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Perception verbs, copy raising, and evidentiality in Swedish and English

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10.1 Introduction

The verb *to look* has several uses in English, two of which are illustrated in (1)–(2):[1]

(1) Carla looked at the painting.

(2) Carla looked like she enjoyed the party.

Carla is the agent of *look* in (1) but not in (2). Verbs such as *look* in the agentless use of (2) will be referred to here as *perceptual resemblance verbs* (PRVs; Asudeh and Toivonen 2012): the sentence conveys perceptual (visual) resemblance evidence that Carla enjoyed the party. In other words, based on something that one can see, it can be concluded that Carla enjoyed the party. *Look like* examples such as (2) are the main focus of this chapter. Other PRVs are *sound, taste, smell, feel*:

(3) The engine sounds/smells like it is broken.

(4) The bread tastes/smells/feels like it is old.

The complement of *look* is not necessarily a clause. This is illustrated in (5), where the complement is an AP and in (6), where the complement is a PP:

(5) Carla looked happy.

(6) Carla looked like a professional soccer player.

Rogers (1971) uses the term *flip perception verbs* because the subjects are not perceivers but what is perceived. In (2)–(6), the subject is what is perceived and not the perceiver as in (1). The perceiver in PRV verbs is instead expressed with an optional *to*-phrase, such as *to me* in (7):

[1] Thanks are due to two anonymous reviewers and Raj Singh for insightful comments. I also want to thank the editors for comments and help, and for putting this volume together. I am thrilled to be part of this effort to celebrate Mary Dalrymple's contributions to linguistics.

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(7) Carla looked *to me* like she enjoyed the party.

PRVs have received considerable attention since they were first explored in early generative literature by Rogers (1971, 1972, 1973) and Postal (1970, 1971, 1974). They have thereafter been explored across generative and functionalist frameworks because of their interesting syntactic and semantic characteristics.

This chapter specifically concerns PRVs with finite clausal complements, as in example (2). Our first goal is to review some of the literature on PRVs, with a special focus on some of the points which remain controversial (Sections 10.2–10.4). A second goal is to present the results from a novel psycholinguistic study on the Swedish equivalent of *look like* (Section 10.5). This study investigates and compares the interpretation of *look like* examples with an expletive subject (8) and a raised subject (9):

(8) Det såg ut som om Peter var glad.
it looked out as if Peter was happy
'It looked like Peter was happy.'

(9) Peter såg ut som om han var glad.
Peter looked out as if he was happy
'Peter looked like he was happy.'

The results of this experimental study are discussed in light of previous studies and reveal a subtle but interesting difference between Swedish and English.

10.2 Evidentiality

Perceptual resemblance verbs can be compared to grammaticalized evidentiality marking. Grammatical evidentiality refers to mandatory morphological marking of evidential sources (Aikhenvald 2004). Chafe and Nichols (1986) define evidentials as 'devices used by speakers to mark the source and reliability of their knowledge'. Evidential markers can, for example, indicate whether the statement is based on visual or reported evidence, and whether the speaker has directly experienced the event.

English does not have the kind of grammaticalized (morphological and mandatory) evidentiality that is found in Tariana (Aikhenvald 2003), Cheyenne (Murray 2010), and Quechua (Faller 2002). However, PRVs similarly indicate type of evidence: 'look like' indicates visual evidence, 'sound like' indicates aural evidence, etc.[2] It is clear that PRVs can specify the sensory modality that provided the relevant evidence,[3] but a more controversial question is whether perceptual

[2] A difference is that grammaticalized evidentiality does not typically distinguish between all the senses. Instead, there is a distinction between visual and other.

[3] Note, however, that at least some PRVs can be extended ('bleached') to mean something like 'seem like' (Whitt 2009; Rudolph 2019b, 64). This is evident from the following attested examples from the www:

resemblance verbs encode direct evidentiality (Asudeh and Toivonen 2012; Rett and Hyams 2014) or indirect evidentiality (Lesage et al. 2015; Asudeh et al. 2017; Asudeh and Toivonen 2017; Kanda and Honda 2018; Rudolph 2019a). The remainder of this section is devoted to this question.

