Whichever Antecedent

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Anaphoric pronouns are commonly understood to "stand for" or "refer back to" an antecedent full noun phrase. Plural pronouns may have several antecedents, as in

(1) John told Bill that they were in danger. [they={(John, Bill)}]

Singular pronouns on the other hand are interpreted as referring back to a single antecedent. Thus (2) is perceived as ambiguous because he can be taken to stand for either John or Bill. (Here as elsewhere I ignore the possibility of the antecedent being outside the sentence in question.)

(2) John told Bill that he was in danger. [he=John or he=Bill]

It is customary to distinguish between pronouns that correspond to bound variables in predicate logic and "pronouns of laziness" that replace proper names and definite descriptions (Partee 1975). The ambiguity of examples like (3) is supposedly due to the possibility of taking he either as a variable bound by the quantifier phrase only John or as a pronoun of laziness standing for John.

(3) Only John thinks that he is in danger.

A third kind of anaphora is illustrated in (4). It is neither a case of variable binding nor an instance of pronominalization by a coreferential term (Karttunen 1969).

(4) The man who gave his paycheck to his wife was wiser than the man who gave it to his mistress.

Although (2), (3), and (4) represent different kinds of anaphora, they have one feature in common: in all of these cases the pronoun requires a unique antecedent; the ambiguity of (2) and (3) is due to the fact that there are two possible antecedents for the pronoun.

There is a class of cases -- hitherto unnoticed -- where the availability of two antecedents does not result in any ambiguity. Consider sentences like (5).

(5) If Mary has a car or John has a bicycle, it is in the garage.

The interesting fact about (5) is that the pronoun it is perceived as unambiguous. There is no reading of (5) under which it is interpreted as definitely referring to a car or to a bicycle. Instead
it seems to mean "a car or a bicycle, whichever of these it is that exists." The same goes for examples like (6) and (7).

(6) If Mary has a car or a bicycle, it is in the garage.
(7) John can choose between a bicycle and a car but he must keep it in the garage.

It is interesting to note that the acceptability of (5) and (6) is dependent on the connective being or rather than and. (8) does not have that sort of reading.

(8) If Mary has a car and John has a bicycle, it is in the garage.

This example is either ambiguous or ungrammatical; that is, the pronoun should be they if it is taken to have two antecedents.

Note also that the acceptability of (5) is in part due to the fact that the truth of the if-clause guarantees that there is some object, either a car or a bicycle, for it to refer to. If one of the alternate antecedents is removed, as in (9), the result seems ungrammatical.

(9) If Mary has a car or John commutes, it is in the garage.

This is presumably because the if-clause "Mary has a car or John commutes" does not entail that there is a car to talk about.

It is evident that anaphoric pronouns of the sort in (5), (6), and (7) cannot be interpreted as bound variables -- no variable can be bound by two quantifiers. They certainly are not pronouns of laziness either. Any such interpretation runs against the intuition that the sentences in question are unambiguous; there is only one meaning.

These examples are similar to those discussed in Hintikka and Carlson 1976 (see also Karttunen 1976), but their game-theoretical treatment of anaphora does not give correct results in the present case, at least not without some modification.

References

Hintikka, Jaakko and Lauri Carlson (1976) "Conditionals, Pronominalization by Quantifiers, and Other Applications of Subgames," unpublished manuscript.