Linear effects in ATB movement

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Abstract. Munn (2001), Citko (2005), and others argue that in ATB movement initial and non-initial gaps exhibit asymmetries in reconstruction effects and weak crossover: only the initial ATB gap shows reconstruction and weak crossover. Munn argues that these asymmetries are due to the nature of the gap: the initial ATB gap is a real gap, while non-initial gaps are parasitic gaps. Parasitic gaps are generally claimed to show no reconstruction or weak crossover (e.g., Nissenbaum 2000). We re-examine reconstruction in ATB movement and parasitic gap constructions and show that in most cases the putative asymmetries between gaps are not real, and when there is an asymmetry it is due to linear order and not to the nature of the gap. We conclude that both ATB movement and parasitic gap constructions involve full copies in all gaps.

Keywords. ATB movement; parasitic gaps; weak crossover; reconstruction; linear order

1. Introduction. It has long been thought that in ATB movement the initial gap and the subsequent gaps show a number of asymmetries in reconstruction and weak crossover. Munn (2000; 2001) and Citko (2005) show that unlike the initial ATB gap, non-initial gaps are insensitive to reconstruction effects for binding condition A:

(1) (Citko 2005, 493, (44))
   a. * [Which picture of himself$_i$] did Mary sell _ and John$_i$ buy _?
   b.   [Which picture of himself$_i$] did John$_i$ sell _ and Mary buy _?

In addition, reconstruction effects for binding condition C show up only in the initial gap according to the judgments reported by Munn and Citko:

(2) (Citko 2005, 494, (45))
   a. * [Which picture of John$_i$] did he$_i$ like _ and Mary dislike _ ?
   b.   [Which picture of John$_i$] did Mary like _ and he$_i$ dislike _?

Munn cites examples like those below which show that weak crossover appears only with respect to the initial ATB gap:

(3) (Munn 2001, 374, (10a,c))

    a.   [Which man$_i$] did you hire _ and his$_i$ boss fire _?

    b.   * [Which man$_i$] did his$_i$ boss fire _ and you hire _?

On the basis of these asymmetries, Munn (2001), Zhang (2010), and others argue that non-initial gaps in ATB movement do not involve movement at all, but are occupied by a null element that is not a trace. Munn contends that this null element is a parasitic gap (PG). Munn's analysis challenges the often taken-for-granted theory of ATB movement as movement from all gaps, creating what is referred to as a forking chain (the *forking chain analysis*).

2. New Data and Proposal. In this paper, we re-examine the asymmetries between ATB gaps which have been reported in the literature. We surveyed thirteen speakers on examples of ATB movement and parasitic gap constructions which involve violations of binding conditions A and C and weak crossover. Speakers' judgments show that (i) in many cases the asymmetries are not real, (ii) where they are, the asymmetry is due to linear order not the nature of the gap. We also find evidence of reconstruction into parasitic gap sites. We therefore argue that both ATB movement and parasitic gap constructions involve extraction from all gaps (adopting the forking chain analysis for both).

3. Condition C. Starting with the asymmetries in reconstruction for condition C of the type in (4), our speakers find no asymmetry between initial and non-initial gaps. Ten out of thirteen find both sentences grammatical. Only two rate (4b) better.

(4)   a.   * [Which picture of John$_i$] did he$_i$ like _ and Mary dislike _ ?

        b.   [Which picture of John$_i$] did Mary like _ and he$_i$ dislike _?

To test whether linear order plays a role in the asymmetry for those few speakers who find one, we tested examples of PG constructions where the PG precedes the real gap:

(5)   a.   This is the type of story about Obama$_j$ that people who hear pg_i think he$_j$ will be angry about t_i.

        b.   This is the type of story about Obama$_j$ that people who tell him$_j$ to ignore pg_i always end up talking about t_i.

In Munn's analysis, (5a) should be ungrammatical. The judgments we got challenge this prediction. Nine out of thirteen speakers report no difference between (5a, b); two find (5a) better, and one finds (5b) better.

The judgments seem to identify two groups of speakers: speakers who find no contrast between the gaps and speakers who reconstruct to initial gaps only (very few speakers). To account for these results, we propose that generally, speakers only copy the head of the filler into gap positions:

(6)   Which picture of John$_i$ did he$_i$ like [~~which picture~~] and Mary dislike [~~which picture~~]?

