The semantics of similatives[*]

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This lecture series presents a case study with the aim of providing more insight into different morphosemantic strategies for comparison and similarity across languages, as well as formal analyses of several of these strategies. The specific goals are to:

- *better understand the nature of degree relations and degree relatives, by looking at how equatives are formed across languages (**Lecture 1**)*
- → *better understand the nature of as-relatives and the semantic features of verbs and propositions, by looking at different types of similatives (**Lecture 2**)*
- *better understand the role of degree quantification in the semantics of similarity, by investigating the semantics of quantifier-based equatives in contrast to comparatives and measure phrases (**Lecture 3**)*

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1 review: equation constructions across languages

- *as* is everywhere, assimilating all sorts of things

  (1) a. A is as tall <u>as</u> B.   specific equative, *degrees*
       b. A is white <u>as</u> snow.   generic equative, *properties*
       c. A danced <u>as</u> B sang.   verbal similative *times* or *manners*
       d. I've had to quit my job, <u>as</u> you know.   propositional similative, *propositions*
       e. {She is the same person / Think of her} <u>as</u> your teacher.   *individual*

- a glossary for these types of constructions (including the comparative):

A	(is)	more	tall	than	B	
A	(is)	as	tall	as	B	
A			danced	as	B	(did)
TARGET OF		PARAMETER	PARAMETER	STANDARD	STANDARD OF	
COMPARISON		MARKER		MARKER	COMPARISON	

- a review from yesterday:

  ○ there are several different types of equative constructions

equatives

predicative
|
no weak reading

non-predicative

explicit/PM

implicit/non-PM
|
$\left\{ \begin{array}{c} \textit{unmodifiable} \\ \textit{evaluative} \end{array} \right\}$

sufficientive
|
$\left\{ \begin{array}{c} \textit{modifiable} \\ \textit{non-evaluative} \end{array} \right\}$

demonstrative
|
$\left\{ \begin{array}{c} \textit{unmodifiable} \\ \textit{non-evaluative} \end{array} \right\}$
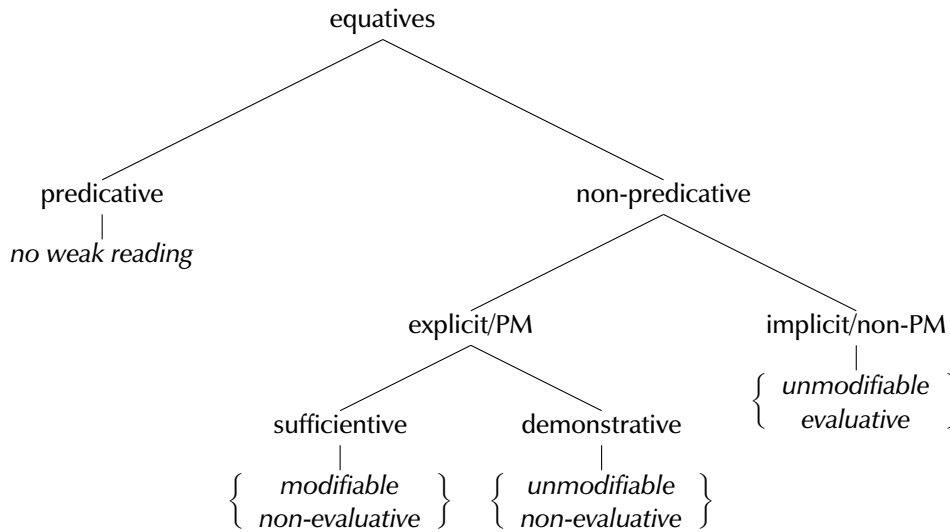
Figure 1: A typology of equatives

○ implicit equatives and demonstrative-based explicit equatives involve *as* as a relativizer

(2)   ⟦relativizer S⟧ = λy.⟦S⟧$^{[y/x]}$, for any free variable x in S

  ∗ implicit equatives are free relatives

    (3)   Gianni è alto come Pietro.   *Italian*
            a.   ⟦come Pietro ~~è alto~~⟧ = λd.tall(p,d)
            b.   ⟦Gianni è alto⟧ = λd′.tall(g,d′)
            c.   *PM, EC*: ∃d[tall(g,d) ∧ tall(p,d)]
                  'There is a degree to which Gianni and Pietro are both tall.'

  ∗ demonstrative-based explicit equatives are degree correlatives, involving degree anaphora

    (4)   Gianni è <u>tanto</u> alto quanto Pietro.   *Italian*
            a.   ⟦quanto Pietro ~~è alto~~⟧ = λd.tall(p, d) ⤳ MAX(λd.tall(p, d))   cf. (3-a)[1]
            b.   ⟦Gianni è tanto alto⟧ = tall(g, MAX(λd.tall(p, d)))
                  'Gianni is tall to the maximum degree to which Pietro is tall.'

○ today we'll look at all of the other constructions in (1) except for sufficientive-based explicit equatives

2   overview: today's talk

• HB claim #1: languages generally tend to use the same SM in equatives as they do in similatives

		Equative PM	Equative SM	Similative SM
	Bulgarian	∅	*kato*	*kato*
	Czech	*tak*	*yako*	*yako*
(5)	Finnish	*yhta*	*kuin*	*kuin*
	Lithuanian	*taip*	*kaip*	*kaip*
	Norwegian	*like*	*som*	*som*
	Portuguese	*tão*	*como*	*como*

[1]The variation between *quanto* and *come* – both *wh*-pronouns that can range over degrees – is interesting here, and will be relevant in tomorrow's discussion about the confluence of degrees and manners.

     ○ *temptation: to analyze equatives and similatives as related, both are similatives writ large*

- HB claim #2: languages may form equatives with PMs, but they do not form similatives with PMs[2]

  (6)   a.   A is **as** tall **as** B (is).
         b.   A (***as**) danced **as** B did/danced.