The proponents of direct evidentiality base their arguments on a difference in intepretation between pairs of examples such as the ones in (10)–(11):

(10) It looks like Cecilia has won the lottery.

(11) Cecilia looks like she has won the lottery.

In what follows, examples with an expletive 'it' (10) will be referred to as *it*-clauses, and examples such as (11) will be referred to as *copy raising* (CR) clauses because the subject ('Cecilia') corresponds to a pronominal copy in the lower clause ('she').

Examples (10) and (11) are very similar in meaning: each sentence indicates that Cecilia has won the lottery and that the evidence for this is visual. Rogers (1972, 1973: 77), Horn (1981); Asudeh and Toivonen (2012), and others have noted that the two types of examples differ in that CR clauses require the matrix subject to be the source of evidence. In (11), the impression that Cecilia has won the lottery comes from Cecilia. This may also be the case in (10), but it need not be. Example (10) but not (11) is acceptable in a context where there is no direct evidence from Cecilia herself, but there is instead other evidence that she has come into a lot of money: There might be a new and expensive car in her driveway, she might be throwing a lavish party, etc. The following pair of examples (from Rett and Hyams 2014) serves to further illustrate the same point:

(12) John looks like he is sick.

(13) It looks like John is sick.

Both (12) and (13) are acceptable if the visual evidence comes directly from John: perhaps the speaker[4] has seen that John has a runny nose and fever-blank eyes. However, (12) but not (13) requires the evidence to come from John. Sentence (13) is also acceptable in a context where the speaker is not looking at John but has some other evidence for his illness; perhaps the speaker is looking at John's empty desk at work, for example.

Several studies have provided experimental evidence for the generalization that CR clauses require direct perceptual evidence from the subject (Rett and Hyams 2014; Chapman et al. 2015a,b, Rudolph 2019a). However, counterexamples have also been noted by Heycock (1994); Potsdam and Runner (2002); Mack (2010);

i. Donald Trump looks like he's trying to blow up NATO before his meeting with Vladimir Putin.
ii. I presume if the bus looks like it is running late, I can hop in a taxi to speed up the trip!

Rett and Hyams (2014) found in their study that participants required a visual source for *look like* examples with an NP subject but not examples with an expletive subject.

[4] Rather than the speaker, it can also be the individual whose perspective is conveyed (Doran 2015).

Landau (2011); Kim (2014); Doran (2015); Rudolph (2019a,b), and others. The following example is provided by Doran (2015: 11):

(14) [You are a skilled musician with a highly trained ear. Through the thin walls of your apartment, you can hear your neighbor playing the guitar, but the chords sound slightly off, like the guitar is missing a particular string. You remark:]
The B string sounds like it is missing.

Example (14) involves no direct perception of the B string.

There are several proposals that aim to capture the generalization that CR subjects typically need to be directly perceived, while at the same time accounting for the counterexamples. Mack (2010) and Landau (2011) argue that the correct generalization has to do with topicality or aboutness: the CR subject is what the statement is about. Park and Turner (2017) propose that the judgements follow from analysing the matrix subject functions as a reference point to the pronominal copy. Rudolph (2019a,b) concludes, based on the results of several experiments, that distinct analyses are needed for different verbs. Her studies indicate that while 'taste', 'feel', and 'smell' invariably require perception of the subject, the facts are more complicated for 'seem', 'look', and 'sound'. For example, 'seem' and 'look' only require perception of the CR subject when the embedded clause is headed by a stage-level predicate.

