A Very Short Note on *Half* vs. *All*

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1.   *Half* and *all* look alike in the following pair of examples:
   (1) Half (of) the students like syntax.
   (2) All (of) the students like syntax.
Yet *half* does not 'float' in the way that *all* does:[1]
   (3) They should all/*half have paid more attention to semantics.
Nor does *all of*:[2]
   (4) *The students should all of have paid more attention to semantics.
     The following proposal would account for (4):[3]
   (5) Q-stranding of the sort seen in (3) is incompatible with the *of* of (1)/(2).
More specifically, in Sportiche's (1988) terms, the type of movement that strands *all* in (3) cannot strand *of*, as shown by (4).[4] Using capital letters to indicate silent elements, let me generalize (5) to:
   (6) Q-stranding is incompatible with *of*, as well as with its silent counterpart OF.[5]

2.   If so, we can account for the impossibility of *half* in (3) if we take *half* to necessarily be accompanied by *of*/OF, i.e. if we take *half the students* to necessarily be:[6]
   (7) half OF the students
The contrast between *half* and *all* in (3) must then indicate that *all the students* need not contain OF.
     The contrast between *half* and *all* concerning *of/*OF presumably reflects at least in part the nominal character of *half* that is also seen in:
   (8) one/this/each half of the pie
   (9) A pie can only have two halves.
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[1]As noted by Al Khalaf (2019, 2). Cf. also:
   i) I like them all/*half.
[2]As noted for *each* by Bobaljik (2003, 123).
[3]On the other hand, *of* is compatible with a resumptive pronoun:
   i) They should all of them have paid more attention to semantics.
   ii) They've half of them decided to switch to chemistry.
in a way that may be relevant to Torrego (1996), Shlonsky (1991) and Al Khalaf (2019).
[4]Cf. Kayne (1998, sect. 2.3) on other cases in which English disallows P-stranding.
[5]A further generalization to cover the genitive Case of standard Arabic as discussed in Al Khalaf (2019) might be appropriate.
[6]Cf. Borer (2005, 207) on *of*-deletion; on the difference between deleted elements and silent elements, see Kayne (2006).

That *all* does not require *of*/OF can now be taken to suggest that *all* is not nominal;[7] possibly it is of the same category as the closely related *whole*.

3.   A related instance of *half* cooccurring with OF can be seen, I think, in:
   (10) It'll take us (a) half a day to finish this work.
The link between *half the students* and *(a) half a day* is supported by the fact that neither generalizes to other fractions:[8]
   (11) It'll take us a third/quarter/fifth *(of) a day to finish this work.
   (12) Half/*third/*quarter/*fifth the students like syntax.
With *third, quarter, fifth...* in (11), overt *of* is needed (along with *a* or *one*), as also seen in:
   (13) A/One third/quarter/fifth *(of) the students like syntax.
     Why exactly silent OF is licensed with *half*, but not with *third, quarter,...* remains to be understood, though there may be a link to the following contrast:
   (14) Both (of) the students like syntax.
   (15) All three *(of) the students like syntax.
Like *half*, *both* does not require overt *of*; though unlike *half*, *both* can be stranded:
   (16) The students both like syntax.
which implies, given (6), that *both the students* does not require OF. Since *half* and *both* are both related to 2,[9] there might be an indirect link here to the proposal in Kayne (2019) to the effect that 2 is syntactically simpler than all higher numerals.
     Half does not always allow both *of* and OF, contrary to what we saw in (1):
   (17) Half *(of) all the linguists I know like chemistry.
With respect to Q-stranding, this kind of sentence patterns with *half*, rather than with *all*:
   (18) *The linguists I know half of all like chemistry.
arguably because of the presence of *of*. Why OF is not licensed in (17) remains to be elucidated.

4.   The proposal in (6) leads to the conclusion that in sentences with stranding and a pronominal subject, as in:
   (19) We're all working hard.
there must be no OF, despite overt *of* being required in:[10]
   (20) All *(of) us are working hard.
   (21) Everybody admires all *(of) us.
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[7]From the perspective of Kayne (2008), simplex lexical items can in effect only be either nominal or verbal; *all* might not be simplex; whether *all* could be a different subtype of nominal from *half* is unclear.
   In phrases with *all of*, *all* is almost certainly followed by either a silent numeral, thinking of *all three of*, or by NUMBER/QUANTITY, thinking of Kayne (2005).
[8](11) was noted by Borer (2005, 116n)
[9]On *both* as 'all two', see Pesetsky (2013, 137).
[10]The impossibility of *all* (and *both*) plus following pronoun was noted by Maling (1976, 712). Note that it also holds for *half*:
   i) half *(of) them/us/you

The permitted absence of OF in (19), though not matched by (20)/(21), must also hold in:
   (22) Everybody admires us all.
   (23) I've already spoken to them all.
in which *us all* and *them all* can arguably be taken to be constituents.[11]
    Similar to the question raised by (19)-(21) is that raised by:
   (24) The students, who are all working hard,...
   (25) The students, all *(of) whom are working hard,...
The stranded *all* of (24) implies, given (6), that there is no OF; but if *all* can combine with *who* without either *of* or OF in (24), why does (25) require *of*? Relevant are McCloskey's (2000) examples such as:
   (26) What all did you get for Christmas?
which very likely have *what all* as a constituent, with no *of* and plausibly with no OF.
    There remains the question of why exactly (20)/(21) and (25) do require *of*. There may be a link to the fact that certain Italian prepositions must or can be followed by another preposition *di* ('of'), but only if their object is a pronoun,[12] which might in turn be related to the fact that in many Romance and Germanic languages Case distinctions are found only on pronouns.

5.   A partially different kind of challenge to (6) comes from *each*, which, unlike *all* (and *both*) always needs overt *of* in cases like:
   (27) Each *(of) the students is working on a different topic.
Yet *each* can apparently be stranded:
   (28) The students are each working on a different topic.
though with restrictions not found with *all*:
   (29) The students are all/*each happy.
   (30) Do you have friends who are linguists? Yes, in fact my friends/they all/*each are.
The proper response to pursue, though not here, will, I suspect, be to take (28) not to have a stranding analysis of the sort under discussion, but instead to be related to sentences like:[13]
   (31) They've gone, the one to Paris, the other to London.

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[11]As argued by Postal (1974, sect. 4.5), Maling (1976, sect. 3) and Bobaljik (2003, 114); this constituency claim goes against Klima (1964), whose Case facts will have to be rethought. Cf. also Durrell (2002,104)'s German example:
   i) Sie alle sind gekommen. ('they all are come')
with *sie alle* presumably an initial constituent, given German V-2. French allows:
   ii) Ils parlent de nous tous. ('they speak of us all')
with *nous tous* almost certainly a constituent, and similarly for Italian, apart from order:
   iii) Hanno parlato di tutti noi. ('they-have spoken of all us')
Cf. Shlonsky (1991) on Hebrew; also the *y'all* of some varieties of English, which can occur as a possessor, as in *y'all's house* - cf. Wolfram and Christian (1975, 138/149, 143/154 and sect. 4.4.3.4).
[12]Cf. Rizzi (1988).
[13]On which, cf. Kayne (1975, 60).

5. Conclusion   Against the background of certain similarities between *half* and *all*, a certain difference between them having to do with stranding can be understood in terms of a silent OF needed with *half* (in the absence of an overt *of*), but not with *all*. The account appears to fit well with the stranding analysis of Sportiche (1988).[14]

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[14]As well as with the labeling-based variant of it proposed in Al Khalaf (2019).

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