  (7)   a.   Min syster er <u>lika</u> vacker som dig.
            my sister is PM pretty SM you
            'My sister is as pretty as you.'   *Swedish* HB 294
         b.   Hans (*<u>lika</u>) skriver som sin syster.
            Hans (*PM) writes SM his sister
            'Hans writes like his sister.'   *Swedish* HB 313

     ○ *temptation: to analyze equatives and similatives as semantically distinct*

- the goal today: to show how the relative-clause-based account of *as* from yesterday can be extended to constructions with non-adjectival parameters (and what that requires)

- two subgoals

   1. an analysis of verbal similatives, like (35-a): how does *as* come to range over times or manners, and why can't it range over degrees? (Rett, 2013)

   2. an analysis of propositional similatives, like (1-d): how does *as* come to associate with a trace position, and what happens in hypothetical *as if* cases? (Rett and Starr *to appear*)

3   what verbal similatives can mean

- verbal similatives, in general, can receive one of two interpretations: time or manner

  (8)   a.   A danced as B sang.   *time*
         b.   A danced as B danced.   *manner*

     ○ what conditions the difference? context, with discourse coherence playing a clear role, Kehler 2002

- the goal in this section: determine the source and generality of these readings

- two other constructions that will be relevant, ultimately:

     ○ generic equatives, equatives formed a) with adjectival parameters but b) without a parameter marker

   (9)   a.   She is (#as) white as snow.
          b.   This table is (#as) solid as a rock.

     ○ intensifier-verb similatives, similatives whose verbal parameters seem to be intrinsically gradable

   (10)   a.   A raced as B raced.
           b.   A stinks as B stinks.

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[2]This claim does not extend to verbal participles, cf. *The pie (*as) was as eaten as the lasagna.*

3.1   the semantic associates of verbs

- there is independent evidence that verbs can associate with a few different types of semantic arguments

- there's evidence from proforms and *wh*-phrases that verbs can associate with manners (Anderson and Morzycki, 2015)[3]

  (11)   a.   I wish you wouldn't dance {so/like that}, it's unbecoming.   *manner*
         b.   I wish you wouldn't dance {so/like that}, we're in a hurry.   *time*

  (12)   a.   How did you dance?   *manner*
         b.   When did you dance?   *time*

- and there's evidence from other sources that verbs can associate with degrees

  ○ degree achievements (DAs, deadjectival verbs) are associated with degrees (Dowty, 1979)

    * DAs can receive either a telic or atelic interpretation; the telic reading seems to track a degree scale associated with the verb (Hay et al., 1999)[4]

      (13)   a.   The soup cooled in 10 minutes.   *telic*
             b.   The soup cooled for 10 minutes.   *atelic*

    * DA degrees aren't the same as the degree arguments of the corresponding gradable adjectives, they are crucially differential degrees (Kennedy and McNally, 2005; Kennedy, 2010)[5]

      (14)   a.   She warmed the soup 10 degrees.
             b.   She warmed the soup too much.
             c.   She warmed the soup so much that she can't eat it.

    * Kennedy/McNally propose that these differential degrees are introduced via a measure-of-change function $\mathbf{m}_\Delta$ which tracks "change over the course of an event" and is not available to adjectives

  ○ quantity scales: the event described by a verb can be "measured out" on its quantized direct object (Krifka, 1990; Tenny, 1994, among others)

    (15)   B half washed the dishes.
           a.   B washed half of the dishes.   *collective*
           b.   B washed all of the dishes halfway.   *distributive*

    * this suggests that verbs can be associated with quantity scales, too:
      · perhaps because they lexicalize a degree argument corresponding to quantity (Piñón, 2008);
      · perhaps because they're associated with a quantity degree argument via a type-shifter or modifier (Piñón, 2000, 2005; Caudal and Nicolas, 2005)

  ○ there is a small class of verbs that can be intensified by *so* and modified by MPs (Umbach, 2011)

    (16)   a.   You shouldn't have gorged so yesterday.

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[3]It's not necessary for the argument here that these arguments be accessible via the <u>same</u> proform or *wh*-phrase, just that they be accessible by <u>one</u> of them. (*Then*, for instance, can be used as a distal temporal proform.) But it is certainly very interesting that some of these arguments are subsumed under the same proforms and *wh*-phrases across languages, again and again; this issue is taken up in Anderson and Morzycki (2015).

[4]The available interpretations of *how* and *well* are very intriguingly syntactically conditioned in English (McNally and Kennedy, 2002):

(i)   a.   How [$_{VP}$ were the pants lengthened]?   *manner reading*
       b.   How [$_{CP}$ [$_{AP}$ lengthened] were the pants]?   *degree reading*

(ii)   a.   The car was well loaded.   *degree or manner reading*
       b.   The car was loaded well.   *manner reading only*

[5]"[(14)] show that... the DA examples are parallel to the interpretations they have with comparatives: they impose constraints on differential degrees." (Kennedy, 2010, 11)

        b.   It's best if you don't race so on the highway.

        c.   I can't imagine why she stinks so.

(17)   He raced 100 miles an hour.

    ∗ these verbs have been argued to be effectively the gradable counterparts of other verbs: they lexicalize degree arguments (Umbach, 2011)

3.2   non-lexicalized semantic arguments

- we have intuitions about what and how many semantic arguments a given predicate lexicalizes[6]

(18)   a. $[\![\text{walk}]\!] = \lambda x.\text{walk}(x)$
         b. $[\![\text{eat}]\!] = \lambda x \lambda y.\text{eat}(y, x)$

(19)   a. $[\![\text{circular}]\!] = \lambda x.\text{circular}(x)$
         b. $[\![\text{tall}]\!] = \lambda x \lambda d.\text{tall}(x, d)$

- but this picture needs to be supplemented with ideas of how it can happen that lexicalized arguments are not explicitly filled or bound...

