# Conditionals without 'if' – tracking conditional meaning across languages

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*Part 2: Conditional conjunctions*

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## 1 Introducing conditional conjunctions

- Sentential conjunctions can obtain conditional readings: ***Conditional conjunctions, CCs***

    (1)     *Mary sings another song and John leaves the bar.*
            ≈*If Mary singes another song, John leaves the bar.*

- Asserting a CC does not commit the speaker to the first conjunct and commits them to the second only conditionally on the first (≈ hypothetical conditional):

    (2)     'C1 *and* C2' ≈ '*If* C1, *then* C2.'

- Challenge: derive conditional readings for sentential conjunctions that look like their Boolean counterparts.

**Alternative form types of CCs**

- ***Declarative and Declarative*** (DaD)

    (3)     *Mary starts singing and John leaves the bar.*
            ≈ 'If Mary starts singing, John leaves the bar.'

- ***Imperative and Declarative*** (IaD)

    (4)     *Sing another song and John will leave the bar.*

- ***Sufficiency Modal and Declarative*** (SMaD)

    (5)     *Mary only has to sing another song John will leave the bar.*

- ***(Minimal) Noun Phrase and Declarative*** (NPaD)

    (6)     *One more song and John leaves the bar.*

C1 contains 'unfit' material in IaDs, additional material in SMaDs, and misses material in NPaD.

A variety of unrelated and typologically different languages have been shown to attest at least one form of CCs (e.g. English, German, Dutch, Spanish, Russian, Serbian, Hebrew, Palestinian Arabic, Georgean, Basque).     (Bolinger 1967; Culicover and Jackendoff 1997; Kaufmann 2012; Keshet 2013; von Fintel and Iatridou 2017, a.o.)

von Fintel and Iatridou (2017) look for IaDs only and find them not to exist in Turkish, Bangla, Hindi, and Persian.

Semantically, CCs are most easily understood as expressing a causal connection (sometimes called ***causal conjunctions***, e.g. von Fintel and Iatridou (2007) for SMaDs). Keshet (2013) exemplifies absence of direct causation in CCs with (7) (his (6)):

(7)     *Something happens in this town, and John knows about it.*

**Roadmap**

- Starr (2018), Kaufmann (2018a): the first conjunct of a CC introduces a hypothetical state of affairs as the topic, relative to which the second conjunct is evaluated.

  With construction specific assumptions; Starr: lexical, Kaufmann: prosodic cues.

- Here: topicalization is directly responsible (building on crosslinguistic data from Kaufmann and Whitman Ms.)

- Develop a dynamic account with propositional discourse referents

- Challenges:

  – CCs and semantic types of indicative conditionals
  – Choice of material topicalized
  – What sort of topicalization?

## 2   Conjunctions, hypothetical conditionals, and why they might be similar

(8)

|  | $\phi \wedge \psi$ | $\phi \Rightarrow \psi$ |
|---|---|---|
| Entailments |  |  |
| $\phi$ | entailed | not entailed |
| $\psi$ | entailed | $\phi$ entails $\psi$ |
| Dynamics |  |  |
| $C +$ __ $= ?$ | $(C + \phi) + \psi$ | $(C + \phi) + \psi) \cup (C + \neg\phi)$ |

- Weakened dynamic conjunctions without commitment to $\phi$? ($\Rightarrow$ A version of account-type 1...)

  (9)     $((C + \phi) + \psi) \cup (C + \neg\phi)$

### 2.1   Account-type 1: Left-subordinating *and*

<div align="right">(Culicover & Jackendoff 1997, Klinedinst & Rothschild 2015, Starr 2018)</div>

CCs are ordinary hypothetical conditionals derived from a special (Starr: left-topicalizing) variant of *and*:

(10)     [ C1 *and$_{LS}$* C2 ]

- ♥ Draws on dynamic similarity

- ☣ Requires polysemous lexical marker *and*

- ☣ Requires 'conjoinable' $\phi$ and $\psi$ (–alternative forms of C1 create problems)

☣ Predicts regular epistemic conditionals

☣ No connection with information structure (unless crafted into the meaning of left-subordinating *and*: Starr 2018 postulates 'left-topicalizing *and*')

## 2.2 Account-type 2: Restricting quantificational operator

<div align="right">(Krifka, 2004; Schwager, 2006; Keshet, 2013; Keshet and Medeiros, 2019)</div>

CCs are ordinary conjunctions in the scope of a quantificational operator (conjuncts aren't entailed):

(11)     OPERATOR [ C1 ] [ C1 *and* C2 ]

Asymmetry from information structure: backgrounded C1 comes to restrict OPERATOR
Keshet (2013); Keshet and Medeiros (2019): the operator is restricted by the union of the focus semantic alternatives of the conjunction it outscopes (roughly: 'C1 and C2 or some alternative to C2')

(12)     OPERATOR [ { C1 *and X* | $X \in$ ALT(**C2**) } ] [ C1 *and* C2 ]

♥ Ordinary conjunctions

♥ The account is inherently sensitive to information structure

The process is reminiscent of information structure sensitivity in modals and quantificational adverbials (Halliday, 1967; Jackendoff, 1972; Rooth, 1985, , a.o.).

