

*As Ifs*¹

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Abstract. We provide an event semantic analysis of *as if*-phrases in manner reports and other modification uses on which these adjuncts contribute *hypothetical comparative* properties of eventualities. When combined with the dynamic verb *dance*, for instance, an *as if*-phrase expresses that the reported dancing event resembles in some relevant respect its counterparts in the most normal worlds described by the clause embedded under *as if*. Towards the end of the paper, we extend our analysis to *as if*-complements of copy raising verbs in perceptual resemblance reports.

Keywords: Event semantics, conditionals, manner reports, perception verbs, copy raising

1. Introduction

This paper is an excerpt from a larger project in which we develop a compositional semantics for a range of *as if* constructions in English and explain their core pragmatic effects. While there has been theoretical and empirical work on the distribution and historical development of *as if* (Bender and Flickinger 1999; Huddleston and Pullum 2002; López-Couso and Méndez-Naya 2012; Brook 2014; Brinton 2014), the syntax and semantics of perceptual verbs that take *as if*-complements (Postal 1974; Potsdam and Runner 2001; Asudeh 2002, 2004; Landau 2011; Asudeh and Toivonen 2012; see also Breckenridge 2007, 2018; Glüer 2017 on *looks* reports), sarcastic uses of *as if* (Camp and Hawthorne 2008; Camp 2012), and the semantics of analogous “hypothetical comparative” constructions in other languages (see Bücking 2017 on German *wei wenn* (‘how if’)), there has not to our knowledge been an extensive study with *as if* playing a starring role at the semantics-pragmatics interface. Part of the challenge with such a study is that *as if* is extremely productive, appearing in a range of syntactic environments, and each of its different uses raises its own interpretive puzzles.

Four core uses are illustrated in (1)-(4):

- (1) *Manner use:* Pedro danced as if he {was/were} possessed by demons.
- (2) *Perceptual resemblance report:* It tastes as if there were an angel peeing on my tongue. (Dutch compliment to the chef)
- (3) *Root sarcastic use:* (Opening inbox) As if I have time to answer all these emails!
- (4) *Clueless use:* (Gross guy makes an advance) Cher: Ugh, as if!

In this paper, we focus mainly on manner reports like (1) and related modification uses. It might seem that a satisfactory analysis of such examples shouldn’t be too hard to come by. After all, there is already a great deal of work both on *if*-conditionals (some classics: Stalnaker 1968, 1975; Lewis 1973, 1975; Heim 1983; Veltman 1985; Kratzer 1986) and on various similarity

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constructions in English and other languages (for recent work, see Alrenga 2010 on *like*; Rett 2013 on similatives; Umbach and Gust 2014 on German *so* ('such'/'like this'), and the cross-linguistic studies on similatives and equatives in Treis and Vanhove 2017). However, we argue that matters aren't so simple. In §2, we offer strong syntactic and semantic evidence that *as if* is an idiomatic compound, and we should therefore be wary of trying to analyze *as if*-phrases by just mashing together our best accounts of regular *if*-clauses and the ordinary preposition *as* (cf. Bücking 2017). We also show that there are tempting ways to draw connections to prior research—such as building on Lewis's (1973) influential analysis of counterfactuals in terms of comparative similarity—that lead to trouble.

In §3, we develop a detailed analysis of the manner report (1). Roughly, we propose that (1) conveys that Pedro's past dancing resembles in respect of its manner—this is the *as* part—his dancing in scenarios in which he was possessed by demons, which is the *if* part. Formally, this is implemented within an event semantic framework (building on Davidson 1967; Parsons 1990; Landman 2000; Beck and von Stechow 2015, among others), where *as if*-phrases express *hypothetical comparative* properties of eventualities. More specifically, we take an *as if*-phrase to express a property that holds of an eventuality *e* when it resembles in some relevant respect (manner, in the case of (1)) each of its counterparts in the most *stereotypical* worlds described by the clause embedded under *as if* (and in which a counterpart of *e* exists). After motivating the different components of our analysis, we show how it can be imported into the kind of clausal architecture developed in Beck and von Stechow (2015) to give a fully compositional treatment of (1) and related examples.

Though we do not have space in this paper to discuss other uses of *as if* in depth, we conclude in §4 by briefly discussing how our analysis of *as if*-adjuncts in manner reports can be carried over to *as if*-complements of perception verbs in perceptual resemblance reports such as (2).

2. *As if* vs. *As...would...if*

It's tempting to think that *as if*-phrases are constructed from a regular *if*-clause headed by regular *as*, and that the meaning of the full phrase is then compositionally determined from the meaning of these parts (Bücking 2017, for instance, offers a fully compositional treatment of German *wie wenn* ('how if')). Note that it is possible to insert material between *as* and *if* in many of the above examples without any apparent change in meaning, so *as if* doesn't seem to be particularly special:

- (5) Pedro danced *as he would if* he was possessed by demons.
- (6) Kiss me *as you would if* it were the last time.