(20)   a.   I ate.
         b.   A is tall.

- ...and how semantic arguments can come to be associated with predicates that don't lexicalize them

(21)   a.   I walked the dog.
         b.   A is more circular than spherical.

- so how to we associate times, manners, and degrees with verbs, assuming an intuitive picture of them taking individual arguments (as in (18-b)) or events, in the neo-Davidsonian style (as in (22))?

(22) $[\![\text{eat}]\!] = \lambda y \lambda x \lambda e.\text{eat}(e) \wedge \text{agent}(x,e) \wedge \text{patient}(x,e)$

- there is lots of precedence for this sort of thing in the literature!

    ◦ type-shifters can do the first job, but not the second (Partee and Rooth, 1983; Partee, 1987)

    ◦ a tried-and-tested way of adding arguments to a semantic derivation *without adding information* into the derivation is a homomorphism[7]

        ∗ we need something like a homomorphism or some other mapping to explain cases of deferred reference, i.e. when I can felicitously utter *Sue is parked across the street* (Nunberg, 1995)

        ∗ in their proto-degree semantics, Bartsch and Vennemann (1972) and Cresswell (1976) introduce "quantity operators" to map an individual to its quantity; modern adaptations have called it μ[8]

        ∗ Krifka (1990) and Nakanishi (2007) introduce an event-to-object homomorphism ("Mapping to Object"), cf. meaning preservation between *half ate the apple* and *ate half the apple*

        ∗ Krifka (1989) and Parsons (1990) introduce a "temporal trace" function τ that maps an event to its runtime (if it has one)[9]

        (23) $\forall e \forall e'[\tau(e) \cup_T \tau(e') = \tau(e \cup_E e')]$

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[6]I am crucially differentiating between the adjunct/argument distinction in syntax, and the idea that the semantic denotation of a predicates is a function from a variety of (semantic) arguments. The claim is that these arguments may or may not be lexicalized by the predicate.

[7]An isomorphism is a structure-preserving mapping between two (algebraic) structures; a homomorphism is a structure-preserving mapping between two (algebraic) structures of the same type, that preserves the operations on the structures. Following the literature, for better or worse, I will use the term 'homomorphism' to talk about these mappings, regardless of which term is more appropriate.

[8]Additional evidence that μ introduces a homomorphism from individuals to degrees, comes from Rett (2007) and Rett (2014).

[9]For $\cup_T$ the union operation over times, and $\cup_E$ the union operation over events, which is (non-trivially) lattice-theoretic.

- two other (less attractive) options (arguments against these in what follows):

  - every predicate lexicalizes every argument it could possibly need, and we use existential closure to get rid of them if they're not needed
  - no predicate lexicalizes any argument, they're all associated, when needed, via context

- so we can postulate a single, contextually-sensitive homomorphism η that maps any event to some information-preserving entity corresponding to that event (effectively, a generalization of τ, the familiar temporal trace function from Krifka 1989)[10]

  - in certain contexts, it maps to times
  - in certain contexts, it maps to manners
  - perhaps, sometimes, it maps to individuals corresponding to the event's patient (Krifka, 1990)
  - perhaps, sometimes, it maps to degrees of quantity or achievement (Kennedy and McNally, 2005)

(24) a. $\forall e \forall e'[\eta(e) \cup_T \eta(e') = \eta(e \cup_E e')]$ *time-valued η*
      b. $\forall e \forall e'[\eta(e) \cup_M \eta(e') = \eta(e \cup_E e')]$ *manner-valued η*
      c. $\forall e \forall e'[\eta(e) \cup_X \eta(e') = \eta(e \cup_E e')]$ *individual-valued η*

- this formulation takes for granted that the entities we associate with verbal events form a lattice structure; more details to how this might be possible in Krifka (1989) and Champollion (2015)[11]

3.3   the semantics of similatives: a baseline analysis

📖 FORMAL TOOLBOX

1. a formal analysis of *as* as a relativizer (ideally one that doesn't require it be base-generated in its argument's position)

2. a type-general notion of predicate modification

3. existential closure, a way to bind variables that aren't overtly bound

4. a way to associate predicates with optional non-arguments, e.g. times, manners (homomorphism τ)

5. a way to λ-abstract over non-lexicalized arguments in matrix clauses (a type-raiser)
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(25) $[\![\text{relativizer S}]\!] = \lambda y.[\![S]\!]^{[y/x]}$, for any free variable x in S

(26) $[\![\text{A danced}]\!]$
      a. $= \lambda e[\text{danced}(e) \wedge \text{agent}(a,e)]$
      b. $= \lambda e[\text{danced}(e) \wedge \text{agent}(a,e) \wedge \tau(e, t)]$ *time interpretation*
      c. $= \lambda e[\text{danced}(e) \wedge \text{agent}(a,e) \wedge \tau(e, m)]$ *manner interpretation*

- as before, we derive similatives using Predicate Modification and existential closure, but now we have τ

  - in order to utilize Predicate Modification, we need to also assume that the matrix clause (here, *A danced*) can involve λ-abstraction over its non-lexical argument
  - in Rett (2013) I did this by postulating a null *wh*-operator in the matrix clause

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[10] In Rett (2013), I did this in a maximally complicated way, with two null operators ρ and τ and a single semantic relation $\mathbb{R}$

(i)   a. $[\![\rho]\!] = \lambda E_{\langle v,t \rangle} \lambda e.E(e) \wedge \mathbb{R}(e, m)$
       b. $[\![\tau]\!] = \lambda E_{\langle v,t \rangle} \lambda e.E(e) \wedge \mathbb{R}(e, t)$

[11] See Rett (2015) for some additional considerations about how strictly-ordered domains differ from those that are lattice-based.