(13)     a.  *Dogs must be carried.*
         b.  *Officers always accompany ballerinas.*

☣ Quantificational adverbs need to be extracted from C2. But in regular conjunctions, adverbs can be extracted only from C1 (if anything); Keshet (2013:225):

(14)     a.  *You come on time and you usually get a seat.*
             *≈ Usually, you come on time, and you get a seat.*          his (43)
         b.  *You come on time and you can be sure that you'll always get a seat.*

(15)     *She probably left and you just didn't notice.*          (his ii-a)
         *≈ It is probably the case that she left without you noticing.*

☣ Dealing with alternative forms of C1

☣ Focus should in principle be able to land on/within either conjunct

# 3   Core idea here: Topicalization out of regular conjunction

(16)     [ [ C1-TOPIC ] and C2 ]

## 3.1 Against lexical polysemy of *and* and information structure

• Conditional effects arise also for juxtapositions

(17)     a.  *You call the cops, I break her legs.*          Klinedinst and Rothschild 2015

b. *U drive. U text. U pay.* <span style="float:right">US Dept. of Transportation</span>

(18) *These warm summer days ain't gonna last forever, Thorn. You don't **hurry up**, we gonna be hidin' from the rat creatures in a **snowbank!*** <span style="float:right">Jeff Smith, *Bone 6*; p. 50, his emphasis</span>

- Conjunctive adverbial modifiers become conditional antecedents when topicalized (German non-subject in SpecCP) <span style="float:right">Rosina (2019)</span>

(19) [ *Bei schönem Wetter* ] [ *grillen wir im Garten.*]
     with nice   weather   barbeque we in.the garden
     'In case the weather is nice, we'll have a barbeque in the garden.'
     'In nice weather, we'll have a barbeque in the garden.'

Note: the English translation looks like a ***free adjunct***, Stump 1985:41; his (4a,b) [*more on Friday*]

(20) a. *In first gear, the truck might reach the top of that hill.*
      b. *If it were in first gear, the truck might reach the top of that hill.*

Keshet (2013:231), compares with fronted adverbials, which cannot contain stress and need to become part of the restriction (his 55a,b; from von Fintel 1994):

(21) a. *When he's in the shower, John usually SHAVES.*
      b. *??When he's in the SHOWER, John usually shaves.*

Keshet observes that this contrasts with clause-internal adverbials that can be focused and are then not part of the restrictor (his 54a,b; from Rooth 1985):

(22) a. *John usually SHAVES when he's in the shower.*
      b. *John usually shaves when he's in the SHOWER.*

- We can explain the lack of flexibility if (i) adverbial fronting is topicalization, and (ii) German SpecCP is not a focus position.

CCs seem to be equally restricted. However, Keshet assumes that focus on C2 is merely strongly preferred (see Sect. 5).

## 3.2 Japanese, Korean: CCs are encoded transparently

- Rich inventory of conditional markers (e.g. *-reba, -tara, =to, -te mo,-te=wa,nara*, Takubo 2020)

- Normally not considered as having CCs

- Kaufmann and Whitman (Ms.): Japanese and Korean derive CCs transparently

  – Japanese *-te=wa* and Korean *-ko=nun* conditionals instantiate '[p-TOPIC] and q'
  – The Japanese conditional connective *-to* involves syntactic topicalization (Hasegawa, 2017).
  *=to* is an NP conjunction (and also a comitative particle, *John=to* 'with John'), but it can work as a (Boolean) sentential conjunction under specific restrictions (Koizumi, 2000).
  Kaufmann and Whitman (Ms.): *to* conditionals are CCs.

- Diachronically, possibly all Japanese and Korean conditional markers are derived this way (e.g. Japanese *-reba*, Hara 2020; Korean *myen*), but markers other than *-tewa*, *to* and *ko nun* don't show CC-characteristic interpretations (anymore).

