Clausal Equations (A Note on the Connectivity Problem)

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Abstract: According to a variety of tests, *What John likes is himself* displays the same c-command relations as *John likes himself*. But none of these relations appears to hold on the surface; this is the 'connectivity problem'. *Revisionists* maintain that the problematic examples are identity sentences with no hidden structure, but that none of our c-command tests is infallible. *Conservatives* claim that our c-command tests are reliable, but that the clause *John likes himself* is indeed present at some level of representation. Siding with the Conservatives, we follow Ross's original insight and suggest that connectivity sentences equate a concealed question with an elided answer: *[What John likes]= [~~John likes~~ himself]*. New arguments are given for each component of the analysis, and it is shown that connectivity effects are obviated when the elements that are equated are referential rather than clausal. The correct truth-conditions are derived from the semantics of identity, together with Groenendijk & Stokhof's semantics for questions. The analysis is then extended to cases of DP connectivity, such as *His worry is himself,* by suggesting that semantically dyadic nouns have an additional argument position, yielding the representation: *[?x his [worry x]]=[~~his [worry~~ himself]]*. Finally it is shown that recent objections based on 'anti-connectivity' effects misfire, because the same facts hold of question-answer pairs, as is expected on the present approach.

0   Introduction

The riddle of Pseudocleft Connectivity[1], which has exercised linguists for the last thirty years (see Akmajian 1970, Ross 1972, Higgins 1976), has been the object of renewed attention in the recent past (Guéron 1992, Heycock & Kroch 1999, Sharvit 1999, Den Dikken, et al. 2000, and Ross 2000). The reason is probably that the problem can be seen as foundational, since one side of the debate (one I will oppose) maintains that the relevant facts argue for a revision of the very bases of syntactic theory. Briefly, the initial puzzle was that, according to a variety of syntactic tests, a sentence like (1)a should display the same c-command relations as the 'connected' sentence in (1)b[2]:

(1)   a. What John likes is himself

      b. John likes himself.

Principle A of the Binding Theory states that 'himself' in (1)a should be c-commanded locally by 'John', just as it is in (1)b. The problem is that this does not appear to be the case, at least if (1)a has a structure similar to (2):

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[1] Also called 'connectedness'. I use the term 'connectivity' to avoid confusion with an unrelated proposal by R. Kayne.

[2] The statement of the puzzle will be refined below, especially when we discuss (a) connectivity effects with noun phrases, and (b) anti-connectivity.

(2)

what ... is ... John likes t ... himself
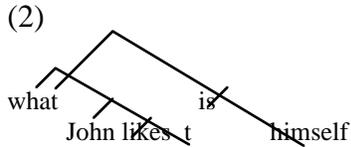
Thus the problem is that there is a discrepancy between the apparent structure of (1)a and the structure it *should* have according to various c-command tests - in fact, according to *all* of the syntactician's standard c-command tests. For simplicity, I will call 'connectivity sentence' any copular sentence that exhibits these properties (thus I will assume that, by definition, *all* c-command tests converge in this way in a 'connectivity' sentence)[3].

Two main lines of research have been explored so far: the *revisionist* approach (Jacobson 1994, Sharvit 1999, Cecchetto 2000, 2001) suggests that (1)a is a simple identity sentence, and that its apparent structure is the real one. The connectivity puzzle simply shows that *none of our c-command tests is infallible.* This, of course, requires a new account of binding and scope, one that does not always depend on c-command - hence a far-reaching revision of the foundations of the field. By contrast, the *conservative* approach retains at least some of our c-command tests, but argues that despite appearances the sentence in (1)a *does* contain, at some level of representation, a connected clause like (1)b. Among conservative approaches, the 'Question in Disguise Theory'[4] argues that (1)a is a question-answer pair, where part of the answer is elided (Ross 1972, 1985, 1997, Schlenker 1998, Den Dikken et al. 2000):

(3)   [What John likes __] is [John likes himself].

I provide new arguments (partly from French) in favor of a conservative approach along the lines of the Question in Disguise Theory. However I disagree with other proponents of the Question in Disguise theory such as Den Dikken et al. 2000 in maintaining (as Revisionists do) that connectivity sentences are a variety of identity sentences. Thus I argue that in a connectivity sentence the verb *be* has the meaning of identity, but that the elements that are equated are a question and an answer, rather than referential elements or other higher-order semantic objects. In other words, on the present theory a connectivity sentence is an equation of two clauses: a concealed question and an elided answer.

There are two main challenges for this theory. The first is to derive the semantics of the construction. In classic accounts such as Hamblin 1973 or Karttunen 1977 a question is

analyzed as a set of (true or possible) answers. But this immediately entails that a question could not be equated to an answer without yielding a type mismatch. However, the situation is different on Groenendijk & Stokhof's theory (e.g. Groenendijk et al. 1997), whose claim is precisely that the extension of a question Q is simply the intension of the unique exhaustive answer to Q. Thus a question *can* be equated with an answer; I show that this derives the right truth-conditions for our construction. The second challenge is to extend the Question in Disguise Theory to cases of DP connectivity, as in (4):

(4)   His$_i$ worry is himself$_i$

Principle A suggests that 'his' c-commands 'himself' locally, something which is not apparent on the surface. Accordingly, I extend the analysis to DPs, and argue that *whenever connectivity effects arise the DP has an additional argument position and can be interpreted as a clause*[5]. Thus (4) is given the analysis in (5), where a concealed question is equated with an elided answer ('?x' is the question operator, and 'worry' is analyzed as a dyadic predicate):

(5)   ?x [his [worry x]] = [~~his~~ [~~worry~~ himself]]

The paper is organized as follows. First, I lay out the major challenges for the Question in Disguise theory and its rivals. Second, I give new arguments to motivate each component of the proposed analysis: the pre-copular element is a question, the post-copular is an elided answer, and *be* means identity. Third, I show that the semantics of the construction can be derived from Groenendijk & Stokhof's analysis of questions. Fourth, the analysis is extended to cases of DP connectivity. Finally, I review cases of 'anti-connectivity' used against the present theory by proponents of the revisionist approach, and show that despite appearances these facts *strengthen* the empirical basis of the Question in Disguise theory.

1   Revisionist and Conservative Approaches

1.1   The initial generalization: Pseudocleft Connectivity

The initial generalization shows that all standard c-command tests yield the same results with pseudoclefts and with their 'connected' counterparts. (The following English facts can be replicated in French, with the proviso that the pre-copular element must systematically be left-dislocated and followed by 'ça', a fact which is discussed below.)

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[3] The term 'specificational sentences' has also been used to refer to such examples, at least by those theorists who believe (as I do) that connectivity can arise if and only if a copular sentence is 'specificational'. But since the latter term is more theory-laden, I mostly avoid it in what follows.
[4] The term is introduced in Sharvit 1999.

(6)   Bound Variable Connectivity

  a. What [no student]$_i$ enjoys__ is his$_i$ finals   (Sharvit 1999, (1b))

  b. [No student]$_i$ enjoy his$_i$ finals

(7)   Opacity

  a. What John seeks __ is a unicorn   (Den Dikken et al. 2000, (5b))

  b. John seeks a unicorn

(8)   NPI licensing

  a. What John didn't buy __ was any books   (Sharvit 1999, (7))

  b. John didn't buy any books

(9)   Conditions A, B and C   (Sharvit 1999, (2))

  a. What he$_i$ is __ is proud of himself$_{i/*j}$ / him$_{*i, j}$ / John$_{*i, j}$

  b. He$_i$ is proud of himself$_{i/*j}$ / him$_{*i, j}$ / John$_{*i, j}$

The next observation, which has become standard, is that the whole range of connectivity effects holds *only* in case the post-copular element is read as non-predicational. Thus no binding-theoretic connectivity effects arise in the following examples[6]:

(10) a. What John$_i$ likes __ is important to him$_i$ / *himself$_i$

  b. What he$_i$ likes __ is important to John$_i$

It should be noted that not all standard tests are necessarily good c-command tests. Thus Jacobson 1994 and Sharvit 1999 argue convincingly that pronouns may sometimes be bound without c-command (the following is from Sharvit 1999, (19))

(11)   a. The picture of himself that every student bought was a nuisance to him

  b.[∀x: x a student] (the picture of x that x a bought was a nuisance to x)

Although (11)a. is clearly predicational, the quantifier 'every student' is allowed to bind outside of the relative clause. This, however, could weaken the initial generalization only if

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[5] Although there is no 'connected' variant of the sentence in this case, I will still call examples such as (4) 'connectivity sentences', following in this a terminological move made in Sharvit 1999.

[6] Occasionally the presence or absence of a connectivity effect can be used to disambiguate a sentence, as is the case in this (famous) minimal pair (Higgins 1976):

 (i)   a. What John$_i$ is is important to himself$_i$ => John is important to himself / self-important

        b. What John$_i$ is is important to him$_i$ => John's function (e.g. being director) is important to John

While b. predicates a certain property of the thing that John is, a. *equates* what John is with the property [λx x is important to x]. The semantic difference is reflected in the presence or absence of a connectivity effect, which is of course one of the main facts to be explained.

all c-command tests could be dismissed in this fashion. But if such is not the case, all we can conclude is that variable-binding is not a good test for c-command, which still leaves us with several reliable tests - and an independent problem to solve in specificational sentences[7].

1.2 Previous approaches: Revisionist vs. Conservative accounts

There are two ways to resolve the contradiction between the appearance of connectivity sentences and the verdict of the c-command tests: by abandoning the tests, or by revising the structure of the problematic sentences.

1.2.1 Revisionist accounts

A *Revisionist* wishes to abandon the tests. Her contention is that what you see in (1)a is what you get in the syntax. The reason we had a problem in the first place, the Revisionist will claim, was that we wrongly assumed that, say, Condition A really *is* a test for c-command. While it may be one in simple cases, this is not in general true. The Revisionist's advantage is that she keeps syntactic abstraction to a minimum. But her burden is that she has to re-analyze each and every one of the syntactician's c-command tests to show that they are *not* c-command tests after all, at least in the case of specificational pseudoclefts. In Jacobson 1994 and Sharvit 1999 this enterprise is pursued with an elaborate account of Binding, Scope and NPI licensing which involves a higher-order semantics rather than a structural condition like c-command. Accordingly, this line of research has often been called the 'semantic' approach to the Connectivity problem. Clearly, for the semantic approach to be completely successful the theory must show that each modification of the standard syntactic theory is motivated *independently* of the facts to be explained here (or else the account will be stipulative, at least to some extent).

In a nutshell, Sharvit's bold and highly interesting approach has the following logic: 1. First, she observes that some system must be posited to allow variables to be bound without appeal to c-command (see (11) above). She resorts to quantification over functions to do so. This mechanism can then be extended to the bound variable example in (6), which is now taken to equate a function f from students to things that they like with a function that associates to each student his finals. Simplifying somewhat, the result is as follows:

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[7] I set aside in what follows Den Dikken et al.'s observation that NPI licensing does not always pattern with other c-command tests. Their generalization is that NPI licensing systematically *fails* in English whenever the order of the elements is reversed in a standard connectivity sentence; all other c-command tests, by contrast, yield the same results as in the standard case. See Appendix II for further remarks on Den Dikken et al. 2000.

(12) a. What [no student]$_i$ enjoys __ is his$_i$ finals

b. [ɿf: f is a natural function & [no x: x a student] x enjoys f(x)] = [λx the finals of x]

where ɿ is the definite description operator, properly defined[8].

Opacity connectivity can be analyzed in similar fashion by making the functions intensional.

2. Second, Sharvit resorts to Reinhart's theory of binding, based on the idea that Condition C is a reflex of the systematic preference for bound readings over accidental coreference. Given the account of bound variable readings without c-command in 1., Reinhart's competition mechanism directly yields an account of Condition C effects.

3. Third, Sharvit gives a higher-order account of Condition A effects, which she sees as a morphological by-product of semantic reflexivization. Accordingly she analyzes (1a) as:

(13) a. What every man shaved __ was himself   (Sharvit 1999, (51a))

b. [ɿf: f is a natural function & [every x: x a man] x shaved f(x)] = [λx x]^9

Thus Sharvit assumes that a reflexive is always interpreted as an identity function, i.e. [λx x].

4. Fourth, Sharvit derives Condition B effects by postulating that morphological reflexivization is applied *whenever possible*. Thus Condition B effects are derived from 3. together with a principle of preference for reflexive marking over, so to speak, 'accidental reflexivization'.

5. Finally, Sharvit must account for the last test, NPI licensing. She postulates that *only* downward-entailingness is necessary to license an NPI. She further shows that the relevant contexts are indeed downward-entailing, which yields the desired results[10].

1.2.2 Conservative Accounts

The Jacobson/Sharvit approach to connectivity requires a complete re-analysis of the role of c-command in syntax. By contrast, the *conservative* approach (which is also called the 'syntactic' approach) leaves the sanctity of (at least some of) our c-command tests untouched, but claims that there is more to the structure of (1)a than meets the eye. Specifically, the

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[8] Here is Sharvit's formalism applied to our example (*Max* is a maximality operator):

(i)   Max (λg$_{<e, e>}$ [Nat'(g) & ∀x (student'(x) → ¬enjoy'(x, g(x)))]) = λy [Max (λz [finals (z, y)])])

[9] Sharvit's precise formulation is the following (her (51b):

(i)   Max (λg$_{<e, e>}$ [Nat'(g) & ∀x (man'(x) → shave'(x, g(x)))]) = λx x

[10] Den Dikken et al. 2000 suggest that Sharvit's approach might be correct, but only for their Type B pseudoclefts [=inverted pseudoclefts, which disallow full clauses and NPIs in the pre-copular position]. If one were to take this proposal seriously, it would be desirable that Sharvit's account should not extend to NPI licensing, since the crucial property of Type B pseudoclefts according to Den Dikken et al. 2000 is precisely that they do *not* license NPIs. Den Dikken et al.'s version of Sharvit would presumably postulate that downward-entailingness is not enough, and that c-command is in fact necessary to license NPIs.

