

Only, if and only if

Two familiar doctrines about *only* and *if* render a compositional analysis of *only if* difficult. One says that *if* clauses restrict adverbial quantifiers and, presumably, also *only*. According to the other, *only* is the converse of a universal quantifier: the universal's restriction is the scope of *only* and vice versa. The two are incompatible. By the first, the *if* clause in (1) is the restriction of *only*, but by the second the *if* clause is the scope of *only*. In an attempt to solve the *only if* puzzle, I argue that *only* is not the converse of a universal quantifier but a focus-sensitive sentential operator (von Fintel 1997) and that *if* clauses are plural definite descriptions (Schein 2001) and that conditionals are by default 'weak'.

I. *Only*: Though *only* seems to be the converse of *all* in (2), it does not in (3). (3) does not state that all those that came were hungry sparrows, but that all sparrows that came were hungry ones. The effects of focus follow if *only* is indeed a universal quantifier, but one which takes clausal scope and which is restricted by a 'focus frame' (cf. Rooth 1985). In particular, I take (3) to mean (4) (Bonomi and Casalegno 1993, Herburger 2000).

Only if sentences pattern with other *only* sentences in being focus-sensitive. (5) is false if it was not Raquel's lullaby but someone else's that made the baby go to sleep. Extending the analysis of *only* that we employed for (3) to (5) -- without yet spelling out the contribution of *if* -- gives us (6). From (6) it follows that if the baby fell asleep then Raquel sang to him. Because of the parenthetical which captures the (backgrounded) existential force of *only* (Atlas 1993, Herburger 2000) it also follows that if the baby was sung to he fell asleep. I argue that the resulting 'bi-conditional' reading of *only if* is the natural interpretation of these sentences in non-academic English (Lycan 1991).

II. *If*: As we have seen, the conditional in (5) does not restrict *only*. Conditionals in sentences without adverbial quantifiers, such as (7), are held to restrict a tacit universal (or generic) adverb, as in (8) (Kratzer 1986). Does this version of the conditional doctrine extend to the yet-unanalyzed conditionals in (6)? It seems not, for it would lead to incorrect truth conditions: "every situation where every singing lead to the baby falling asleep was part of a situation where every singing by Raquel lead to an event of the baby falling asleep." Situations where only some lullabies succeeded in lulling the baby to sleep will be ignored, but wrongly so because they might include a successful lullaby by someone other than Raquel. And such a situation would falsify (5). Faced with this kind of problem, von Fintel (1997) contemplates whether the universal in question obeys the excluded middle. Alternatively, Dekker (2001) tackles the conditionals in *only if* sentences by accessing the content of *if* clauses without interpreting the *if* itself.

Here, I explore a different route. Consider (9). As S.J. Barker (1997) shows, iterated *if* clauses like (9) pose a problem for the *if* clause doctrine. A solution, proposed in Schein (2001), is that *if* clauses are in-situ plural definite descriptions of situations or events. For simple sentences like (7) the results are equivalent ("Most events where you drop a vase result in a breaking of the vase" and "The events where you drop a vase are such that most any among them result in the vase breaking", resp.). But for (9) only the analysis paraphrased in (11) delivers the desired truth-conditions in (10).

The plural definite description analysis of conditionals also helps in (6), whose logical form, now that *if* is spelled out, is paraphrased in (12). (12) entails that whenever the baby fell asleep, the one that sang to him was no other than Raquel. Because the consequent is existentially quantified, a situation where somebody tried various lullabies but only succeeded with one is no longer excluded from the count, as desired.

If, aiming to provide a unified account, this analysis is extended to conditional sentences without overt adverbial quantifiers, they all come out as 'weak' by default. What about the difference between the weak (13) and the strong (14)? I explore the possibility that the contrast (13) vs. (14) is pragmatic and due to the 'desired result' condition (the inverse of Schein's 'ceteris paribus'). Schematically, conditionals are now analyzed as follows: the situations described in the antecedent are such that a situation as described in the consequent follows and--and this is the desired result condition--such a situation follows until the desired result is reached. The 'desired result' condition will make George Bailey stop putting his quarters in the meter when the meter reaches the time limit he needs for parking legally. At the same time, if the desired result is to alleviate world hunger, the desired result condition will keep George Bailey giving his quarters to Santa Claus until he has none left.

- (1) The light in the kitchen is only on if aunt Regina is up.
- (2) [Only sparrows] came.
- (3) [Only HUNGRY sparrows] came. (CAPS=focus)
- (4) Every event where sparrows came (and there was such an event) were part of a situation where hungry sparrows came.
- (5) The baby only fell asleep if RAQUEL sang to him.
- (6) Every situation where, if sung to, the baby fell asleep (and there was such a situation) was part of a situation where, if sung to by Raquel, the baby fell asleep.
- (7) If you drop a vase, it will break.
- (8) Every (normal) event where you drop a vase is such that there is a related event where that vase breaks.
- (9) If a donkey is vaccinated, then if it has a vitamin deficiency, it usually faints.
- (10) Most any donkey with a vitamin deficiency that is vaccinated faints (then).
- (11) The situations in each of which a donkey is vaccinated are such that the situations among them where the donkey has a vitamin deficiency are such that in most any situation among them the donkey faints.
- (12) Every situation where the lullabies to the baby were such that among them there was an event where the baby fell asleep (and there was such a situation) was part of a situation where Raquel's lullabies to the baby were such that among them there was an event where the baby fell asleep.
- (13) If George Bailey has a quarter in his pocket, he puts it in the parking meter. 'weak'
- (14) If George Bailey has a quarter in his pocket, he gives it to Santa Claus (to alleviate world hunger) 'strong'

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