- CCs from conjunction plus topic marker: Japanese

(23)     *Mary=ga   uta=o    utat-**te**    John=ga   dete iku.*
        Mary=NOM song=ACC sing-GER John=NOM leave go-NPAST
        ✓'Mary sings a song and John leaves.'                   (Boolean)
        ✗'If Mary sings a song, John leaves'                (conditional)

(24)     *Mary=ga   uta=o    utat-**te=wa**    John=ga   dete iku.*
        Mary=NOM song=ACC sing-GER=TOP John=NOM leave go-NPAST
        ✗'Mary sings a song and John leaves.'                   (Boolean)
        ✓'If Mary sings a song, John leaves'                (conditional)

- CCs from conjunction plus topic marker: Korean

(25)     *Mary=ka    nolay=lul pulu-**ko**  John=i    ttena ka-n-ta.*
        Mary=NOM song=ACC sing-GER John=NOM leave go-PRS-DEC
        ✓'Mary sings a song and John leaves.'                   (Boolean)
        ✗'If Mary sings a song, John leaves'                (conditional)

(26)     *Mary=ka    nolay=lul pulu-**ko=nun**   John=i    ttena ka-n-ta.*
        Mary=NOM song=ACC sing-GER**=TOP** John=NOM leave go-PRS-DEC
        ✗'Mary sings a song and John leaves.'                   (Boolean)
        ✓'If Mary sings a song, John leaves'                (conditional)

### 3.3 Topicalization evidence in English and German

- CCs receive a special intonation: first conjunct ends in fall-rise (Pierrehumbert and Hirschberg, 1990) [*see below*]

- CCs are natural with answerhood focus on the second conjunct but not on the first, Keshet (2013:228, from his (49,50))

(27)     A: *What happens when you hit the space bar?*
        B: *You hit the space bar and your character jumps.*

(28)     A: *How do you make your character jump?*
        B: ??*You hit the space bar and your character jumps.*

- CCs cannot express uncertainty about which conditional holds ⇒ they don't like to be all focus

(29)     (Context 1: There seems to be some connection between one of the keys and what your character does, but I haven't fully figured this out, I have to keep watching some more.)
        a.    ✓*Either your character jumps if you press the space bar, or it disappears if you press the ALT key.*

b. ✗*Either you press the space bar and your character jumps, or you press the ALT key and it disappears.*

Note: After '*In the next round you have two options*': (29b) is felicitous and preferred, but can be construed as a disjunction of regular conjunctions.

# 4 Challenge: Restrictions on felicitous CCs

CCs are generally assumed to not express epistemic conditionals:

(30)  a.  *If you have the other half of the locket you are my half-sister.*
      b.  *You have the other half of the locket and you are my half-sister.*     no CC, from Bolinger 1967

(31)  a.  *John left work at 6 and he's probably home by now.*                                      no CC
      b.  *Probably, John left work at 6 and he's home by now.*        no CC        from Keshet 2013

- Unexpected with hypothetical updates of the contextually given belief state (as assumed by Klinedinst and Rothschild 2015; Starr 2018)

- Ideas in the previous literature:

  - Syntactically smaller conjuncts corresponding to ontological distinction (situations vs. worlds)
    Bjorkman 2010; Kaufmann and Whitman Ms.
  - Lack in focus sensitivity for epistemic modals and averbials        Keshet 2013

Two types of exceptions to the ban on epistemic CCs...

## 4.1 Epistemic CCs 1: Predictive

*probably*-CCs after all                                       from Kaufmann and Whitman Ms.

(32)  *Mary tosses that coin, and it probably comes up heads.*

(33)  *Mary sings one more song and John probably has a headache for 5 weeks.*

- Do these mean '*probably* > (regular) CC'? – This can't be the only reading:

  (34)    [Context: I know that Mary always cheats a bit and manages to often make fair coins come up heads, but I exclude that she can guarantee it] ✓(32)

- These are ***predictive*** conditionals according to Kaufmann (2005): the antecedent refers to a state of affairs not yet manifest or verifiable at speech time but can become realized (and thereby true at all historical alternatives, settled) at a future point.

  (35)    (32) is true at $i$ if at any index $j$ such that there is an $i'$ and $i' \approx i$ and $i' \leq j$ and Mary tosses a coin at $j$, the coin comes up heads at $j$.
          ('at any $j$ at which it is settled that she tosses the coin, the coin comes up heads')

Note: Like predictive *if*-conditionals, English Simple Present lacks the ***certainty condition*** normally associated with eventive predicates (or more generally, a reference time after the speech time, Kaufmann 2005).