Conservative's contention is that at some level of representation the sentence does indeed contain a connected clause similar to (1b). When one gets to the actual theories, this approach comes in two or three varieties (depending on how Heycock & Kroch's theory is classified):

a) The *reconstruction* approach claims that the connected sentence is reconstructed in Logical Form, as is illustrated below:

(14)   a. [What John likes __] is himself

   b. [What John likes himself] is himself

There is one obvious problem with this theory, which has been noted by a number of researchers: the movement/reconstruction that one has to postulate violates usual syntactic constraints, since in this case movement is not to a c-commanding position. In addition Den Dikken et al. 2000 observe that reconstruction theories fail to account for NPI licensing, which is known to require c-command at *S-structure* rather than at LF. The hypothesis is therefore difficult to maintain, although I refer the reader to the literature for more criticisms (and possibly defenses) of this approach (see Sharvit 1999 and Den Dikken et al. 2000).

b) Heycock & Kroch 1999 argue for a variant of the reconstruction approach, according to which the connected sentence does not arise, as other reconstruction processes do, at LF. Rather, the derivation of a connected sentence is claimed to be a post-LF process, which is licensed/triggered on semantic grounds. Thus they agree with the first step of Sharvit's analysis of 'What John likes is himself': connectivity sentences are a variety of identity sentences. But unlike Sharvit, who resorts to quantification over functions even in the simple cases, Heycock & Kroch 1999 postulate that the elements that get equated denote entities[11]. They further posit that, at some level of representation, a sentence involving a specificational pseudocleft gets transformed into a connected sentence by an operation called 'ι-conversion', which "eliminates the ι operator and substitutes the focus of the pseudocleft for the ι-bound variable", as shown below:

(15) $[\iota x_{<e>}:$ John likes $x_{<e>}] =$ himself **--ι-*conversion*-->**   John likes himself

The main problem with this approach is that, as the authors recognize, their main source of evidence for this additional level of syntactic representation lies in the phenomenon to be explained itself. In this sense the account is stipulative. Of course what is a stipulation at one

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[11] In the simple cases, that is. Since Heycock & Kroch 1999 assume (following Partee 1986) that *be* is cross-categorial, any two elements can be equated as long as their types match. For instance in 'What John is is proud of himself', the elements that are equated are of type <e, t>.

point may turn out to be a principle upon consideration of further data. But Heycock & Kroch have not yet shown that this is indeed the case.

c) The last type of conservative approach is the Question in Disguise Theory, originally due to Ross 1972 (see also Ross 2000, 2001, who credits Faraci 1971). The advantage of this approach is that it accounts straightforwardly for connectivity *without* postulating either an unmotivated sort of movement/reconstruction, or an additional level of syntactic representation. It also meets Den Dikken et al. 2000's requirement that the connected clause be present at S-structure so as to satisfy NPI licensing. In addition, Ross's approach is made particularly plausible by the existence of visible structures that are very similar to the one postulated in (16)b:

(16)   a. What I did then was call the grocer   (Ross (1972), (39a))

       b. What I did then was I called the grocer   (Ross (1972), (39b))

As D. Sportiche (p.c.) points out, Ross's examples are not only suggestive, but they also provide a conceptual argument against all competing accounts. *Every theory* must account for the existence of (16)b. Once this is done (and independently of *how* it is done), the Question in Disguise Theory only has to posit that ellipsis applies to part of the post-copular element in (16)b to yield (16)a, along lines which are independently motivated in question-answer pairs (see below). By contrast, any competing account will have to posit one type of mechanism for b. (call it M_b), and another one for a. (M_a). Of necessity, M_b will have to resemble Ross's account, since in this case the morphology tells us that the post-copular element is a full clause. By hypothesis M_a, which accounts for (16)a, is different from M_b. But M_b + Ellipsis *also* accounts for (16)a. As a consequence, two different mechanisms generate the same sentences, which obviously leads to considerable redundancy in the grammar[12]. Maybe such a redundancy is real, but this has to be shown.

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[12] Sharvit 1999 grants that the Question in Disguise theory might be necessary for a., but argues that it does not work in full generality: "As observed by Ross, some dialects of English actually admit a full sentence in the post-copular position of a specificational pseudocleft:

(71)   What John read __ was John read Huck Finn

Indeed, it may be true that for these cases we need something like the question analysis. But I do not think that we can extend it to all cases, especially not to specificational sentences with headed relatives, since here, a full sentence is not allowed on the surface:

 (72)   *The thing John is looking for __ is John is looking for a job and a girlfriend / John is looking for a job and John is looking for a girlfriend." [pp. 320–321]"

Sportiche's conceptual argument still holds, in my opinion. Since in some languages ellipsis in connectivity sentences is obligatory, whatever factor forces ellipsis in these cases might force it in (72) as well. Of course

Despite this conceptual advantage, the Question in Disguise Theory must settle several points. Briefly, the challenge is to explain *why connectivity sentences are expressed the way they are so as to produce the meanings that they do*. Each part of a connectivity sentence raises a particular question:

(i) How is the *form* of the pre-copular element to be explained? An English pseudocleft has the form of a question; but in other languages this is not the case, and yet connectivity effects do hold. (Izvorski 1997, Sharvit 1999, Cecchetto 2000, 2001). In addition, connectivity effects hold in English with plain noun phrases (Higgins 1976). I argue that quite generally and productively noun phrases can be interpreted as concealed questions in certain environments.

(ii) Why is the verb *be* used systematically in connectivity sentences? Den Dikken et al. 2000 argue that in these cases *be* expresses neither identity nor predication, but is simply an inflectional element that spells-out a functional projection which they call 'Topic Phrase'. By contrast, I suggest that in connectivity sentences *be* is used because it means identity.

(iii) Why is part of the answer optionally or obligatorily *deleted*, depending on the language and on the construction? Den Dikken et al. 2000 go a long way towards an explanation, although they admit that some details are still unclear. Independent principles should conspire to explain why and in which cases deletion is optional or obligatory in connectivity sentences. I show that the same patterns of ellipsis are displayed in connectivity sentences and in question-answer pairs.

(iv) Finally, how is the *meaning* of the whole sentence derived from the meaning of the parts discussed in (i)-(iii)? I show that the semantics follows if Groenendik & Stokhof's analysis of questions is adopted.

By way of summary, the following provides a classification of copular sentences and of the various analyses of the connectivity problem.

(17)   Typology of copular sentences and theories of connectivity

Type	Con-necti-vity?	1st element	be	2nd element	Main Features of the analysis
Predicational	No	What John likes is good for him			
		Entity	Ø	Predicate	
Plain Identity	No	(Mary thinks that)			
		John	is	Peter	
		Entity	=	Entity	

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everyone has to find out what this factor is - by no means an easy task [but see Den Dikken et al. 2000 for a line of explanation].

Specificational	Yes	What John likes	is	himself	
		?	?	?	
-Revisionists					• Sticks to appearances
Sharvit 1999		Function	=	Function	• Reanalyzes all c-command tests
-Conservatives					
Heycock/Kroch		Entity	=	Entity	Posits an additional level of syntax
Reconstruction		?	?	?	Posits a new variety of movement
Question in					• Must explain why the question & answer
Disguise I:Den		Question	'Top'	Answer	do not have their normal form
Dikken et al.					• Must explain why *be* is used
Question in					Must explain why the question & answer do
Disguise II		Question	=	Answer	not have their normal form

2 Motivating Each Component of the Analysis

We begin by motivating each component of the analysis. The first two subsections (the first element is question, the last element is an answer) are mostly directed against Sharvit 1999 and Heycock & Kroch 1999. The third subsection (*be* means identity) is directed against Den Dikken et al. 2000 and Moro 1997.

2.1 The first element is an indirect question

2.1.1 Ross's paradigm

When a full answer appears in the post-copular position of a connectivity sentence, as in (16)b, it is particularly plausible that the pre-copular element is a question. But what about cases in which a full answer does not appear? Ross 1985 argues that even then the pre-copular element should be analyzed as question rather than as a free relative; for there are striking similarities between the *restrictions* on embedded questions and on pseudoclefts (he attributes the observation to Faraci 1974):

(18)   a.   1. I know / *ate what else she cooked
                2. What (else) she is going to cook is spaghetti flambé
          b.   1. I knew / *ate what it was that she cooked
                2. What it was that she cooked was a stewed eel
          c.   1. I *know / ate whatever she cooked
                2. What(*ever) she cooked might not be stuffed peas

(18)a. and b. show that 'what else' and 'what it was that' are acceptable both in an embedded question an in a specificational pseudocleft, but not after 'eat', whose complement is a garden-variety free relative. The opposite pattern is found in (18)c with 'whatever' , which is acceptable in pseudoclefts and in embedded questions, but not after 'eat'. Thus pseudoclefts behave like questions and unlike free relatives, as the Question in Disguise Theory would

lead one to expect. Further arguments for this conclusion are provided in Den Dikken et al. 2000 (Section 4)[13].

2.1.2   Question anaphora

Obviously these are impressive similarities. However the point should be made stronger to show that *every* case of connectivity involves a concealed question, even when the morphology would seem to suggest *the opposite*. French is an interesting case in point, for the morphology suggests that in general questions *cannot* appear in connectivity sentences. Thus only 'ce que' ('it that') can introduce both an indirect question and a pseudocleft, while other *wh*-words cannot be used to introduce connectivity sentences:

(19)   a. Ce qu'il$_i$ aimait, c'était lui-même$_i$
            [it that he$_i$ liked]$_k$, it$_k$ was himself$_i$
            'What he liked was himself'
       b. *Qui il$_i$ aimait, c'était lui-même$_i$
            who he$_i$ liked]$_k$, it$_k$ was himself$_i$

 The challenge, then, is to show that even in French an element that can appear in the pre-copular position of a connectivity sentence is interpreted as a question. This can be done in an indirect way by resorting to question anaphora, as in the following paradigm:

(20)   a. Je me suis longtemps demandé [ce qu'il$_i$ aimait]$_k$, et j'ai finalement
            I me am   long   asked   [it that he$_i$ liked]$_k$, and I have finally
            'For a long time I have been wondering what he liked, and have finally
            appris que c$_k$'était lui-même$_i$/??lui$_i$/*l'imbécile$_i$/*Jean$_i$
            *learned that it$_k$ was himself$_i$ / ??him$_i$/*the idiot$_i$ /* Jean$_i$*
            learned that it was himself / him / the idiot / Jean'
       b. Ce qu' il$_i$ aimait, c'était lui-même$_i$/??lui$_i$/*l'imbécile$_i$/*Jean$_i$
            *[it that he$_i$ liked]$_k$, it$_k$ was himself$_i$ / ??him$_i$/*the idiot$_i$ /* Jean$_i$*
            'What he liked was himself / him / the idiot / Jean'
       c. Il$_i$ aimait lui-même[14]$_i$/??lui$_i$/*l'imbécile$_i$/*Jean$_i$
            *He$_i$ liked himself$_i$ / ??him$_i$/*the idiot$_i$ /* Jean$_i$*
            'He liked himself / him / the idiot / Jean'

(20)b is a connectivity sentence, as shown by the comparison with (20)c. (20)a is obtained by putting the left-dislocated element of (20)b in an environment where it is *forced* to be interpreted as an indirect question because it appears under the verb *se demander* (to

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[13] The paradigm in (18) should be refined in several respects: (i) O. Percus (p.c.) informs me that the generalization is not entirely correct, and that furthermore this fact was noted in Faraci 1974. Percus notes that for some speakers, "what else" pseudoclefts are bad, while "what else" embedded questions are fine". (ii) An anonymous reviewer notes that 'ever' can appear in some free relatives, e.g. 'I'll eat whatever else you cook for me (... but I won't eat that)'. I leave this for future research.

[14] 'lui-même' must be strongly focused. Otherwise the clitic 'se' must be included: 'Il s'aimait lui-même'.

wonder). Exactly the same connectivity effects arise, but now coindexation between *ça* and the embedded question ascertains that the pre-copular element is indeed a question[15].

Additional evidence that the pre-copular element is propositional is provided by the observation that 'ça' (or rather 'c'', its phonologically elided form) is obligatory in sentences that yield connectivity effects, just as it is with identity sentences that involve *non-individual-denoting expressions:*

(21)   a. Ce qu'il$_i$ aimait, c'était lui-même$_i$
            It that he liked, it was him-self
          'What he liked was himself'
        b. ??Ce qu'il$_i$ aimait était lui-même$_i$
            It that he like   was him-self

(22)   a. ?? Être vieux est être oublié
            To-be old is to-be forgotten
        b. Être vieux, c'est être oublié
            To-be old, it is to-be forgotten
          'To be old is to be forgotten'
        c. Être vieux est ennuyeux
            To-be old is boring
          'To be old is boring'

The generalization seems to be that non-individual denoting elements that appear in the first position of an identity sentence must be left-dislocated and followed by *ça*. The same fact holds of connectivity sentences, which suggests that their first element is also non-individual denoting, as in (21). This can be explained if, as we claim, the first element of a connectivity sentence is systematically a concealed question.

