

## I. Introduction.

This paper presents a novel analysis of the copy construction in *wh*-questions (*Wen glaubst du wen Mary getroffen hat?*), a construction in which the intermediate copies of a *wh*-chain are pronounced in addition to the top copy.

The analysis focuses on the difference between *wh*-phrases like *what* and *wh*-phrases like *what book*. The former are compatible with the copy construction, while the latter are not.

The analysis is centered on the claim that *wh*+NP phrases (which I call *wh*-determiners), by virtue of taking NP complements, are quantificational (in that the variable they introduce is bound by an existential quantifier). Lone *wh*-phrases (which I call *wh*-pronominals), on the other hand, are non-quantificational, which is to say they introduce a free variable later bound by existential closure.

Given the assumption that intermediate copies, when pronounced, are interpreted in the same way as the head of a chain, it follows from this distinction that *wh*-determiners cannot occur in the copy construction because each copy introduces an existential quantifier, leading to vacuous quantification. Because *wh*-pronominals are not quantificational, they are compatible with the copy construction.

There are two motivations for the above distinction; the first is drawn from similar work done by Wiltschko (1998) on pronominals; the second is drawn from work by Jacobson (1995) that observes that *wh*-pronominals and *wh*-determiners behave differently in free relatives. The parallel between Jacobson's work and the current analysis is strengthened by the novel observation that dialects allowing the copy construction in questions also allow the copy construction in free relatives.

\* I'd like to thank my QP committee at Rutgers: Veneeta Dayal, Ken Safir and Mark Baker. Many of the ideas in this paper stemmed from discussion with Adrian Brasoveanu, who is an invaluable colleague. Thanks also to Roger Schwarzschild, Sam Cumming, Adam Sennet, Viviane Deprez and Ivano Caponigro for comments, along with Julie Horvath for her help on Hungarian and Paul Roberge for his help on Afrikaans. German judgments come from the tireless efforts of Andre Nuendel, in addition to two anonymous German informants.

## II. Properties of the copy construction.

- It occurs in some dialects of German, along with dialects of Afrikaans, Frisian, Romani, and Hungarian.
- It is an optional alternative to extraction constructions (with only a few subtle semantic differences, see below).

1. a. Wen glaubt John dass Mary getroffen hat? *extraction*  
who believes J. that M. met has
- b. Wen glaubt John wen Mary getroffen hat? *copy construction*  
who believes J. who M. met has  
*Who does John believe that Mary has met?*

- It elicits single-answer responses (it's not a multiple-*wh* question)
  - It contains two (or more) *wh*-words in the same *wh*-chain (this paper therefore does not address things like: *Who wins depends on who enters the race*).
  - It is distinct from *wh*-scope-marking constructions, also present in some dialects of German (*Was glaubt John wen Mary getroffen hat?*) (see Dayal 1994, 2000).<sup>1</sup>
  - It is multiply iterable (but optionally so; Höhle 2000, A. Nuendel p.c.).
2. a. Wem glaubt John dass Hans meint dass Mary getroffen hat?  
b. Wem glaubt John wem Hans meint dass Mary getroffen hat?  
c. Wem glaubt John wem Hans meint wem Mary getroffen hat?  
d. Wem glaubt John dass Hans meint wem Mary getroffen hat?
  - Cannot copy *wh*+NP phrases:
  3. a. Welche Bücher glaubst du dass sie gerne liest?  
which book believe you that she gladly reads  
b.\*Welche Bücher glaubst du welche Bücher sie gerne liest?  
which book believe you which book she gladly reads

<sup>1</sup> The copy construction patterns with extraction, rather than scope-marking constructions, in the following: cross-clausal quantifier binding ("Where does every man think he..." Dayal 1994); *wh*-word/quantifier scope interaction (Pafel 2000, Fanselow & Mahajan 2000), compatibility with de dicto/de re presuppositions ("I know no one will volunteer. But who does Mary think will volunteer?" Dayal 2000); and consistent v. inconsistent readings ("Where does Mary believe John is more popular than he is?" Reis 2000, contra Felser 2004). See also Crain & Thornton (1994) for acquisition data on extraction, the copy construction, and scope-marking.