However, there is strong evidence that *as if* is an idiomatic compound, in both a syntactic and semantic sense, that cannot be cleanly separated into distinct comparative and hypothetical components.

First, as Huddleston & Pullum (2002) observe, the kind of meaning-preserving intervention exhibited in (5) and (6) is not always possible:²

²This intervention with *would* is not possible with root sarcastic and *Clueless* uses:

- (i) *As it would be if I have time to answer all these emails!
- (ii) *As it would be if!

- (7) #Don't attack a mouth as *you would* (attack a mouth) if you're dipping a mop into a slop-bucket!

Moreover, *as if* doesn't accept the intervening modifiers *only* or *even*—unlike *as...would...if* constructions which can be modified with either expression (von Fintel 1994. In this respect *as if* patterns like *what if* (Bledin & Rawlins *ms.*):

- (8) The Dalai Lama acted {**as/as he would*} {*only/even*} if he were angry.
(9) **What* {*only/even*} if Napoleon had won at Waterloo?

Likewise, *as if* and *as...would...if* pattern differently with respect to the possibility of intervening with adverbs of quantification such as *always*, *usually*, or *never* (Lewis 1975):

- (10) **Ben* is cycling as {*always/usually/never*} if he was drunk.
(11) Ben is cycling as he {*always/usually/never*} would if he was drunk. (Bücking 2017)

We take these contrasting data to provide some preliminary support for the claim that *as if* is a fixed idiom chunk.

Moving from the externals of *if* to *if* itself, the first thing to observe is that one cannot typically replace the *if* in *as if* with *wh*-items. While *as when* constructions are possible, *as when* has a far more limited distribution than *as if*:

- (12) Then it was quiet in a way he did not like either, as when everyone in class watched him for an answer. (COCA)³
(13) ??It's as when we still had landlines.
(14) **It's* as {*who/why/where/how*}...

Moreover, one cannot replace the *if*-clause with a *wh*-clause to form an unconditional adjunct (Rawlins 2008, 2013b) and one cannot substitute other complementizers like *if and when*, though such substitutions are possible in the filled out *as...would...if* constructions:

- (15) Alfonso nodded {**as/as he would*} whether or not he heard the question.
(16) Beggar So fought {**as/as he would*} if and when drunk.

The internals of *as if*-clauses also differ from the internals of standard *if*-clauses in various respects. Huddleston and Pullum (2002) observe that *if* cannot be repeated in coordination within *as if*-phrases (but such coordination is possible within *as...would...if*):

- (17) Annie was treated by the king {**as/as she would have been*} if she were a noblewoman or if she were a commoner.

Finally, *as if* differs from *as...would...if* with respect to NPI licensing. While *as...would...if* resembles ordinary *if* in licensing weak NPIs like *anyone* and *ever*, non-root *as if* doesn't license such NPIs (or at least is a far less hospitable environment for weak NPIs):

³Corpus of Contemporary American English, available online at <http://corpus.byu.edu/coca/>

- (18) She took a bow as she would if {someone/anyone} was in the theater watching her perform.
- (19) She took a bow as if {someone/*anyone} was in the theater watching her perform.
- (20) John smells as he would if he ever got sprayed by a skunk.
- (21) *John smells as if he ever got sprayed by a skunk.

On the other hand, as Camp and Hawthorne (2008) and Camp (2012) observe, sarcastic *as ifs* license NPI *any* and *ever*, in which respect they pattern like sarcastic *like*:

- (22) {As if/Like} my son will ever leave home and get a job!
- (23) A: Who won Eurovision?
B: {As if/Like} anybody cares!

Taken together, the above data suggest that while *as...would...if*-phrases are compositionally generated from regular *if*-clauses, *as if* is semantically and syntactically idiomatic. Perhaps at least some of the differences between *as if* and *as...would...if* can be explained away by those seeking a non-idiomatic treatment of *as if* in terms of regular *as* and *if*, but there would be a lot of explaining to do so we don't pursue such a treatment in this paper.

That said, we do not mean to argue that *as if* is totally disconnected from regular *as* and *if*. On one hand, *as if* is still *iffy* in the sense that many of the characteristic morphosyntactic and inferential features of regular *if*-clauses carry over to *as if*-clauses as well. For instance, like regular *if*-clauses, *as if*-clauses generate nonveridical contexts in that sentences containing them do not entail the TP-complement of *as if* (as discussed, *as if*-phrases are in many cases used to convey that these embedded TPs are false):

- (24) Oswald {is acting/looks} as if he didn't shoot Kennedy.
↗ Oswald didn't shoot Kennedy.