○ we didn't need this yesterday, because the degree argument in implicit equatives is lexicalized by the adjective, and so its λd was part of the lexicalized argument structure[12]

○ and we don't need this if we omit the homomorphism and assume that verbs lexicalize their time and manner arguments, although see §4.1

• all verbal similatives are derived the same way:

(27) A danced as B sang.   *time*
   a. ⟦A danced⟧ = ⟦Op$_t$ A danced ⟧ = λt∃e[danced(a,e) ∧ τ(e,t)]
   b. ⟦as B sang⟧ = λt'∃e'[sang(e') ∧ agent(b,e') ∧ τ(e',t')]
   c. *PM, EC*: ∃t, e, e'[danced(a,e) ∧ τ(e,t) ∧ sang(b,e') ∧ τ(e',t)]

○ note: there is no temporal overlap component to the TCs here; that meaning is achieved by the existential requirement

(28) A danced as B danced.   *manner*
   a. ⟦A danced⟧ = ⟦Op$_m$ A danced ⟧ = λm∃e[danced(a,e) ∧ τ(e,m)]
   b. ⟦as B sang⟧ = λm'∃e'[sang(b,e') ∧ τ(e',m')]
   c. *PM, EC*: ∃m, e, e'[danced(a,e) ∧ τ(e,m) ∧ sang(b,e') ∧ τ(e',m)]

• this approach correctly predicts the time and manner readings, but of course it does! it's very powerful

4   what verbal similatives can't mean

• *as* can range over degrees (1), and verbs can be associated with degree arguments... why can't similatives receive a degree interpretation? an individual interpretation? a propositional interpretation?

• note: we have to differentiate between restrictive and non-restrictive verbal similatives

(29) a. A danced as B danced.   *time or manner*
      b. A danced, as B danced.   *event parallel*

(30) a. A danced with B as C did.   *time or manner*
      b. A danced with B, as C did.   *event parallel*

(31) a. This is solid as a rock *(is).   *generic equative*
      b. This is solid, as a rock (is).   *property parallel*

4.1   interpretational restrictions on similatives

• equatives equate degrees, but similatives cannot

○ degree achievements test:

(32) A cooled the pie as B did the lasagna (#namely, from 180° to 100°).

○ quantized object test:

(33) A washed the dishes as B washed the car (#namely, halfway).

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[12]Assuming the argument structure for non-gradable adjectives in (19), we <u>do</u> need to postulate something like this for degree coercion in equatives formed from non-gradable adjectives, like (i-a), or temporal coercion in equatives formed from non-gradable adjectives, as in (i-b).

(i)   a.   This pillow is as circular as that pillow.
       b.   A is as pregnant as B.

- a plausible generalization of the difference between (34) and (35) is that those in (34) involve the equation of lexicalized arguments, while those in (35) involve the equation of non-lexicalized arguments.

(34)   a.   A read <u>the same</u> book **as** B did.   *same/different construction*
         b.   A is <u>as</u> tall **as** B.   *equative*

(35)   a.   A danced **as** B did.   (*manner*) *similative*
         b.   A danced **as** B sang.   (*temporal*) *similative*
         c.   A hands were cold **as** ice.   *generic equative*
         d.   A is a liar, **as** B already knows.   *propositional similative*

   ○ as discussed yesterday, the consensus analysis for explicit equative PMs (based on the sufficientive, as in English) characterizes it as a degree quantifier

   ○ the phrases *same* and *different* are arguably also individual quantifiers (Barker, 2002; Hanink, 2021)

4.2   other mismatches between parameters and interpretations

- a case study: generic equatives

   ○ the correlation between the absence of a PM and the absence of a degree interpretation occurs outside of the adjective/verb distinction, in a contrast between specific and generic extent equatives

   ○ in English, generic equatives cannot be formed with a PM

(36)   a.   This table is (#<u>as</u>) solid as a rock.
         b.   John's toes were (#<u>as</u>) cold as ice.

   ○ generic equatives, too, don't have a degree interpretation: they equate evaluative properties

      ∗ we can test this putative difference with specific equatives if we contrast the two forms with a positive-antonym relative adjective, e.g.

(37)   a.   A is as big as B, although they're both small.
         b.   A is big as a barrel, #although they're both small.

      ∗ since generic equatives are relatively restricted and idiomatic in English, it's easier to make this point with hyperbolic constructions:

(38)   a.   A is *(as) big as hell.
         b.   A is *(as) big AF.
         c.   A is long/short/tough/beached as.   *Australian/New Zealand English*

   ○ across languages, generic equatives pattern morphologically with similatives rather than specific equatives when there is a morphological distinction (Haspelmath and Buchholz, 1998)

- another case study: intensifier-verb similatives

(39)   a.   A raced as B did (namely, on a bicycle).
         b.   A stinks as B does (namely, of incense).

   ○ these are formed with verbs for which there is independent evidence they have a degree argument

   ○ the question is whether these receive a degree interpretation *in addition to* a manner interpretation

(40)   a.   A raced as fast as B did.
         b.   A stinks as much as B does.

   ○ this is crucially different from the question of whether they receive a(n evaluative) property interpretation, like generic equatives, which is particularly clear with an intonation break

(41)   a.   A raced, as B did.
         b.   A stinks, as B does.