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(36)    a.  *Marry tosses the coin.*
        b.  *Mary is at the office tomorrow afternoon.*

But in CCs, where does the future extension come from? (Recall that Kaufmann (2005) burdens *if*; possible alternative: Williamson's 2021 future operator?)

And then, how does *probably* combine with this?

- Anyways, we also find settled antecedents and unsettled consequents:

(37)    (context: I'm about to open the door to find out whether or not you've broken anything.)
        *You've broken another vase and I'm leaving.*        ex from Culicover and Jackendoff 1997;
        Weisser 2015

The example hinges on me being in control of what I do, it feels like a conditional commissive, compare:

(38)    a.  (?)*You've broken another vase and Mary is leaving.*
        b.  ??*You've broken another vase and I'm probably leaving.*

<u>Options</u>: Treat it as bona fide epistemic with a special discourse structure (*see below*) –? Or coerce to 'I find out that you have broken another vase'–?

## 4.2   Epistemic CCs 2: Inference tickets (Ryle 1949)

- Confirm: undisputedly epistemic CCs without predictivity are awkward out of the blue

(39)    *He left around 5 and he is home by now.*                              standalone: no CC

But they improve { significantly/$^{\%}$fully } in **'what shows what?'-*reasoning***:        Kaufmann 2019

- Like a list of Ryle's *inference tickets* a law is "an inference ticket (a season ticket) which licenses its possessors [. . . ] to move from one assertion to another, to provide explanations of given facts, and to bring about desired states of affairs by manipulating what is found existing or happening" (1949a, 117).

- Consider the following data (surveyed informally for English, German, Japanese *to*)

(40)    A:  Oh no, look, John forgot his phone. We can probably find out when he left the office, but I have no clue where he is now. - Do you think we can reach him somehow?

        B:  *Come on, it's not that hard, you know him!. . . He left around 5 and he's home by now; he left around 6 and he still will be exercising at the gym.*
        B':  *Come on, it's not that hard, you know him!. . . He left around 5 and he must be home by now; he left around 6 and he must still be exercising at the gym.*

(41)    Conversation in the department kitchen:
        A:  Have you seen Jon? I'm not sure if he's at the department today. . .
        B   (pointing to a tea pot sitting on the kitchen counter without being able to see if it's empty): *Well, there's no more tea in that pot and { he's around / he was here this morning}.*

Culicover and Jackendoff (1997): CCs cannot paraphrase conditionals with abstract stative clauses, but these two seem to improve as 'inference tickets':

(42)   a.   *If  x is less than y, the derivative of  $f(x)$  is positive.*
       b.   *x is less than y and the derivative of  $f(x)$  is positive.*                  their (10b); no CC

(43)   *x ist KLEINER als   y und die erste Ableitung ist positiv,   x ist GROESSER als   y und sie*
       x is  less        than y and the derivative        is  positive, x is  more        than y and she
       *ist negative.*
       is  negative
       '(Come on, it's not that hard:) $x$ is less than $y$ and the derivative is positive, $x$ is more than $y$
       and it is negative.'                                          CC improves/is ok in list context

- Keshet (2013), who generally takes epistemic conditonals to be ruled out but discussed phonological disambiguation with the following example:

(44)   *Angelina's dating Brad, and Billy Bob doesn't have a chance.*                       his (46)

'As a CC, on the other hand, (46) [*here,* (44)] is acceptable in a context like the following: two people are discussing Angelina's love life, but they do not know who she is dating. Brad is quite attractive, though, and so if Angelina was dating him, Billy Bob would not have a chance with her. The CC reading of (46) conveys this conditional meaning.'

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CCs don't have an issue with epistemic modal flavor. CCs are sensitive to discourse structure.

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Tentatively:

- CCs presuppose 'What correlates with what?' questions and presupposes alternatives to both conjuncts

- Topicalization in CCs is ***contrastive***

- Contrastive topics are marked by prosody (and syntactic position) (e.g. English, Constant 2014; German) or morphology (e.g. Japanese contrastive *wa*; Cantonese *le*; *pace* Constant 2014, Mandarin *ne* works differently, Yuan (2022))

- Contrastive topics indicate partial answers. A question about at least one alternative to the discourse topic is left unresolved, (Buring, 2003; Constant, 2014):

(45)   JOHN brought the BEANS.
       indicates a discourse strategy: 'Who brought what?'

- For conditionals: the negation of the antecedent can always serve as an alternative. But: 'What happens if not $p$?' is not always presupposed to have a true answer.