One can use the subjunctive mood/fake past (Iatridou 2000; Schulz 2014) to signal counterfactuality:

- (25) Pedro danced as if he were {possessed/Michael Jackson}.
- (26) He's behaving as if he was a Neanderthal.

There are also analogs in the case of *as if* to other distinctive inferential patterns observed for indicative and subjunctive *if*-conditionals. We see apparent failures of *strengthening of the antecedent* (SA) (Goodman 1947; Lewis 1973):

- (27) Messi is playing as if it is the Champions League final.
↗ Messi is playing as if it is the Champions League final and Barcelona is already five goals ahead.

Furthermore, *as if*-clauses that embed disjunctions give rise to the inferences that motivate the principle of *simplification of disjunctive antecedents* (SDA) for *if*-conditionals (Nute 1975; Ellis et al. 1977; Starr 2014; Willer 2015; Ciardelli 2016; Lassiter 2018):

- (28) It smells as if someone is smoking cannabis or there is a skunk nearby.
~> It smells as if someone is smoking cannabis.
~> It smells as if there is a skunk nearby.

And so on.⁴ The *iffy* nature of *as if* can also be seen, of course, from many uses that intuitively require us to consider scenarios in which the *as if*-complement holds.

On the other hand, *as if* is preposition-like in its externals, taking many of the same pre-modifiers as ordinary *as* and other prepositions, such as the adverbs *exactly*, *almost*, and *quite*:

- (29) Put someone on a virtual roller coaster and their mind and body will react exactly as if they're on the real thing. (COCA)
(30) That sounded very businesslike, almost as if I knew what I was doing. (COCA)
(31) He sat there still fresh-faced and smiling, looking about him quite as if he saw nothing that I was seeing. (COCA)

Moreover, *as if* is *as-y* in the intuitive sense that many *as if*-sentences do seem to involve similarity comparisons. Presumably, someone who utters (30) is comparing how a previous speech act sounded to how it would sound if uttered when she knew what she was doing. Going forward, then, we pursue an analysis of *as if* that needn't involve the fusion of regular *as* and *if*, but we nevertheless take it to be an important desideratum of our semantics that it remain *as-y* and *iffy* in the sense that it has clear conditional and comparative components.

3. A Hypothetical Comparative Semantics

We first pursue an analysis of our lead-off manner use (1), repeated below as (32):

- (32) Pedro danced as if he was possessed by demons.

Taking the *as* and *if* in *as if* seriously, our rough proposal is that (32) conveys that Pedro's dancing in the actual world resembles his dancing in possible situations where he was possessed by demons—that is, he danced wildly/crazily. The intuitive idea that *as if*-phrases can fix some relevant feature of an actual event via a comparison to events in other possible worlds is an old one—as Bücking (2017) reports, this idea (applied to German hypothetical comparative clauses) goes back at least to Kasper (1987). But, of course, the devil is in the details. And, as we will argue, there are some tempting ways to fill in the details that lead to bad results.

3.1. Refining the analysis

We work in the framework of event semantics (Davidson 1967; Parsons 1990; Landman 2000; among many others). First, some points about our background ontology: following Bach (1981), we assume the existence of a domain of eventualities, where “eventuality” is a cover

⁴The status of both SA and SDA for indicative and subjunctive conditionals is highly controversial. Our point is not that SA/SDA are invalid/valid and that the corresponding principles for *as if*-sentences are also invalid/valid, but only that we witness similar kinds of apparent failures of antecedent strengthening in both cases, and we can intuitively draw simplification inferences from both *if*-conditionals with disjunctive antecedents and *as if*-clauses with disjunctive complements in a broad range of cases.

term for both events and states.⁵ Furthermore, like Schaffer (2005), Beck and von Stechow (2015), and others, but unlike Hacquard (2006), we assume that eventualities occur in only a single world—they are world-bound. To identify “similar” eventualities across possible worlds, we help ourselves to Lewis’ (1968) *counterpart theory* applied to eventualities and introduce the following transworld relation (see Schaffer 2005 for a similar proposal):⁶

(33) **Counterpart relation between eventualities**

$C(e)(e')$ iff e' is a counterpart of e .

We assume the general things that Lewis says about counterparthood, such as that the relation C is reflexive—every eventuality is a counterpart of itself—but this relation needn’t be symmetric or transitive. Also, while eventualities often have unique counterparts in other worlds, they might also have multiple counterparts or none at all.