Even though there are some important caveats, there is a strong intuition that at least certain types of CR clauses differ from *it*-clauses in that they require evidence from the referent denoted by the subject. This intuition has led Asudeh and Toivonen (2012); Rett and Hyams (2014); Poortvliet (2016) and others to suggest that examples such as (11) and (12) encode direct evidentiality. However, regardless of what the source of evidence is, the meaning of the subordinate clause is only inferred, and both CR and *it*-clauses are therefore parallel to indirect evidentials, not direct evidentials. A comparison of the sentences in (15)–(18) illustrates the point:

(15) Mandy saw Sue laugh.

(16) Mandy saw that Sue was laughing.

(17) It looked to Mandy like Sue was laughing.

(18) Sue looked to Mandy like she was laughing.

The examples in (15)–(18) are very similar in meaning. Each sentence conveys that Mandy has received visual evidence about Sue laughing, which can very roughly be represented as SEE(mandy, LAUGH(sue)). However, only (15) directly encodes that basic meaning: (15) alone entails that Mandy had direct visual evidence of Sue laughing. Examples (16)–(18) are also consistent with that reading, but they are in

addition compatible with an interpretation where Mandy had *indirect* evidence of Sue laughing. For example, (16) can be uttered in a context where Mandy has seen Jason and Sue having a conversation, but she only saw Jason's face, not Sue's face. Mandy knew what Jason and Sue are talking about, and from the expression on Jason's face, Mandy reached the conclusion that Sue was laughing. Example (15) is not felicitous in this context.

Examples (17) and (18) do not entail that Mandy has direct visual evidence of Sue's laughter, and it is unclear whether the examples are in fact fully felicitous in such a context. They instead indicate that Mandy has some kind of visual evidence that has indirectly lead her to believe that Sue was laughing. Example (17) but not (18) is compatible with the scenario described above, where Mandy only sees Jason's face. Both (17) and (18) are felicitous in a context where Mandy saw Sue from a distance and noticed her making a facial expression that was a likely indication of laughter, but could have been a scowl or a sneeze. Lesage et al. (2015), Asudeh et al. (2017), and Asudeh and Toivonen (2017) present experimental evidence that indicate that there is a difference in certainty and reliability between the *see* construction of (15) and *look like* examples such as (17)–(18). When participants were asked about examples such as (15), they judged it as highly likely that *Sue laughed*, significantly more than when they were asked about examples like (17)–(18). The English *look like* constructions are therefore more appropriately classified as expressing indirect than direct evidentiality marking, as noted by Aijmer (2009), Lesage et al. (2015), Mortelmans (2016), Asudeh et al. (2017), Asudeh and Toivonen (2017), and Rudolph (2019a,b).

In sum, two main generalizations emerge from the literature on the evidentiality of *look like*. First, the evidential source of CR-style examples is typically (though not always) the CR subject. Second, just like other PRVs, the verb *look like* indicates indirect evidence for the embedded proposition.

10.3 The copy pronoun

The status of the subject in copy raising structures is controversial not only because of its evidential status. Another major point of discussion is whether or not the subject is a thematic argument of the copy raising verb. Does a verb such as *look* in (19) determine a thematic role which is affiliated with the subject *Asaf*?

(19) Asaf looks like he needs a hair cut.

Potsdam and Runner (2002) review several pieces of evidence that the CR subject is not a thematic argument of the CR verb, and we repeat some of that evidence here. First, the CR subject alternates with an athematic expletive *it* subject, as shown in several examples above (e.g. (17)). Second, some CR verbs can alternate with

standard raising verbs that do not take a thematic subject. The verbs *seem* and *appear* occur both in standard raising structures (20) and in CR structures (21):

(20) Tina seems/appears to have finished the race.

(21) Tina seems/appears like she has finished the race.

Most perception verbs cannot head regular raising structures, but some speakers allow *look* as a standard raising verb:

(22) %Tina looks to have finished the race.

The fact that the verbs *seem, appear*, and in some dialects *look*, can take a raised subject suggests that those verbs do not take a thematic subject.