Under some conditions some speakers copy the head plus any complement in the first gap, but only the head in subsequent gaps. For these speakers, the identity of the copy seems to decrease with linear distance from the filler:

(7)   Which picture of John$_i$ did Mary like [~~which picture of John~~] and he$_i$ dislike [~~which picture~~]?

    We thus propose that the variation in judgments on Condition C has to do with whether a full copy or a partial copy fills the non-initial gap, not the nature of the gap itself (real vs. parasitic).

4. Condition A.   Turning to the asymmetries in reconstruction for binding condition A, we collected judgments on examples like the one below:

(8)   a.   * [Which picture of himself$_i$] did Mary sell _ and John$_i$ buy _?
    b.   [Which picture of himself$_i$] did John$_i$ sell _ and Mary buy _?

Our speakers divide into two groups. The first group found a violation in the initial gap or a non-initial gap equally acceptable (six out of thirteen found the sentences equally grammatical, one finds them equally ungrammatical). The second group found a violation in a non-initial gap more acceptable (five found (8a) better as previous literature reported, while one speaker finds (8b) better).

    Note that the example here involves a picture-NP. In fact, all the examples cited in the literature are of this sort. In such contexts, anaphors are known to be exempt from condition A. Exempt anaphors are thought to be licensed by the closest perspective center (Pollard and Sag 1992, Reinhart and Reuland 1993). When a perspective center is established, a violation in the initial conjunct becomes acceptable:

(9)   John$_i$ is upset. Which picture of himself$_i$ will Mary find _ and he$_i$ then have to explain _?

    We propose that the variation in speakers' judgments on examples that involve an exempt anaphor is due to speaker variation in requiring the closest possible perspective taker to be the antecedent for an exempt anaphor. Those who find violations in the initial gap and non-initial gaps equally grammatical seem to have no preference, while those who do not tolerate a violation in the initial conjunct seem to require that the closest NP be the antecedent.

    We also tested cases of exempt anaphors in picture NPs in PG constructions where the PG precedes the real gap. In the PG analysis, only the real gap show reconstruction effects, so (10a) should be ungrammatical and (10b) grammatical. The results we got do not match this prediction. Three out of thirteen speakers judged (10a) better than (10b), while the rest found no difference. This is consistent with our proposal above.

(10)   a.   [How many portraits of herself$_i$] did [the woman$_i$ who commissioned *pg*] end up asking that artist to take *t* back?
    b.   [How many portraits of himself$_i$] did [the woman who commissioned *pg*] end up asking [that artist]$_i$ to take *t* back?

    Much more telling are examples with non-exempt anaphors. We tested reconstruction with anaphors in argument position and PPs like the ones below:

(11)   a.   * [Criticize himself$_i$], John$_i$ will _ but Mary won't _.
    b.   * [Criticize himself$_i$], Mary will _ but John$_i$ won't _.

(12) a. * [Over himself$_i$], John$_i$ pulled a blanket _ and Mary threw a rug _ .

　　　b. * [Over himself$_i$], Mary pulled a blanket _ and John$_i$ threw a rug _.

　　Our results are that speakers divide into two groups: five out of thirteen speakers report that (12a, b) are equally ungrammatical/marginal, while six out of thirteen found (12a) better (and two found them equally grammatical).

　　The same results were found with PG constructions where the PG precedes the real gap:

(13) a. * It is only himself$_i$ that [people who know pg_i think John$_i$ should blame t_i].

　　　b. * It is only themselves$_i$ that [people$_i$ who blame pg_i will realize John has conned t_i].

　　Eight out of thirteen judge both (13a, b) unacceptable, while three out of thirteen found (13a) slightly better and two out of thirteen judged them both grammatical. We should note that PGs must involve a full copy; otherwise, (13a) would be grammatical for all speakers.

　　With non-exempt anaphors, speakers divide into two groups. One group finds no contrast between the initial and non-initial gap; reconstruction into both is required. The other group seems to allow a binding violation in non-initial gaps. We therefore generalize the analysis we proposed above for Condition C. We propose that there are two sorts of reconstruction: full reconstruction, that is reconstruction of full copies, and reconstruction with vehicle change in the non-initial gaps. In particular, we propose that most speakers require all gaps to be exact copies of the filler:

(14) 　* Over himself$_i$, John$_i$ pulled a blanket [~~over himself~~] and Mary threw a rug [~~over himself~~].