Stated in terms of counterparts, a more refined version of our proposal is that (32) conveys that there was an event e of Pedro’s dancing that resembles its counterparts in possible worlds in which Pedro was demonically possessed. Like Lewis, we acknowledge that the relation C is “problematic in the way all relations of similarity are: it is the resultant of similarities and dissimilarities in a multitude of respects, weighted by the importances of the various respects and by the degrees of the similarities” (Lewis 1968, p. 115). In fact, our counterpart relation between eventualities is admittedly more problematic than Lewis’s original relation between individuals, as eventualities are more complex entities than individuals. But, like Lewis (1968), we won’t go into more fine-grained details about C here. We do want to insist, however, that the notion of counterparthood remain fairly flexible in order to handle examples like the following:

(34) Pedro danced as if he was jumping rope.

On our proposal, the relevant counterparts to Pedro’s dancing that enter into the evaluation of (34) aren’t dancing events themselves but rather events of jumping rope. In general, to be a counterpart of e (i.e., a most similar event to e in a world), it can be enough to have (roughly) the same time and location as e and involve some of the same participants (or their counterparts).

Now, when evaluating sentences like (32), not just any eventuality counterparts should be taken into account. Presumably, there are possible worlds in which Pedro was possessed yet danced in a calm and sedate manner. We want to screen these worlds off and focus on only those in which a demonically possessed Pedro danced wildly. To whittle down the set of counterparts picked out by *as if* in this way, we might turn to Lewis again and adopt the *similarity relations* between possible worlds familiar from his classic work on counterfactuals (Lewis 1973, 1979). The proposal would be that (32) conveys that there is an event e of Pedro’s dancing which resembles its counterparts in the *most similar* worlds (to the actual world) in which Pedro was possessed by demons—see Bücking (2017) for a proposal about German hypothetical comparative clauses (HCCs) with “counterfactual readings” along these lines.⁷

⁵We use the variable e to range over events and the class of eventualities as a whole. Later in the paper when we have states specifically in mind, we use s to range over states only.

⁶Lewis (1968) himself takes events to be transworld—he identifies events with classes of spatio-temporal regions that can span multiple worlds. While our counterpart-theoretic treatment of events is inspired by Lewis’s work on modality, any conceptual errors associated with (33) are our own.

⁷The core semantics for *as if* that we are busy developing in this section is similar to Bücking’s analysis of German HCCs, which was brought to our attention by a reviewer for *Sinn und Bedeutung* 23 after we had already

However, working with comparative similarity leads to trouble when faced with “contrary-to-expectation” sentences like (35) (the reason for our label will become clear shortly), as this form of analysis incorrectly predicts that these sentences will sound terrible:⁸

(35) Melania is angry but she’s not acting as if she’s angry.

If the left conjunct of (35) holds, then—assuming that similarity orderings are *centered* in the sense that a world is always more similar to itself than any other world is—the most similar world to the evaluation world in which Melania is angry is just this evaluation world itself. On the similarity-based version of our analysis of *as if*, the right conjunct then turns on whether Melania’s behavior *doesn’t* resemble her behavior.

Intuitively, a speaker who utters (35) is saying that Melania is angry but she isn’t acting as one might expect her to act when she’s angry—she isn’t yelling, flailing her arms around, and so forth. To capture this interpretation, we propose that *as if*-phrases select for *stereotypical* or *normalcy* orderings over logical space that represent what speakers consider to be normally the case (one might take these orderings to be induced by Kratzerian 1981 “ordering sources”; see also Asher and Morreau 1991; Veltman 1996; Pelletier and Asher 1997 for related proposals):

(36) **Stereotypicality relation between worlds**

$v \leq_w u$ iff v is at least as typical as u from the perspective of w .

For ease of exposition, we make a version of the “Limit Assumption” (Lewis 1973; Stalnaker 1980) and assume that for every stereotypicality relation \leq_w and non-empty proposition $p \subseteq \mathcal{W}$, there is some p -world that is at least as normal as all other p -worlds. We can then refine our proposal further and say that (32) conveys that the event e of Pedro’s dancing resembles its counterparts in the *most typical* worlds in which Pedro was possessed by demons. To its credit, this stereotypicality-based analysis allows for contrary-to-expectation sentences to come out fine, as the world of evaluation needn’t be the most stereotypical world by its own standards—our expectations are disappointed in oh so many ways.

