Conditional Antecedents as Polar Free Relatives

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Goal: Kratzer (1986, 2012), building on Lewis (1975), develops one of the most successful accounts of conditionals to date: the *if-clause-as-restrictor* account. It maintains that *if* contributes no meaning to a conditional construction. Rather, the antecedent of a conditional simply denotes a proposition, which may act as a restrictor for a (covert) modal operator in the consequent. A popular alternative to this account, the *if-clause-as-a-definite-description-of-worlds* account (Schlenker, 2001), has been argued by Bhatt & Pancheva (2006) to be supported by syntactic facts which suggest that *if*-clauses are free relatives which denote a definite description of worlds. We propose a syntax-semantics for *if*-clauses which treats them as free relatives formed via a polar question operator (see also Arsenijević, 2009). We show that such an account provides a more transparent syntax-semantics mapping than that of Bhatt & Pancheva. The proposed account maintains a Kratzerian semantics, while nonetheless capturing the well-established syntactic behavior of *if*-clauses.

Proposal in a nutshell: *If*-clauses serve two primary functions: (i) as conditional antecedents (1a), and (ii) as embedded polar questions (1b).

(1) a. [If it rained], then the grass will be wet.
    b. John wonders [if it rained].

Conditional antecedent *if*-clauses as in (1a) exhibit the syntactic behavior of adjunct clauses, such as *when*-clauses (2) (e.g., Geis, 1985; Bhatt & Pancheva, 2006; Sæbø, 2011; *inter alia*).

(2)   When it rains, John will get wet.

Caponigro (2004) refers to *when*-clauses as in (2) as PP-like free relatives. The relative clause in (2) is taken to be a set denoting CP which combines in the relevant part of the structure as a free relative through the use of type shifting mechanisms (Partee, 1987; Chierchia, 1998; Dayal, 2004). Most notably, an iota operator may apply to the set and return its unique member. In the case of (2), that member will be *the (salient) time at which it rains*. This can then restrict the reference time of the main clause via a covert preposition. We propose that, unlike constituent free relative *when*-clauses, *if*-clauses are polar free relatives. We assume that polar interrogative clauses denote singleton sets containing the nucleus proposition (e.g., Biezma & Rawlins, 2012; *inter alia*). Upon combining with such a set, the iota operator returns its unique member. The result is that the *if*-clause [*if p*] comes to denote the nucleus proposition p. We therefore attribute the same semantic function to *if* in both (1a) and (1b) (i.e., a set formation operator), while maintaining Kratzer's insight that *if* does not contribute any meaning of its own in a conditional construction.

Syntax: Haegeman (2010) argues that the ban on argument fronting in *when*-clauses is due to an intervention effect. She notes that *when*-clauses are structurally interrogative: they are fronted by an overt *wh*-item and can have a long-distance construal indicative of A′-movement.

(3) a. John left [when$_1$ [Sheila said [he would leave] t_1]]
    b. John left [when$_1$ [Sheila said [he would leave t_1]]]   (Larson, 1987)

She argues that *if*-clauses, which also do not permit argument fronting, are similarly derived by operator movement. Indeed, *if*-clauses have long been argued to be free relatives which can be associated with a correlative pro-form, *then* (Iatridou, 1993; Izvorski, 1996). However, unlike *when*-clauses, *if*-clauses cannot have a long-distance construal (i.e., (4) lacks a reading on which John's leaving is conditional on Sheila leaving).

(4)   John will leave [if [Sheila says [she will]]]

Bhatt & Pancheva (2006) attribute this to a locality condition on an abstractor over worlds. We propose, however, that the relevant abstractor is that used in polar question formation, a local

operation which similarly cannot give rise to a long-distance construal (i.e., (5) lacks a reading on which John wondered about Shelia's leaving).

(5)   John wondered [if [Sheila said [she would leave]]]

Besides English, the conditional marker also functions as an interrogative marker for embedded polar questions in numerous languages including Italian (6) and French (Kayne, 1991).

(6) a. Gianni non   sa   se dovrebbe andare al   cinema.
       Gianni NEG   knows if he-should to-go   to-the movies.
    b. Se Gianni avesse fatto   questo, …
       if Gianni had   done   this,

Like polar questions, the antecedent of counterfactual conditionals can be formed by T-to-C movement in several languages (7a), while even indicative conditionals can be formed by T-to-C movement in, for example, German (7b) (Iatridou & Embick, 1994; Bjorkman, 2011).

(7) a. Had I known you were coming, I would have stayed home.
    b. Kommt Hans,   dann   geht Susanne.
       Comes Hans,   then   goes Susanne.

We propose to take these data at face value: *if*-clauses are syntactically polar free relatives.
Semantics: *If*-clauses, like *when*-clauses are free relatives. However, the variable abstracted over belongs to a different domain. We adopt and support the proposal that polar questions denote a singleton set containing the nucleus proposition (e.g., Biezma & Rawlins 2012). Following Dayal's (2016) treatment of the question operator, *if* forms a singleton set by taking a propositional variable q and the nucleus proposition p as arguments (8a). The variable q is abstracted over at the clause edge, forming the singleton set $\{p\}$ (8b). After applying the iota operator, the *if*-clause denotes the unique member in $\{p\} = p$ (8c). This of the appropriate type to restrict the modal base of the (covert) modal in the main clause (Kratzer, 2012) (8d).

(8) a. $[\![\text{if}]\!]^w = \lambda q.\, \lambda p.\, q = p$
    b. $[\![\,[\,q_1[[\text{if } t_1\,][\,p\,]]]\,]\!]^w = [\lambda q.\, q = p] = \{p\}$
    c. $[\![\,[_{Free.Rel}\,q_1[[\text{if } t_1\,][\,p\,]]]\,]\!]^w = \iota q[q \in \{p\}] = p$
    d. $[\![\text{if } p, \square\, r]\!]^w = \forall w' \in (\text{Epist}_{...} \cap p) : [\![r]\!]^{w'} = 1$

Adverbial clauses like *when*-clauses are presupposed (Hooper & Thompson, 1973; Sawada & Larson, 2004), while *if*-clauses are neither presupposed nor asserted (Sæbø, 2011). Indeed, the antecedent of an indicative conditional is presupposed to be possible (von Fintel, 1998), and implicated to be not certain (Veltman, 1986). Starr (2011) notes that such a presupposition is shared with polar questions (9a,b) (where c is the context set).

(9) a. Is John coming?   *presupposes*: C(j) $\cap c \neq \varnothing$
    b. If John is coming, then …   *presupposes*: C(j) $\cap c \neq \varnothing$

This can be treated as a lexical presupposition of polar question formation operators such as *if*.
Significance: We focus on providing an account which takes the mapping between syntax and semantics to be transparent. Although we have not discussed the semantic arguments for the *if-clause-as-a-definite-description-of-worlds* in Schlenker (2001), we maintain that the syntactic facts outlined in Bhatt & Pancheva (2002; 2006) do not favor that account over the *if-clause-as-restrictor* account. In fact, the syntax-semantics mapping is arguably simpler on the account presented here: *if* and T-to-C movement can receive the same semantics in both polar question formation and in conditional antecedents (singleton set formation). Combined with a fairly standard account of free relative formation (Caponigro, 2004), polar free relatives provide the necessary semantic object to function as a modal restrictor.

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