Third, the non-thematic status of the CR subject explains the requirement that there be a 'copy pronoun' in the lower clause (e.g. *he* in (19), *she* in (21)). Like a raised subject in standard raising constructions, the CR subject is thematically connected to the lower clause; the subject gets its thematic role from the embedded predicate. Instead of a gap or a trace, there is a copy pronoun in the lower clause.

However, several authors have noted that although the embedded clause in CR structures typically contains a pronoun which is coreferential with the matrix subject, this is not always the case. Rogers (1973: 99) provides example (23) and Heycock (1994: 292) example (24):

(23) The soup tastes to me like Maude has been at the cooking sherry again.

(24) That book sounds like everyone should own a copy.

More common are examples where there is a copy, but it is not in the subject position of the lower clause:

(25) John looks like somebody has stabbed him.

Potsdam and Runner (2002) argue that only examples where there is a copy pronoun in subject position constitute true copy raising. Asudeh (2002, 2004, 2012: ch. 9) similarly holds that true copy raising necessarily involves a pronominal copy, but in his account the copy may be deeply embedded and need not be a subject. Asudeh further argues that only the verbs *seem* and *appear* in English require a pronominal copy, and perception verbs such as *look, sound* do not. In his view, only *seem* and *appear* are true copy raising verbs, even though other verbs can also appear in a copy raising frame.

10.4 Variation

Perceptual resemblance verbs appear in CR structures across the Germanic languages, but there is variation both between and within languages with respect to

which verbs allow it, and within languages whether it is allowed at all (Van Egmond 2004; Asudeh and Toivonen 2012; Mortelmans 2016; Poortvliet 2016; Brook 2018; Zanuttini et al. 2018). Among speakers who allow CR, there is variation regarding whether expletives and idiom chunks can copy raise (Horn 1981, a.o.).

Asudeh and Toivonen (2012) present the results of an acceptability survey on copy raising in English and Swedish. They found that their participants divided into four dialects in both languages. A minority did not allow CR at all (around 7 per cent of participants). Some speakers allowed CR but only with a pronoun in the subject position in the immediately embedded clause (English 45 per cent, Swedish 28 per cent). Yet another group of speakers allowed CR and required a pronoun, but did not restrict the pronoun to the subject position of the immediately embedded clause (English 42 per cent, Swedish 26 per cent). Interestingly, the languages seem to differ in whether they allow the CR frame with no copy pronoun at all, for example *John seems like Mary won*. About 6 per cent of their English participants and 38.5 per cent of their Swedish participants found such examples acceptable. Asudeh and Toivonen's (2012) results for perceptual resemblance verbs such as *look like, sound like* differed somewhat from the results for other CR verbs (e.g. *seem like*) reported above. For perceptual resemblance verbs, the participants were more accepting of structures with no copy pronoun at all; that is, they found examples such as *John looks like Mary won* acceptable. A full 30 per cent of English-speaking participants and 61 per cent of the Swedish-speaking participants accepted PRV examples that contained no copy pronoun.

The observation that PRVs seem to be more acceptable than *seem, appear* without a copy pronoun was interpreted by Asudeh and Toivonen (2012) as support for Asudeh's (2002) claim that perceptual resemblance verbs are not true CR verbs. However, many participants nevertheless rejected PRV examples without a copy pronoun in English (70 per cent) and also in Swedish (39 per cent). This finding indicates that perceptual resemblance verbs are, in fact true CR verbs for many speakers *contra* Asudeh (2002). Park and Turner (2017) also argue that the distinction between *seem, appear* and PRVs is not sharp in this respect. However, Asudeh and Toivonen's survey results nevertheless indicate that Asudeh is correct that *seem, appear* are more likely to be true CR verbs than PRVs.

An alternative explanation is that copy-free examples are in general acceptable, given an appropriate context, as suggested by Landau (2011), Kim (2014), and Rudolph (2019b: ch. 3). It is quite likely that Asudeh and Toivonen's acceptability ratings would be higher across the board if each example had been presented in a convincing context. However, the context hypothesis nevertheless leaves unexplained the difference between Swedish and English. If context alone is the relevant factor, why are copy-free examples so much more acceptable in Swedish than in English, both for *seem* verbs and PRVs?

