kayne and Pollock (2014).

The conclusion stated in (105) seems weak, though, in at least two ways, if we interpret (105) as a hypothesis. First, (105) seems difficult to test, insofar as the term ‘very often’ is not precise. Second, (105) seems unlikely to be derivable from any set of general principles. We might therefore consider strengthening (105) to:⁶⁴

(106) All sentential heads are silent.

which looks to be more readily testable. A key question would then be, why would (106) hold, if correct?

A possible answer might lie within the question of what counts as atomic for Merge. We usually take morphemes to be atomic lexical items with respect to Merge. Yet morphemes are complex. Setting aside for the purposes of this paper the question of purely semantic features, morphemes have phonological features and formal features, which can be thought of as being bundled or assembled into a lexical item.⁶⁵ Taking a cue, though, from recent discussions with Chris Collins, and thinking of Agbayani and Ochi (2014) and references cited there, let me take such bundling or assembling to necessarily be an instance of Merge.

A problem seems to arise. If a lexical item is constructed by merging a (structured) set of phonological features/segments with a formal (syntactic) feature (or perhaps features), then a lexical item is not atomic, and so cannot, strictly speaking, be a head H. Put another way, we can produce a pronounced lexical item via Merge, but only at the cost of having that lexical item not be a true head. This apparent problem may provide the beginning of an account of (105)/(106), as follows.

A lexical item/morpheme associated with phonological features and at least one formal feature cannot be simplex. Therefore it cannot be a (sentential) head, as noted. Instead, we have the following partial derivation, for what we think of as a lexical item LI (with phonological features) that is supposed to merge with a phrase XP. The phonological features (PF) and formal features (FF) associated with LI merge with each other.⁶⁶

(107) { PF(LI), FF(LI) }

The resulting syntactic object is then merged with XP, yielding:

(108) { { PF(LI), FF(LI) }, XP }

⁶⁴The ‘doubly-filled Comp filter’ tradition had already noticed that there are fewer pronounced heads than might be expected; cf. especially Starke (2004). For another view with some similarities to the one being proposed here, see Borer (2013).

The approach to be developed here will have certain points in common with Distributed Morphology (cf. Halle and Marantz (1993)), without adopting ‘late insertion’, either in their sense or in the sense of nanosyntax (v. Starke (2009)). Informally put, I will end up having phonological and formal features ‘distributed in space’ (i.e. in distinct positions) rather than ‘distributed in time’, as in DM.

⁶⁵Cf. Chomsky (2001, 10), going back in part to Chomsky’s (1995, sect. 4.4.4) ‘move feature’ idea.

⁶⁶A variant of this idea (cf. Agbayani and Ochi (2014)) would be to have the formal feature(s) FF(LI) first merging with XP, yielding {FF(LI), XP}, followed by merging the phonological features PF(LI), yielding:

i) { { PF(LI), { FF(LI) , XP } }

with FF(LI) again being the head/label of the entire syntactic object, so that all heads would be silent, as in the text formulation.

Thinking of Chomsky (2013, 43) and his discussion of labeling and minimal search, it is plausible, especially if PF(LI) is itself complex⁶⁷ and if FF(LI) is a single feature, to take the head of the new syntactic object given in (108) to be FF(LI), which is by definition silent. (105)/(106) then follows.

Although (105)/(106) is stated for sentential heads, the point is of more general import. There is no reason to think that the type of derivation indicated in (107)/(108) should be restricted to heads in the sentential projection line. The merge sequence indicated in (107)(108) will consequently hold for any lexical item associated with phonological features that is merged with an XP. If so, then we appear to have, as a generalization of (105)/(106) (thinking in part of the earlier discussions of determiners, particles and adpositions):

(109) All or most heads are silent.

which is in need of clarification.

16. Silent (Sentential) Heads II

(109) is not sufficient. In the earlier sections on sentential elements such as complementizers, sentence-final particles, *need*, aspect, tense, focus and topic, and agreement morphemes, as well as in the sections on determiners, particles and adpositions, the claim was made that what is usually taken to be the head of a certain phrase is not actually the head of that phrase, which should rather taken to be silent. The notion of 'silent' used in those sections is stronger, though, than what is stated in (109).