- The restriction in (3) is not a D-linking phenomenon (Pesetsky 1987):
- 4. Susie has only three dollars.
  - a. Wieviel meint sie wieviel das kostet?  
how.much thinks she how.much that costs  
*How much does she think that costs?*
  - b. \*Wieviel Geld meint sie wieviel Geld das kostet?  
how.much money thinks she how.many money that costs  
*How much money does she think that costs?*
- Nor does it have to do with the phonological or morphological ‘heaviness’ of the *wh*-phrase (Nunes 1999):
- 5. a. Mit wem glaubst du mit wem Hans spricht?  
with whom believe you with whom H. talks  
*Who do you think Hans is talking with?*
- b. Auf wem hat sie gesagt auf wem er warten soll?  
on whom has she said on whom he wait should  
*Who has she said he should wait on?*

### III. *Wh*-phrases and quantification.

- A. Wiltschko 1998 on pronominals.  
Wiltschko examines the distribution of two different pronominal forms in German: personal pronouns (*er, sie, es*) and d-pronouns (*der, die, das*). She concludes that d-pronouns are full DPs containing an empty NP while personal pronouns are a “mere spell-out of phi-features, i.e. an instantiation of AgrD, rather than an instantiation of D” (148).
- Because of their determiner status, d-pronouns are quantifiers whose range is the natural kind referred to by the head noun (Longobardi 1994).
  - Because they’re not determiners, personal pronouns are not quantificational.
  - I extend this division to *wh*-words: *wh*-words surfacing with an NP complement (*wh*-determiners) are determiners functioning as quantifiers over this NP complement, while *wh*-words generated without an NP complement (*wh*-pronouns) aren’t quantificational, and instead introduce a free variable that’s later existentially bound at the utterance level.

- If this were true, d-words (by virtue of being quantificational) and *wh*-pronominals (by virtue of being non-quantificational) would be in complimentary distribution. This seems to be the case:
- 6. a. Nimm das Buch, das /*\*was* du willst.  
take the book d-pron/*\*what* you want  
*Take the book you want.*
- b. Nimm, was /*\*das* du willst.  
Take what/*\*d-pron* you want.  
*Take whatever you want.*
- B. Jacobson 1995 on free relatives (FRs).  
Jacobson notes that in some FR constructions, *wh*-pronouns appear where other quantifiers cannot, indicating that they behave more like definites than quantifiers. She proposes that *wh*-pronouns aren’t quantificational in FRs.
- 7. a. I ate *what* John cooked.  
b. \*I ate *which food* John cooked.<sup>2</sup>
  - It’d be nice to give *wh*-phrases in FRs and *wh*-phrases in questions the same semantics.
  - The fact that free-relative<sup>3</sup> copy constructions are possible in dialects that allow the copy construction in questions seems to bolster this connection (A. Nuendel, p.c.):
- 8. a. Ich traf wen John meint wen Mary liebt.  
I met who J. thinks who M. loves  
*I met who John thinks Mary loves.*
- b. Ich traf welche Person John meint dass/*\*welche Person* Mary liebt.  
I met which person J. thinks that/*\*which person* M. loves  
*I met the person John thinks Mary loves.*

<sup>2</sup> This construction is possible in some languages, none of which are Germanic (or allow the copy construction, see Caponigro 2004).