2.1.3   Connectivity sentences with full (embedded) questions

An additional observation is that every indirect question in French can in fact yield connectivity effects, albeit in a slightly different construction. Replacing the copula with *voilà* ('here-is', without a copula) and reversing the order of elements, we obtain sentences that seem to have a closely related semantics: the first element is equated to the last one.

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[15] Interestingly this pattern can also arise when 'ça' is coindexed with an indirect question which could *not* appear in the pre-copular position of a connectivity sentence, as is the case with 'qui il aimait' in (i) (compare with (20)b):
(i)   Je me suis longtemps demandé [qui il$_i$ aimait]$_k$, et j'ai finalement
            I me am   long   asked   [who he$_i$ liked]$_k$, and I have finally
            'For a long time I have been wondering who he liked, and have finally
            appris que c$_k$'était lui-même$_i$/??lui$_i$/*l'imbécile$_i$/*Jean$_i$
            *learned that it was himself$_i$ / ??him$_i$/*the idiot$_i$ /* Jean$_i$*
            learned that it was himself / him / the idiot / Jean'
This suggests that the reason standard embedded questions are blocked in specificational sentences is morpho-syntactic, not semantic (more on this below).

Connectivity still holds, even though the question-like element could not appear in a copular sentence:

(23)   *XP voilà YP* (with XP=concealed question; YP=wh CP)
      a. Contre lui-même$_i$/??lui$_i$/*Jean$_i$ - voilà contre qui il$_i$ a lutté
       Against himself$_i$ / him$_i$ / *Jean$_i$ - here-is against whom has fought*
      b.   (?) De faire le moindre mal à quiconque - voilà ce que Jean a refusé
        To do the slightest harm to anyone - here-is it that Jean has refused
      c. Avec sa$_i$ voiture/*la voiture de Jean$_i$ - voilà comment il est venu
       With his$_i$ car / the car of Jean$_i$ - here-is how he$_i$ is come*

These examples are similar to standard connectivity sentences, except that (i) the order of the elements has been reversed (the answer comes first, the question comes last), and (ii) the verb *be* does not appear at all, and is replaced with 'voilà'. We may further observe that the question is *embedded* rather than direct, since *ce que* and not *qu'est-ce que* is used as an inanimate *wh*-object (in my dialect 'qu'est-ce que' is degraded to introduce embedded questions; and 'ce que' can only introduce an indirect question):

(24)   a. Sa$_i$ voiture/*la voiture de Jean$_i$, voilà ce qu'il a vendu /?? qu'est-ce qu'il a vendu
        His car / the car of Jean, here-is it that he has sold / ??what is it that he has sold
      b. Je me demande ce qu'il a vendu / ?qu'est-ce qu'il a vendu
       I to-me ask it that he has sold / ?what is it that he has sold
      c. Qu'est-ce qu'il a vendu? / *Ce qu'il a vendu? (possible only on an echo reading)
       *What is-it that he has sold? *It that he has sold?*

2.2   The last element is an elided answer

     We now turn to the last element, and attempt to show that it is in fact an elided answer.

2.2.1   Propositional anaphora

     Ross 1972 gave examples in which a full answer could appear overtly (e.g. (16) above). But in French this is not possible (with one exception discussed below). Still, we can replicate Ross's argument by resorting once again to propositional anaphora. Instead of directly equating the pre-copular element with a clause, we equate it with a deictic DP which itself refers to a proposition:

(25)   a. Ce qu'il$_i$ est, c'est ceci: (il est) fier de lui$_i$ / *fier de Jean$_i$
        It that he is , it is this:(he is) proud of him(self) / proud of Jean
       'What he is is this: his is proud of himself / proud of Jean'
      b. Ce qu'il$_i$ est, c'est fier de lui$_i$ / *fier de Jean$_i$
       It that he is, it is proud of him(self) / proud of Jean
       'What he is is proud of himself / proud of Jean'
      a'. Ce qu'il refuse, c'est ceci: (il refuse de) faire le moindre mal à quiconque
       It that he refuses, it is this: (he refuses to) do the slightest harm to anyone
     'What he refuses is this: to cause any harm to anyone'
      b'. Ce qu'il refuse, c'est de faire le moindre mal à quiconque
       It that he refuses, it is to do the slightest harm to anyone

'What he refuses is to cause any harm to anyone'

(25)a and a' have the same semantics as b and b', but unlike the latter they wear their clausal nature on their sleeves, so to speak. This shows that the semantic component can interpret copular sentences whose post-copular element is propositional. (In addition, we note that in a. and a'. the last clause does not have to be elided but can be; this is even the most natural option, which makes these sentences particularly similar to standard connectivity sentences).

2.2.2   Degrees of ellipsis

Even without resorting to propositional anaphora, the clausal nature of the post-copular element can be demonstrated in special cases which involve various degrees of ellipsis, and are particularly problematic for proponents of the revisionist approach. The general idea is that every degree of ellipsis is represented in French. Although the conditions that make ellipsis obligatory are ill-understood, a theory that denies that ellipsis is possible at all is bound to make incorrect predictions.

- *No ellipsis*

Consider first the following French sentences:

(26)   a. Ce que j'ai fait,   c'est fermé la fenêtre
    It that I have done, it is closed the window
    'What I did was close the window'
   b. Ce que j'ai fait,   c'est que j'ai   fermé la fenêtre
    It that I have done, it is that I have closed the window
    'What I did was I opened the window'

On Sharvit's analysis, (26)a. could only be given one of the analyses below:

(27)   a. $[\iota x_{<e,\,t>}: \text{I did } x_{<e,\,t>}] = [\lambda x_{<e>}\ x_{<e>} \text{ closes the window}]$

  b. $[\iota f_{<e,\,<e,\,t>>}: f_{<e,\,<e,\,t>>}\text{is a natural function \& I did } f_{<e,\,<e,\,t>>}(I)] = [\lambda x_{<e>} \text{ close the window}]$

But neither analysis will work for (26)b., where the post-copular element is clearly propositional, and hence cannot be equated with an element of the predicate type in (27)a. or of the higher functional type in (27)b. On the Question in Disguise theory, on the other hand, the case is unproblematic. Both (26)a. and (26)b. involve a concealed question and an elided answer, with the sole difference that ellipsis has applied to a larger chunk in a. than in b. Presumably the reason a full clause can appear in b. is that it does not lead to a repetition of the VP found in the pre-copular part. This correctly predicts the following contrast:

(28)   a. Ce que j'ai fermé, c'est la fenêtre
   It that I have closed, it is the window
   'What I closed was the window'
   b. *Ce que j'ai fermé, c'est (que) j'ai fermé la fenêtre.
   It that I have closed, it is (that) I have closed the window

(Conditions on ellipsis are studied in far greater detail in Den Dikken et al. 2000.)

- *Partial ellipsis*

The same type of argument can be extended to some cases in which partial ellipsis is obligatory, although the result is still uninterpretable from a Revisionist's standpoint. Consider the following:

(29)   a. Ce contre quoi il$_i$ a lutté, c'est sa$_i$ patrie / la patrie de Jean$_{*i, k}$
         It against which he has fought, it is his motherland / the motherland of John
          'What he fought against was his motherland/John's motherland'
        b. *Ce contre quoi il$_i$ a lutté, c'est (qu')il a lutté contre la patrie de Jean$_{i, k}$
         It against which he$_i$ has fought, it is (that) he$_i$ has fought against the motherland of Jean
        c. Ce contre quoi il$_i$ a lutté, c'est contre sa$_i$ patrie / contre la patrie de Jean$_{*i, k}$
         It against which he$_i$ has fought, it is against his$_i$ motherland/against the motherland of J$_i$
          'What he fought against was his motherland/John's motherland'

Again, Sharvit would presumaby offer the following analysis for a. (because the possessive pronoun is bound, quantification over functions has to be used in this case):

(30)   [$\iota f_{<e, e>}$: $f_{<e, e>}$ is a natural function & I fought against $f_{<e, e>}$(I)] = [$\lambda x_{<e>}$ $x_{<e>}$'s motherland]

But this solution will not extend to c., which is also fairly natural in French[16], for whatever the type of 'against his motherland' (presumably, <e, t>), it is not of type <e>, and thus could not yield a function of the right type. By contrast, on the Question in Disguise theory the solution is straightforward: a. and b. display different degrees of ellipsis, both of which are also exemplified in question-answer pairs[17]:

(31)   Contre quoi a-t-il lutté?   -^{Ok}Sa patrie / -^{Ok}Contre sa patrie
        Against what has he fought?   -His motherland / -Against his motherland
         'What did he fight against?'   -His motherland / -Against his motherland

To summarize, the repetition of a preposition, just as the appearance of a full clause in the post-copular position, are strong morpho-syntactic arguments against Sharvit's theory. By

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[16] The relevant facts can be replicated in English when the pre-copular element is a CP, but apparently not when it is a DP:

(i)   a. What he$_i$ fought against was against John$_{*i, k}$'s motherland
          b. What he$_i$ fought against was John$_{*i, k}$'s motherland

(ii)   a. *?The country I fought against was against Russia
          b. The country I fought against was Russia

I do not know why repetition of the preposition is blocked in the DP case.

[17] NPI licensing is somewhat puzzling in these environments, since (to my ear) it appears to *require* a repetition of the preposition:

(i)   a. *? Ce contre quoi il a refusé de lutter, c'est la moindre infraction
             It against which he has refused to fight, it is the slightest violation
          b. Ce contre quoi il a refusé de lutter, c'est contre la moindre infraction
         It against which he has refused to fight, it is against the slightest violation

I do not have an explanation for this fact.

contrast, they are unsurprising on the Question in Disguise theory.

- *Obligatory ellipsis*

One apparent weakness of the Question in Disguise theory is that it fails to predict that ellipsis of the answer is in many cases and languages *obligatory* in connectivity sentences, although it is only *optional* in question-answer pairs. I do not have an explanation for this fact (but see Den Dikken et al. 2000). However I do not think that it can be used to argue against the present approach, since *exactly the same patterns of ellipsis hold* whenever it is extremely plausible that a question is indeed equated with an answer, as in the following examples, already discussed under a different guise:

(32)   Je me suis longtemps demandé [ce qu'il$_i$ aimait]$_k$, et j'ai finalement
        I me am long   asked   [it that he$_i$ liked]$_k$, and I have finally
        'For a long time I have been wondering what he liked, and have finally
        appris que c$_k$'était lui-même$_i$/*qu'il s'aimait lui-même$_i$
        *learned that this$_k$ was himself$_i$ / *that he liked himself$_i$*
        learned that it was himself / *that he liked himself

On the Question in Disguise theory this sentence is unsurprising: an indirect question ('what he liked') is equated with an elided answer through the mediation of the anaphoric demonstrative 'this'. But if one wanted to deny that the Question in Disguise analysis holds of garden-variety pseudoclefts, one would still have to admit that in the relatively clear case of question-answer equation in (32) the *same* patterns of ellipsis hold as are posited for standard connectivity sentences on the present theory. Thus although the obligatoriness of ellipsis is still a mystery, it is one which we know to exist independently of the connectivity problem.

2.3   *Be* **means identity, but connectivity sentences do not equate referential elements**

Almost all the pieces of the puzzle are now in place. All we need to show is that the verb *be* in connectivity sentences has indeed the meaning of identity, and we will have what we need to derive the semantics of the construction.

2.3.1   Be *means identity*

Den Dikken et al. 2000 outline a version of the Question in Disguise theory in which *be* spells-out a 'Topic' head that marks the question-answer relation - a somewhat stipulative move, at least from a semantic standpoint (why should the question-answer relation be marked by a special head?). In this respect we side with the Revisionists, who assume that *be* has the meaning of identity. Without reviewing all the existing arguments (see Sharvit 1999

and Heycock & Kroch 1999), I would like to adduce additional evidence in favor of this conclusion. In a nutshell, connectivity does *not* require the presence of *be*, but can arise whenever the *semantics* of the construction is that of an equation. The observation was already made for English by Higgins 1976, and it can be replicated and generalized in the following French examples:

(33)   a. Il a refusé de causer la moindre souffrance
           He has refused to cause the slightest suffering
           'He refused to cause any suffering'
       b (De) causer la moindre souffrance, voilà ce qu'il a refusé
          (To) cause the slightest suffering, here-is it that he has refused
       c. (?) Ce qu'il a refusé, ça se réduit à ceci: causer la moindre souffrance
           It that he has refused, it itself reduces to this: cause the slightest suffering
           'What he refused reduces to this: to cause any suffering'
       d. (?)Ce qu'il a refusé, ça n'est pas autre chose que de causer la moindre souffrance
          It that he has refused, it NE is not another thing than to cause the slightest suffering

Voilà ('here-is'), *se réduit à* ('reduces to') and *n'est pas autre chose que* ('is nothing but') have a meaning which implies identity. Thus the generalization appears to be that connectivity effects can arise whenever the pre- and the post-copular elements are semantically equated. The same point can be made with the following English examples:

(34)   a. *His$_i$ problem is John$_i$'s arrogance.
       b. *His$_i$ problem lies in John$_i$'s arrogance.
       c. *His$_i$ problem reduces to John$_i$'s arrogance.
       d. His$_i$ problem caused John$_i$'s arrogance.