Consider, for example, tense. Familiar tense morphemes were suggested in section 7 to be demonstrative morphemes occurring as subparts of phrases akin to 'at that time'. This is compatible with (109), but does not follow from it, since (109) would also be compatible with:

(110) { { PF(T), FF(T) }, XP }

with silent FF(T) the head, PF(T) the set of phonological features associated with the tense morpheme (e.g. *-ed*), and XP the phrase that best corresponds to the complement of T, say AspP. Consequently, if the analysis suggested in section 7 is on the right track and superior to (110), something further must be at issue.

A key difference between (110) and the analysis of section 7 lies in the absence in (110) of any counterpart to the silent noun TIME seen also in cases like:

(111) Have you been waiting long?

⁶⁷It would also suffice if the labeling algorithm ignored phonological features.

It may be that PF(LI) is always complex, even if the LI in question is phonologically monosegmental. This would be so if phonological segments are built up from phonological features by Merge, and if phonological segments cannot be monofeatural.

If phonological features are brought together by Merge, and if it holds with complete generality that the output of Merge is associated in one way or another with linear/temporal order (cf. especially Kayne (2011)), then the expectation arises that phonological features within a segment must always be (totally) linearly/temporally ordered. (Such ordering is already suggested for particular cases by terms like 'prenasalized stop' (cf. Maddieson (1989)) or 'prestopped nasal' (cf. Turpin et al. (2014) and Round (2014)); such an ordering would presumably impose boundary conditions on the phonetics, without requiring the phonetics to display the ordering transparently.)

If PF(LI) is generated by Merge and is subject to being externally merged with FF(LI), then we might expect PF(LI) to also be subject to internal merge (cf. in part Chomsky (1995, sect. 4.4.4; 2013, 46)), which could be taken to underlie, from the perspective of the copy theory of movement (cf. Chomsky (2000, 114)), the existence of morphophonological/syntactic reduplication - cf. Marantz (1982), Travis (2003), and Frampton (2009). ((Partial) reduplication might involve remnant movement.)

(112) Have you been waiting a long time?

It is virtually certain that (111) contains silent TIME (and perhaps a silent indefinite article).⁶⁸ Section 7 took the position that ordinary tense morphemes are like *long* in (111) in needing to be accompanied by silent TIME. The next question is why TIME is needed in (111) and with tense morphemes.

Kayne (2005) proposed:

(113) UG imposes a maximum of one interpretable syntactic feature per lexical item.

Setting aside for now the question of uninterpretable features,⁶⁹ the intuition was that lexical items are limited to making a minimal contribution to interpretation. This means, for example, that if *long* (111) contributes an interpretation corresponding to some notion of magnitude, it cannot by itself also contribute the notion of 'time'. For (111) to be interpreted as involving time, (111) must necessarily contain the (silent) noun TIME, parallel to overt *time* in (112).

In parallel fashion, a tense morpheme such as English *-ed* cannot simultaneously contribute 'time' and 'in the past' to the interpretation; on the assumption that it contributes something like 'in the past', it must be accompanied by silent TIME. For this reason, *-ed* cannot simply match { PF(T), FF(T) } in (110), with XP equal to AspP. (If *-ed* is (part of) a demonstrative, as argued, then it will appear as { PF(T), FF(T) } in some { { PF(T), FF(T) }, XP}, but the XP there will be equal to NP or some similar phrase that demonstratives cooccur closely with.)

Akin to tense morphemes, from this perspective, are sentence-final particles, which are arguably associated with too complex an interpretation for them (more exactly, for their FF, if the discussion of (108) is on the right track) to be able to stand alone as a sentential head; rather, further silent elements of one sort or another must be present. Aspectual morphemes are presumably also akin to tense morphemes in this regard. Leu (2014) has taken a similar position for most determiners, as discussed in section 9; they are never simple lexical items that are associated with no silent elements. As suggested in section 4, particles like English *away* are not simple lexical items, but are rather bimorphemic; whether a monomorphemic particle unaccompanied by any silent element is possible is an open question.

17. Silent (Sentential) Heads III

The discussion of (108) concluded that a formal feature FF, rather than a whole lexical item with its phonology, is the head/label of a phrase. In this technical sense, (106) is true (see also note 66). Yet (108) readily allows a lexical item to look like a pronounced head, to the extent that PF(LI) is present and a sister to FF(LI).