○ it's hard to say, but it seems these do not receive a degree interpretation

  ∗ scenario: A, B and C all stink, but for different reasons: A just came from a hot yoga session, B was at a campfire, and C was attending a religious ceremony with a lot of incense. A and C are stinky, but B is noticeably much stinkier.
  ∗ note: I have reason to believe this degree reading is fine for implicit-equative languages

4.3   summary, verbal similatives

- (most) verbs can associate with arguments they don't lexicalize: times, manners, degrees

- but verbal similatives can't receive a degree interpretation

- there seems to be a generalization outside of verbal similatives too:

  ○ if there's a parameter marker <u>and</u> the parameter lexicalizes a degree argument, the construction receives a degree interpretation

  ○ if not, it can't (if the parameter is an adjective or intensifier verb but there's no PM)

- two theoretical conclusions:

  1. degree quantifiers like parameter-marking *as* seem to differentiate between lexicalized and non-lexicalized degree arguments

  2. for some reason – perhaps because there is a dedicated degree quantifier – similatives in English don't receive a degree interpretation in the absence of a parameter marker

     ○ as we know from yesterday's discussion, this isn't true of languages whose most dedicated morphological strategy is an implicit equative

     ○ but it doesn't seem construction-specific either, *wh*-based free relatives in English cannot receive a degree interpretation either (Caponigro, 2003)

       (42)   a.   I'll have [what he's having].   d.   I invited [who he invited] to the party.
                b.   I'll go [where/when he goes].   e.   I'll talk [how he talks].
                c.   *I'm tall [how tall he is].   f.   *I'll buy [how many he buys].

     ○ and in fact if we want to get a degree interpretation for a verbal similative in English, we need to use a) a parameter marker and b) *much*-support, to introduce a dummy adjectival parameter

       (43)   a.   *A as danced as B.
                b.   A danced as much as B.

5   propositional similatives

5.1   basic data

- *as* can range over propositions, in what I'll refer to as 'propositional similatives'

- depending on the sort of proposition it associates with, these *as*-clauses can accordingly function as a speaker certainty marker, an evidential, or a discourse marker[13]

  (44)   a.   As you know, I've had to stop consuming dairy.   *epistemic use*
           b.   If, as I suspected, he's convinced the team to abandon the project, we should too.

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[13]A propositional similative could but need not qualify as a hedge (Benton and van Elswyk, 2020); hedges are defined functionally, whereas I'm defining propositional similatives morpho-semantically.

(45) a. The siege has ended, as we have just heard.   *evidential use*
      b. As it says in the Bible, stained linen should be repurposed as candle wicks.

(46) a. As you mentioned earlier, the days are getting shorter.   *discourse use*
      b. Housing prices are too expensive, as I've said repeatedly.

- in this sense, *as* seems to behave like a propositional anaphor, like *that*, *so* or *which* (Snider, 2017)[14]

- crucially, because they cannot be part of the main clause (i.e. are adjuncts, not modifiers), *as* clauses in propositional similatives are parentheticals, and introduce not-at-issue content accordingly

- they inform our theory of the semantics of similatives in two ways:

  ○ the associate of *as* – a proposition – need not be overtly represented

  ○ in some propositional similatives, *as* combines with clauses headed by *if* and marked with subjunctive mood, creating hypothetical similarity comparisons

5.2   a simple semantic analysis

- standard propositional similatives have a syntax that looks something like this:

(47) $[_{CP} [_{CP}$ As you know $p] [_{CP}$ main clause$]^p]$

  ○ it's natural to think of the *as*-clause gap as a trace, corresponding to a moved/extraposed/slifted clause

  ○ but I'm going to characterize the dependency as one of anaphora instead, for (at least) two reasons:

    1. it is possible to have an overt pronoun in this position

       (48)   As I see it, you've got two options.

    2. it is possible to have the gap associate with a non-overt proposition or a syntactically inaccessible, cf. other types of similatives

       (49) a. As you wish.
             b. (Just) As I thought.

       (50) a. B accused A of cheating, as might be relevant.   *p*: A cheated or B accused A
             b. B accused A of cheating, as if she would.   *p*: A cheated

- from (2), we'd like to keep the meaning of *as* held fixed (recall that the domain of x and y is unspecified):

(51) $[\![$as S$]\!] = \lambda y.[\![S]\!]^{[y/x]}$

- but for propositional similatives, x, y range over propositions (and S over sentences with free p variables)

(52)   As A knows, B went to the store.

          a. $[\![$B went to the store$]\!] = $ went(b,the-store)
          b. $[\![$A knows $t_p]\!] = $ knows(a,x)
          c. $[\![$as A knows $t_p]\!] = \lambda y.$knows(a,y)
          d. $[\![$as A knows t_p B went to the store$]\!] = $ knows(a, went(b,the-store))

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[14]The two main differences between *as-* and *which*-headed RCs are syntactic: those headed by *which* can't be sentence-initial , and those headed by *as* can't form standalone sentences and/or can't head pseudoclefts (Snider, 2017).

(i)   a. I've had to stop consuming dairy, {which/as} you know.
       b. {As/*Which} you know, I've had to stop consuming dairy.

(ii)   A: Erik was there.
       B: {Which/*As} is what I've been trying to tell you!

- there's something big missing here: we ultimately want to say that an utterance of e.g. (52) both asserts that B went to the store and backgrounds that A knows it

  ○ this is not something we want to encode in the semantics: it's not a part of (or relevant to) other similatives, and it's something we can explain with off-the-shelf information structure accounts

  ○ by virtue of its status as a relative clause, *as p* can function as an appositive, contributing backgrounded content to the foregrounded embedded clause (see also 'slifting,' Simons, 2007)

  ○ but it crucially doesn't need to (Simons et al., 2011)

  (53)   Q: Why is everyone making candle wicks out of linen?
         A: As it says in the Bible, stained linen should be repurposed as candle wicks.

  ○ we'll have to import some more info-structure-sensitive apparatuses to deal with this layer compositionally; fortunately, there are some good ones (Anderbois et al., 2015; Koev, 2019)

- what's new here?