While (34)a-c entail that 'his problem' and 'John's arrogance' are in some sense identical, this is not the case in (34)d (a cause is not identical with its effect), which accounts for the contrast. This shows once more that the *be* that yields connectivity effects should be taken to be the *be* of identity.

2.3.2   No connectivity effects arise in identity sentences that equate two referential elements

Although connectivity sentences are a variety of identity sentences, they are crucially different from other identity sentences in that they equate a *question* and an *answer*. I now show that in identity sentences that equate referential terms, *connectivity effects systematically fail* (in Schlenker 1998 this was taken as an argument against competing accounts - incorrectly, since the latter can also handle this observation; see footnote 19).

The facts are clearest with DPs. In statements of mistaken identity, connectivity effects systematically disappear (the same facts hold in French):

(35) a. I thought that his$_i$ brother was John$_i$.
　　 b. *I thought that his$_i$ worry was John$_i$.
　　 a'. I knew that his$_i$ brother wasn't John$_i$
　　 [Context: Didn't you mistake John for his twin, Peter? No: ...]
　　 b'. *I knew that his$_i$ worry wasn't John$_i$

In this case it would not make much sense to read *his brother* as a concealed question (i.e. as *Who is John's brother?*), since given world knowledge it is clear that John could not be his own brother. As a result, only the 'mistaken identity reading' is salient even independently of the issue of connectivity. But it is easy to construct examples that can be read either as 'mistaken identity' sentences or as 'concealed question' sentences. In these cases the syntax can be used to disambiguate: if the connectivity effect is obviated, a 'mistaken identity' reading arises. Consider the following:

(36) [Mary is a defendant in a trial. Her lawyer, Ann, looks like Mary. Sam does not know that Ann is a lawyer.]
　　 a. Sam thinks that her lawyer is herself　　　=> no 'mistaken identity' reading
　　 b. Sam thinks that her lawyer is her　　　　　=> 'mistaken identity' reading
　　 a'. Sam knows that her lawyer isn't herself　　=> no 'mistaken identity' reading
　　 b'. Sam knows that her lawyer isn't her　　　　=> 'mistaken identity' reading

The interesting fact is that (36)a cannot be uttered to mean that Sam mistakes Mary's lawyer (=Ann) for Mary. By contrast, this is the most salient reading in (36)b. The latter would typically be uttered if Sam is acquainted with Mary's lawyer (=Ann) under some description α, and with Mary herself under some description β, and is willing to assent to: $\ulcorner\alpha=\beta\urcorner$. (Example: Sam saw Mary at a cocktail party; he also saw Ann talking to the judge. And he thinks: 'The woman I saw at the cocktail party is none other than the woman I saw talking to the judge'). This is *not* what (36)a means; (36)a does not require that Sam be acquainted with Mary's lawyer at all. All that is required is that he should assent to something like: 'Mary is representing herself'.

　　 Why should such contrasts hold? On the present proposal the syntactic part of the explanation is simple: the embedded clause in (36)a-a' has the structure in (37)a, where *her* c-commands *herself* locally. By contrast, (36)b is a 'standard' identity sentence, as represented in (37)b, where the post-copular *her* is not bound at all.

(37) a.

?x
her$_i$ is
lawyer x   ~~her$_i$~~
~~lawyer~~ herself$_i$

b.

[~~her$_i$~~ lawyer]$_k$
is   her$_i$
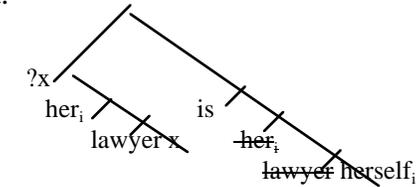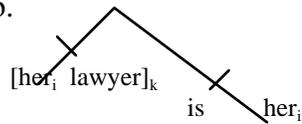
    This, however, does not derive the *semantic* difference between between (36)a and (36)b. And for good reason: (36) and (36)b are equivalent in unembedded contexts. This very equivalence (which will be derived in next Section) is of course what prompted many researchers to claim that there is simply no difference between connectivity sentences and standard identity sentences. So how can a semantic difference arise in *embedded* contexts? The key to the solution lies in the observation that (37)a and (37)b are *not* substitutable *salva veritate* when embedded under an attitude verb. This is because a referential term τ construed *De Re* in an attitude report makes a semantic contribution of its own - roughly, that the attitude holder is *acquainted* with the denotation of τ. No such contribution is made in (37)b, where *her$_i$ lawyer x* has the type of a proposition and thus is not referential at all. This will suffice to account for the contrast.

    Let us consider in greater detail the semantics of referential terms in attitude reports. The initial problem, which goes back to Quine 1956, was that both of the following may be true at the same time if Ralph is acquainted with Ortcutt under two different guises: Ralph believes, of Ortcutt (*qua* the man in the brown hat), that he is a spy. And he also believes, of Ortcutt (*qua* the man seen at the beach), that he is not a spy. But we would not want to infer from this that Ralph thinks that Ortcutt is and is not a spy, which would make him irrational. Kaplan 1969's solution was to assume that 'Ralph believes that Ortcutt is a spy' asserts that (i) Ralph is acquainted with Ortcutt under *some* description α (e.g. 'the man seen at the cocktail party'), and further that (ii) he would assent to: ⌜α is a spy⌝(e.g. 'The man seen at the cocktail party is a spy'). Ralph may also be acquainted with Ortcutt under some different description β (e.g. 'the man seen at the beach'), and he may assent to: ⌜β is not a spy⌝(e.g. 'The man seen at the beach is not a spy'). As long as α and β are distinct descriptions (as in our example), Ralph may hold both beliefs without thereby being irrational. In this analysis

De Re terms are replaced with variables over descriptions, yielding the following (where *R(α, Ortcutt, Ralph)* abbreviates: 'Ralph is acquainted with Ortcutt under the description α[18]):

(38)   a. Ralph believes that Ortcutt is a spy
       b. $\exists\alpha$ (R(α, Ortcutt, Ralph) & Ralph believes: $^{\ulcorner}$α is a spy$^{\urcorner}$)
       Ralph is acquainted with Ortcutt under some description α and believes: $^{\ulcorner}$α is a spy$^{\urcorner}$

Applied to (36)b, this yields the following analysis of 'Sam thinks that her lawyer is her' (we assume that [her_i lawyer]$_k$ is read De Re):

(39) $\exists\alpha \; \exists\beta$ (R(α,[her_i lawyer]$_k$, Sam) & R(β,her_i, Sam) & Sam thinks $^{\ulcorner}$α=β$^{\urcorner}$)
       Sam is acquainted with the lawyer under some description α, he is also acquainted with the lawyer under some (other) description β, and he believes: $^{\ulcorner}$α=β$^{\urcorner}$

Given Kaplan's analysis, the sentence now entails that Sam is acquainted with Mary's lawyer, Ann (this is because (39) entails $\exists\alpha R(\alpha,[her_i \text{ lawyer}]_k, Sam)$). No such requirement holds in (36)a because *her_i lawyer x* is not referential, and thus does not fall under Kaplan's analysis of referential terms. This accounts for the intuitive difference between the two cases.

The same observations carry over to cases of pseudocleft connectivity, although the facts are less clear (for reasons I do not understand). Consider the following:

(40)   [In a safari, Mary shot at some animal - and missed it. The animal ran away]
       a. Sam thinks that what Mary$_i$ shot at is herself$_i$ => no mistaken identity reading
       b. Sam thinks that what Mary$_i$ shot at is her$_i$ => mistaken identity reading
       c. Mary$_i$ shot at herself$_i$/*her$_i$

For (40)b to be true, Sam must be acquainted with the animal Mary shot at, and must mistake it for her, maybe because he is observing the scene from afar. Thus (40)b would be relatively felicitous if Sam, who was trying to follow Mary, suddenly starts going in the direction in which the animal just disappeared. I could explain his behavior by saying: 'Well, Sam thinks that what Mary shot at is her'. By contrast, if (40)a is uttered, there is no requirement that Sam be acquainted with the animal Mary shot at. Sam just thinks that Mary short herself, and does not mistake anything for anything else[19].

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[18] Kaplan 1969 gives a more precise definition: R(α, x, Ralph) ['α represents x to Ralph'] if and only if:
(i) α denotes x
(ii) α is a name of x for Ralph
(iii) α is sufficiently vivid

[19] Contrary to what was claimed in Schlenker 1998, these facts *can* be handled by competing theories. Consider first Heycock & Kroch's account. Recall their basic proposal: 'What John likes is himself' is transformed by 'ι-conversion' into: 'John likes himself', as represented in (15) (repeated here for convenience):
(i)[=(15)] What John likes is himself
a. [ι$x_{<e>}$: John likes $x_{<e>}$] = himself
b. => John likes himself

3   Semantics of the Construction

3.1 Outline of the general idea

I now outline a precise implementation of the proposal in terms of equations of clauses. Given the present analysis, *be* must mean identity, and the post-copular element must denote a proposition, which we equate to a set of possible worlds. In case the sentence was 'What John likes is ~~John likes~~ himself', this yields as a first approximation (to be refined):

(41)   [[John likes himself]]={w': John likes John in w'}

All that remains to be determined, then, is the semantic contribution of the pre-copular question. There are currently two main approaches to the semantics of questions.

(i) According to the Karttunen/Hamblin line, the denotation of a question is a set of true or possible answers, i.e. a set of propositions. From our perspective this yields an immediate problem, since a set of propositions cannot be equated to a proposition without creating a type mismatch. There are two potential solutions to this problem.

a. First, we could stipulate that an answerhood operator *Ans* is introduced in the logical form, roughly along the following lines:

(42)   a. What John likes is ~~John likes~~ himself
      b. Ans(What John likes)=~~John likes~~ himself
      'The unique exhaustive answer to 'What does John like?' is 'John likes himself''

What triggers this transformation is the entailment relation between a. and b. Heycock & Kroch could observe that Kaplan's semantics for Quantifying In makes (i)a and (i)b non-equivalent when they are embedded under an attitude operator. Consider the following variant:

(ii)   a. Sam thinks that what Mary shot/aimed at is her.
        a'. $\exists\alpha\,\exists\beta$ (R(α,[what Mary shot/aimed at $_k$, Sam) & R(β,Mary, Sam) & Sam thinks $\ulcorner\alpha=\beta\urcorner$
        b. Sam thinks that Mary shot/aimed at herself
        b'. $\exists\alpha$ (R(α,Mary, Sam) & Sam thinks $\ulcorner\alpha$ shot herself$\urcorner$)

It is clear that b'. isn't entailed by a'. This is, among others, because the predicate 'shot' has no choice but to be interpreted in the scope of the attitude operator in(ii)b, whereas it may be read as part of a De Re description in (ii)a. Thus if the computation of ι-conversion is allowed to be non-local, and to take into account the effects of Kaplan's analysis of Quantifying In, Heycock & Kroch can predict that connectivity effects should be obviated in attitude reports. In other words, if one is willing to countenance ι-conversion in the first place, the above facts can be explained without resorting to the Question in Disguise Theory. (I leave it open how Heycock & Kroch would account for unembedded examples, where connectivity can also be obviated under 'mistaken identity' readings.)

Consider now Sharvit's theory. Her analysis could go along the following lines, as suggested in her 1999 paper. The crucial point is that as soon as 'herself' in a. is interpreted as the identity function (type <e, e>), 'her lawyer' cannot be referential (type <e>), for this would yield a type-mismatch. Hence 'her lawyer' must be interpreted as referring to a natural function rather than to an entity. But this should block any 'mistaken identity' reading; in particular, Kaplan's recipe for Quantifying In should become inapplicable.

(iii)   a. Sam thinks that her lawyer is herself   => no 'mistaken identity' reading
        a'. ... [ιf: f is a natural function & f(Mary)=lawyer(Mary)] = [λx x]
        b. Sam thinks that her lawyer is her   => 'mistaken identity' reading

The Answerhood operator is thus used to solve the type mismatch and to yield the correct semantics. While such an operator is indeed used (in the meta-language) in the literature on questions (e.g. Heim 1994, Beck & Rullmann 1999), it is normally assumed that it is introduced by the lexical semantics of the embedding verb[20]. But there is no independent reason to assume that the semantics of *be* is defined in terms of the Answerhood operator, and thus this solution is stipulative.

b. We could assume instead that because of the type mismatch it is not the denotation of the question [[Q]](w), i.e. a set of propositions, that gets equated with the elided answer, but rather the conjunction of the propositions in [[Q]](w) (i.e. $\cap$[[Q]](w)). This solution, which solves the type mismatch problem, is implemented in Appendix I, with the surprising result that *modulo* a mild constraint on the structure of possible worlds it *does* yield the correct truth-conditions. But it is unclear why $\cap$[[Q]](w) rather than simply [[Q]](w) should be computed when a question appears in an identity sentence, and we are thus left with an unpleasant stipulation.

