1 Pair-list readings and single pair readings

(1) Who bought what?  
   a. John bought a book, Sue bought a record, and Bill bought a tape.  
   b. ?? John bought a book.  

(2) Who just bought what?  
   a. ?? John just bought a book, Sue just bought a record...  

There are a number of different possible “pair-list”-type readings.

(3) a. (Guess) what the boys bought.  
   b. (Guess) what everyone bought.  
   c. (Guess) who bought what.

2 Questions with quantifiers

2.1 Quantifiers

Reminder: quantifiers are things like everyone, most books, nothing—they allow you to express generalizations.

(4) Every boy fainted.  
(5) Most (of the) boys fainted.  
(6) Several (of the) boys fainted.  
(7) No(ne of the) boys fainted.

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1 A “record” is sort of functionally like a CD, from the distant past. A “tape” is functionally similar, but from the slightly less distant past and more like a early form of CDRW. See also “8-track,” “Dictaphone.”
In general, quantifiers relate two sets of things. One set is the set of boys, and the other is what the sentence without the quantifier expresses (*those who fainted*). The quantifier says something about the number of things in the first set that are also in the second set. For *every*, being in the first set implies being in the second. For *no*, being in the first set implies *not* being in the second. For *most*, truth requires more than half of the members of the first set to be in the second set…

Quantifiers are actually a lot like *wh*-in-situ (or, some would say, the other way around). We assume that quantifiers don’t make sense if they haven’t been “split” apart, leaving a trace. But in pretty much every language (except maybe in Hungarian), this splitting (movement of the quantifier) doesn’t happen until after surface structure.

Quantifiers also *interact* with one another. The *relative scope* of a quantifier to another quantifier (usually) affects the truth conditions.

(8) Someone ate everything
   a. There is person, say, Oscar, who—for every thing there was—ate it.
   b. For every thing there was, we can find some person that ate that thing.

We understand this as coming from a logical form structure that reflects these priorities structurally. Thus: scope interaction is a way to diagnose quantifier movement.

(9) a. someone$_i$ everything$_j$ \[ t_i \text{ ate } t_j \]
   b. everything$_j$ someone$_i$ \[ t_i \text{ ate } t_j \]

In support of the idea that it’s movement is the fact that the movement is constrained.

(10) Someone thinks [that John bought everything].
   a. There is a person $x$ s.t. $x$ thinks that for every thing $y$, John bought $y$.
   b. # For every thing $y$, there is a person $x$ s.t. $x$ thinks that John bought $y$.

### 2.2 A subject-object asymmetry (May 1985)

(11) What did everyone buy for Max?
   a. Everyone bought Max a piano.
   b. Mary bought Max a tie, Sally bought him a sweater, …

(12) Who bought everything for Max?
   a. Mary bought everything for Max.
   b. # Mary bought the tie, Sally bought the sweater, …
(13)  a. \( \text{what}_j \text{ everyone}_i \times [t_i \text{ bought } t_j \text{ for Max}] \)
    b. \( \text{everyone}_i \text{ what}_j \times [t_i \text{ bought } t_j \text{ for Max}] \)

(14)  a. \( \text{who}_j \text{ everything}_i \times [t_j \text{ bought } t_i \text{ for Max}] \)
    b. \( \# \text{ everything}_i \text{ who}_j \times [t_j \text{ bought } t_i \text{ for Max}] \)

(15)  Who does no one like?
(16)  Who do at most two boys like?

3  Sloan 1991

(17)  Who does everyone think you saw?
    a.  Mark.
    b.  \# John thinks I saw Mark, Bill thinks I saw Sue, …

(18)  a.  Who did everyone see?
    b.  Who do you think everyone saw?
    c.  \# Who does everyone think you saw?
    d.  \# Who does everyone think saw you?
    e.  \# Who do you think everyone saw Mary kiss?
    f.  \# Who did everyone see Bill’s picture of?
    g.  Who does everyone expect to see?
    h.  \# Who does everyone expect Mary to see?

    b.  Mary thinks John saw himself.
    c.  * John thinks Mary saw himself.
    d.  * John thinks himself saw Mary.
    e.  * Mary thinks John saw Sue kiss himself.
    f.  * John saw Mary’s picture of himself.
    g.  John expects to see himself.
    h.  * John expects Mary to see himself.