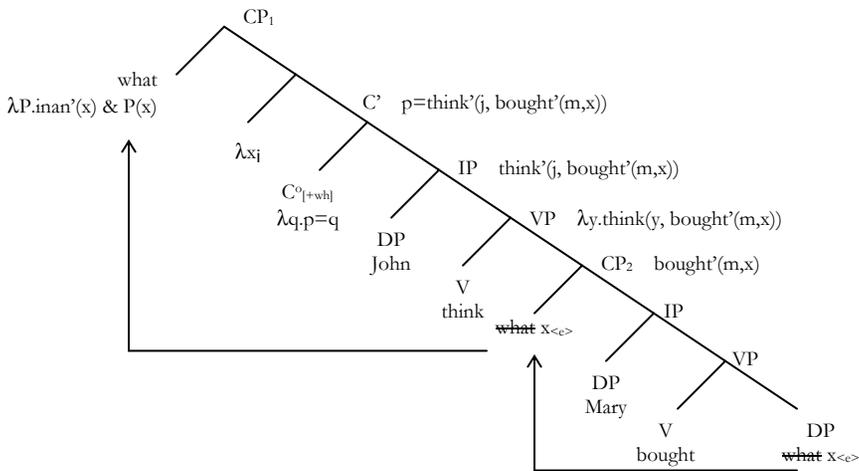
<sup>3</sup> For the purposes of this paper, I’m ignoring *–ever* FRs (‘I ate whichever food John cooked’). These constructions seem to have significantly different semantics due to the contribution of *–ever* (it signals the speaker’s ignorance and patterns strongly with universal, rather than existential, quantifiers) and thus do not provide a good environment for the investigation of the meaning of *wh*-phrases. See Dayal 1997 and von Stechow 2000.

IV. The analysis.

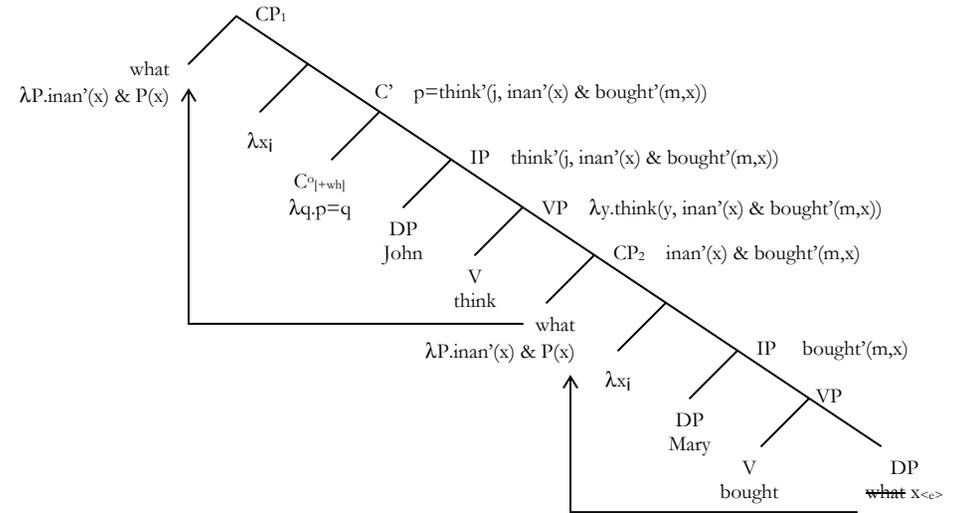
This section takes for granted that extraction and copy constructions differ only with respect to the fact that the former don't spell out intermediate copies, while the latter do. It also assumes that, if a copy is pronounced, it is interpreted as the (pronounced) head of a chain is, and if it is not pronounced, it is interpreted as the (unpronounced) tail of a chain is (i.e. as a variable of type  $\langle e \rangle$ ).<sup>4</sup>

- 9. a.  $[[\text{what}_1]] = \lambda P. \text{inanimate}'(x) \ \& \ P(x)$  (*wh-pronominal*)
- b.  $[[\text{what}_2]] = \lambda Q \lambda P \exists x. \text{inanimate}'(x) \ \& \ Q(x) \ \& \ P(x)$  (*wh-determiner*)

- 10. *What* in extraction constructions: a) What does John think Mary bought?
- b)  $\lambda p \exists x. \text{inanimate}'(x) \ \& \ p = \text{think}'(j, \text{bought}'(m, x))$