(ii) A more elegant solution is available if one adopts Groenendijk & Stokhof's semantics for questions, according to which the extension of a question is a proposition rather than a set of propositions. The type mismatch problem does not arise on this theory, and furthermore it can be shown that precisely the correct semantics can be predicted for the construction, as is done in the next two sub-sections. Of course there are other differences between the Groenendijk & Stokhof and the Karttunen/Hamblin approach to questions, and in the end the present theory should be assessed within this larger debate (for instance Heim 1994 and Beck & Rullmann 1999 argue that a version of the Karttunen approach can more readily account for the whole range of exhaustive readings of questions than the Groenendijk & Stokhof approach). The issue is not whether the present approach can be adapted to any theory of questions - it can, but the question is how many stipulations one needs to do so. I'd suggest that remarkably few are needed on the Groenendijk & Stokhof analysis.

3.2 Solution with a Groenendijk & Stokhof semantics

In Groenendijk and Stokhof's semantics, the denotation of a question [[Q]](w) is the unique exhaustive true answer to Q in the world w. For example, suppose that we are in a world where John likes Mary and nobody (or nothing) else. Then the exhaustive answer to

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[20] For instance Heim 1994 claims that the lexical semantics of 'know' must be defined in terms of this operator (for her, to know Q [e.g. to know *who left*] is to believe that the answer to Q is what it really is).

'What does John like' in our world is: 'John likes Mary' (and only Mary). And since a proposition is a set of possible worlds, we obtain the following value for the question:

(43)   Value of [[What does John like?]] at a world w such that John likes Mary and nothing else in w: [[what does John like?]](w) = {w': {x: John likes x in w'}={Mary}}

Now suppose that in our world w John likes John and nothing else; then clearly the value of 'What does John like' at w will now be that 'John likes John and nobody else' - in other words, the answer is whatever is true in the actual world:

(44)   Value of [[What does John like?]] at a world w such that John likes John and nothing else in w: [[what does John like?]](w) = {w': {x: John likes x in w'}={John}}

In general, then, the meaning of the question evaluated at *any* world w should be as follows:

(45)   [[What does John like?]](w) = {w': {x: John likes x in w'}={x: John likes x in w}}

We can now equate without any type-mismatch the extension of a question to the intension of its answer[21]:

(46)   Semantics for '[What John likes] is [John likes himself]' *(first attempt)*
       [[What John$_i$ likes is himself$_i$]](w)=1 iff
       {w':{x: John likes x in w'}={x: John likes x in w}} ={w': John likes John in w'}

Does this yield the right truth-conditions? Not yet. To see this, consider the following scenario, where w is the actual world, and w_1 and w_2 are unactualized possible worlds:

(47)   w: John likes himself and nothing else
       w_1: John likes himself, and John also likes Mary
       w_2: John likes Mary and nothing else

Intuitively, 'What John likes is himself' should be true in such a situation. But in this situation w does not satisfy the above equation, since if there are no other possible worlds, we have: {w':{x: John likes x in w'}={x: John likes x in w}} = {w}

On the other hand: {w': John likes John in w'} = {w, w_1}

Since {w} ≠ {w, w_1}, 'What John likes is himself' is incorrectly predicted to be false.

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[21] This might *prima facie* appear to contradict our earlier claim that what gets equated in a specificational sentence is an indirect question and an indirect answer - which suggests that the first element should, just like the second, denote an intension; this would yield a type-mismatch between <s, <s,t>> and <s,t>. But in fact there is no reason to assume that the denotation of an indirect question is necessarily an intension. As noted by Groenendijk & Stokhof (1990), the opposite appears to be true with verbs like 'know' or 'tell' (as opposed to 'wonder' or 'guess'), whose entailments require an analysis like (i) below:

'Verbs like know and tell are extensional in the sense that they take the extension of an embedded interrogative as argument. Verbs like wonder and guess are intensional, they essentially take the intension of an embedded interrogative as argument.
     (i)   a. John knows whether Mary walks.
               b. know(i) (j, λj [walk(i)(m) = walk (j)(m)])
     (ii)   a. John wonders whether Mary walks

There is a solution, however. Let us stipulate that the answer, just as the question, must be read as exhaustive (the stipulation will be derived shortly). We obtain the following *equation*, which does yield the correct truth-conditions:

(48)   a. [[John likes himself]]={w': John likes John in w'}
  b. [[John likes [himself]$_F$]]={w': {x: John likes x in w'}={John}}

(49)   Semantics for '[What John likes] is [John likes himself]' *(second attempt)*
  [[What John$_i$ likes is himself$_i$]](w)=1 iff
    {w': {x: John likes x in w'}={x: John likes x in w}}
  = {w': {x: John likes x in w'} ={John}}

Given that the first member of the equation is formally identical to its second member, except for {x: John likes x in w} vs. {John}, the solution is:

(50)   [[What John$_i$ likes is himself$_i$]](w)=1 iff {x: John likes x in w}={John}[22].

In other words, 'What John likes is himself' is true at w just in case John likes John and nothing / nobody else in w - the correct result. Interestingly, this derives the semantics that Higgins had suggested on intuitive grounds in an addition to his dissertation:

> "(1) What we saw in the park was a man and a woman
> Why, on the specificational reading, does this sound like a listing? And why do we not seem to be saying anything ABOUT a certain object or certain objects seen in the park -- compare the predicational reading, where we are attributing a complex property to an object seen in the park? An adequate semantic representation should at least account for these impressions. I suggest that the following kind of representation covers these, and should be taken as a basis for elaboration:
> (2) {x: we saw x in the park} = {a man, a woman}"('Remarks to Chapters Two and Four', 1976)[23]

3.3 Exhaustivity and the incremental computation of implicatures

Let us now go back to our stipulation that the answer should be read as exhaustive. Can this point be derived? First, let us observe that in *discourse* an implicature of exhaustiveness is certainly present in question-answer pairs:

(51)   Who did Mary meet? -John$_F$
  a. *Assertion:* Mary met John
  b. *Implicature:* Mary met no one but John.

---

  b. wonders(i)(j, λi λj[walk(i)(m) = walk (j)(m)])' [(G&S 1990), pp. 1–7]

[22] More precisely:
(i) If {x: John likes x in w}={John} holds, then clearly the equality in (49) holds as well.
(ii) Now suppose that the equality holds. Clearly, the actual world w belongs to the set {w': {x: John likes x in w'}={x: John likes x in w}}. But since by hypothesis the equality in (49) holds, w must also belong to the set {w': {x: John likes x in w'} ={John}} But this means that w is such that {x: John likes x in w}={John} -which is what we wanted to prove.

[23] More work is needed to determine whether and how our semantics can be extended to cases of quantification into question - for instance the following:

(i) What everyone did was call his mother.

The same is probably true in out-of-the-blue contexts if *John* is focused:

(52) Mary met John$_F$
    a. *Assertion:* Mary met John
    b. *Implicature:* Mary met no one but John

      But by itself the implicature won't suffice in the case of connectivity sentences, since it is crucial that the exhaustiveness be built into the answer *before* the latter is equated to the question. Otherwise we will be back to the first attempt that was outlined above, and we will not derive the correct truth-conditions for the construction. Interestingly, however, there are recent arguments that suggest that the computation of implicatures must be done hand-in-hand with the semantics. This is the proposal put forth in Chierchia 2000, who suggests that each constituent has a normal semantic value and a 'strengthened' value, which is obtained for each constituent by adding the relevant implicatures (if any) to the normal semantic value. In a nutshell, we will suggest that the elements that are equated in connectivity sentences are *strengthened* rather than normal semantic values. The strengthened semantic value of a (Groenendijk & Stokhof-style) question is presumably its normal value; but the strengthened value of the answer certainly includes the implicature of exhaustivity.

      Let us first consider Chierchia's own examples. As is well-known, <some, every/all> is a scale which triggers implicatures. 'Some student is waiting for John' implicates that not all students are. For if I knew that all of them are, it would be more informative and hence more cooperative to say 'Every student is waiting for John'. By Gricean reasoning, if I do not utter the strengthened sentence, this must be because it is false ((53)c):

(53) a. Some student is waiting for John
    b. *Assertion:* [∃x: student(x)] is-waiting(x, John)
    c. *Implicature:* ¬[∀x: student(x)] is-waiting(x, John)

      Traditionally, implicatures are taken to be computed globally. In other words, an implicature is computed by taking the negation of an entire sentence in which the scalar term (here *some*) has been replaced by its alternative (*every*). But as Chierchia points out this global procedure makes incorrect predictions in more complex cases (Chierchia's (12)-(14)):

(54) a. John believes that some student is waiting for him.
    b. *Predicted implicature:* It is not the case that John believes that every student is waiting for him.
    c. *Actual implicature:* John believes that not every student is waiting for him.

If implicatures are computed globally, Chierchia observes, the Gricean reasoning that was sketched above predicts the implicature in (54)b. But this is too weak: b. 'merely says that it is *compatible* with John's belief that not every student is waiting. But this doesn't mean he

excludes such a possibility', as is in fact understood (Chierchia 2000 p. 5).

Chierchia's solution is to allow implicatures to be computed locally. This is done by defining recursively a strengthened value for each constituent, which corresponds to the conjunction of the normal value and of the implicature. Thus the strengthened value of (53)a is the conjunction of (53)b and (53)c. In simple cases of composition, such as (54)a, the strengthened value of the entire constituent (here: of the entire sentence) is obtained by applying the functor (here: belief operator) to the strengthened value of its argument (here: the embedded clause). This yields the following results, which derive the correct implicature for the sentence:

(55)   a. John believes that some student is waiting for him.
       b. *Normal value:* John believes that [∃x: student(x)] is-waiting(x, John)
       c. *Strengthened value:* John believes that [[∃x: student(x)] is-waiting(x, John)
       & ¬[∀x: student(x)] is-waiting(x, John)]

Using Chierchia's account, we can stipulate that in a connectivity sentence the *strengthened* value of the elided answer is equated to that of the concealed question. Since an answer with a focused element has an implicature of exhaustivity, this does derive the result we need. But is there independent evidence that strengthened rather than normal values are equated in identity sentences? This is by no means trivial since in Chierchia's system strengthened values only give rise to implicatures, never to assertions. But we need to use the strengthened value in the *assertion* part of an identity sentence, or else the equation we need will not have the correct truth-conditions, as was demonstrated in (47). So we definitely need some independent evidence that strengthened values can be equated in the semantics. That this is a *possibility* is suggested by (56)a , which has a reading (maybe its only reading) which is definitely true:

(56)   a. To eat five apples is to eat at least five and no more than five apples
       b. # λx [≥5y: apple(y)]eat(x,y)=λx [[≥5y: apple(y)] eat(x, y) & [≤5y: apple(y)]eat(x,y)]

If only normal values could be used in the computation of (the normal value of) the equation, the truth-conditions in b. would be predicted (on the standard assumption that 'five apples' is semantically 'at least five apples', and that the 'exactly' reading is derived as a scalar implicature). But b. is false, and of course conjoining b. with any implicature one cares to choose won't help, for the conjunction will be false as well. So a. should be false, contrary to fact. No such problem arises if the *strengthened* values of the elements are equated in a. In this case the scalar implicature in the pre-copular element makes the identity a tautology, just as one wants.

Going back to our problem, *What John likes is himself* can now receive the following treatment. The strengthened value of *what John likes* is equated to the strengthened value of *John likes himself$_F$*. The former is identical to its normal Groenendijk & Stokhof value, i.e. {w': {x: John likes x in w'}={x: John likes x in w}}. The latter is the result of conjoining the normal value of the answer with its implicature, i.e. (semi-formally) {w': John likes John in w' & John likes no one but John in w'}. But this is simply the value of the exhaustive answer: {w': {x: John likes x in w'} ={John}}. As shown above, this equation of clauses yields the correct truth-conditions. I conclude that there is some evidence for a semantic mechanism which, given the rest of our analysis, yields exactly the correct truth-conditions for connectivity sentences.

4   Extension to DP Connectivity

Connectivity effects also arise with garden-variety noun phrases (Higgins 1976, Heycock & Kroch 1999, Den Dikken et al. 2000, Sharvit 1999). Two cases should be distinguished: when the pre-copular element is of the form D+N+CP (e.g. *The person John likes is himself*), the sentence has a connected counterpart (here: *John likes himself*), which can be claimed to be present but elided in the post-copular position. In a nutshell, we will tentatively suggest that in this case *the* spells out the definite feature of a concealed *wh*-word such as *who* or *what*. Thus (57)a is analyzed as (57)b, by analogy with (57)c:

(57)   a. The person he$_i$ likes __ is himself$_{i, *j}$ / him$_{*i, j}$ / John$_{*i, j}$
       b. ?x [person he$_i$ likes](x)=he likes himself$_{i, *j}$ / him$_{*i, j}$ / John$_{*i, j}$
       c. Who is the/a person he likes? -(He likes) himself$_F$.

But there are also connectivity effects in the *absence* of any CP, i.e. without a plausible connected counterpart:

(58)   His$_i$ worry is himself$_{i, *j}$ / him$_{*i, j}$ / John$_{*i, j}$

The theory will be extended by positing that the noun *worry* has an additional argument position in which *himself* can appear. Although this hypothesis will be seen to be semantically motivated (because 'worry' is semantically dyadic), I do not have independent syntactic evidence for it; in that sense this will remain a theory-internal assumption.

4.1 DPs as concealed questions

The facts we just laid out have been taken to argue against the Question in Disguise theory because the pre-copular noun phrases do not 'look like' questions. But DPs can

productively be interpreted as concealed indirect questions, at least in certain environments. In my 1998 paper I cited the following examples, from Heim 1979:

(59)   a. John knows the capital of Italy
       b. They revealed the winner of the contest.