　　However, some speakers require the first gap to be an exact copy of the filler, but subsequent gaps can marginally undergo *vehicle change*. *Over himself* reconstructs as *over himself* in the initial gap, and as *over him* in the non-initial gap. Speakers who allow this then permit an apparent binding violation in non-initial gaps:

(15) 　Over himself$_i$, John$_i$ pulled a blanket [~~over himself~~] and Mary threw a rug [~~over him~~].

　　For these speakers (a minority), the asymmetries with non-exempt anaphors seem to be due to variation in identity between the gap and the filler; identity seems to decrease with linear distance from the filler for some speakers, which makes a binding violation in a non-initial gap acceptable.

　　To wrap up, the putative asymmetries between ATB gaps in reconstruction for binding condition A are either not real (with exempt anaphors), or they are due to linear order: vehicle change is allowed in non-initial gaps but not in the initial gap. Importantly, ATB gaps and PGs behave the same, with the important factor being linear order, not PGs versus "real" gaps.

5. Weak Crossover.　We repeat example (3), in which only the initial gap shows weak crossover:

(16) a. 　[Which man$_i$] did you hire _ and his$_i$ boss fire _?

　　　b. * [Which man$_i$] did his$_i$ boss fire _ and you hire _?

　　This asymmetry simply follows from linear accounts of weak crossover that have already been proposed (Chomsky 1976, Higginbotham 1980, Shan and Barker 2006). We formalize this condition below:

(17)   A quantifier Q can bind a pronoun P as a variable only if some A-position occupied by Q precedes P.

The extraction in (16a), according to the condition above, does not result in weak crossover because there is an A-position that is occupied by (a copy of) *which man* that precedes *his*, namely object of *hire*. In (16b), however, the extraction induces a weak crossover violation because there is no A-position occupied by *which man* which precedes *his*.

Given this condition, we predict that if the PG precedes the real gap, WCO should reverse. An example that would test the validity of this prediction follows:

(18)   a.   What kind of father$_i$ do teachers who have to send his$_i$ child home to pg_i always end up despising t_i?

b.   What kind of father$_i$ do teachers who meet pg_i have no trouble sending his$_i$ child home to t_i?

However, speakers polled found no contrast between (18a) and (18b). Both were found equally grammatical or equally ungrammatical. We suspect that many speakers dislike parasitic gaps in relative clauses modifying subjects. Also, in these examples, the PG is part of a relative clause. Relative clauses often do not show weak crossover (Lasnik and Stowell 1991).

We thus constructed sentences that avoid the problems associated with an example like (18), using gerunds as subjects:

(19)   a.   * Which girl$_i$ did her$_i$ teacher('s) criticizing pg_i really upset t_i?

b.   Which girl$_i$ did the teacher('s) criticizing pg_i make her$_i$ mother withdraw t_i from school?

(20)   a.   * Which official$_i$ did his$_i$ boss's firing pg_i make reporters scramble to get an interview with t_i?

b.   Which official$_i$ did the boss('s) firing pg_i make his$_i$ friend try to intercede for t_i?

Informal polling for the above examples shows that our prediction is correct. Weak crossover reverses when the PG precedes the real gap, confirming that the asymmetry between gaps in weak crossover is due to linear order and not the nature of the gap. PGs also show weak crossover when they precede the real gap.

6. Conclusion. In this paper, we re-investigated putative asymmetries between ATB gaps in reconstruction effects and weak crossover. We argued against the claim that the asymmetries are due to ATB gaps differing in nature, where non-initial gaps are not real gaps. The judgments we collected reveal that most of the claimed asymmetries are due to linear order and not to the nature of the gaps. Significantly, we find evidence of full reconstruction into PG sites. We propose that an analysis in which extraction occurs from *all* gaps is on the right track, for both PG constructions and ATB movement. Linear asymmetries result from partial copying or vehicle change in non-initial gaps. We suggest that such an analysis should make use of left-to-right derivations (Phillips 1996, 2003; Bruening 2014), but we do not spell out such an analysis here and leave the issue for future research (but see Al Khalaf (2015) for a sketch of such an analysis).

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