## The Internal Composition of Modified Concealed Questions

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**1. Introduction:** In this paper, I argue for a novel analysis of modified concealed questions (MCQs) largely based on Nathan (2005). Concealed questions are determiner phrases (DPs) that give rise to a question-like meaning when embedded under some question-embedding verbs. I look specifically at modified concealed questions, which I argue have underlying internally-headed syntax, a fact which is not predicted by any current analysis. To account for this, I propose a covert concealed question operator as a complex covert *wh*-determiner. As well as correctly predicting the syntactic facts, this account retains the explanatory power of Nathan (2005) concerning the distribution of MCQs, and captures additional facts, including the unavailability of "multiple-*wh*" concealed questions and the availability of pair-list readings.

**2. Modified Concealed Questions**: MCQs are DPs that, when embedded under some question-taking verbs, (1)a, give rise to a meaning very similar to an embedded questions, (1)b.

- (1)a. I know the book that John read this summer.
  - b. I know which book John read this summer.
  - c.\*I know the book.

Observe that in order to successfully embed under a question-taking verb, the head DP must be modified by a relative clause (or similar modifier), (1)c. This observation lead Nathan (2005) to argue that the relative clause must host the operator that gives the DP its question-like semantics, as any operator that combines directly with the DP would not be sensitive to the difference between a bare and modified noun. Specifically, Nathan argues that a standard relative clause can have two denotations, one which modifies an NP, and one which gives rise to a set of propositions, resulting in the basis for a concealed question denotation:

(2)[[that John read this summer]] =

- a.  $\lambda x_e$ . John read x this summer
- b.  $\lambda P_{(s,et)}$ .  $\lambda p_{(st)}$ .  $[\exists x_e . p = \lambda w . [P(w)(x) \& John read x this summer in w]]$  CQ modifier

DP modifier

To derive the correct meaning for (2)b, Nathan assumes a type-shifting operator that combines first with a relative clause and then an NP, mapping two properties into a set of propositions, (3).

(3)  $[[Op_{CQ}]] = \lambda Q_{s,et} \cdot \lambda P_{s,et} \cdot \lambda p_{st} \cdot [[\exists x_e \cdot p = \lambda w \cdot [P(w)(x) \& Q(w)(x)]] \qquad \langle \langle se, t \rangle, \langle set, \langle st, t \rangle \rangle \rangle$ 

**3.** The Syntax of MCQs: A compositional analysis of MCQs using this operator makes a strong syntactic prediction: any MCQ must be an externally headed relative clause, (4).



An internally-headed syntax is not available: the operator cannot combine above the CQ level, as it would lose the sensitivity to modified versus non-modified NPs, (5)b, but also cannot intervene in the structure and be abstracted over, (which an internally headed relative clause would require), as the existential binding introduced by  $Op_{CQ}$  would apply before abstraction, and render  $\lambda$ -operator above  $OP_{CQ}$  vacuous.

(5)a.  $[VP know [DP the [CQ book [Op_{CQ}-\exists x [CP \lambda x John read x]]]]$ b. # $[VP know [DP the [Op_{CQ}-\exists x [CQ book [CP \lambda x John read x]]]]$ c. \* $[VP know [DP the [CQ book [\lambda x Op_{CQ}-\exists x [CP John read x]]]]$ external head, high  $Op_{CQ}$ \*internal head, low  $Op_{CQ}$ 

This prediction, however, is not borne out: MCQs seem to be necessarily internally headed. Using a series of diagnostics based on Hulsey&Sauerland (2006), Harris (2008), I show that MCQs, unlike their counter-part relative clauses, have a syntax that allows only an internal copy of the head, which originates from a lower position in the structure (e.g. raising relative clauses, *wh*-questions), (6)a, and cannot accommodate an external copy of the head, (6)b.

(6)a.	Internally headed:	$\dots$ [DP the [CP book1 that John read $\langle book \rangle_1$ ]].

b. Externally headed:  $\dots$  [DP the [NP book [CP book4 that John read <book>1]]].

In (7)-(9), I illustrate some of these diagnostics. Condition A violations are argued to indicate a necessarily internally-headed structure. The contrast between the relative clause, (7)a, and the concealed question, (7)b, indicates that unlike standard relative clauses, MCQs cannot be externally headed. Similarly, extraposition is argued to be compatible only with an externally headed structure; the contrast in (8) shows that while standard RCs can be externally headed, and therefore accommodate extraposition, MCQs cannot. Likewise, a condition C violation indicates an internally-headed structure, and the contrast in (9) supports the conclusion that MCQs (unlike the surface-identical relative clauses) cannot have an external head. I will present additional tests (e.g. idiomatic interpretation, and variable binding) supporting this conclusion.

<ul><li>(7)a. Every boy likes the picture of himself<sub>i</sub> that Mary has in her office</li><li>b. *Every boy is curious as to the picture of himself<sub>i</sub> that Mary has in her office</li></ul>	RC CQ
<ul><li>(8)a. Mary sold the book yesterday that John read</li><li>b. *Mary was curious as to the book yesterday that John read</li></ul>	RC CQ
(9)a. Mary sold the picture of John <sub>1</sub> that he <sub>1</sub> likes	RC
b. *Mary is curious as the picture of John <sub>1</sub> he <sub>1</sub> likes	CQ

**4.** A Modified Account: In order to account for the syntax of modified concealed questions, I propose a covert *wh*-determiner based on Nathan's type-shifting operator, (10), which combines first with (the *in-situ*) NP, which then moves to the specifier of CP, (11).

 $(10) [[Wh_{CQ}]] = \lambda Q_{s,et}. \ \lambda P_{s,et}. \ \lambda p_{st}. [[\exists x_e . p = \lambda w . [P(w)(x) \& Q(w)(x)]] \qquad \langle \langle se, t \rangle, \langle set, \langle st, t \rangle \rangle \rangle$ 

This structure correctly predicts the syntactic facts described in the last section: the  $NP_{CQ}$  originates inside the relative clause and raises. This movement is independently justified by a type mismatch resolution (c.f. quantifier raising to resolve the problem of a quantifier in object position), creating a semantically interpretable structure. Moreover, this structure is not compositionally compatible with a higher copy of the host NP, correctly predicting the modified concealed questions can never have an external head.

This account gives an identical external semantics for MCQs as Nathan (2005), retaining the explanatory power of the original proposal. Moreover, I will argue that this account, unlike the account put forth in Nathan (2005), provides the necessary ingredients to explain the basic similarities to embedded questions, including the availability of genuine pair-list readings, (12), and the differences, including the unacceptability of embedded *wh*-words, (13).

- (12) I am curious as to the woman that every man loves.
  - a. Every man loves Marilyn Monroeb. John loves Mary, Bill loves Sue, and Dave loves Kate

Single Individual Pair-List

- (13) a. \*Mary knows the boy which girl kissed
  - b. \*Mary knows the boy who kissed which girl

**5.** Conclusion: In this paper, I argue that modified concealed questions are necessarily internally headed, a fact that no current analysis predicts. I argue for an amended version of Nathan (2005) in which the concealed question operator acts as a complex covert *wh*-determiner. This account correctly predicts the newly observed syntactic facts and captures the distributional facts of MCQs, while also providing the necessary structure to account for internal properties of MCQ, including the unavailability of an embedded *wh*-word and availability of pair-list readings.