

If-clauses and (c)overt adverbs of quantification revisited

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1. Since Lewis (1975), adverbs of quantification in conditionals have been thought to take scope over the entire clause they appear in and to be restricted by the if-clause. (1a) on this view is a mere ‘stylistic variant’ of (1b), sharing with it the logical form paraphrased in (1c):

- (1) a. If a cat is dropped on the ground, it usually lands on its feet.
b. Usually, if a cat is dropped on the ground, it lands on its feet.
c. ‘In most cases where a cat is dropped on the ground the cat lands on its feet’

Lewis’s ‘if-clause=adverbial-restrictor’ thesis is held regardless of whether ‘cases’ are thought of as the closest possible worlds (e.g. Lewis 1973) or minimal situations (e.g. Berman 1987, Kratzer 1989), and also regardless of whether *usually* is treated as an unselective (e.g. Lewis 1975) or a selective adverb (e.g. de Swart 1991, von Stechow 1994).

2. Despite its great success, the if-clause=adverbial-restrictor thesis is not without problems. Thus, (i) it accords to the adverb in (1a) a place in the logical syntax that does not correspond to its place in the overt syntax (and which cannot easily be attributed to covert movement, which is not attested for quantificational adverbs). (ii) it predicts that NPIs in the antecedent of conditionals should only be licensed in conditionals with adverbs that create downward entailing (DE) contexts (Ladusaw 1979). But, as (2) shows, NPIs are not only licensed in conditionals with *never* or *always*, whose restrictions are DE, but also in those with *sometimes* and *often*, whose restrictions are not DE:

- (2) If Doug reads **anything** interesting in the newspaper, he **never/always/sometimes/often** tells Sid about it.

3. We take (i) and (ii) to show the need for an account where quantificational adverbs only take scope over the consequent and where the antecedent restricts a separate quantifier that is DE in its restriction. These requirements are met—and, crucially, compositionality is observed and NPI licensing explained—if conditional antecedents are plural definite descriptions (Schein 2001; cf. Schlenker 2004). (1a) no longer has the logical form paraphrased in (1c) but that in (3):

- (3) ‘The cases where a cat is dropped on the ground are such that in most among them the cat lands on its feet’

Holding cases to be events, where events individuated by their participants and the relations between them (e.g. Geis 1969, Lycan 2001, Schein 2001), we take the modal nature of conditionals (e.g. Stalnaker 1968, Lewis 1973) to show that conditionals describe possible events, a subclass of possible individuals. Quantification over possible events captures the interaction between conditionals and negation and also why (4) is not vacuously true if Pakistan refrains from invading Kashmir:

- (4) If Pakistan invades Kashmir, India will use nuclear weapons.

4. Next, the licensing of NPIs in antecedents indicates that antecedents constitute a DE environment. Therefore, the fact that the consequent of a conditional does not quantify over all antecedent cases cannot be due to a selection function or accessibility relation restricting the domain of quantification of the antecedent, thereby making it non-monotonic (Stalnaker 1968, Lewis 1973). Rather, the elimination of abnormal and bizarre cases (cf. Kadmon & Landman 1993) must take place not in the antecedent but elsewhere: it takes place in a tacit *ceteris paribus* condition sandwiched between the antecedent and consequent (Schein 2001). The resulting logical form for (1a) is (5), where $[Qx: F(x)]G(x)$ is the schema for restricted quantification for ‘Q-many x’s that are F are G’:

- (5) $[\iota e: \forall e E(e) \leftrightarrow [\exists x: \text{Cat}(x)] \text{Is-dropped-to-ground}(x, \text{at } e)]$ (a)
 $[\forall e: E(e)] [\exists E': \exists e' E'(e') \wedge \forall e' (E'(e') \rightarrow \text{Follow}(e, e'))]$ (b)
 $[\iota e'': \forall e'' (E''(e'') \leftrightarrow E'(e'') \wedge \text{Ceteris-paribus}(e, e''))]$ (c)

[Most $e'' : E''(e'')$] [$\exists x : \text{Cat}(x) \wedge \text{Is-dropped-to-ground}(x, \text{at } e)$] $\exists e''' \text{Lands-on feet}(e''', x)$ (d)
 (5) says that the possible events where a cat is dropped (a) are each followed by possible events (b) where those where everything was and remained normal (c) are such that for most of those there is an event where the dropped cat lands on its feet (d).

