Lowering and Cyclicity: Attraction by X from Spec XP

The ill-formedness of lowering examples like (1) might tempt us to posit an explicit ban on lowering: e.g., a requirement that heads can only attract objects in their c-command domain. However, (1) will also be ruled out by versions of Cyclicity assumed in Chomsky (1995, 1999), and much other work. Cyclicity requires that the tree be assembled from the bottom up, and that attractors must attract soon after being introduced into the structure; on this view, (1) is ruled out because the embedded [+wh] C is introduced before the wh-phrase *who*, and therefore has nothing to attract at the relevant point in the derivation.

A Cyclicity-based ban on (1) differs from an explicit ban on lowering in the case of attraction by a head out of its own specifier. Consider the derivations in (2), where C first attracts the wh-phrase *how proud of what* in (2a), then further attracts the embedded wh-phrase *of what* to a specifier above (2b) or below (2c) the existing one. If C can only attract out of its c-command domain, then the derivations in (2) should be ruled out. On the other hand, if Cyclicity is responsible for ruling out (1), then the derivations in (2) might be acceptable. I will refer to these as "recursive questions"

Bulgarian, in which all wh-phrases move overtly, allows questions which, I argue, have derivations like (2); the questions in (3) are examples. I attempt to establish the following points:

*** The embedded wh-phrase must undergo wh-movement**. The NP complement *po matematika* 'of mathematics' in (4) must remain in DP-medial position; it cannot be moved to the left (4b) or the right (4c). The corresponding recursive question in (5) has radically different properties; the NP complement must be moved (5b-c), and cannot remain in situ (5a). Thus, the embedded wh-phrase is undergoing wh-movement: a form of movement which is available only to wh-phrases and is obligatory in Bulgarian.

*** The embedded wh-phrase moves from inside the embedding wh-phrase**. Wh-extraction of the embedded wh-phrase is not fed by extraposition of the embedded wh-phrase. First, such extraposition is independently unavailable (4). Second, if extraposition occurred, presumably to a position c-commanding the embedding wh-phrase, the final order of the two wh-phrases should always be that in (5b), given that wh-order in Bulgarian follows the base c-command relations between the wh-phrases (Rudin 1988, Richards 1997, 1999); (5c) would be incorrectly ruled out.

*** The embedded wh-phrase lands in a specifier outside the embedding wh-phrase.** The embedded wh-phrase is not simply moving to a high position within the embedding wh-phrase. The two phrases can be separated by further wh-movement into a higher clause, as in (6), where the embedding wh-phrase moving into a higher clause, leaving the embedded wh-phrase behind.

*** The embedded wh-phrase moves after the embedding wh-phrase does.** The A-over-A principle (presumably to be derived from Shortest Attract) prevents the embedded wh-phrase from being attracted before the embedding wh-phrase is. Moreover, Richards' (1997, 1999) approach to wh-ordering in Bulgarian requires that the word order in (5c) reflect movement of the embedding wh-phrase first, followed by movement of the embedded wh-phrase to a lower specifier.

*** Wh-ordering in recursive questions follows from general principles.** Having established that Bulgarian recursive questions involve derivations like those in (2)--that is, that the embedded wh-phrase is undergoing obligatory wh-movement, from inside the embedding wh-phrase to a second specifier outside it, after the embedding wh-phrase has already moved to a specifier of CP--I then show how the freedom of ordering in recursive questions can be made to follow from general principles. The freedom of ordering is not related to the freedom of ordering in D-linked questions in Bulgarian; as the contrasts in (7-10) show, recursive questions with non-D-linked wh-phrases still exhibit freedom of ordering. I follow Richards (1997, 1999) in assuming that Bulgarian wh-ordering follows from a general principle of Shortest which requires that all the participants in a movement operation (the attractor, and the head and tail of the new chain) be maximally close to each other. A second wh-movement is required to "tuck in" below the existing specifier, because of Shortest applied to the relation between the head and tail of the chain, and also, redundantly, between the head of the chain and the attractor. If Shortest is defined as in (9), then (5c) will obey Shortest for the relation between the attractor and the head of the chain, but not for the relation between the head and tail of the chain (there is no path between them); (5b) will do the opposite.

(1) *She told __ [who John ate a sandwich].

(2) a. [How proud of what] was John?
b. [of what] [how proud __] was John?
c. [how proud __] [of what] was John?

(3) a. [Ot kakvo] [kolko gord __] beshe Ivan ?
of what how proud was Ivan
'How proud of what was Ivan?'
b. [Ot koi strani] [po kolko studenta __] predstavi na Ivan ?
from which countries DIST how-many students you-introduced to Ivan
'How many students from which countries did you introduce to Ivan?'

(4) a. Vidja [studenti **[po matematika]** ot Bulgaria]
saw-2sg students of mathematics from Bulgaria
'You saw students of mathematics from Bulgaria'
b.* Vidja [**po matematika**] [studenti __ ot Bulgaria]
c.* Vidja [studenti __ ot Bulgaria] **[po matematika]**

(5) a.* [Kolko studenti **[po kakvo]** ot Bulgaria] vidja?
how-many students of what from Bulgaria saw-2sg
'How many students of what from Bulgaria did you see?'
b. **[po kakvo]** [kolko studenti __ ot Bulgaria] vidja?
c. [Kolko studenti __ ot Bulgaria] **[po kakvo]** vidja?

(6) [Kolko studenti __] se opitvash da razberesh [[ot koi strani] e ubil Ivan]?
how-many students you-try to find-out from which countries AUX killed Ivan
'[How many students __] are you trying to find out [from which countries] Ivan killed?'

(7) a. Koj [ot kakvo] beLAe gord?
who of what was proud
b. *[Ot kakvo] koj beLAe gord?

(8) a. Koj [kolko gord ot tova] beþe?
who how proud of this was
b. *[kolko gord ot tova] koj beLAe?

(9) a. [Ot kakvo] [kolko gord __] beLAe Ivan __ ?
of what how proud was Ivan
'How proud of what was Ivan?'
b. [Kolko gord __][ot kakvo] beLAe Ivan __ ?

(10) a. path
The path between A and B is the set of nodes X such that A c-commands X and X dominates B
b. Shortest
The relation between A and B obeys Shortest iff there is a path P between A and B such that for any C, C not equal to B, P is a subset of the path P' between A and G.

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