The relevant reading of (59)a does not assert that John knows Rome, but rather that he knows *that* Rome is the capital of Italy; and (59)b is equivalent to *They revealed* who *the winner of the contest was*[24]. However these examples don't appear to be entirely productive (e.g. *John knows your worry* isn't readily interpreted as: *John knows what your worry is*). In addition, Sharvit 1999, Cecchetto 2000, 2001 and others have pointed out that certain types of DPs that can *never* have a question reading under such verbs can still appear productively in connectivity sentences.

But the argument can be improved. In French certain verbal constructions such as *s'interroger sur* ('to wonder about') do systematically allow the following DP to be interpreted as a question (much more productively than *know* in (59)a). This suggests that DPs can by themselves be interpreted as questions, but only in a certain syntactic environment S. We may then posit that in French the post-verbal position of verbs such as *s'interroger sur* and the pre-verbal position of copular sentences satisfy the environment S, while in other languages only the pre-copular position satisfies S. This would yield an account of the observed correlation in French, and of the known cross-linguistic facts. Of course the challenge, which is left for future research, is to determine how the environment S should be syntactically characterized - not a trivial matter.

In French the same syntactic restrictions hold after *s'interroger sur* and before *be* in a connectivity sentence: DPs are allowed, CPs aren't. As a result, (i) an element can appear in the pre-copular position of a connectivity sentence if and only if it can appear after *s'interroger sur*. Furthermore, (ii) elements that appear after *s'interroger sur* can systematically be interpreted as concealed questions. This lends further plausibility to the Question in Disguise theory: whatever theory can account for the question interpretation of DPs after *s'interroger sur* can be extended to connectivity sentences.

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[24] An additional argument (noted by Den Dikken et al. 2000) is that some DPs can be interpreted as *direct* questions in discourse, and yield connectivity effects (Den Dikken et al.'s (145)):
(i)   a. A: What is the only thing he didn't do?
         b. B: The only thing he didn't do? Buy any wine

Let us now consider the relevant French examples[25]:

(60) a. Je m'interroge sur ce que Marie refuse de faire
          I wonder on it that Marie refuses to do
        'I wonder what Marie refuses to do'
      b. Ce que Marie refuse de faire, c'est le moindre effort
          It that Marie refuses to make, it is the slightest effort
        'What Marie refuses to make is the slightest effort'

(61) a. ??Je m'interroge sur qui tu as rencontré
          I wonder on who you have met
      b. ??Qui tu as rencontré, c'est Jean
          Who you have met, it is Jean

(62) a. Je m'interroge sur la personne qu'il a rencontrée
          I wonder   on the person that he has met
        'I wonder who you met'
      b. La personne qu'il$_i$ a rencontrée, c'est lui-même$_i$ / *Jean$_i$
          The person that he met,   it is himself / Jean
        'The person he met was himself / Jean'

(60) and (62) show that DPs are grammatical after *s'interroger sur* and before *be*; (61)

shows that CPs aren't. But how can we show that the element that appears after *s'interroger*

sur can indeed be interpreted as a question?

(i) First, it yields opacity effects, as other clauses embedded under attitude verbs:

(63) a. Pierre s'interroge sur la personne que tu as rencontrée
          Pierre himself ask   on   the person   that you have met
      b. La personne que tu as rencontrée = Marie
          The person that you have met   = Marie
      c. [a & b] does *not* entail: Pierre s'interroge sur Marie
                                        Pierre himself ask about Marie

---

[25] I have found one exception to the generalization, which I put aside because (i) it seems to involve a more colloquial register than that of the cited examples, and (ii) the generalization can be saved by looking at slightly different matrix verbs. Here are the relevant facts:

(i)   a. Là où il$_i$ habite, c'est dans la maison de Jean$_{*i, k}$
            There where he live, it is in the house of Jean
                'Where he lives is in John's house'
        b. ?? Je m'interroge sur là où il habite.
            I ME ask   on there where he lives

There appears to be a dialect clash between 's'interroger sur' and the expression 'là où' (I think 'l'endroit où' would be preferable in that register that uses 's'interroger sur'). But the generalization can be saved by considering a different embedding verb:

(ii)   Je n'ai pas la moindre idée de là où il habite
        I NE have not the slightest idea of there where he lives
        'I don't have the slightest idea where he lives'

(ii) Second, these opacity effects cannot be explained by postulating that *s'interroger sur* is an intensional transitive verb of the same class as *seek*, which also fails substitutivity tests. For unlike *seek* (or its French counterpart *chercher*), *s'interroger sur* yields opacity effects *only when* its complement is a definite. Thus the following pattern of inference involving indefinites is valid with *s'interroger sur* but invalid with *seek*:

(64) a. John seeks a unicorn.
      b. ≠> There is some unicorn that John seeks

(65) a. Pierre s'interroge sur une personne que tu as rencontrée
          Pierre himself ask   on a person   that you have met
      b. => Il y a une personne que tu as rencontrée sur laquelle Pierre s'interroge
          There is a person that you have met on whom Pierre himself asks

The contrast between *seek* and *s'interroger* sur would be surprising if both were intensional transitive verbs. By contrast, if only *definite* DPs can be interpreted as interrogative *wh-*clauses, the contrast is unsurprising, and illuminating for our purposes since *connectivity sentences also involve definite DPs only*[26].

(iii) Third, the reason an overt question does not appear after *s'interroger sur* seems to be syntactic rather than semantic.   In fact a nominal element such as *ceci* ('this') or *cela* ('that') can appear after *s'interroger sur* when it refers to a question. Thus in (66)a *ceci* appears to be coindexed with a direct question, while in (66)b *cela* denotes an embedded question.

(66)   a. Je m'interroge sur ceci: qui as-tu rencontré?
          I myself ask on this: who have you met?
         'I wonder about this: who did you meet?'
        b. Pierre se demandait [qui tu avais rencontré]$_i$, et moi aussi je
          Pierre was-wondering who you had met, and me too I
     m'interrogeais sur cela$_i$[27]

---

[26] There is one exception to this generalization. When the question under discussion is of the 'mention-some' variety, which does *not* require an exhaustive answer (e.g. 'Where in the neighborhood can I buy a newspaper?'), a connectivity sentence is possible, as in (ia) (an anonymous reviewer points out similar examples in English with stressed 'one', e.g. *ONE thing I forgot to do was bring any wine*). The corresponding sentence with *s'interroger sur* can to some extent have a concealed question reading, characterized by the failure of existential exportation, as in (ib).
(i)   a. Un endroit qu'il$_i$ aime vraiment, c'est son$_i$ jardin / le jardin de Jean$_{*i}$
              A place   that he$_i$ likes really, it is his$_i$ garden / the garden of Jean$_{*i}$
           'A place he really likes is his garden / John's garden'
           b. ? Marie s'interroge sur un endroit que Jean aime vraiment.
               Marie herself asks on a place that Jean likes really
           ≠> Ily a un endroit que Jean aime vraiment sur lequel Marie s'interroge
               There is a place that Jean likes really on which Marie herself asks
I leave the topic of 'mention-some' questions in connectivity sentences for future research.
[27] Interestingly, the opposite pattern does not appear to be as readily possible. In other words, when a concealed question appears after 's'interroger', it is difficult to refer anaphorically to it in the complement of a verbe like 'se demander', which overtly takes an embedded question:

myself was-asking on this
    'Pierre wondered who you had met, and I wondered about this too'

In all of these cases, then, it appears that the DP can be interpreted as an indirect question, which defuses an important argument against the Question in Disguise Theory. It should also be noted that in the foregoing environments a question interpretation is available even for DPs that do not contain a CP, for instance in the following example:

(67) Je m'interrogeais sur son problème le plus grave
    I me asked on his problem the most grave
    Reading 1: His gravest problem is x, and I wonder about x
    Reading 2: I wonder about the following: What is his gravest problem?[28]

    Finally, if the pre-copular DP is a concealed question, is there independent evidence that the post-copular element is a concealed answer? The only argument I know of is that, if *ceci* ('this') is used, a connected sentence can indeed be made to appear overtly:

(68) Je me suis longtemps interrogé sur [la personne qu'il$_i$ aimait]$_k$, et j'ai
    I me am long interrogated on the person that he liked, and I have
    'For a long time I've been wondering about the person he liked, and I have
    finalement appris que c$_k$'était ceci:il aimait lui-même$_i$[29]/??lui$_i$/*l'imbécile$_i$/*Jean$_i$
    finally learned that it was this: he liked him-self /him/ the idiot /Jean
    finally learned that it was this: he liked himself / him / the idiot / Jean

Of course no such strategy can work in case no CP is involved, as in *His worry is himself*, for the simple reason that *his worry himself* (without ellipsis of the first two words) is not grammatical. This case is discussed at greater length below.

 (i)   a. Jean se demande qui tu as rencontré, et Pierre se le demande aussi
         Jean himself asks who you have met, and Pierre himself it asks too
         'Jean wonders who you met, and Pierre wonders about that too'
       b. ?? Jean s'interroge sur les personnes que tu as rencontrées, et Pierre se le demande aussi
         Jean himself interrogates on the people that you have met, and Pierre himself it asks too
I do not know why this contrast holds.

[28] We can strengthen the argument by showing that in one and the same sentence the same semantic element can function as an embedded question after 's'interroger sur' *and* as the pre-copular element of a connectivity sentence. As before we resort to question anaphora with anaphoric 'ça' [the facts are identical if 'la personne qu'il aimait' (the person he liked) is replaced with a standard pseudocleft such as 'ce qu'il aimait' (what he liked)]:

(i)   Je me suis longtemps interrogé sur [la personne qu'il$_i$ aimait]$_k$, et j'ai
        I me am long interrogated on the person he liked, and I have
       'For a long time I've been wondering about the person that he liked, and I have
       finalement appris que c$_k$'était lui-même$_i$/??lui$_i$/*l'imbécile$_i$/*Jean$_i$
       finally learned that it was him-self /him/ the idiot/Jean
       finally learned that it was himself / him / the idiot / Jean
[29] 'lui-même' must be strongly focused. Otherwise 'il s'aimait lui-même' (with the reflexive clitic) is more natural.

4.2 Extending the Theory

4.2.1   The *interpreted as a* wh-*word*

When the DP contains a relative clause, the Question in Disguise theory can be extended by assuming that *the* spells out the Definiteness feature of a concealed *wh*-word such as *what* or *who*. Thus *the person John likes* is analyzed as the indirect question *who is (the) person John likes,* where the modified noun phrase is read as predicational. Independent evidence for this interpretive possibility is provided by the DPs interpreted as questions after *s'interroger sur* in French, and also by many other comparable constructions studied in Spanish and Catalan by Hirschbühler & Rivero 1983, for instance the following:

(69) Acuerdate   los   libros que   compraron   (their example (31e))
      Remember   the   books that   they-bought
      'Remember which books/how many books they bought'

Hirschbühler & Rivero's suggestion differs somewhat from the present one, however. According to them *the* is simply interpreted as *which,* and is restricted by the head noun, yielding for one reading of (69) *Remember which books they read*. As was observed by an anonymous reviewer, this proposal would have undesirable consequences for the present theory, in view of (70)a. For *I wonder about the worst problem that John worries about* cannot be paraphrased as: **I wonder which worst problem John worries about.* By contrast, the analysis we are arguing for yields something like: *I wonder what is the worst problem that John worries about,* where the definite description is read as predicational. This solution can presumably be extended to connectivity sentences as well, maybe along the lines of (70)b, which is constructed by analogy with the question-answer pair in (70)c:

(70)   a. The worst problem that John worries about is himself.

       b. ?x [worst problem that John worries about](x) = ~~he worries about~~ himself

       c. What is the worst problem that John worries about?-(He worries about) himself$_F$

In (70)c the answer *asserts* that John worries about John, but it also *implicates* that there is no other problem that John worries about more (or else this wouldn't be a satisfactory answer to the question). How the implicature comes about is unclear (focus seems to be crucial); but once it is assumed that such an implicature exists in (70)c, the mechanism developed in Section 3.3 to equate the value of the pre-copular element with the *strengthened* value of the post-copular element will presumably yield the desired results [30, 31].

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[30] The argument can be strengthened by resorting to propositional anaphora, as was done earlier:

4.2.2 Nouns with an additional argument position

Consider now the case of simple DPs. First, I note that *any* theory that assumes that connectivity really is about c-command must posit a further argument position deeply embedded in the relevant nouns. An apparent alternative would be to posit that, say, in 'John$_i$'s problem is himself', 'John' is raised, yielding the following structure:

(71)
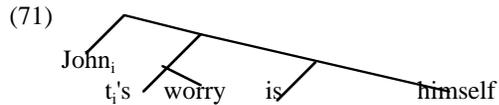
But this won't work. Suppose, as is plausible, that this structure is derived by an operation such as Quantifier Raising, which is often taken to account for the bound reading in 'Everybody's mother likes him'. Then the locality conditions imposed on the antecedent-anaphor relation by the Binding Theory won't be met, as is shown by the ungrammaticality of 'Everybody's mother likes himself'. So we need to posit that 'himself' can appear *inside* the DP 'John's worry', so that it can be bound *locally* by 'John'.