  ○ not much! we already know how similatives and relative clauses work

  ○ but there are two lessons that need to be emphasized:
    1. *as* can range over propositions, and
    2. propositional similatives are similatives in which *as* is associated:
        * not with an unfilled argument (like in implicit equatives);
        * not with a non-lexicalized or associated argument (like in verbal similatives);
        * but with a trace or gap position in another clause, via anaphora

  ○ the consequence of this semantic relationship is that propositional similatives can in principle occur insolation, without an overt associate, e.g. *As if I have the time!* (Brinton, 2014)

- armed with this information, let's turn towards a more interesting type of propositional similative

5.3   *as if* constructions

- similatives can be formed with *as if* as well; there is recent work arguing that these constructions are idiomatic and thereby unrelated to other types of similatives (Bledin and Srinivas, 2019, 2020)

- (they've been called "hypothetical comparatives"; I'll use the term "hypothetical similatives")

- the goal here is to argue against that claim, and to extend the previous analysis to *as if* constructions[15]

5.3.1   the data

- Bledin and Srinivas (2019) categorize hypothetical similatives into three distinct categories:

  (54)   hypothetical similatives
         a.   Amy danced as if she was possessed.   *manner use*
         b.   This honey tastes as if it were purified.   *perceptual use*
         c.   As if I have the time!   *isolate use*

---

[15]There is a very clear and compositional proposal of *wie wenn* constructions in Bücking (2017), which are closely related to *as if* constructions (German *als ob*) in the obvious way. But there remain clear differences, which I'll try to highlight along the way. And Bücking himself notes, "[T]he analysis of *als*-HCCs needs to be worked out in detail. Specifically, an explicit semantic proposal for the meaning contribution by *als* must be made. The envisaged full-fledged analysis should answer the question of whether the internal semantics of *als*-HCCs is derivable from their parts or largely intransparent for a regular compositional derivation" (p1022).

- Bledin and Srinivas (2019) and Bledin and Srinivas (2020) both argue that *as if* is idiomatic, and provide:

  - an event(uality)-based semantics for the manner and perceptual uses (Bledin and Srinivas, 2019)[16]
    * a resemblance relation between eventualities
    * a stereotypical ordering relation between possible worlds
    * a selection function mapping an eventuality and a proposition to a set of counterpart eventualities

      (55) $\llbracket$as if$\rrbracket = \lambda p \lambda e \forall e'[e' \in f_c(e)(p) \rightarrow r_c(e)(e')]$

    * the manner use in (54-a) is primary, the perceptual in (54-b) derived secondarily, via θ roles
  - an exclamatives-based semantics for the isolate use of *as if* (Bledin and Srinivas, 2020)

- despite their claim that **as if** constructions are idiomatic, Bledin and Srinivas point out that *as if* can be modified by *exactly, almost*, and *quite*, "the same pre-modifiers as ordinary *as* and other prepositions"

- there are also parallels with other *if* phrases (all points from Bledin and Srinivas (2019)):

  - they generate non-veridical entailments (*B danced as if he'd taken lessons ↛ B had taken lessons*)
  - they license the subjunctive (*danced as if he were possessed*)[17]
  - they demonstrate failure of antecedent-strengthening and antecedent disjunction-strengthening

- but there are *as if* constructions in which it doesn't associate with events; while (54-a) and (54-b) are instances of verbal similatives, there are propositional *as if* similatives

  (56)   a.   Jane spoke as if she represented all of us.   *verbal 'as if'*
          b.   I've lost my job, as if you didn't know.   *propositional 'as if'*

- it's also cross-linguistically quite common to have a construction comprised of a relativizer and a hypothetical complementizer, subjunctive mood, or both, so hypothetical comparative markers are not idiomatic[18]

  (57)   *as* in Hungarian
          a.   A olyan magas, **mint** B.
                A so   tall,   as   B
                'A is as tall as B.'   *specific equative*
          b.   A villamos időben érkez-ett, **mint** (ahogy)   Mari is   meg-mond-t-a.
                the tram   time-IN arrive-PST as   in.the.way Mari also TEL/PF-say-PST-DEF
                'The tram arrived, as Mary said.'   *propositional similative*
  (58)   *if* in Hungarian
          a.   **Ha** jön   Mari, örul-ni   fog-ok.
                if   come Mari   be.happy-INF FUT-1SG
                'If Mari comes, I will be happy.'   *indicative conditional*
          b.   **Ha** jön-ne   Mari, örul-né-k.
                if   come-SUBJ Mari   be.happy-SUBJ-1SG
                'If Mari came, I would be happy.   *subjunctive conditional / counterfactual*
  (59)   *as if* in Hungarian
          a.   Mari úgy   táncol, **mintha** részeg len-ne.
                Mari in.a.way dance   as-if   drunk be-SUBJ
                'Mary dances as if she were drunk.'   *subjunctive verbal similative*
          b.   Abbahagytam a   dohányzást, **mintha** nem tudnád.
                quit-1SG   the smoking,   as-if   not know-SUBJ
                'I have quit smoking, as if you didn't know.'   *subjunctive propositional similative*

---

[16]Bücking (2017) also translates *wie wenn* in terms of events; for him, the (54-a)/(54-b) difference is an attachment ambiguity.

[17]This isn't true, however, there are languages (like English) that allow for a mood alternation. More soon.

[18]Lena has great data on this syncretism too!