- Causal networks can offer the required alternatives (default value for dependent node is negation)

  Inference tickets and predicitivity indicate the required discourse structure or facilitate its accommodation:

  Conditional commissive: threat works only if I commit to not leaving if you have not broken another vase.

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- If CCs involve *contrastive topicalization*, this might be a hint as to why they allow for asymmetric extraction (see Mayr and Schmitt 2017 for discussion of symmetry constraints and apparent violations).

- Crosslinguistic evidence for contrastive topicalization:

  Jess Law (p.c.) points out that Cantonese CCs can be formed transparently by adding the contrastive topic marker *le*:

  (46)    Lei ceong jat-sau go    (le), ngo bei lei jat-bak      man;  lei  ceong leong-sau go,
          You sing  one-cl song (LE), I     give you one-hundred dollars you sing   two-cl      song,
          ngo bei  lei  saam-bak       man.
          I     give you three-hundred dollars
          'You sing one song and I give you 100 dollars; you sing two songs and I give you 300 dollars.'
          *without* le: *ambiguous between regular conjunction and CC*
          *with* le: *only CC*

  Muyi Yang, Xuetong Yuan (p.c.), confirmed Jess Law (p.c.): Mandarin *ne* forms conditionals that are more constrained (list environment; 'if C1 is what you want').

  But Yuan (2022) shows that Mandarin *ne* is not a contrastive topic marker but indicates that the topic is continued or elaborated on (SDRT relations CONTINUATION/ELABORATION):

  (47)    A:  What did John and Mary bring?
          B:  En... Yuehan (*ne) dai-le      pijiu, mali  ne/#ba dai-le      mifan.
              Well John     (NE) bring-perf beer  Mary ne/ba  bring-perf rice
              'Well...John brought beer, Mary brought rice'

  (48)    A:  What fruit will every kid get for lunch today?
          B:  mei-ge  xiaopengyou ne dou hui  dedao yi-ge  pingguo.
              every-cl kid              ne dou will get    one-cl apple
              'Everyone ne will get an apple.'

  For German, Rosina (2019) discusses intontation pattern from conditional readings of adverbials, her desription meets CT marking.

- Using contrastive topics to drive an apparent difference in modal flavor:

  – Contrastive topics: partial answers to a list of questions (Buring, 2003; Constant, 2014)

    (49)    FRED$_{CT}$ ate the BEANS$_F$
            {What did Fred eat, what did Mary eat, what did Sue eat,... }

  – Causal networks reflect dependencies between *variables* which can be construed as partitions on possible worlds (Kaufmann, 2013). We can think of them as sets of questions:
    {What happens if $p_1$, what happens if $p_2$,... }
    Proposal: C1 is a contrastive topic, and CCs are easy to make sense of if C1 names a variable in a causal network:

    (50)    $p_{1_{CT}}$ *and* $q_F$

  – Epistemic readings become available if a list of possible inferences is salient in the context. Presupposes that there is a true answer also for some salient alternative(s) to C1.

{What is the case if $p_1$, what is the case if $p_2$,... }

- <u>Alternative -?</u> It's only about predictivity, inference ticket contexts involve coercion...

  **Option 1:** '$\phi$ and $\psi$' $\Rightarrow$ '$\phi$ and { we know that } $\psi$'

  May seem obviously wrong (we know that we don't know), but this problem extends to *if*:

  (51)    *If the teapot is empty we know that he was here this morning.*

  **Option 2:** '$\phi$ and $\psi$' $\Rightarrow$ '{ We find out that } $\phi$ and { we know that } $\psi$'

  Option 2 would capture also (37) and the contrast to (38).

  <u>Challenge for a coercion account:</u> How to encode the ban on epistemic/non-predictive CCs so that it can be voided by coercion?

## 5   Topics of questionable topicality?

<div align="right">following Kaufmann and Whitman Ms.</div>

- The CC account in term of (some sort of) topicalization predicts that the first conjunct should behave like a topic marked constituent for purposes of discourse structure

- Haiman (1978) maintains that conditional antecedents are topical, building on crosslinguistic strategy sharing between conditional antecedents and topics

- But *if*-marked antecedents can provide novel information, specifically constitute the material that should be marked with answerhood focus:

  (52)    A: *Under what conditions will you buy this house?*
          B: *I will buy this house if you give me the money.*
  <div align="right">(von Fintel 1994: 81, his (6)), also Iatridou 2013 for Turkish</div>

  The observation goes back to Givön (1982) (his (41)), who observes that the position of antecedent vs. consequent seems to depend on whether the antecedent or the consequent bears focus, compare:

  (53)    a.    Context: What will you do if *I give you the money?*
          b.    Reply: *If you give me the money, I'll buy this house.*

- CCs with focus on first conjunct are 'marked' indeed

- <u>Claim:</u> A topic marked conditional antecedent can constitute a *partial* answer when interpreted as a *contrastive* topic:

  (54)    *If you give me the money, then I will give you the house.*

- Keshet (2013) predicts that focus marking on the first conjunct is possible given 'extra contextual and phonological clues' and would yield ***'Reverse CCs'***.