Once this assumption is made, we can show that the additional argument position must be very low in the structure - a conclusion which is also natural given the dyadic nature of the predicate 'worry'. The syntactic argument is that the post-copular element must appear below 'unlikely' in the following examples, or else the NPI 'anything' would not be c-commanded by its licenser at S-Structure:

(72) The most unlikely (*likely) outcome is that we'll do anything / we'll lift a finger

---

(i) In case you wonder about the worst problem that John worries about, it is this - he worries about himself$_F$. Anaphoric *it* appears to denote the concealed question following *wonder about,* while cataphoric *this* would seem to denote the last clause. Thus *it is this* does equate a concealed question with an answer. (Apparently the last clause is degraded when *he worries about* is elided. I do not know why this is).

There is, however, a possible counter-argument against this entire line of analysis. One could object that the acceptability of (70)c does *not* show that *(He worries about) himself$_F$* triggers a certain *implicature* (namely that there is no other problem about which he worries more), but only that question-answer relation in discourse can be lax enough to allow for a very partial answer. This would make it impossible to construct a solution to (70)b on the basis of (70)c.

[31] If it can be fleshed out, this analysis will address an objection raised by Sharvit 1999, who claimed that the present approach could not deal with a sentence such as *The most obvious woman no man wants to answer to is his mother.* Sharvit's point was that the Question in Disguise Theory could only derive the following, where *Ans* is the Answerhood operator introduced in (32) above:

(i) Ans(who is [the most obvious woman no man wants to answer to]) = [his mother is the most obvious woman no man wants to answer to].

As Sharvit observed, this solution won't do, since the right-hand side of the equation contains precisely the connectivity sentence we started out with. However, following the question-answer analogy suggested by (iia), we would analyze Sharvit's example along the lines of (iib):

(ii) a. Who is [the most obvious woman no man wants to answer to? -(No man wants to answer to)[his mother]$_F$.

   b. ?x [most obvious woman no man wants to answer to](x)=[no man wants to answer to [his mother]$_F$]

The crucial point is that we allow for an answer that repeats only *part* of the question, as seems to be possible in question-answer pairs in discourse. This avoids the circularity that Sharvit warned against.

Accordingly I posit the following structure:

(73) a. Pronunciation: His worry is himself
       b. S-structure:
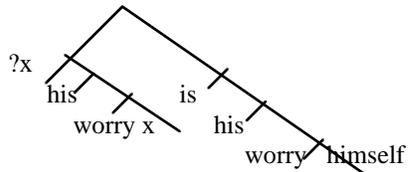
       c. Interpretation: $\{w': \{x: problem(j, x) \text{ in } w'\}=\{x: problem(j, x) \text{ in } w\}\}$
                            $=\{w': \{x : problem(j, x) \text{ in } w'\}= \{John\}\}$

Although the tests above involve the dyadic noun 'worry' (x is a worry for y/x worries y), it was argued in Schlenker 1998 that even prototypical monadic nouns such as 'chair' can cause connectivity effects. This created a serious type-mismatch problem for the theory, which I discuss shortly. The relevant facts were as follows:

(74)   Context: John has a desk in his office, but he doesn't have a chair. Thus, he uses his desk as a chair (he sits on his desk).

       a. *His$_i$ chair is John$_i$'s desk.

       b. John$_i$'s chair is his$_i$ desk.

Coreference is blocked in a, though not in b, which suggests that in the former case 'his' c-commands 'John'. The conclusion I drew in my 1998 paper was that *all* specificational sentences can yield connectivity effects[32].

In the dyadic case (with nouns such as 'worry', construed as taking two arguments), the theory didn't encounter any serious problem. The structures that were posited equated a question (hence the '?x' operator) with an answer, and the semantic types did match, at least on the assumption that 'his' somehow provides an argument of type <e>. To keep things simple, I assume that 'his worry' can be analyzed 'the [he worry]', i.e. as [ιx [he [worry x]]]

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[32] Unsurprisingly, it was also shown that *only* specificational sentences could yield connectivity effects, which accounts for the following contrast:

(i)   a. *His$_i$ problem is John$_i$'s arrogance.
   b. His$_i$ arrogance is John$_i$'s problem.

The word 'problem' can be predicated of 'his arrogance' in b. (somebody's arrogance can be problematic), but 'arrogance' cannot be predicated of 'his problem' in a. (a problem is not the sort of thing that can be arrogant). Consequently, there is a grammatical reading of b. in which the post-copular DP is interpreted as a predicate; but the predicative reading is blocked on semantic grounds in a., which forces a specificational reading. Because connectivity holds in that case, however, a Condition C effect ensues, leading to ungrammaticality. It should be noted that a similar point can be made about the 'chair' example above. If we change the context, so that this time John has a chair and no desk, and thus has to use his chair as a desk (e.g. he writes on his chair),

or as [?x [he [worry x]]] (depending on whether the NP denotes a question or an individual)[33].
A further natural assumption is that in the answer only the 'he' part appears, which yields the
following structures and types:

(75) a. His$_{*i, k}$ worry is John$_i$
   b. [?x his$_i$ worry x] is$_{id}$ [~~his worry~~ John$_i$]
     c.
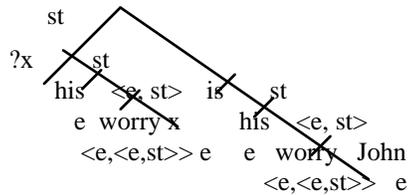
By contrast, in the monadic case (with nouns such as 'chair'), the structures ended up
being uninterpretable, independently of whether 'his' was given the type of an individual
($<e>$), of an adjective ($<e, t>$ or $<et, et>$), or of a determiner ($<et, e>$ or $<et, <et, t>>$). In all
cases the difficulty was that 'chair [John's desk]' was of the propositional type, which
blocked any further composition since no plausible type-assignment for 'his' was of the form
$<st, X>$:

(76)
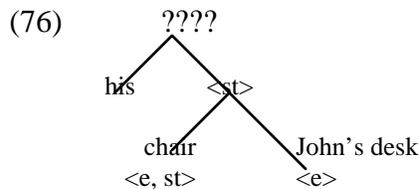
Although I still believe that these facts are real, I also think that the analysis I had
offered is incorrect, and that the type-mismatch problem can be circumvented. I would now
suggest that in all cases of noun phrase connectivity, the noun is semantically dyadic - even
'chair'. The intuitive reason is that 'John's chair is his desk' in the aforementioned context
means something like: 'the thing John *uses* as his chair is his desk', with no implication that
the desk really *is* (in an absolute sense) a chair. Thus I introduce a dyadic predicate chair(x,
y) ('x is a chair for y'), and claim that 'his desk'/'John's desk' appears in the internal
argument position of this dyadic predicate, as illustrated below:

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the connectivity effect goes away. Changing the context has the effect of making 'his chair' referential, so that
a predicative reading for 'John's desk' becomes available. And this obviates the Condition C violation.
[33] Such a treatment is sketched for individual-denoting descriptions in Heim & Kratzer 1998, p. 246.

(77)
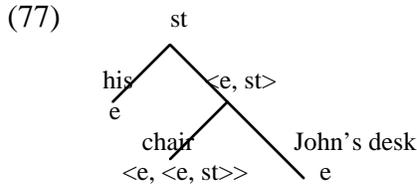
So construed, the 'chair' case reduces to the 'worry' case discussed above, which eliminates the type-mismatch problem. Some semantic support for the present analysis comes from the observation that it is no contradiction to utter the following:

(78)   John's chair is this desk. But of course this desk is not a chair / is no chair at all.

While this should come out as a contradiction if 'chair' were monadic, the acceptability of the sentence is unsurprising on the present theory: the first use of 'chair' is dyadic, while the second is monadic. In effect 'chair' is ambiguous between chair(x) and chair(x, y)[34]. Thus it is no contradiction for John's desk, call it d, to satisfy chair(John, d) but not chair(d). If this is correct, and if nouns that trigger connectivity effects systematically have this dyadic meaning, the type mismatch will never arise, and one important argument against the present theory will disappear.

5   Objections and replies: Anti-Connectivity

The Question in Disguise Theory has recently come under attack on the basis of cases of 'anti-connectivity', that is, connectivity sentences which (a) have a connected counterpart, but (b) whose connected counterpart displays different syntactic properties from the connectivity sentence itself (Eisner 1995, Meinunger 1997, Den Dikken et al. 2000, Sharvit 1999, Cecchetto 2000, 2001). They largely remain a mystery (but see Cecchetto 2000, 2001). But these facts certainly do *not* refute the Question in Disguise theory, for the simple reason that the *same* anti-connectivity effects hold in question-answer pairs in discourse. I briefly mention the relevant observations.

-Locality with Conditions A and B: Sharvit 1999 shows that in some cases an anaphor is licensed in a pseudocleft but not in its connected counterpart (Sharvit's (78) and (79)):

(79)   a. The person every professor / no professor thinks should get a raise is himself / ??him
       b. Every professor / no professor thinks *himself / he should get a raise
       c. The person every professor/no professor hopes his wife likes best is himself /??him.
       b. Every professor / no professor thinks his wife likes *himself / him best.

Similar examples can be constructed with garden-variety pseudoclefts. The following are my recollection of sentences that were mentioned to me by Jamal Ouhalla and Peter Hallman:

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[34] I leave it open how the ambiguity should be derived.

(80)   a. What John thinks that Mary likes is himself
         b. *John thinks that Mary likes himself

It is easy to see that the same facts hold with question-answer pairs:

(81)   -What does John think that Mary likes? -Himself [35].

In the DP case, the parallel with question-answer pairs is harder to establish. One could suggest, following Den Dikken et al. 2000, that NPs can in some cases be used as unembedded questions, as in the following examples (Den Dikken et al.'s (145)):

(82)   a. A: What is the only thing he didn't do?
         b. B: The only thing he didn't do? Buy any wine

If one is bold enough to follow this suggestion, the relevant parallel for Sharvit's examples is the following:

(83)   The person John thinks that Mary likes? Himself, of course.

However, even if one does not accept that DPs can function as unembedded questions, there is another way to make the same point. As was shown above, DPs can quite generally be used as concealed questions. Here again, the parallel seems to function rather nicely:

(84)   I am wondering about the person that John thinks that Mary likes. Apparently, the answer is: himself/ it is himself.

In any event, it seems that Condition A anti-connectivity holds in the same way in Question-Answer pairs and in pseudoclefts.

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[35] The interesting question, of course, is why anti-connectivity should hold in this case. Ouhalla (p.c.) suggests the following answer. As he points out, the Question in Disguise theory must posit phonological deletion of part of an answer. If only constituents are deleted, we are forced to assume that the unelided part of the answer had to move before the rest of the answer was elided, as shown below:

(i)   himself [John thinks t$_i$ that Mary likes t$_i$]]

The question is what sort of movement this is - presumably, an A' movement, which in the present case must be successive cyclic. As a result, there should in principle be a possibility of reconstruction in the intermediate trace position, just as happens with wh-questions quite generally:

(ii)   Which pictures of himself does Mary think that John bought?

Of course if this is correct other connectivity effects must be reanalyzed - an enterprise we will not attempt here. Suffice it to say that this line of thought makes pseudoclefts very similar to clefts:

(iii)   It is himself that [John thinks t$_i$ that Mary likes t$_i$]]

See also Den Dikken et al. 2000 (fn. 29) for further considerations on this kind of examples.

-C-command with Condition C: Cecchetto 2000, 2001 discovered another intriguing case of anti-connectivity, which he thinks involves Condition C of the Binding Theory. Here are the French versions of his Italian examples[36]:

(85)   a'. ??Ce qui lui$_i$ a coûté cher, c'est la Toyota de Jean$_i$
            It   which to-him has cost expensive, it is the Toyota of Jean
       b'. La Toyota de Jean$_i$ lui$_i$ a coûté cher
          The Toyota of Jean to-him cost expensive
       'Jean's Toyota cost him a lot of money'

The interesting fact is that, at least in French, the same effect can be replicated with Question-Answer pairs:

(86)   Qu'est-ce qui l'$_i$ a ruiné?   -Sa$_i$ Toyota / -*la Toyota de Jean$_i$
       *What is it that him$_i$ ruined? -His$_i$ Toyota / -*the Toyota of Jean$_i$*
       What ruined him? -His Toyota / John's Toyota

Obviously these facts should be explained. But since they arise both in question-answer pairs and in pseudoclefts, it is hard to see how they could argue against the Question in Disguise theory[37].

-Weak Cross-Over: Cecchetto 2000, 2001 discusses further asymmetries between specificational pseudoclefts and connected sentences, which he attributes to Weak Cross-Over. (87)a-b is a French version of his original examples, which involve extraction out of a PP; and (87)c shows that the same effect can be replicated in question-answer pairs in discourse[38]:

(87)   a. Ce qui marchait derrière chaque général, c'était son bataillon
          It that was marching behind every general was the his battalion
           What was marching behind every general was his battalion
       b. ? Son bataillon marchait derrière chaque général
          His battalion was marching behind every general

---

[36] His original example was:
(i)   a.*Chi lo$_i$ vide è la sorella di Gianni$_i$
               Who him saw is the sister of Gianni
           b. La sorella di Gianni$_i$ lo$_i$ vide
               The sister of Gianni him saw
               'Gianni$_i$'s sister saw him$_i$'
[37] An anonymous reviewer suggests that following line of analysis. Den Dikken et al. suggest that the Extended Projection Principle does not apply under elision (see fn. 40 below). Applied to (86), this would force *la Toyota de Jean* to appear in the c-command domain of the clitic *le*, which in turn would trigger a Principle C violation.