5. NPIs are not the only sign of the DE nature of if-clauses. The disjunction *or* is too. Consider (6a), which entails both (6b) and (6c).

- (6) a. If Emilia or Jason come to town, Tom picks them up at the airport.
 b. If Emilia comes to town, Tom picks her up at the airport.
 c. If Jason comes to town, Tom picks him up at the airport.

The conjunctive inference licensed by the disjunctive if-clause in (6) is a problem for the Stalnaker/Lewis minimal change accounts (Fine 1975): since only the closest world(s) where the antecedent is true count for the interpretation of the if-clause, if the worlds where Emilia visits happen to be closer to the real world than those where Jason does, (6a) should only entail (6b) but not also (6c), contrary to fact. Considerable effort involving either changing the selection function and/or the semantics of *or* is required to try to maintain the Stalnaker/Lewis account in light of disjunctive antecedents cf. e.g. Nute (1980), Loewer (1976), Alonso-Ovalle (2006), van Rooij (2006), Klinedinst (2007). In contrast, on the present account the ‘conjunctive’ inference licensed by *or* in (6) follows trivially; there is no more to say about the conjunctive inference licensed by *or* in (6) than there is in (7): it follows on the standard truth conditional meaning of *or* from the fact that *or* appears in the scope of a DE operator that happens to be anti-additive (Zwarts 1991):

- (7) a. It is not the case that Emilia or Jason take a cab.
 b. It is not the case that Emilia takes a cab. c. It is not the case that Jason takes a cab.

6. Finally, what happens in a conditional that lacks an overt adverb of quantification? The same, we argue, as in other sentences lacking an overt adverb of quantification: it has a covert one. The adverb can be of the existential sort, resulting in an episodic reading, or of the universal kind, resulting in a generic reading. We show that whether the tacit adverb is existential or universal depends on the tense/aspect/aktionsart of the verbal predicate. Just as in a simple sentence future or past tense eventive predicates can create ambiguity between a generic or episodic reading (see (8a)) and simple present eventive predicates force a generic reading (see (8b)), in a conditional sentence, too, future or past tense in the consequent can create ambiguity between a generic and an episodic reading, cf. (9a), while a present tense eventive predicate in the consequent forces a generic reading, cf. (9b):

- (8) a. Typhoons arose/will arise in this part of the Pacific. generic/episodic
 b. Typhoons arise in this part of the Pacific. generic
 (9) a. If I find a quarter on the street, I’ll give it to you . generic/episodic
 b. If I find a quarter on the street, I give it to you. generic

The contrast between so-called weak and strong conditionals now reduces to genericity (Schubert and Pelletier 1989), in particular to whether the consequent is episodic and has a tacit existential adverb, or whether it is generic and has a universal one, cf. \exists/\forall in (10d):

- (10) [$\exists e : \forall e' E(e) \leftrightarrow [\exists x : Q(x)] \text{Find-I-on-street}(x, \text{at } e)$] (a)
 [$\forall e : E(e) \leftrightarrow [\exists e' : \exists e'' E'(e') \wedge \forall e'' (E'(e'') \rightarrow \text{Follow}(e, e''))]$] (b)
 [$\exists e'' : \forall e'' (E''(e'') \leftrightarrow E'(e'') \wedge \text{Ceteris-paribus}(e, e''))]$] (c)
 [$\exists/\forall e''' : E''(e''') \leftrightarrow [\exists x : Q(x) \wedge \text{Q-found-I-on-S}(x, \text{at } e)] \exists e'''' \text{Give-I-to-you}(x, \text{at } e'''')$](d)

On our account generic consequents have full universal force. The ‘tolerance to exceptions’ the conditionals containing them show is due to the preceding *ceteris paribus* condition. It renders inconsequential for the consequents those antecedent events where not all things were or remained equal.