  He takes this to be dispreferred for the following reasons:

- The interpretative possibilities for clausal conjunctions below CP-level, which have to respect temporal order (Bjorkman, 2010)
- The **Birner/Ward constraint**: focus/new information usually follows given/old information in the sentence (Birner and Ward, 1998)

However, stress within or on the first conjunct appears to yield corrections of regular CCs instead of 'Reverse CCs' :

(55)  [*You press the SPACE button*]$_F$ *and your character jumps.*
  a.  $\not\approx$ All (typical) cases in which you do something relevant and your character jumps are cases in which you press the space bar and your character jumps.
  b.  $\approx$ Pressing the space button is the action such that, if you do it, your character jumps

Keshet: 'the only sentences that consistently form reverse CCs are those where the second clause can easily be inferred as given information and the event in the first clause clearly precedes the event in the second', but the examples he gives could be treated as regular conjunctions with contextual restrictions:

(56)  *I always get to the front of a long line, and only then do I realize I forgot my wallet.* his (82c)
  *'Always [when I forget my wallet] I get to the front of a long line and only then [=when I get to the front of the long line] do I realize that I forgot my wallet.'*

I don't think this is a CC: q-adverb *always* occurs in the first conjunct; restricted by presupposition of the second (*realize* I forgot my wallet.

- Maintain: C1s in CCs <u>are</u> topical.

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Desiderata:

- CCs derive from topicalization of the initial sentence(s) in conjunctions or juxtapositions.

- Form of topicalized material conspires with discourse settings to determine what the second conjunct is relativized to.

- The readings of CCs are constrained by discourse structure

  - Predictive epistemic conditionals are ok (generic or single-case)

  - Non-predictive epistemic conditionals work as 'inference tickets'

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# 6  Towards an implementation

## 6.1  Interpretation with respect to topics

- Conditional antecedents can be treated as definite desriptions referring to worlds or propositions (**referential analysis**):

  Schein 2003; Schlenker 2004; Bhatt and Pancheva 2006; Kaufmann 2018b; Williamson 2019; Yang t.a.

- *if*-antecedents introduce discourse referents for worlds (store propositions)

  Stone 1999; Brasoveanu 2006, 2010; Ebert et al. 2014

- Topicalized C1 should behave like *if*-antecedent

  To keep in mind: C1 content can differ from target antecedent (IaD, SMaD, NPaD)

## 6.2 DPL with propositional referents

- Formulas denote binary relations between variable assignments

- Variables for individuals $x, y, \ldots$ and propositions (sets of possible worlds) $p, q, \ldots$

- Translation indexes with designated referent $p$ that stores a (possibly improper) subset of the current context set and can be bound by intensional operators                   Simplified from ABH15

- <u>Add:</u> dref for **topical proposition** $p^{top}$

- Relevant atomic formulas and dynamic conjunction:

  (57)   a.   $[[p = p']]^{<g,h>} = 1$ iff $g = h$ and $h(p) = h(p')$
         b.   $[[p \subseteq p']]^{<g,h>} = 1$ iff $g = h$ and $h(p) \subseteq h(p')$
         c.   $[[R_p(x_1, \ldots, x_n)]]^{M,g,h} = 1$ iff $g = h$ and for all $w \in h(p)$: $<h(x_1), \ldots h(x_n)> \in I_w(R)$
         d.   $[[[p]]]^{<g,h>} = 1$ iff for any variable $v$ s.t. $v \neq p$: $g(v) = h(v)$

  (58)   $[[\phi \wedge \psi]]^{<g,h>} = 1$ iff there exists $k$ s.t. $[[\phi]]^{g,k} = [[\psi]]^{k,h} = 1$.