- it's also bad news for Bledin and Srinivas (2020) that propositional similatives can occur without an overt associate (cf. other types of similatives, e.g. *As B is singing!*, even when pointing at A dancing) without anything like exclamation intonation

5.3.2   a similative-based account

(60)   a.   A speaks as B writes.   *verbal similative*
        b.   B spoke as if she represented all of us.   *hypothetical verbal similative*

(61)   a.   I've lost my job, as you know.   *propositional similative*
        b.   I've lost my job, as if you didn't know.   *hypothetical propositional similative*

- there are two interesting differences between hypothetical and non-hypothetical propositional similatives:

  1. in *as if* constructions, the *as* clauses are hypothetical, i.e. there is no veridicality entailment (in (60-b), no entailment that B represents all of us)

  2. in *as if* constructions, there's a stronger implication that the *as if* proposition is false (in (61-b), that the hearer <u>did</u> know the speaker lost their job)

- the approach here, informally (mirroring the analysis of counterfactuals in Starr, 2014a,b):

  ○ in propositional similatives, because the *as* clause is necessarily displaced from the main clause, it associates with its argument via anaphora

  ○ the hypotheticality in *as if* clauses is contributed by subjunctive mood (just as in counterfactuals)

  ○ in its role as a topic-raiser or QUD-marker, *if* displays its usual polysemy:

    ∗ it functions as a conditionalizer in verbal similatives

    ∗ it functions as a *yes/no* question operator in propositional similatives

  ○ when it functions as a *yes/no* question operator, it does what other *yes/no* question operators do: it highlights the (proposition associated with the) speaker bias

    (62)   *context*: We are in an affluent hippy neighborhood.
            Q: Is there no vegetarian restaurant around here?
            A: No, there isn't.

    ∗ the prejacent (the thing *no* is anaphoric to): 'There is no vegetarian restaurant around here'
    ∗ the speaker bias: 'There is a vegetarian restaurant around here.'

  ○ arguably, both (61-a) and (61-b) communicate that the receiver knows that p...

    ∗ ...but in (61-a), this is encoded in asserted content (albeit backgrounded asserted content),
    ∗ ...and in (61-b), by virtue of *if*, this is encoded in a speaker bias, the <u>expectation</u> on the part of the speaker that the hearer knows that p

- three formal assumptions, the first two from Starr (2014a,b)

  1. *if* is an interrogative complementizer like *whether* (but it highlights the positive proposition)

    (63) $[\![\mathit{if}]\!] = \lambda \mathsf{q} \lambda \mathsf{p}.\mathsf{p} = \mathsf{q}$ *adapted from Starr (2014a)*

  2. *as if* constructions have the hypothetical meaning they do because they are subjunctive

    (64) $[\![\textsc{subjn}]\!]_f = \lambda \mathsf{p} \lambda \mathsf{w}.\mathsf{w} \in \mathsf{Sim}_f(\mathsf{w}', \mathsf{p})$

    (65) $\mathsf{Sim}_f(\mathsf{w}', \mathsf{p})$ is true iff $w \in f(w', p)$, where f is a contextually supplied set selection function satisfying success, weak centering, and uniformity   *adapted from Stalnaker (1968)*

  3. we need to intensionalize τ so that it relates an event and a world to a manner

- the result, compositionally:

  - for the verbal hypothetical similative:

    (66)   ⟦if SUBJN she represented all of us⟧$_f$
           = λp.p = [λw.w ∈ Sim$_f$(w′, λw.∃e(rep.us(m, e, w) ∧ subj(b, e, w) ∧ τ(m, e, w))]

    (67)   ⟦(60-b)⟧ = λw′∃m ∃e ∃e′[[speaks(m, e, w′) ∧ subj(b, e, w′) ∧ τ(m, e, w′)] ∧
           λp.p = [λw.w ∈ Sim$_f$(w′, λw.(rep.us(m, e′, w) ∧ subj(b, e′, w) ∧ τ(m, e′, w))]]

      * 'The manner in which B spoke is the manner in which she would have represented all of us.'
      * this is just as it is in §3.3, but with (counterfactual) worlds
      * we have τ associating an event (in a particular world) to a manner, and
      * the similarity meaning is introduced via Predicate Modification
      * there's a type-mismatch between the conjuncts that we can solve in the normal Hamblin way

  - for the propositional hypothetical similative:

    (68)   ⟦if SUBJN you didn't know q⟧$_f$ = λp.p = [λw.w ∈ Sim$_f$(w′, λw.¬Know(addr, w, q))]

    (69)   ⟦(61-b)⟧ = λw′.LostJob(spkr, w′) ∧ λp.p = [λw.w ∈ Sim$_f$(w′, λw.¬Know(addr, w, q))]

      * 'I lost my job (and I'm taking for granted that you knew that).'
      * *as* associates anaphorically with the main proposition 'I've lost my job,' binding the free w'
      * the parenthetical status of the informal translation has two distinct sources:
        · the appositive status of the *as* clause
        · the status of ¬p as a speaker bias, a property of interrogatives with high negation and polarity (Farkas and Roelofsen, 2015; Goodhue, 2019)

- it's the anaphoric connection of the associate of *as* in propositional similatives that predicts it can occur without an overt specification, i.e. that it can retrieve its meaning from context

- the analysis above relies on subjunctive mood to achieve the hypothetical meaning, but there are languages in which hypothetical similatives can be formed with indicative mood, at least optionally:[19]

  (70)   a.   Er torkelt, als ob er betrunken ist.
             he sways   as if he drunk   is.IND
             'He sways as if he is drunk.'
         b.   Er torkelt, als ob er betrunken wäre.
             he sways   as if he drunk   were.SUBJ
             'He sways as if he were drunk.'   *German*

  (71)   a.   Ich bin ja arbeitslos,   als ob du das nicht weisst.
             I   am PRT unemployed as if you this not   know.IND
             'I am unemployed, as if you didn't know.'
         b.   Ich bin ja arbeitslos,   als ob du das nicht wüsstest.
             I   am PRT unemployed as if you this not   knew.SUBJ
             'I am unemployed, as if you didn't know.'   *German*

  - both (70-a) and (70-b) are acceptable in English, but the distinction in (71) isn't possible in English

  - the prediction of the present analysis is that there is no anti-veridicality implicature for (70-a)...

