

Wide Scope Simplification: Free Choice Effects from Disjunctions of Conditionals

Summary. The goal of this talk is to account for a novel observation, that disjunctions of conditionals are often but not always interpreted conjunctively. We account for this conjunctive interpretation as a free choice effect.

Data. Simplification of disjunctive antecedents is the inference from *if A or B, C* to *if A, C and if B, C*. For example, from (1) we readily infer (1a) and (1b).

- (1) If you had taken the train or metro, you would have been on time.
- a. \rightsquigarrow If you had taken the train, you would have been on time.
 - b. \rightsquigarrow If you had taken the metro, you would have been on time.

There is an extensive literature on simplification.¹ However, so far there has been no discussion of disjunctions of whole conditionals, such as (2).²

- (2) If you had taken the train you would have been on time, or if you had taken the metro you would have been on time.

(2) has a prominent reading on which it implies each of its simplifications, i.e. (1a) and (1b). The inference from *if A, C or if B, C* to *if A, C and if B, C* we call **wide scope simplification**. For a second example, consider this passage from the Book of Leviticus:

- (3) And if a soul sin ... if he do not utter it, then he shall bear his iniquity.
Or if a soul touch any unclean thing ... he also shall be unclean, and guilty.
Or if he touch the uncleanness of man ... when he knoweth of it, then he shall be guilty.
(Leviticus 5:1–3, [King James Version](#), 1611).

This is most naturally read as a conjunction of conditionals. Cross-linguistically, a disjunction word links the clauses of Leviticus 5 in, for example, [Mandarin Chinese](#) (*huò*), the original [Hebrew](#) (*o*), [Hungarian](#) (*vagy*), [Icelandic](#) (*eðá*), [Māori](#) (*rānei*), [Urdu](#) (*yâ*), [Somali](#) (*ama*), [Welsh](#) (*neu*) and [Yoruba](#) (*tàbí*), suggesting that wide-scope simplification is a cross linguistically robust phenomenon.

A further interesting observation we aim to account for is that wide scope simplification disappears when the antecedent is the same across the two conditionals. Compare:

- (4) a. If Alice had come to the party, Charlie would have come. Or if Bob had come, Charlie would have come.
b. If Alice had come to the party, Charlie would have come. Or if Alice had come, Darius would have come.

(4a) readily receives a conjunctive interpretation, implying both disjuncts, while (4b) does not. Note that the conjunctive interpretation can arise even when the antecedents are not identical, but merely suitably related. For instance, (5) has a conjunctive interpretation.

¹Among authors who argue for simplification's validity are Nute (1975), Ellis, Jackson, and Pargetter (1977), Warmbrød (1981), Fine (2012), Starr (2014), and Willer (2018). Among those who argue it is invalid are Nute (1980), Bennett (2003), van Rooij (2006), Santorio (2018), and Lassiter (2018). More recently, Khoo (2021) considers the case of *if or if*-conditionals such as "If you had taken the train or if you had taken the metro, you would have been on time."

²Though Santorio and Wellwood (2023) consider probabilities of disjunctions of conditionals.

- (5) If you had taken the morning train, you would have arrived before lunch. Or if you had taken the afternoon train, you would have arrived after lunch.

Analysis. We propose that the conjunctive interpretation is a free choice inference. A widespread idea is that disjunction receives a conjunctive interpretation when the conjunctive form does not compete with the disjunction, i.e. is not an available alternative (Fox 2007, Bar-Lev and Margulis 2014, Bowler 2014, Meyer 2015, Singh et al. 2016). If we assume that $A \vee B$ has as alternatives $A \wedge \neg B$ and $B \wedge \neg A$, negating these, together with the truth of $A \vee B$, derives the conjunctive interpretation $A \wedge B$. Thus when the conjunctive alternative is available, disjunction is interpreted exclusively, while when it is unavailable, disjunction is interpreted conjunctively. Following this work, then, our goal is to account for when, and why, the conjunctive alternative to *if A, C or if B, C* is unavailable.

We make use of von Stechow's implementation of the restrictor view of conditionals. von Stechow (1994) proposes that *if*-clauses restrict modals via covert domain variables. The semantic contribution of *if_i A* is to restrict the set of worlds assigned to *i* to those where *A* is true, which is the modal base for modals indexed by *i*. This allows antecedents to be coindexed, resulting in multiple restrictions on the same domain. To illustrate, consider:

- (6) *If_i Alice comes to the restaurant we will_i need to reserve a table for 10 people...*
- And *if_i* (in addition) Bob comes we will_i need to reserve for 11. (*preferred*)
 - And *if_j* Bob comes we will_j also need to reserve for 10. (*dispreferred*)
 - #Or *if_i* (in addition) Bob comes we will_i need to reserve for 11.
 - Or *if_j* Bob comes we will_j also need to reserve for 10.