(20)  a.  \[ \text{who} \text{ pro}_{wh} \] … t
    b.  who… [t pro_{wh}]
(These judgments have not always been convincing. There seems to be a difference, depending on the weather and the precise time of day.)

4 Chierchia 1991

(21) Who does every Italian male love?
   a. His mother.
   b. Giovanni, Maria; Paolo, Francesca; . . .

The first answer is not a single individual, it varies with the men. Is it shorthand for a list? It seems to provide different information, plus:

(22) Who does no Italian male love?
   a. His mother-in-law.
   b. # Giovanni, Maria; Paolo, Francesca; . . .

It seems to be a different reading from individual and list readings: A functional reading. “What is the function $f$ such that every Italian male $x$ loves $f(x)$?”

So, we need an $x$ that can be bound by a quantifier. Like on Sloan’s story, except in this case there’s relatively incontrovertible evidence from the interpretation. And Chierchia takes it to be a pronoun not an anaphor.

(23) Who$_1$ does [every Italian male]$_2$ love [t$_1$ pro$_2$]?

Turning to list readings—they’re a kind of functional answer too. A function (like his mother) pairs individuals with other individuals (say, Italian males with their mothers). That’s pretty much what a list does too. It’s almost as if a function is a list with a name.

That’s not quite it, though—the information you need to make a list is different from the information you need for just any function. You don’t need to know who everyone’s mother is in order to use the function his mother, but you do if you’re going to make a list.

(24) $\lambda n[n + 1]$
(25) $\lambda x[\text{mother-of}(x)]$

Another thing you need in order to make a list is to know who all of the people are for whom you should be listing a paired individual. And this is going to be the key to what goes wrong with who does no Italian married man like? on the list reading.

The reason we can understand Who does every Italian male love? as a list question, but not Who does no Italian male like?, is that the only way to arrive at a list-function is to run through the mapping it provides. Who do you run through for no Italian male?
For few Italian males or at most two Italian males, it’s a little bit less obvious, but the point is essentially the same. Here, there are people you could run through, except how do you pick them? There’s no Italian male that is in every possible choice of at most two Italian males, nor is there an Italian male that is in every possible choice of few Italian males. There’s nobody you can reliably check—you can’t make the list.

Looking at questions with quantifiers in terms of functions with a hidden argument also buys us something else: An explanation for the difference between May’s examples...

(26) Several students bought everything.
(27) What did everyone buy for Max?
   a. Everyone bought Max a piano.
   b. Mary bought Max a tie, Sally bought him a sweater, ...
(28) Who bought everything for Max?
   a. Mary bought everything for Max.
   b. # Mary bought the tie, Sally bought the sweater, ...
(29) a. What\textsubscript{i} did everyone\textsubscript{j} buy [t\textsubscript{i} pro\textsubscript{j}] for Max?
   b. What\textsubscript{i} did everyone\textsubscript{j} [t\textsubscript{j} buy [ t\textsubscript{i} pro\textsubscript{j}] for Max?
(30) a. Who\textsubscript{i} [ t\textsubscript{i} pro\textsubscript{j}] likes everyone\textsubscript{j} ?
   b. Who\textsubscript{i} everyone\textsubscript{j} [ t\textsubscript{i} pro\textsubscript{j}] likes t\textsubscript{j} ?

But (30b) would be ruled out by Weak Crossover...

(31) a. Who\textsubscript{i} does [his\textsubscript{i} mother] love t\textsubscript{i} ?
   b. everyone\textsubscript{i} [ [his\textsubscript{i} mother] loves t\textsubscript{i} ]?

So, not only does the “hidden pronoun” seem to be there just to get the interpretation of the function right, it also seems to be acting like a pronoun with respect to WCO.

(32) a. Who do you think that everyone invited?
   b. Who do you think invited everyone?

We have the same contrast here, and the WCO explanation predicts it just fine. On an approach to list readings that requires quantification into questions, though, we’d have to say something like this:
Everyone, [who do you think \( CP \ t_j \) invited \( t_i \) ]?

That’s kind of a problem, because normally quantifiers can’t get that far:

Few students think that you invited everyone.