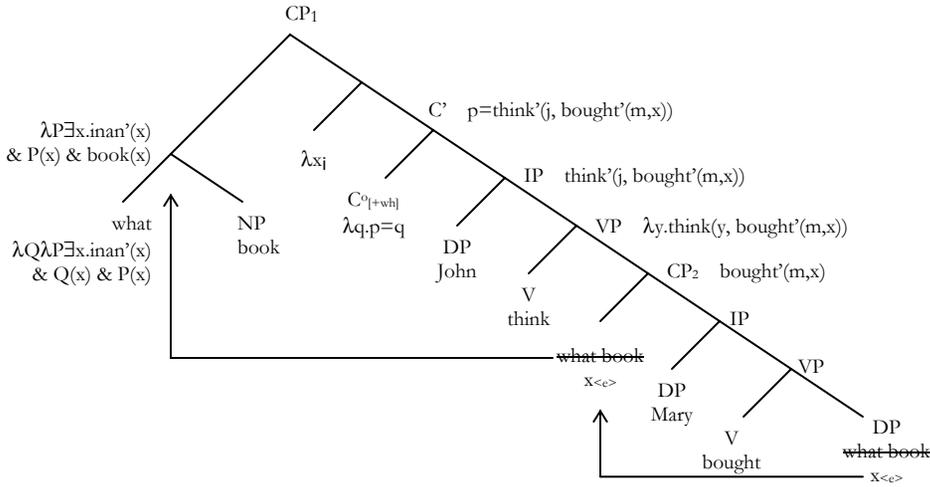
- 11. *What* in copy constructions: a) What does John think what Mary bought?
- b)  $\lambda p. \exists x. \text{inanimate}'(x) \ \& \ p = \text{think}'(j, \text{inanimate}'(x) \ \& \ \text{bought}'(m, x))$



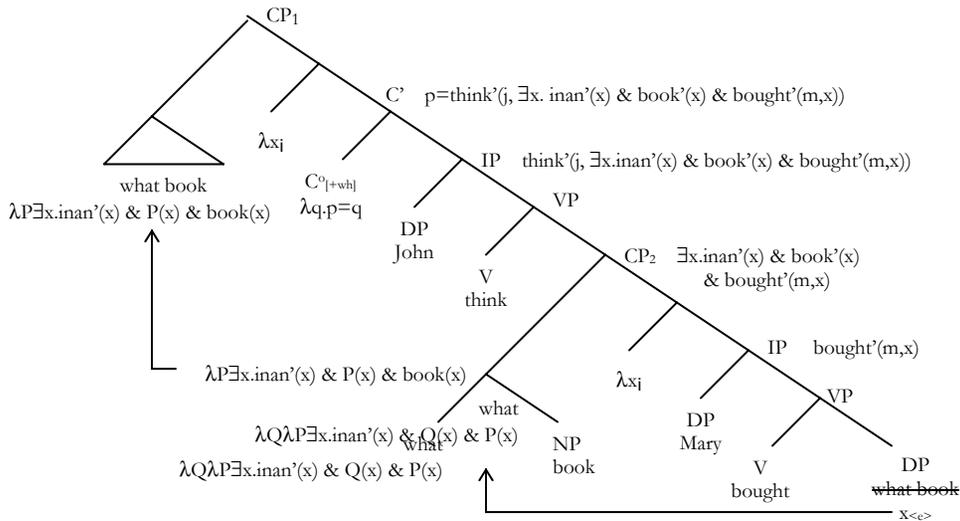
- The derivation in (11) differs from its extraction counterpart only in that it has an additional 'inanimacy' property in the scope of the belief operator.
  - It's not clear this is a problem...
  - If it is, we can instead consider the animacy, location, etc. properties introduced by the *wh*-words as presuppositional rather than assertive. Its status isn't crucial to the analysis.
- Unlike some, this analysis explains why the tail of a chain is never spelled out: if it were spelled out, it would be of type  $\langle \langle e, t \rangle \ t \rangle$  and couldn't properly combine as the argument of the VP *bought*.