More generally, the results from Asudeh and Toivonen's (2012) study indicate what others have also noted: there is substantive variation in speaker judgements

regarding various CR-style structures (Poortvliet 2016; Rudolph 2019a; see also Asudeh 2012: ch. 9 for a proposal on how to capture the variation formally). The variation seems somewhat systematic, but more research is needed in order to gain a full understanding of the patterns. The Swedish study presented in the next section contributes to this research area.

10.5 English and Swedish truth-judgement experiments

Lesage et al. (2015) and Asudeh et al. (2017) performed a series of experiments that focused on the evidentiality of perception verbs in English. The results indicated that speakers interpret examples with *look like* (e.g. *It looked like the door was broken*) as providing indirect evidence for the proposition expressed in the subordinate clause (Lesage et al. 2015; Asudeh et al. 2017; Asudeh and Toivonen 2017). The studies compared *look like* sentences to *see* sentences such as (26):

(26) I saw the woman read.

When presented with *see* examples such as (26), participants judged it as more likely that the proposition expressed in the lower clause (here 'the woman read') was true than when presented with *look like* examples (CR or *it*-sentences). Asudeh et al. (2017) further compared English CR and *it*-examples to each other, and the results of that study will be reviewed here. After that, new results from a parallel Swedish study are presented.

The methods in Asudeh et al.'s (2017) study were based on Lesage et al. (2015) (see also Degen et al. 2019). In Lesage et al. (2015), participants were asked to answer the following question on a scale: 'Given the context *It looked like the woman was reading*, how likely is it that the woman is reading?' Asudeh et al. (2017) adopted that method and modified it to make use of a two-alternative forced choice (2AFC) task. One example of the questions included in the study is given in (27):

(27) In which case is *The woman was reading* more likely to be true?
(a) It looked like the woman was reading.
(b) The woman looked like she was reading.

The survey was a web-based questionnaire. The analysis drew on the responses from 266 native speakers of English. There were four target questions and sixteen fillers.[5] Overall, the participants chose *it*-examples (type (27)a) 47 per cent of the time and CR examples (type (27)b) 53 per cent of the time. According to a binomial test, the difference between *it*-examples and CR examples was not significant (p=0.12).[6]

[5] Example (27) was one target stimulus item. The other target items asked about the following sentences: *The boy was doing homework; The door was broken; The man was bleeding.*

[6] Two additional experiments using Likert scales (the method described in Lesage et al. 2015) and different stimulus items also failed to show a difference between *it*-examples and CR examples.

A novel study on Swedish aimed to replicate Asudeh et al.'s (2017) English study. The Swedish results displayed below have not been previously presented. English *look like* translates to *se ut som* in Swedish. In both languages, the verb can take an expletive (28) or a copy-raised subject (29):

(28) Det såg ut som om kvinnan läste.
it looked out as if woman.DEF read
'It looked like the woman was reading.'

(29) Kvinnan såg ut som om hon läste.
woman.DEF looked out as if she read
'The woman looked like she was reading.'

Self-reported native speakers of Swedish were recruited for a web-based questionnaire. A total of 164 participants completed the survey. The Swedish participants were asked the same questions as the English speakers, and they were given the same stimuli (listed in (27) and footnote 5). All materials were of course translated into Swedish.

Interestingly, the results of the Swedish study differed from the English results. The Swedish participants chose *it*-sentences (e.g. (28)) 80 per cent of the time and CR sentences (e.g. (29)) 20 per cent of the time. A binomial test showed that the *it*-sentences were chosen significantly more often ($p<0.001$).

When interpreting sentences such as (28) and (29), English speakers seem to think it is equally likely that the woman was reading. However, Swedish speakers judge it as more likely that the woman was reading when interpreting the *it*-example (28). It is not immediately obvious why the results of the English and Swedish studies should differ in this respect.

