Diagnosing covert pied-piping

Sauerland and Heck (2003, S&H) show that Beck intervention effects occur within overtly pied-piped constituents. We present novel data showing that these intervention effects also affect covert pied-piping, contra Cable (2010). That is, when a focus intervener (Beck, 2006) is inside an in-situ wh-word’s associated pied-piping constituent, it will block the interpretation of the wh-word, leading to ungrammaticality. We argue that these facts are best accounted for by (a) covert movement of wh-words for interpretation, with pied-piping through Cable’s (2007, 2010) Q-theory of wh-movement, (b) interpretation of pied-piped constituents through focus alternatives (Horvath 2000, 2007; Krifka 2006; Cable 2007, 2010; a.o.), and (c) Beck’s (2006) focus semantic account of intervention effects. We further argue that a careful look at such configurations leads to the conclusion that the size of overt pied-piping and covert pied-piping can differ—in particular, covert pied-piping in English does not allow P-stranding. Finally, we extend these findings to focus constructions and argue for a covert movement approach to in-situ focus interpretation (Krifka, 2006; Wagner, 2006).

Theoretical background: In Cable’s (2007, 2010) Q-particle theory of wh-movement, a Q-particle (silent in English but overt in some languages) is adjoined to a particular wh-containing constituent, and “wh-movement” moves this QP. QPs containing more than just the wh-word lead to pied-piping. In English, in-situ wh-words in superiority-obeying questions merge with Q and covertly move to C (see also Pesetsky, 2000; Beck, 2006).

Previous work on intervention and pied-piping: S&H give German data showing that various interveners such as negative quantifiers cannot occur in an overtly pied-piped constituent (1). Cable (2010) presents the analogous contrast for English, reproduced in (2).

(1) Fritz möchte wissen [[‘ein /#kein wie schnelles Motorrad] du fahren darfst] ‘Fritz wants to know how fast a/*no motorbike you are allowed to drive.’

(2) [‘A/#no/#few picture(s) of which president] does Jim own ___?

S&H and Cable show that these intervention effects occur when an intervener is inside the pied-piped constituent (QP following Cable) and above the wh-word, schematized in (3). Intervention in this configuration is unexpected by Beck (2006), but is amenable to a similar focus-semantic explanation, since the pied-piped constituents are interpreted via focus-alternative computation within the QP (Cable, 2010; cf. Horvath, 2000, Krifka, 2006).

(3) * [QP … INTERVENER [ … wh … ]], … t, …

Intervention in covert pied-piping: As the interpretation of in-situ wh-words can involve covert movement (Karttunen, 1977; a.o.), we would like to know (a) whether covert movement also triggers pied-piping and, if so, (b) whether the size of covert pied-piping is the same as overt pied-piping. The multiple wh-question in (4) provides some evidence:

(4) Who’s read ‘a/one/the/#no/#few book(s) from which library?

Note in particular that this is a superiority-obeying question and, in general, negation intervening between the complementizer and the in-situ wh-word is grammatical (5). Ungrammaticality arises precisely when the intervener is within the DP [D books from which library] that is a pied-piping constituent corresponding to which.

(5) Who has’nt read a/any/one/the book(s) from which library?

This contrast thus does not fall under Beck’s (2006) analysis of intervention effects between C and an in-situ wh. It does, however, fall under the extension of Beck to intervention within QPs (schema in 3), assuming that covert movement also triggers pied-piping via Q-particles. As Q’s function is to mark the constituent that is targeted for movement, the contrast in (4) provides an argument for covert pied-piping in the interpretation of wh-in-situ.
Diagnosing the size of overt and covert pied-piping: As noted by Huang (1982), PP-complements are easier to extract from within a DP than PP-adjuncts are (6–7).

(6) * [From which library] have you read [a book ___]?
(7) ✓ [Of which president] have you met [a relative ___]?

Under the Cable Q-theory, these different options for pied-piping correspond to different positions that the Q-particle can adjoin to. (Note that the entire DPs “a book…” or “a relative…” in (6–7) are also possible pied-piping constituents.) (8–9) show possible attachment sites for the Q-particle for DPs as in examples (6–7).

(8) \( (′Q)D\) book (*Q) from (′Q) which library
⇒ pied-piping options: \( [D\) book from which l.], \( [\) from which l.], \( [\) which l.]

(9) \( (′Q)D\) relative (′Q) of (′Q) which president
⇒ pied-piping options: \( [\) D relative of which p.], \( [\) of which p.], \( [\) which p.]

As the intervention effects observed in (4) occur when an intervener intervenes between a wh-word and its associated Q (schema in 3), the only possible position of Q in (4) must be on the largest possible pied-piping constituent, illustrated in (4′).

(4′) * Who’s read \([\) Q no/few book(s) from which library]\)?

If we modify (4) so that the in-situ wh-word is within a PP-complement (instead of a PP-adjunct), however, the multiple question with the intervener becomes grammatical (10).

(10) ✓ Who’s met no/few relative(s) \([\) Q of which president]\)?

This is because the Q can adjoin to the PP-complement \([\) of which president], but not to the PP-adjunct \([\) from which library] (8–9). As the intervener is entirely outside of the QP in (10), it does not trigger intervention. Thus the pattern of intervention effects in (4, 10) correlates with the options for pied-piping as determined through overt movement in (6–7).

Cable’s theory predicts that Q may alternatively attach to the constituents \([\) which library] or \([\) which president] (8–9), as is possible in overt movement. However, if this were a possible option in covert movement, we would predict that the structure in (4′) is available, yielding no intervention effect in (4). Note that such movement of small QPs would leave a stranded preposition at LF. We argue that this effect is the emergence of the cross-linguistic constraint against preposition-stranding which is exceptionally violated in English overt movement.

(4″) * Who’s read no/few book(s) from \([\) Q which l.]\) ?

Applications to in-situ focus: We extend these findings to focus constructions. Overt focus-movement, in the form of it-clefts in English, also triggers pied-piping. We observe intervention effects within these cleft pivots as well (11).

(11) It’s \([\) at/the/ some/?no/?few book(s) from \([\) THAT] library \) that I’ve read ___.

Krifka (2006) argues that in-situ focus also involves covert movement with pied-piping. We thus predict intervention effects with the same sensitivity to complement/adjunct PPs observed in wh-in-situ. This prediction is borne out.

(12) I’ve only, read \([\) Q at/the/ some/?no/?few book(s) from \([\) THIS] library \).
(13) ✓ I’ve only, met no relatives \([\) Q of \([\) PRESIDENT OBAMA] library \).

This evidence thus further supports the covert movement analysis of focus interpretation, using the same syntactic mechanisms for pied-piping as in overt and covert wh-movement.

Of which city did you witness the destruction ___.
On which table did you like [the books ___].

Cable (2010) shows that intervention only occurs if the intervener is (a) inside the pied-piped constituent and c-commands the wh-word (%%%).

(1) ✓ [Which president does Jim own [no pictures of ___]]?
(2) ✓ [Which picture containing no presidents] does Jim own ___?