<sup>4</sup> This seems intuitive; two copies shouldn't differ in their semantics based on their positions in a chain (anyone arguing that the intermediate *wh*-phrase isn't interpreted the same way the head of the chain is would presumably be arguing that the head is  $\langle \langle e, t \rangle \ t \rangle$  and the intermediate copy is  $\langle e \rangle$ ).

12. *What*+NP in extraction constructions: a) What book does John think Mary bought?  
 b)  $\lambda p \exists x. \text{inanimate}'(x) \ \& \ \text{book}'(x) \ \& \ p = \text{think}'(j, \text{bought}'(m, x))$



13. *What*+NP in copy constructions:  
 a) \*What book does J. think what book M. bought?  
 b)  $\lambda p \exists x. \text{inanimate}'(x) \ \& \ \text{book}'(x) \ \& \ p = \text{think}'(j, \exists x. \text{inanimate}'(x) \ \& \ \text{book}'(x) \ \& \ \text{bought}'(m, x))$



- The vacuous quantification in (13b) yields an infelicitous interpretation for (13a).
- It returns the singleton set of propositions that are true if there are books in the world and if John thinks that Mary bought something.
- Given the inappropriateness of this interpretation, the construction is ruled unacceptable.

V. Consequences.

- Islands. The copy construction is incompatible with matrix negation, a fact which has in the past been attributed to movement violations over negative islands.

14. a. Wen glaubst du nicht dass sie liebt?  
 who believe you not that she loves  
 b. \*Wen glaubst du nicht wen sie liebt?  
 who believe you not who she loves (*Who don't you believe she loves?*)

- Since extraction and copy constructions do not differ on the type of movement they involve in my theory, nor does the matrix negation interfere between an operator and its restrictor in my theory (contra Felser 2004), I cannot appeal to negative islands.
- In fact, since the analysis doesn't predict a difference in the syntax and semantics between extraction and copy constructions, it suggests that the possible explanation lies elsewhere.
- The copy construction is only possible with a small subset of subordinating verbs ("bridge verbs"). These may correlate with neg-raising predicates.
- The copy construction is also incompatible with factive islands.

- *How many* constructions. If one were to assume that the *many* in *how many* were quantificational, then its ability to copy (see (4), reproduced below) would be problematic.
4. a. Wieviel meint sie wieviel das kostet?  
How.much thinks she how.much that costs  
*How much does she think that costs?*
15. a.  $[[\text{many}]] = \lambda P \lambda d \lambda Q \exists X. P(X) \ \& \ Q(X) \ \& \ |X| = d$   
(Romero 1998: 97, Fox 1999:152, a.o.)  
b.  $[[\text{how many books did John read?}]] =$   
 $\lambda p \exists d. p = \exists X. \text{books}(X) \ \& \ \text{read}(j, X) \ \& \ |X| = d$
- There are lots of reasons to think that the *many* in *how many* is not quantificational (see Rett 2005):
- Schwarzschild (2002) argues from comparatives that *many* is a predicate over scalar intervals, rather than a quantifier, partly because of its ability to occur with DegPs:
16. a. many more cookies  
b. many too many cookies
- The existential quantifier over degrees is forced to receive a low reading in French when the NP is stranded, indicating that  $\exists d$  is associated with the NP rather than with *combien*.
17. a. Combien de livres faut-il que vous lisez?  $\square \gg \exists, \exists \gg \square$   
how.many of books it's.necessary that you read
- b. Combien faut-il que vous lisez de livres?  $\square \gg \exists, * \exists \gg \square$   
how.many it's.necessary that you read of books?  
*How many books must you read?*

## VII. Conclusion.

The intermediate copy in the copy construction is a spell-out of a copy in a successive-cyclic *wh*-chain. When a copy is pronounced, it is interpreted as the head of the chain is. Since *wh*-pronominals are non-quantificational (since they introduce a free variable), it is inconsequential when they are spelled out multiple times. Since *wh*-determiners are quantificational, they bind a variable each time they're spelled out, resulting in vacuous quantification.