(6a) is restricted to worlds where Alice comes. We propose that, given an utterance of *if_i A, C or if_j B, C* without coindexing, the conjunction *if A, C and if B, C* is dispreferred as an alternative since conjunction favours the coindexed reading, *if_i A, C and if_i B*.

This proposal accounts for the contrast in (4). A conjunctive interpretation does not arise when the antecedents are the same, as in (4b), since then the *if*-clauses are coindexed; that is, as *if_i A, C or if_i A, D*. Now the conjunctive alternative *if_i A, C and if_i A, D* is readily available, so we predict an exclusive inference, which we indeed observe for (4b).

- (7) a. *If_i A, C. Or if_j B, C.* Conjunctive alt *If_i A, C. And if_j B, C.* **unavailable.**
 \rightsquigarrow Conjunctive reading
- b. *If_i A, C. Or if_i A, D.* Conjunctive alt *If_i A, C. And if_i B, C.* **available**
 \rightsquigarrow Exclusive *or* reading

References

- Bar-Lev, Moshe E and Daniel Margulis (2014). "Hebrew *kol*: a universal quantifier as an undercover existential". *Proceedings of sinn und bedeutung*. Vol. 18, pp. 60–76.
- Bennett, Jonathan (2003). *A philosophical guide to conditionals*. Oxford University Press.
- Bowler, Margit (2014). "Conjunction and disjunction in a language without 'and'". *Semantics and linguistic theory*. Vol. 24, pp. 137–155.
- Ellis, Brian, Frank Jackson, and Robert Pargetter (1977). "An objection to possible-world semantics for counterfactual logics". *Journal of Philosophical Logic* 6.1, pp. 355–357. doi: 10.1007/BF00262069.
- Fine, Kit (2012). "Counterfactuals without possible worlds". *Journal of Philosophy* 109.3, pp. 221–246. doi: 10.5840/jphi1201210938.
- von Stechow, Kai (1994). "Restrictions on quantifier domains". PhD thesis. University of Massachusetts at Amherst. URL: <https://semanticsarchive.net/Archive/jA3N2IwN/fintel-1994-thesis.pdf>.
- Fox, Danny (2007). "Free choice and the theory of scalar implicatures". *Presupposition and implicature in compositional semantics*. Ed. by Uli Sauerland and Penka Stateva. Palgrave, pp. 71–120. doi: 10.1057/9780230210752_4.
- Khoo, Justin (2021). "Disjunctive antecedent conditionals". *Synthese* 198.8, pp. 7401–7430.
- Lassiter, Daniel (2018). "Complex sentential operators refute unrestricted Simplification of Disjunctive Antecedents". *Semantics and Pragmatics* 11. doi: 10.3765/sp.11.9.
- Meyer, Marie-Christine (2015). "Generalized free choice and missing alternatives". *Journal of Semantics* 33.4, pp. 703–754. doi: 10.1093/jos/ffv010.
- Nute, Donald (1975). "Counterfactuals and the Similarity of Words". *The Journal of Philosophy* 72.21, pp. 773–778. doi: 10.2307/2025340.
- (1980). *Topics in conditional logic*. Springer.
- van Rooij, Robert (2006). "Free choice counterfactual donkeys". *Journal of Semantics* 23.4, pp. 383–402.
- Santorio, Paolo (2018). "Alternatives and truthmakers in conditional semantics". *The Journal of Philosophy* 115.10, pp. 513–549. doi: 10.5840/jphi120181151030.
- Santorio, Paolo and Alexis Wellwood (2023). "Nonboolean Conditionals". *Experiments in Linguistic Meaning* 2, pp. 252–264.
- Singh, Raj et al. (2016). "Children interpret disjunction as conjunction: Consequences for theories of implicature and child development". *Natural Language Semantics* 24, pp. 305–352. doi: 10.1007/s11050-016-9126-3.
- Starr, William B. (2014). "A Uniform Theory of Conditionals". *Journal of Philosophical Logic* 43.6, pp. 1019–1064. doi: 10.1007/s10992-013-9300-8.
- Warmbrød, Ken (1981). "Counterfactuals and substitution of equivalent antecedents". *Journal of Philosophical Logic* 10.2, pp. 267–289. doi: 10.1007/BF00248853.
- Willer, Malte (2018). "Simplifying with Free Choice". *Topoi* 37.3, pp. 379–392. doi: 10.1007/s11245-016-9437-5.