[38] Here are his original examples:
(i)   a. Ciò che sfilava dietro a [ogni generale]$_i$ era il suo$_i$ battaglione
               It that was marching behind every general was the his battalion
           'What was marching behind every general was his battalion'
           b.   ?? Il suo$_i$ battaglione sfilava dietro a [ogni generale]$_i$
                The his battalion was marching behind every general

His battalion was marching behind every general
c. Qu'est-ce qui marchait derrière chaque général? -Son bataillon
What is it that was marching behind every general? -His battalion
What was marching behind every general? -His battalion.

Obviously these facts should be further tested, in French, in Italian, and and elsewhere[39].

-NPI licensing: For completeness, I note yet another case of anti-connectivity, which is discussed by Den Dikken et al. 2000 [(31)], who point out the parallel with question-answer pairs. First, they observe the following asymmetry between specificational pseudoclefts and connected sentences (note that the asymmetry arises within Den Dikken et al. 2000's 'Type A' pseudoclefts, i.e. those that they do analyze in terms of question-answer pairs):

(88)   a. *A book that said anything sensible about X wasn't sitting on the shelf
       b. ? What WASn't sitting on the shelf was a book that said anything sensible about X

As they show, that the same anti-connectivity effect also holds with question-answer pairs:

(89)   ? What WASn't sitting on the shelf? -A book that said anything about X.

Thus this is yet another case of anti-connectivity that *supports* the Question in Disguise theory[40].

-Quantifier Scope: Finally, Eisner 1995, Meinunger 1997 and Sauerland (p.c.) noted the following types of examples, in which scope connectivity fails to hold:

(90)   a. Some student admires every teacher
       Reading 1:   [∃x: x a student] [∀y: y a teacher] (x admires y)
       Reading 2:   [∀y: y a teacher] [∃x: x a student] (x admires y)
       b. What some student admires is every teacher
       Reading 1:   [∃x: x a student] [∀y: y a teacher] (x admires y)
       *Reading 2: [∀y: y a teacher] [∃x: x a student] (x admires y)

Again the same effects hold with question-answer pairs as well (see also Cecchetto 2000, 2001):

(91)   What does some student admire? -Every teacher
       Reading 1:   [∃x: x a student] [∀y: y a teacher] (x admires y)
       *Reading 2: [∀y: y a teacher] [∃x: x a student] (x admires y)

---

[39] Cecchetto 2000, 2001 explains these facts with the formal mechanisms developed in Chierchia 1993 to handle Weak Cross-Over effects in questions. The paradox is that Cecchetto argues *against* the Question in Disguise theory, even though his formal tools would yield a direct account of the same facts on the Question in Disguise theory, as far as I can tell.

[40] In order to handle this asymmetry, Den Dikken et al. in effect posit that the Extended Projection Principle is a result of pronunciation, and that it does not have to be satisfied when the head of IP is elided (their (42)):
'Whenever Infl is elided (by Forward Deletion), the EPP is not in effect, i.e. the EPP holds only of IPs whose head is *not* elided.'

The conclusion, then, is that anti-connectivity effects do not argue against the Question in Disguise theory. Quite the opposite: they strengthen the generalization that specificational pseudoclefst behave almost exactly like question-answer pairs. But this, of course, was just Ross's original observation.

Conclusion

While there is an intrinsic appeal to any revisionist account, I think connectivity is one of those few domains where one might want to remain a conservative. The debate about the validity of our c-command tests is certainly a healthy one. But I hope to have established that the connectivity problem *per se* cannot be an argument for revising them, and that the conservative approach outlined here has both a conceptual and an empirical advantage over revisionist accounts.

First, the present theory accounts in one fell swoop (i) for Ross's original examples (e.g. 'What I did then was I called the grocer'), where a question is explicitly equated with an answer; (ii) for those cases that are successfully analyzed by the Revisionist account (e.g. 'What John likes is himself'), and (iii) for all the cases that display intermediate degrees of ellipsis (e.g. 'Ce contre quoi j'ai lutté, c'est contre la guerre'). By contrast, a Revisionist can only account for (ii) and has to posit an entirely different mechanism for (i) and (iii), which yields a tremendous redundancy in her theory. In addition, the Revisionist has to explain how the mechanism that generates (i) and (iii) can *fail* to generate (ii) as well - not a trivial matter. Second, the similarity between pseudoclefts and question-answer pairs was shown to be extremely strong, and to extend to the cases of 'anti-connectivity' that have been discussed in the recent literature - a further argument for the approach presented here. Finally, I note that the present theory leaves several questions open, notably: (i) how the semantics outlined here can be extended to cases of quantification into questions; (ii) how the syntax/semantics interface works for noun phrases that are interpreted as questions; (iii) why clauses such as *his worry himself*, which are clearly ungrammatical when they appear overtly, should be good under ellipsis, and finally (iv) why anti-connectivity effects ever arise, be it in pseudoclefts or in question-answer pairs. I am happy to leave these problems for the Conservatives and the Revisionists of the future.

Appendix I. A Karttunen Semantics for Pseudoclefts

According to Karttunen's semantics, the extension of a question is the set of all true answers to that question. Formally[41]:

(i) $[[\text{what John likes}]]^s(w) = \{p_{<s, t>}: [\exists d_{<e>} [p(w)=1 \ \& \ p=[[\text{John likes t}]]^{s[t->d]}\}$

However in order to handle indirect questions under 'know', Karttunen suggests that 'Mary knows what John likes' is true just in case Mary knows the *conjunction* of all the true answers to the question (this line of thought is developed in Heim 1994). This is defined as follows, where 'L(j, d)(w)' stands for 'John likes d in world w':

(ii) $\text{Conj}([[\text{what John likes}]]^g(w)) \quad = \cap\{p_{<s, t>}: [\exists d_{<e>} [p(w)=1 \ \& \ p=[[\text{John likes t}]]^{g[t->d]}\}$

$\qquad\qquad\qquad\qquad = \cap\{\text{John likes Mary, John likes John, John likes Sam...}\}$

$\qquad\qquad\qquad\qquad = \lambda w'_{<s>} \forall d_{<e>} [L(j, d)(w) \Rightarrow L(j, d)(w')]$

Let us now suppose that in connectivity sentences *be* does not just equate the pre-copular element and the post-copular element. Rather, it equates the *conjunction* of the elements in the question with the answer (this, of course, is a stipulation, since there is no evidence that in other cases identity *be* can compute such a conjunction before effecting the equation). This solves the type-mismatch problem that we encountered earlier, for the elements that are equated are now both propositions. 'What John likes is ~~John likes~~ himself' is thus analyzed as follows:

(iv) $\quad \text{Conj}([[\text{what John likes}]]^g(w)) = [[\text{John likes himself}]]^g$

Replacing both sides with their values, we obtain:

(v) $\quad \lambda w'_{<s>} \forall d_{<e>}[L(j, d)(w) \Rightarrow L(j, d)(w')] = \lambda w'_{<s>} L(j, j)(w')$

This can be expressed equivalently as (vi), which is easier to compare to the analysis given in the body of the article, repeated as (vii):

(vi) $\{w': \{x: \text{John likes x in w'}\} \supseteq \{x: \text{John likes x in w}\}\} = \{w': \{x: \text{John likes x in w'}\} \supseteq \{\text{John}\}\}$

(vii) $\{w': \{x: \text{John likes x in w'}\} = \{x: \text{John likes x in w}\}\} = \{w': \{x: \text{John likes x in w'}\} = \{\text{John}\}\}$

Unlike (vii), however, (v)/(vi) is not immediately equivalent to the result we want, namely that John likes John and nothing else in w, which can be expressed in the notation of (v) as in a. or of (vi) as in b.:

(viii) $\quad$ a. $\forall d_{<e>} (L(j, d)(w^*)=1 \Leftrightarrow j=d)$

$\qquad$ b. $\{x: \text{John likes x in w}\} = \{\text{John}\}$

(viii) immediately entails (v)/(vi), but the converse is not true. The following situation is a counterexample:

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[41] For perspicuity, I mix set-theoretic and lambda-notation.

w: John likes John and Mary
w_1: John likes John, Mary and Ann
-The worlds w' such that {x: John likes x in w'}⊇{x: John likes x in w} are: {w, w_1}
-The worlds w' such that {x: John likes x in w'} ⊇ {John} are: {w, w_1}

In this situation the equation in (v)/(vi) holds, although (viii) is not true. Observe, however, that the above situation is rather peculiar in that the set of possible worlds is extremely impoverished. In particular, there is no world in which John likes John and nothing else - a surprising fact, for certainly such a world is logically coherent. Interestingly, as soon as we assume that there *is* in fact such a possible world, counterexamples such as the one we just discussed are blocked, and (v)/(vi) turns out to entail (viii).

Let us assume, then, that there is always *some* possible world w* (though w* not necessarily the actual world w) in which John likes John and nothing else:

(ix) Auxiliary assumption: For some world w*, $\forall d_{<e>}$ (L(j, d)(w*) ⇔ d=j)

When (ix) holds, (v)/(vi) does entail (viii). To see this, apply both members of (v) to w*. After λ−conversion, this yields:

(x) $\forall d_{<e>}$[L(j, d)(w) ⇒ L(j, d)(w*)] = L(j, j)(w*)

By (ix), L(j, j)(w*) is true, hence the left-hand side of (x) is true as well:

(xi) $\forall d_{<e>}$ [L(j, d)(w) ⇒ L(j, d)(w*)]

But by (ix) again this entails:

(xii) $\forall d_{<e>}$[L(j, d)(w) ⇒ j=d]

To complete the argument and obtain $\forall d_{<e>}$[L(j, d)(w) ⇔ j=d], note that w trivially satisfies the left-hand side of (v), hence also its right-hand side, i.e. L(j, j)(w)=1. But by logic this entails that: $\forall d_{<e>}$[L(j, d)(w) ⇐ j=d]. Thus we have shown that (v) & (ix) entails (viii), which is what we wanted. ❑

Appendix II. A Remark on Den Dikken et al. 2000
Consider the following paradigm, from Den Dikken et al. 2000 (their (15)):

(i)   a. angry with himself$_i$/*him$_i$/*John$_i$ is what he$_i$ is
           b. a unicorn is what John seeks
           c. a picture of his$_i$ house is what nobody$_i$ bought
           d. *any wine was what nobody bought.

Den Dikken et al. suggest that these facts prove the existence of two radically different types of pseudoclefts. What they call 'Type A' pseudoclefts exhibit a uniform pattern with respect to all c-command tests, and should accordingly be treated in terms of question-answer pairs (as is the case in the present theory). By contrast, they think that 'Type B' pseudoclefts, which exhibit connectivity effects for every test *except* NPI licensing, should be given a

different treatment, maybe along revisionist lines. The rationale for their proposal is that there exists a correlation between the environments that license a full answer, and those in which an NPI can be licensed, as is shown in (ii) and stated in (iii) (their (10)). (iv) is Den Dikken et al.'s summary of the main properties of each type of pseudoclefts (I have substituted my terminology for theirs):

(ii)   a. What John did was [he bought some wine]
       b. *[He bought some wine] was what John did

(iii) NPIs are found in the post-copular element of connectivity sentences only where full-IP pre-copular elements are licensed.

(iv) (A)a. Type A connectivity sentences have full-IP post-copular elements.
       b. their post-copular elements may look smaller than IP as the result of ellipsis
       c. NPI connectivity involves c-command of the NPI by (elided) negation in the full-IP syntactic representation of the post-copular element.
(B)   a. Type B connectivity sentences have non-IP post-copular elements
       b. there is no ellipsis in Type B connectivity sentences
       c. hence type B connectivity sentences do not feature NPI connectivity.

However there are some reasons to doubt that Type A and Type B pseudoclefts should be derived from entirely different mechanisms.

1. First, such a proposal is highly uneconomical from a conceptual standpoint. It is hard to see how whatever mechanism generates Type B pseudoclefts could *fail* to produce sentences that are indistinguishable from a subset of the Type A pseudoclefts. This would yield a great deal of redundancy in the grammar - not an impossible conclusion, but one for which one would like to have considerable evidence.

2. Second, even if Den Dikken et al. are correct about the facts, the ungrammaticality of inverted NPIs does not necessarily imply that Type B pseudoclefts are not transformationally derived from Type A pseudoclefts. In fact one might *expect* inverted NPIs to be ungrammatical if the inversion process is the result of movement of an element from an elided answer to the pre-copular position, somewhat along the following lines:

(v)   Himself is what he likes t_{is} ~~he likes~~ $t_{himself}$

Since NPI licensing requires c-command at S-structure, 'any wine' should not be allowed to undergo such movement.

3. Finally, I do not think Den Dikken et al.'s characterization of the facts is entirely correct. As is shown below, it *is* in fact possible to license an NPI in a Type B pseudocleft:

(vi)   a. What he refused was to buy any wine

　　　　b. *Any wine was what he refused to buy
　　　　c. What he refused was to buy any wine
　　　　d. ? To buy any wine was what he refused
　　　　e. What he refused to do was to buy any wine
　　　　f. To buy any wine was what he refused to do
　(vii)　a. What he refuses is to cause any harm
　　　　b. To cause any harm is what he refuses

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