## Select Readings.

- Caponigro, I. 2004. "The semantic contribution of *wh*-words and type-shifts: evidence from free relatives crosslinguistically." *Proceedings of SALT 14*.
- Dayal, V. 1994. "Scope marking as indirect dependency." *Natural language semantics 2*: 137-170.
- Dayal, V. 1997. "Free relatives and *ever*: identity and free choice readings." *Proceedings of SALT VII*, 99-116.
- Dayal, V. 2000. "Scope marking: cross-linguistic variation in indirect dependency." In Lutz, Müller & von Stechow (eds.) *Wh-scope marking*. Philadelphia: John Benjamins. 157-194.
- Fanselow, G. & A. Mahajan. 2000. "A Minimalist theory of *wh*-expletives, *wh*-copying and successive cyclicity." In Lutz, Müller & von Stechow (eds.) *Wh-scope marking*. Philadelphia: John Benjamins. 195-230.
- Felser, C. 2004. "*Wh*-copying, phases & successive cyclicity." *Lingua 114*:5, 543-574.
- von Fintel, K. 2000. "Whatever." *Proceedings of SALT 10*.
- Fox, D. 1999. *Economy and semantic interpretation*. Cambridge, MA: MIT Press.
- Höhle, T. 2000. "The *W...W*-Construction: appositive or scope-indicating?" In Lutz, Müller & von Stechow (eds.) *Wh-scope marking*. Philadelphia: John Benjamins. 249-270.
- Jacobson, P. 1995. "On the quantificational force of English free relatives." In E. Bach et al. (eds.) *Quantification in natural languages 451-486*. Dordrecht: Kluwer.
- Longobardi, G. 1994. "Reference and proper names: a theory of N-movement in syntax and logical form." *Linguistic inquiry 25*: 609-665.
- Nunes, J. 1999. "Linearization of chains and phonetic realization of chain links." In S. Epstein & N. Hornstein (eds.) *Working minimalism*. Cambridge, MA: MIT Press. 217-249.
- Pafel, J. 2000. "Absolute and relative. On scope-marking in German *wh*-sentence, *W...W*- constructions included." In Lutz, Müller & von Stechow (eds.) *Wh-scope marking*. Philadelphia: John Benjamins. 333-358.
- Pesetsky, D. 1987. "*Wh*-in-situ: movement and unselective binding." In E. Reuland & ter Meulen (eds.) *The representation of (in)definiteness*. Cambridge, MA: MIT Press. 98-129.
- Poletto, C. & J-Y. Pollock. 2004. "On *wh*-clitics and *wh*-doubling in French and some North Easter Italian dialects." *Probus 16*(2): 241-272.
- Reis, M. 2000. "On the parenthetical features of German *Was... W*- constructions and how to account for them." In Lutz, Müller & von Stechow (eds.) *Wh-scope marking*. Philadelphia: John Benjamins. 359-408.
- Rett, J. 2005. "How *many* is interpreted." Ms., Rutgers University.
- Romero, M. 1998. *Focus and reconstruction effects in wh-phrases*. University of Massachusetts, Amherst: PhD Thesis.
- Schwarzschild, R. 2002. "The grammar of measurement." *Proceedings of SALT 14*.
- Thornton, R. & S. Crain. 1994. "Successive cyclic movement." In T. Hoekstra & B. Schwartz (eds.) *Language acquisition studies in generative grammar*. Philadelphia: John Benjamins. 215-252.
- Wiltschko, M. 1998. "On the syntax and semantics of (relative) pronouns and determiners." *Journal of comparative Germanic linguistics 2*: 143-181.