- Translating CCs:

  (59)
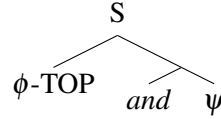
  

  - $\phi$-TOP $\rightsquigarrow [p^{top}] \wedge \mathbf{max}_p^{p^{top}}(\phi')$
  - $[[\mathbf{max}_p^{p^{top}}(\phi')]]^{<g,h>} = 1$ iff $[[[p^{top}] \wedge p^{top} \subseteq p \wedge \phi'[p/p^{top}]]]^{<g,h>} = 1$ and there is no $h'$ s.t. $[[[p^{top}] \wedge p^{top} \subseteq p \wedge \phi'[p/p^{top}])]]^{g,h'} = 1$ and $h(p^{top}) \subset h'(p^{top})$         mod. ABH15
  - *and* $\psi \rightsquigarrow \psi'(p^{top})$
    *and* triggers evaluation on $p^{top}$ (default: $p^{top} = p$)

  - (59) $\rightsquigarrow [p^{top}] \wedge \mathbf{max}_p^{p^{top}}(\phi') \wedge \psi'[p/p^{top}]$

- Application to a sentential conjunction:

  (60)   *You sing another song and I'm out of here.*

  - Boolean and CC:

    (61)   a.   *you sing another song* $\rightsquigarrow$ SONG$_p$

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      b.   *I'm out of here* $\rightsquigarrow$ $\text{OUT}_p$

      c.   *and I'm out of here* $\rightsquigarrow$ $\text{OUT}_{p^{top}}$

– Boolean:

(62)   a.   [ *You sing another song* [ *and I'm out of here* ] ]

         b.   $\text{SONG}_p \wedge \text{OUT}_{p^{top}}$

         c.   By default, $p^{top} = p$

– CC:

(63)   a.   [ *You sing another song*-TOP [ *and I'm out of here* ] ]

         b.   $[p^{top}] \wedge \mathbf{max}_p^{p^{top}} (\text{SONG}_p) \wedge \text{OUT}_{p^{top}}$

         c.   $p^{top}$ set to $\text{SONG}$-subset of $p$

$\Rightarrow$ an assignment $g$ that stores $\text{SONG}$-worlds in $p$ that are not in $\text{OUT}$ has no successor ($\approx$ hypothetical conditional)

Example with q-adverbial:

(64)   *You sing a song and I'm usually out of here.*

- Desideratum: *usually* in situ

- With *usually* as 'most'

(65)   a.   *usually* $\psi \rightsquigarrow \text{GEN}_p(p^{top})(\psi')$

         b.   $[\![\text{GEN}_p(p^{top})(\psi')]\!]^{<g,h>} = 1$ iff $g = h$ and for most $w \in h(p^{top})$: $w \in [\![ [p'] \wedge \mathbf{max}_{p^{top}}^{p'}(\psi') \wedge$

            $\text{MOST}(p^{top})(p')]\!]^{<g,h>} = 1$

         c.   $[\![\text{MOST}(p^{top})(p')]\!]^{<g,h>} = 1$ iff for most $w \in h(p^{top}) : w \in h(p')$

- But what about wide-scope *usually* -?

(66)   *Usually, you sing a song and I'm out of here. But today I have ear plugs :)!*

CC can scope under *usually*: replace $\text{MOST}$ with normalcy w.r.t. $p$        $\Rightarrow$ *More work!*

Good news for one-place anaphoric *and*

- *and* $\psi \rightsquigarrow \psi'[p/p^{top}]$

- *and* can be discourse-anaphoric, both Boolean and CC reading

(67)   A: *We can send Sue an email.*
          B: *Right! And we can send John a text message.*

(68)   A: *We can send Sue an email.*
          B: *Yes. And she'll never talk to us again.*
          $\approx$ 'If we do that, she'll never talk to us again.'

All about *and* after all?

- *and* signals evaluation w.r.t. local propositional topic

- Juxtapositions?

- Japanese and Korean CCs (conjunction marker in first conjunct) -?  <span style="float:right">(Teruyuki Mizuno, p.c.)</span>

- <u>Minimally</u>: Avoid vacuous topicalization

- Suggests: Propositional dref in C1 resolved according to pragmatic considerations, effect of *and* is more indirect (Asher and Lascarides 2003 (SDRT) Maximize Discourse Coherence; Stonjnić 2016)

# 7 Topic content across form-types

## 7.1 The missing modal puzzle (Kaufmann 2018)

- Imperative and SM modality in C1 ⤳ modal-free antecedent

  (69)    a.    *Sing one more song and I'm out of here.* <span style="float:right">IaD</span>
         b.    *You only have to sing one more song and I'm out of here.* <span style="float:right">SMaD</span>
           ≈ 'If you sing one more song,…'