This is a novel finding, and more research is needed to test if it generalizes more broadly. However, assuming that the finding is correct, a possible explanation emerges if we connect this study to Asudeh and Toivonen's (2012) study comparing Swedish and English PRVs. Recall that they reported that copy-free versions of CR examples such as (30) are much more acceptable in Swedish than in English:

(30) Fredrika såg ut som om stranden var smutsig.
Fredrika looked out as if beach.DEF was dirty
'Fredrika looked like the beach was dirty.'

In other words, the connection between the CR subject and the embedded subject is not as tight in Swedish as it is in English. This would mean that the embedded pronoun in a sentence like (31) could in principle quite easily be interpreted as referring to someone other than the subject (*Fredrika*) in Swedish:

(31) Fredrika såg ut som om hon var smutsig.
Fredrika looked out as if she was dirty
'Fredrika looked like she was dirty.'

We now have a possible explanation for why Swedish speakers do not necessarily assume that a sentence like (31) entails that Fredrika is dirty: Fredrika could look like somebody else is dirty. Of course, this is not a very likely interpretation, especially not out of context, but it is a possible interpretation, and it seems especially readily available to Swedish speakers. Contrast (31) with (32), which entails that the person who looked dirty was Fredrika:

(32) Det såg ut som om Fredrika var smutsig.
It looked out as if Fredrika was dirty
'It looked like Fredrika was dirty.'

To review, previous studies and the experiment reported here have unearthed two differences between English and Swedish *look like* verbs: (1) In CR examples, English speakers are more likely to require a copy pronoun than Swedish speakers. (2) Swedish speakers (but not English speakers) judge *it*-examples to be more likely than CR examples to imply that the proposition of the embedded clause is true.[7] The first generalization can help explain the second generalization: in Swedish, the embedded pronoun does not necessarily refer to the matrix subject, and therefore the embedded sentence can be interpreted as not involving the matrix subject at all. In terms of a specific example, the pronoun *hon* in the Swedish sentence (31) does not necessarily refer to Fredrika, so the embedded clause does not have to be interpreted as *Fredrika was dirty*.

10.6 Concluding remarks

Perception verbs have inspired careful syntactic and semantic research (e.g. Gisborne 2010; Whitt 2010; Rudolph 2019b), but many important questions remain. This chapter has reviewed some of those questions, focusing on English and Swedish, and on the verb *to look* as it occurs with a finite complement. The review of the literature revealed that there is linguistic variation across languages and speakers with respect to several aspects of *look like* sentences and related constructions.

Section 10.5 zoomed in on two aspects of that variation: (1) There is variation within and between languages with respect to whether 'copy-free' copy raising is allowed. Swedish speakers are generally more accepting of copy-free structures than English speakers. (2) There is variation with respect to likelihood judgements. Swedish speakers judge that *it*-clauses imply more strongly than CR-clauses that the embedded proposition is true. English speakers show no difference between *it* and CR clauses in this respect. It was argued in Section 10.5 that the second

[7] Recall that *look like* only involves indirect evidence, so *it*-examples don't *entail* that the embedded proposition is true. They do, however, straightforwardly entail that it looks like the embedded proposition is true.

generalization (the difference in likelihood judgements) follows from the first generalization (the difference in acceptance of copy-free examples): Swedish speakers do not necessarily interpret the pronominal subject of the embedded proposition in CR-examples as co-referential with the matrix subject.

The two sets of studies on Swedish and English revealed subtle but interesting differences between the two closely related languages. These are just two of many new research results to emerge from recent psycholinguistic work on copy raising and PRVs in Germanic (Koring 2013; Rett and Hyams 2014; Chapman et al. 2015a,b; Lesage et al. 2015; Mortelmans 2016; Poortvliet 2016; Brook 2018; Rudolph 2019a). A potentially interesting future research topic would be to expand the likelihood-judgement experiments that were described in Section 10.5 to other Germanic languages.