Of course, an eventuality e will resemble its counterparts in many boring respects. Presumably, the counterparts of Pedro’s dancing in the most stereotypical worlds in which he was possessed all have roughly the same temporal trace, for instance. But it’s the *manner* of these events that we’re interested in here: (32) describes the manner of Pedro’s dancing as being like the manner of its counterparts in the most normal Pedro-possessed-by-demons worlds. Generalizing from this example, it is tempting to analyze *as if* as effecting a manner comparison between an

worked out the main ideas in this paper. However, there are some important differences between our account of English *as if*-phrases and Bücking’s account of German HCCs. First, Bücking pursues a fully compositional treatment of *wie wenn* (the star of his paper) while we treat *as if* as a semantic unit (Bücking acknowledges that German *als*-HCCs headed by *als wenn/als ob/als wäre* (‘as if’/‘as whether’/‘as were’) exhibit syntactic and semantic idiosyncrasies, but he doesn’t analyze these constructions in depth). Second, we are about to argue that *as if* selects for stereotypicality or normalcy relations while Bücking argues that German *als*-phrases with a verb form in the counterfactual subjunctive should be given a Lewisian similarity-based analysis. Third, we aim to account for a broader range of *as if* data including perceptual resemblance reports (Bücking doesn’t analyze similar constructions). In addition, there are numerous differences between our full semantic implementation in §3.2 and Bücking’s account—we offer an explicit treatment of tense while Bücking does not, Bücking posits an ontology including both events and situations while we work with only events, and so on—but these are less central to the analysis of *as if*.

⁸Breckenridge (2007) rejects a similarity-based account of *looks as if* reports on the basis of such examples.

eventuality and certain of its counterparts under the scenario described by the embedded clause.

However, this would be another mistake, leading to an account that is overly restricted. In addition to manner uses, *as if*-adjuncts can be used to convey non-manner features of the matrix eventualities contributed by the verb phrases they modify, such as their location (37), and the (potential) cause or reason for their occurrence (38):

(37) Context: The king’s policy is to meet nobles in his throne room and commoners in the hall. Occasionally he makes exceptions.

Though Annie was a mere commoner, the king met with her as if she were nobility.
↪ The king met with Annie in the throne room.

(38) As if in response to the tough declarations from Hollande on Saturday, the Islamic State moments later asserted responsibility for the attacks. (COCA)

The moral from such non-manner reports is that we shouldn’t lexically associate *as if* with manner comparisons. To allow for the required variation, we parametrize out the dimension and nature of comparison and evaluate *as if* sentences relative to a resemblance relation, which we take to be reflexive and symmetric but not necessarily transitive:

(39) **Resemblance relation between eventualities**
 $r(e)(e')$ iff e' resembles e .

While r might relate eventualities based on respects of manner, it might also compare them based on other criteria, such as their means, locations, and so forth. Moreover, even once we’ve fixed on a manner comparison in the case of (32), there is the further question of how close the manner or style of a counterpart of Pedro’s dancing needs to be in these or those respects to the manner of his actual dancing to count as resembling it. We assume that along any dimension (or dimensions) of comparison, r also encodes how ‘close’ eventualities need to be in the relevant respect (or respects) to count as resembling.

While we treat the resemblance relation r as a contextually supplied primitive, one could make this relation more transparent by deriving it from a basic similarity relation between points in one of Umbach and Gust’s (2014) multi-dimensional “attribute spaces” (or Gärdenfors’s 2000 “conceptual spaces”).⁹ Generalizing the measure functions found in degree-based accounts of gradable adjectives like *hot* and *tall*, which are taken to map entities to points in temperature scales, height scales, and so on (Kennedy 1999), Umbach & Gust map entities to points in an attribute space and then count two entities as similar when their corresponding points in this space are similar. Adapting this approach for present purposes, one could introduce a generalized measure function μ mapping eventualities into a multi-dimensional attribute space and then let $r(e)(e')$ iff $\mu(e')$ is sufficiently close to $\mu(e)$ along the relevant dimension of the attribute space.¹⁰

Summing up, we are proposing that (32) reports that there was an event e of Pedro’s dancing that r -resembles its counterparts (determined by C) in the most stereotypical possible worlds in

⁹We are grateful to Bücking (2017) for bringing Umbach & Gust’s research on similarity demonstratives (German *so*) to our attention.

¹⁰With generalized measure functions in place, one can also look to off-the-shelf accounts of degree modification in gradable adjectives to handle examples like (30) and (31). Thanks to Rachel Rudolph for helpful discussion.

which he was possessed (according to $\leq_{\omega(e)}$, where $\omega(e)$ is the world in which e occurs, which we call its “modal trace”). To turn this proposal into a formal analysis, we interpret sentences through a function $\llbracket \cdot \rrbracket^{c,g}$ relativized to a context of use c and an assignment function g (for evaluating pronouns), and we assume that each context c determines a counterpart relation C_c , a function \leq_c mapping each world $w \in \mathcal{W}$ to a stereotypicality relation $\leq_{c,w}$, and a resemblance relation r_c . Using the first two parameters, we define a *selection function* f_c that takes an eventuality e and proposition p as arguments and returns the counterparts of e in all the most normal p -worlds in which a counterpart of e even exists:

$$(40) \quad e' \in f_c(e)(p) \leftrightarrow C_c(e)(e') \wedge p(\omega(e')) \wedge \\ \forall w[(p(w) \wedge \exists e''[\omega(e'') = w \wedge C_c(e)(e'')]) \rightarrow \omega(e') \leq_{c,\omega(e)} w]$$