- Regular modals in C1 ⤳ modal antecedent:

  (70)    a.    #*You { have to / should / must } sing one more song and I'm out of here.*
           ≈ 'If you have to/should/must sing one more song, …'

<u>Popular claim [*not endorsed*]</u>: Evidence for the non-modal nature of imperatives      (von Fintel and Iatridou, 2017; Starr, 2018)

- SMaDs leave out overt modal, even though modal proposition is available for pick-up elsewhere <sub></sub> pace Starr 2018

  (71)    a.    *You only have to sing another song and I'm out of here.*
         b.    *You only have to go to the North End. You know <u>that</u>, right?*

- Imperative proposition is available for pick-up elsewhere

  <span style="float:right">pace Snider 2017, his (72a): confound from stress, John Whitman, p.c.</span>

  (72)    a.    *Shut the door! Nancy (already) told you <u>that</u>.*
           #<u>that</u>: Addressee should shut the door.
         b.    *Shut the door! Hasn't Nancy told you <u>that</u> already?*

- Sometimes even regular modals disappear from the antecedent …

Case 1: Possibility modals staying out

- Possibility modals with *even if*-effect: <span style="float:right">ex from Schwager 2006</span>

  (73)    *You can call him at MIDnight and he won't be angry.*

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a.  ≈ Even if you call him at midnight he won't be angry.
b.  $^{???}$ ≈ ◇CALLATMN ∧ ¬ ANGRY
c.  $\not\approx$ ◇(CALL-AT-MN ∧ ¬ ANGRY)

- Possibility modal with minimizing effect

  Culicover and Jackendoff 1997, base case for extraction contrast;          don't comment on interpretation

(74)  *You can just wave your hands like* this *and we arrest the whole gang.*          their (35a)
       ≈ *You can just wave your hands like* this *[to get our attention/to make us arrest the whole gang] and if [*you wave your hands like *this] we arrest the whole gang.*

Case 2: Even necessity modals can stay out after all

- Contrastive focus can make modal vanish from antecedent:

(75)   *You { have to / must /need to } sing [ one more SONG] and I'll leave.*
       ≈ 'It's if you sing one more song that I'll leave.'
       ≈ 'If you want me to leave you have to sing one more song.'

But they're all not entirely gone. . .
- *even*-effect:

(76)  a.  (#)*You can call him at midnight and you're friends with his boss.*
      b.  *You can [call him at MIDnight] and he won't be angry.*

- SMs: sensitive to a scale of alternatives to their prejacent          von Fintel and Iatridou 2007

(77)   *You only have to sing one more song and I leave.*
       ⇒ < you sing one more song, . . . , you hit me >

- Imperatives impose constraints on contexts of felicitous use by a.o. constraining QUD to decision problem with alternatives to the prejacent (Kaufmann and Kaufmann t.a.), not questions about suitable goals

(78)   *If you want to host the department party, buy a bigger dining table.*

**Tracking imperative meaning in IaDs**: Keshet and Medeiros (2019): experimental evidence that DaDs are preferred over IaDs if CCs don't contribute to choice of action:

(79)   Present Context: An exasperated parent is searching the cluttered attic for a mischievous child and shouts:
       a.  *You're hiding from me again and you're in big trouble.*
       b.  #*Be hiding from me again and you're in big trouble.*

(80)   Future Context: An exasperated parent wants a mischievous child to stop hiding before some visitors arrive. She exclaims:
       a.  *You're hiding from me when grandma arrives and you'll be in big trouble.*
       b.  *Be hiding from me when grandma arrives and you'll be in big trouble.*

So what's missing -?

- Modal meaning is missing from antecedent of the conditional that is conveyed ('not part of $p^{top}$')

- Commitment to full first conjunct is hard to distinguish from 'missingness' in a context that presupposes 'what does Agent have to do to reach goal G'

  (81)    A: *How do I get to Harlem?*
          B: *You have to take the A-train.*

  (82)    *You have to sing one more SONG.*

- To try: composition of material with underspecified logical forms, discourse relations and focus contours as presuppositions (Schlöder and Lascarides 2020, SDRT)

- DaDs, NPaDs: no corresponding commitment to C1

# 8    Conclusion

- First stab at formalizing a unfied account of different CC-types

- Drawing on a dynamic framework with referents for propositions

- Allows to derive CCs from topicalization only, no need for lexical(ly polysemous) conjunctions

- More work needed to determine what becomes the propositional topic $p^{top}$ and how it relates to overall discourse structure (QUD or discourse relations; presumed causal networks,...).

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