  - ...but also that, in both sentences in (70), *if* raises the QUD of whether he is drunk (with the assumption that he is)

  - this is true for the English (70), but remains to be seen for the propositional contrast in (71)

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[19]Thanks to an anonymous SALT reviewer for this point and these data.

- what this account is currently missing is an explanation of why hypothetical verbal similatives can receive a manner interpretation but not a time interpretation

  - my best guess at this point involves a metaphysical constraint on this reading, there's just nothing intrinsic about an event's time, i.e. there's no natural class of events at time t across worlds

6   conclusions & extensions

- today we've extended yesterday's core semantic analysis of implicit equatives to other (unbound) uses of *as*, in particular to verbal and propositional similatives

- in verbal similatives, *as* associates with times or manners associated with the verb's event argument

  - I've introduced the times and manners into the compositional semantics using a contextually-valued event homomorphism, based on a similar one from Davidsonian event semantics
  - these verbal similatives are unable to equate degrees, arguably because there is a dedicated degree quantifier that has this specialized meaning
  - additional evidence of the relationship between non-lexicalized arguments and parameter markers comes from generic equatives (with adjectival parameters) and similatives with intensifier verb parameters

- in propositional similatives, *as* acts like a propositional anaphor

  - because its associate is a proposition, the *as*-clause itself is adjunct-like, surfacing as an appositive
  - because it is anaphoric, its associate proposition need not be overtly specified
  - *as if* constructions have been characterized as a special case, but they can be accounted for under this approach, assuming:
    - * subjunctive mood contributes hypotheticality
    - * in propositional similatives, *if* acts like (other) *yes/no* Q operators, highlighting speaker bias

- we've learned another way in which *as* can associate with a semantic object, i.e. anaphorically, in which case we expect its associate to be optionally covert

- a few other loose ends or things to think about going forward:

  - it's curious that there is a (universal) asymmetry between the main and subordinate clauses of similatives, namely that the subordinate clause requires an overt relativizer to denote a property, while the main clause prohibits one
    - * this seems possibly related to the (universal) asymmetry with respect to complementizers in main vs. embedded clauses (see Dayal and Grimshaw, 2009, for an extension to slifting)
  - similatives don't license NPIs, but (sufficientive-based) explicit equatives do... this account is in-principle compatible with these facts, but I haven't gone into detail here (more tomorrow)

    (72)   a.   *She danced as ever before.
            b.   She is as happy now as ever before.

  - there is lots of work yet to be done on the relationship between *as*-based similatives and those based on *wh*-relativizers, especially for those languages that allow for both
    - * Bücking's analysis of *wie wenn* is event-based in the way described above, and so doesn't naturally extend to propositional similatives, but this is arguably a welcome prediction
    - * that said, it remains to be seen what the semantic difference is between *wie wenn* and *als ob* (and *als wenn*) is in verbal similatives, and consequently how we should approach our analysis of them

7   a preview of tomorrow's lecture

- (sufficientive-based) explicit equatives are the most closely related to comparative constructions in that they involve a degree quantifier

- in tomorrow's lecture, I'll cover the consequences of that particular morphosyntactic strategy, in particular, that (sufficientive-based) explicit equatives are unique in that they:

    ○ are modifiable
    ○ are non-evaluative
    ○ are NPI-licensing

- I'll also examine the curious situation of MP equatives, in which the parameter is a measure phrase

    ○ we'll see that this allows MP equatives to function as 'modified numerals' (Nouwen, 2010)
    ○ and we'll see how the distribution of equatives – and MP equatives in particular – reveal very interesting things about the morphosemantic relationship between comparatives, equatives, and MPs
    ○ (and the Gricean implicatures that pertain to that relationship)

appendix: individual-degree polysemy

- this section is based on the discussion in Rett (2014), and presents evidence for the idea that there is a freely available homomorphism from individuals to degrees (i.e. a measurement operator like μ)

- empirical claim: most DPs in any language is polysemous between (denoting) an individual or a degree

(73)	a.	Four pizzas are vegetarian.	*individual*
	b.	Four pizzas is sufficient.	*degree*
(74)	a.	Many guests are drunk.	*individual*
	b.	Many guests is several more than we anticipated.	*degree*
(75)	a.	Cheese doodles are delicious.	*individual*
	b.	Cheese doodles is not enough. The senators will need protein.	*degree*

- in languages that mark subject agreement, the degree interpretation triggers singular agreement

- the phenomenon is a superset of several other phenomena, including:

    ○ the amount/object ambiguity in e.g. *How many books must John read?* (Cresti, 1995)
    ○ agreement differences in the container/substance polysemy (Stavrou, 2003)

    (76)   Iparhun / iparhi mis sira   diavathmisis.
            is-3PL   / is-3SG a   range gradations
            'There are/is a range of gradations.'   *Greek*

- how do we know that the degrees are derived from the individuals, and not vice-versa?

    ○ the degree interpretations are restricted...
    ○ ...they can only involve truth-preserving dimensions of measurement, i.e. measurements that are monotonic on the part/whole structure (Schwarzschild, 2006)

    (77)   a. Four inches of cable are warped / is more than she asked for.   *pseudopartitive – length*
            b. Four-inch cables are warped / #is more than she asked for.   *attributive MP – width*

    (78)   a. #Heavy barbells is more (heavy) than she had asked for.   *collective weight*
            b. Heavy barbells is not enough – to get in shape, you'll need cardio too.   *exertion*

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