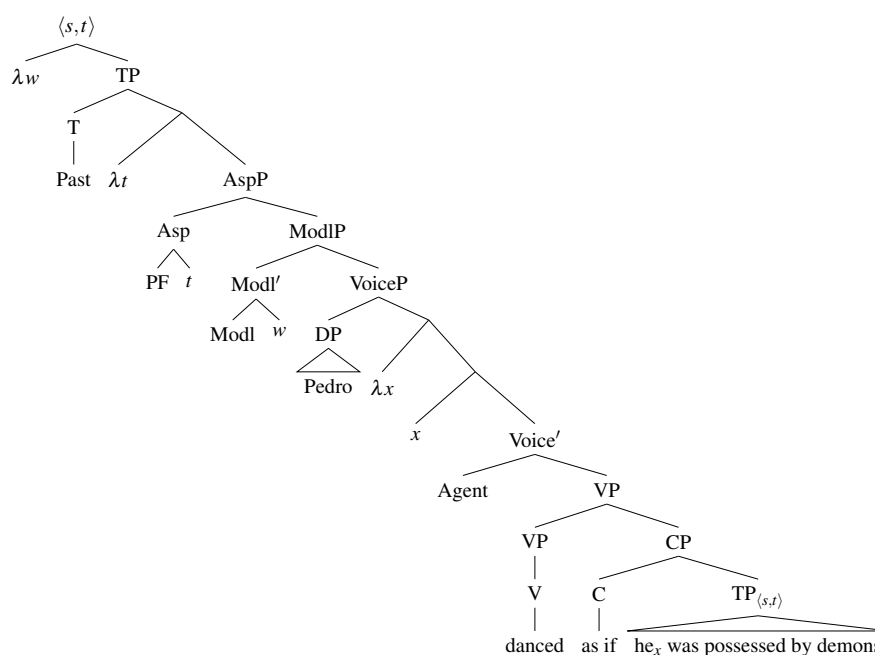
In words: f_c applied to e and p includes the eventuality e' iff e' is a counterpart of e occurring in one of the most normal p -worlds in which a counterpart of e occurs. *As if* is then interpreted in terms of f_c and r_c as follows:

$$(41) \quad \mathbf{Entry\ for\ as\ if} \\ \llbracket as\ if \rrbracket^{c,g} = \lambda p_{\langle s,t \rangle} \lambda e_v. \forall e' [e' \in f_c(e)(p) \rightarrow r_c(e)(e')]$$

In words: *as if* takes a propositional argument p and returns a property of eventualities, which holds of e when it r_c -resembles all its counterparts selected by $f_c(e)(p)$.

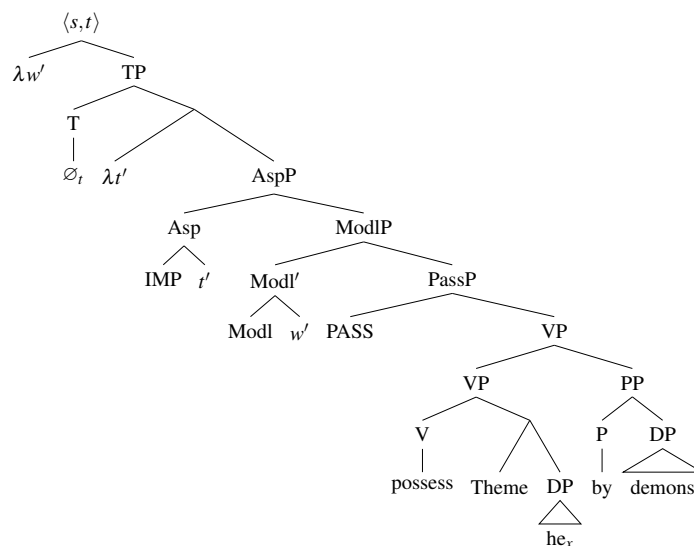
3.2. A worked-out example

The entry (41) can be imported into a Beck & von Stechow (2015)-style clausal architecture to give a compositional analysis of (32) and related examples (see Zobel 2016 for a closely related application of this architecture). We say “style” because we deviate from Beck & von Stechow in a number of respects—for instance, instead of treating tenses as operators, we adopt a referential analysis of tenses as pronouns (following Partee 1973; Kratzer 1998; Hacquard 2006). We analyze (32) as follows:



In the above LF, we classify the *as if*-phrase as a CP headed by the complementizer *as if* rather than a PP generated from an *if*-clause and preposition *as*, given our arguments for syntactic idiomaticity in §2.¹¹ The *as if* complementizer combines with the TP *he was possessed by demons* to form a property of eventualities of type $\langle v, t \rangle$. This property then composes with the interpretation of the matrix verb *danced* and its subject *Pedro* via the Agent function contributed by a silent voice head to form a more fine-grained property of type $\langle v, t \rangle$. A modal layer further refines this property by situating the event argument in world w . The perfective aspectual and tense layers existentially close the predicate denoted by the ModIP node and locate the runtime of the event within a contextually supplied reference time interval t_c preceding the utterance time. After abstracting over the world variable w , the output of the compositional machinery is a proposition of type $\langle s, t \rangle$.