(Pretty much can’t mean “For everyone \( x \), few students think that you invited \( x \)”)

So, lists on this view are just functions, with a hidden pronoun, for which you can enumerate the domain. And the hidden pronoun can induce WCO violations.

Which paper\(_1\) did no speaker\(_2\) criticize \([t_j \ pro_2]\)?

The one by his/her spouse.

Which speaker\(_1\) criticized no paper\(_2\)?

Which speaker\(_1\) [no paper\(_2\)] [t\(_j\) pro\(_2\)] criticized \( t_2 \)?

* Its author.

5 Aguero-Bautista 2000

It turns out that even where the conditions are right and WCO is not at issue, the PL reading disappears under certain conditions. Specifically, C.

Perhaps I’ll introduce enough of Binding Theory to understand the idea here, but perhaps we’ll skip this section.

To which player on Pat Riley’s team did he award every prize?

Which player on Pat Riley’s team did he award every prize to?

[—\( t_1 \)] did he\(_2\) award every prize\(_1\) [to which player on PR\(_2\)’s team\(_1\) pro\(_3\)]?  

To which player on his team did Pat Riley award every prize?

Which player on his team did Pat Riley award every prize to?

[—\( t_1 \)] did PR\(_2\) award every prize\(_1\) [to which player on his\(_2\) team\(_1\) pro\(_3\)]?

Condition C (a.k.a. Principle C) would only be violated in (37) if To which player on PR’s team is interpreted in its original position. The question is grammatical, so it seems that it isn’t necessary to interpret it in its original position—but the PL reading is gone, which suggests that it is necessary for the PL reading to interpret the wh-phrase in its initial position (that is, below the every phrase). That Condition C is at issue is confirmed by the fact that (38) does have the PL reading, once the configuration allows the wh-phrase to be interpreted in its original position.

Perhaps this argues for a bit more tightly fused pro that actually moves with the wh-phrase and must reconstruct with the wh-phrase. Though, then we get into questions about what WCO is really sensitive to.
The following sentence seems to permit an interpretation where there is a different librarian for each boy. That is *every boy* takes scope over *some librarian or other*.

(39) Some librarian or other found out which book every boy needed.

What makes that strange was mentioned before—quantifiers can’t usually get that far. If there is no embedded question there, such a librarians-vary-with-the-boys reading is not available.

(40) Some librarian or other found out that every boy needed help.

It’s as if the embedded question gives *every boy* a little boost, getting it close enough to then QR over *some librarian or other*. The question can only boost it so far, though.

(41) Some librarian or other found out that I know which book every boy needed.

But it seems not always to work—replace *every boy* with *few boys* and the librarians-vary-with-the-boys reading goes away.

(42) Some librarian or other found out which book few boys needed.

Ah-ha. This gives us a hint about what’s going on. Pair-list and single pair readings can be detected in embedded questions as well.

(43) I know which book every boy needs.

But there seems to be no PL reading for quantifiers like *few boys*, even embedded.

(44) John found out which book few boys needed.

So—it looks like whatever is giving *every boy* this “boost” to the edge of the question relies on the PL reading.

We could check Aguero-Bautista’s facts against this, but good luck with the judgments. The first one should only involve one reporter.

(45) Some reporter or other found out which player on his team Pat Riley awarded every prize to.

(46) Some reporter or other found out which player on Pay Riley’s team he awarded every prize to.

Assuming that works (and I think it does), it further supports the generalization that in order for a quantifier to get a “boost” from a question, the question must have a PL reading generated by that quantifier.
7 So where are we?

M&S (1994) seems to suggest something more like the original view—quantification into questions. The quantifier gets up to the edge of the question (in order to generate the PL reading) and from there is close enough to interact with quantifiers higher up.

(47) Fewer than three students find every article to be comprehensible.

Idea (cf. Cecchetto 2004) might be that a quantifier can’t move that high on its own, but if it has some other reason to move partway, it can move the rest of the way on its own.

Chierchia (1993, 1993), Aguero-Bautista (2000) seem to suggest that in order to get the PL reading, at least part of the wh-phrase (perhaps a covert pronoun or anaphor) needs to be lower, beneath the quantifier, at the point of interpretation.

There’s still something to be figured out here.

References