At the same time, the earlier sections on sentence-final particles, tense, aspect, etc. attempted to show that even that appearance is misleading, in the sense that the following (modeled on (108), with XP (say, AspP) a phrase in the sentential projection line) is not the right way to think about a tense morpheme like English *-ed*:

(114) { { PF(T = *-ed*), FF(T) }, AspP }

Instead, *-ed* must be taken to be subpart of a larger demonstrative phrase that (114) cannot accommodate.

The section preceding this one suggested that (114) could in fact be excluded by recourse to (113), and that that effect of (113) might well extend beyond tense to sentence-final particles, aspectual morphemes, determiners, particles like *up*, etc., forcing them all out of the main projection line and into

⁶⁸Languages differ here (for reasons to be elucidated). French would have to have *longtemps* ('long time'), with overt *temps*.

⁶⁹If Kayne (1994; 2011) is correct in excluding multiple specifiers, the answer is almost certainly yes.

phrases (containing silent elements) whose existence we might not have been aware of, such as the demonstrative phrase in the case of tense.

The applicability of (113) to (108), which is repeated here:

(115) { { PF(LI), FF(LI) }, XP }

is, however, limited to cases in which LI would have had to be too complex an interpretation. (113) would allow any instance of (115) in which LI is either uninterpretable or makes an appropriately minimal contribution to interpretation. In such cases, the LI in question would give the appearance of being a (sentential) head. A good candidate for such an LI would be a complementizer, especially from Rizzi's (1997) split-CP perspective.

In other words, if (113) were the only principle imposing limits on (115), we should expect to find many such instances involving a minimally interpretable (or uninterpretable) LI in the sentential projection line. But it is not clear that we do (if the empirical thrust of this paper leans in the right direction). If we do not find such instances, then (115) must be being suppressed, in the sentential projection line, by more than just (113).

A possible proposal would be the following. This proposal will be more transparent if we use the variant of (115) given in note 66, which is:⁷⁰

(116) { { PF(LI), { FF(LI) }, XP } }

In (116), PF(LI) is in a specifier-like position with respect to the head/label FF(LI). Assume, with Kayne (1994) or (in a different way) Kayne (2011), that multiple specifiers are prohibited. Then any FF(LI) head associated with a PF(LI) will be prohibited from having another LI or a phrase as (second) specifier.

Put another way, a pronounced LI will be unable to have (the equivalent of) a specifier. Consequently, if some FF needs another full LI or phrase as specifier, that FF will of necessity lack an associated PF of its own, i.e. it will have to be silent. If all FFs in the sentential projection line need such 'filled specs', then all the heads/labels in that projection line will have to be silent. (In effect, pronounced LIs will be restricted to occupying positions in which they would not need such a 'filled spec'.)

18. Conclusion

On the basis of considerations involving complementizers, sentence-final particles, *need*, aspect, tense, focus and topic, agreement morphemes, determiners, particles and adpositions, it appears that many more heads in the sentential projection line (and elsewhere) are silent than is usually thought. This reflects in part the fact that all projecting heads are technically silent (since they are just formal features),⁷¹ and in part the fact that the presence of phonological features precludes the presence of a(n other) specifier.

*Earlier versions of this paper were presented at the University of Geneva in June 2012, at the Workshop on Complement(ation), University of Rome 3 in April 2013, at the Workshop on Portuguese

⁷⁰Both variants will have the initial step of a derivation able to merge PF(LI) with FF(LI), with the latter counting as head/label, perhaps because PF(LI) is always complex - see note 67. It may be that little *n* (cf. Marantz (1997)) is unnecessary from the present perspective; nor would Chomsky's (2013, 47) prohibition against roots as labels be necessary.

In having PF(LI) subject to syntactic computation, the present proposal is not in the spirit of the 'late insertion' aspect of DM (Halle and Marantz (1993)), nor with the phrasal spellout aspect of nanosyntax (Starke (2009)).

⁷¹This will account for the doubly-filled Comp filter and its descendants; for a different approach, see Starke (2004).

Syntax, University of Venice in May, 2013, at Towards a Theory of Syntactic Variation, Bizkaia Aretoa, Bilbao (University of the Basque Country UPV/EHU) and at EdiSyn 2013, Konstanz in June 2013, at NYU in October, 2013, at MIT in April 2014, at GLOW in Asia X, National Tsing Hua University, Taiwan in May, 2014, and at Goethe-Universität, Frankfurt am Main in June, 2014. I am grateful for useful comments and questions to all those audiences.

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