Going into more detail now, we unpack the TP-complement of *as if* as follows:



To interpret the full LF, we help ourselves to a number of off-the-shelf ingredients. We adopt the following standard treatment of determiner phrases and a Heim and Kratzer (1998)-style bound variable analysis of the anaphoric pronoun *he* in the *as if*-phrase:¹²

$$(42) \quad \llbracket \textit{Pedro} \rrbracket^{c,g} = \textit{Pedro}$$

$$(43) \quad \llbracket \textit{demons} \rrbracket^{c,g} = \lambda x_e. \textit{demon}(x)$$

$$(44) \quad \llbracket \textit{he}_x \rrbracket^{c,g} = g(x)$$

Eventualities are introduced by a Neo-Davidsonian lexical semantics (Carlson 1984; Parsons 1990; Krifka 1992; among others), where verbs denote properties of eventualities:

¹¹This categorial analysis agrees with that in Bender and Flickinger (1999) and Brook (2014) for the *as if*-complements of perception verbs. Asudeh (2002) argues for a PP analysis of *as if*-phrases, but we do not find his analysis persuasive. His main arguments are based on uniformities between *as if* and ordinary *as* and *if*—for instance, he observes that *as if*-phrases take the same pre-modifiers as prepositions and allow for subjunctive mood. But we didn't deny in §2 that *as if* is *as*-like and *if*-like in many respects, including those observed by Asudeh, and the evidence shows that *as if* is syntactically inflexible in ways that are surprising on a non-idiomatic PP treatment.

¹²Alternatively, one could give a referential analysis, as also discussed in Heim and Kratzer (1998).

$$(45) \quad \llbracket \text{dance} \rrbracket^{c,g} = \lambda e_v. \text{dance}(e)$$

$$(46) \quad \llbracket \text{possess} \rrbracket^{c,g} = \lambda e_v. \text{possess}(e)$$

These eventualities are linked to their participants via thematic roles (functions of type $\langle v, e \rangle$, such as Agent and Theme), which we take to have syntactic counterparts in LF, and we invoke the system of type-shifting operations in Champollion (2017) when required to compose verbal denotations with thematic information:

$$(47) \quad \llbracket \text{Agent} \rrbracket^{c,g} = \lambda e_v. \text{Agent}(e)$$

$$(48) \quad \llbracket \text{Theme} \rrbracket^{c,g} = \lambda e_v. \text{Theme}(e)$$

(49) **Type shifters**

- a. $\lambda \theta_{\langle v, e \rangle} \lambda V_{\langle v, t \rangle} \lambda x_e \lambda e_v. V(e) \wedge \theta(e) = x$
- b. $\lambda \theta_{\langle v, e \rangle} \lambda P_{\langle e, t \rangle} \lambda V_{\langle v, t \rangle} \lambda e_v. V(e) \wedge P(\theta(e))$

To account for the passivization of *possess* in the *as if*-phrase, we employ the following PASS operator and thematic analysis of *by*-phrases based on Landman (2000), which builds on the classic theory of passives in Dowty (1982):

$$(50) \quad \llbracket \text{PASS} \rrbracket^{c,g} = \lambda V_{\langle v, t \rangle} \lambda e_v. V(e) \wedge \exists x[\text{Agent}(e) = x]^{13}$$

$$(51) \quad \llbracket \text{by} \rrbracket^{c,g} = \lambda e_v. \text{Agent}(e)$$

Higher up in the clausal hierarchy above VPs, Beck and von Stechow’s (2015) ModI operator takes us from eventualities to possible worlds by assigning eventualities their modal trace (and introducing a world parameter in LF also gives modal operators higher up in the tree something to grab on to, though we do not explicitly show this here):

$$(52) \quad \llbracket \text{ModI} \rrbracket^{c,g} = \lambda w_s \lambda e_v. \omega(e) = w$$

Higher still is the aspectual layer where a perfective or imperfective operator existentially binds the eventuality argument and takes us from eventualities to times by situating the “temporal trace” or “runtime” $\tau(e)$ of an eventuality e (Krifka 1989) with respect to a time parameter t that can later be saturated with a reference time by Tense (the perfective operator PF is from Beck and von Stechow 2015; the imperfective operator IMP is based on Kratzer 1998 and Hacquard 2006, though, as Hacquard discusses, non-perfective morphology appears in a range of environments and its semantics is far from settled):

$$(53) \quad \llbracket \text{PF} \rrbracket^{c,g} = \lambda t_i \lambda V_{\langle v, t \rangle}. \exists e[\tau(e) \subseteq t \wedge V(e)]$$

$$(54) \quad \llbracket \text{IMP} \rrbracket^{c,g} = \lambda t_i \lambda V_{\langle v, t \rangle}. \exists e[t \subseteq \tau(e) \wedge V(e)]$$

As mentioned, we treat tenses as pronouns (Partee 1973; Kratzer 1998; Hacquard 2006). In particular, we assume that the TP layer above aspect supplies one of the following pronouns, where Present/Past have presuppositions that the reference time t_c is included in/precedes the time of evaluation t_c^* respectively, and the zero tense \emptyset_t allows us to implement Kratzer’s (1998) analysis of ‘sequence of tense’:

¹³As we will see, when the Agent role in a passive construction is supplied by a *by*-phrase, the PASS operator is semantically redundant.

Assuming that this exchange takes place in a run-of-the-mill context where there is no special connection between manners of dancing and the curvature of the earth, B’s answer doesn’t help to resolve A’s question.

3.3. Taking stock and generalizing

Our semantics for *as if* has clear comparative and conditional aspects. The comparativity is manifest in the resemblance parameter r_c , and the selection function f_c introduced in (40) should bring to mind standard accounts of indicative conditionals.

Compare for instance the influential Lewis-Heim-Kratzer “restrictor view” of indicatives, on which *if*-clauses serve to restrict the domain of nearby modal operators (Lewis 1975; Heim 1983; Kratzer 1986). On Kratzer’s version of the theory, indicative conditionals always have a covert or overt modal in their complement, which quantifies over a set of possible worlds contributed by a *modal base* f that are maximal with respect to an *ordering source* g . When f encodes a speaker’s information and g encodes stereotypicality, say, these parameters pick out the most typical worlds compatible with this information. To evaluate an indicative conditional, the proposition expressed by its antecedent is added to the modal base, thereby restricting the quantificational domain of the modal in its consequent to worlds in which this antecedent holds:

- (61) **Kratzer’s conditional semantics** (Kratzer 1991, Def 13)
 $\llbracket \text{if } \varphi \text{ must } \psi \rrbracket^{f,g} = \llbracket \text{must } \psi \rrbracket^{f^+,g}$ where $f^+(w) = f(w) \cup \{\llbracket \varphi \rrbracket^{f,g}\}$

A similar kind of domain restriction is built into our semantics for *as if*. One might roughly think of our selection function f_c as restricting the domain of comparison supplied by a stereotypical ordering source with the proposition expressed by the clause embedded under *as if*.

While we have used the manner report (32) as our representative example of modification with *as if*-adjuncts, our semantics is meant to extend to other adverbial uses as well. Indeed, the primary motivation for parameterizing *as if* to a contextually-supplied resemblance relation is to allow for comparisons in respects other than manner. Note that questions under discussion (QUDs; Roberts 1996, 2012; Ginzburg 1996; van Kuppevelt 1996) often modulate the relevant dimension of comparison, given that *as if* claims, like assertions in general, must be relevant to the QUD (Roberts 1996). For instance, if the QUD for (37) is *Where did the king meet with Annie?* (as we have assumed), then a locative reading is obtained. On the other hand, if the QUD is *How did the king behave towards Annie?*, we get a manner reading.

4. Coda on Perceptual Resemblance Reports

In this concluding section, we discuss how our analysis can be extended to the *as if*-complements of the perceptual source verbs *seem*, *appear*, *look*, *sound*, *feel*, *smell*, and *taste* in perceptual resemblance reports (PRRs) such as the following:

- (62) Banner {seems/appears} to Thor as if he is morphing into Hulk.
(63) It {smells/sounds/tastes} as if we’re in Italy.

On what seems to be the dominant view of PRRs in the copy raising literature, the relation to propositional attitude reports is tight: a speaker who utters (62) or (63) is taken to report the existence of an experiential state with the propositional content denoted by the TP embedded

typical worlds in which Banner is morphing into Hulk during t_c^* . Note that on this analysis of (62), the proposition $\llbracket \textit{Banner is morphing into Hulk} \rrbracket^{c:s}$ isn't attributed to the reported seeming state as its representational content but rather serves to restrict the selection of its counterparts by f_c to those in worlds where Banner is morphing into Hulk.

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