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Copy raising and its consequences for perceptual reports[1]

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1.1 Introduction

Copy raising is a phenomenon in which a raising verb takes a non-expletive subject and a complement containing an obligatory pronominal "copy" of the subject:

(1.1) a. Thora seems like she adores popsicles.
b. *Thora seems like Isak adores popsicles.

English copy raising was initially noticed by Postal (1974, 268, fn.1) and was also touched on by Rogers (1971, 1973) in work that principally concerned what he called *flip perception verbs* (Rogers, 1971, 1972, 1973, 1974). The topic has recently received renewed attention in work by Potsdam and Runner (2001) and Asudeh (2002, 2004). The first detailed investigation of copy raising was Joseph's (1976) work on Modern Greek, which was subsequently brought to wider attention by Perlmutter and Soames (1979). Copy raising is in fact not typologically

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uncommon and has been attested in a number of unrelated languages, including Samoan (Chung, 1978), Hebrew (Lappin, 1984), Irish (McCloskey and Sells, 1988), Haitian Creole (Déprez, 1992), Igbo (Ura, 1998), and Turkish (Moore, 1998).

In this paper, we add to the repository of empirical data on copy raising by giving a characterization of copy raising in Swedish. This has the benefit of allowing us to compare the phenomenon in two closely related Germanic languages, namely English and Swedish. In carrying out the comparison, it becomes evident that copy raising yields insights into the linguistic encoding of the source of perceptual reports, i.e. what it is that gives the speaker the impression that something is the case. We argue that the proper analysis of perceptual sources in copy raising has consequences for linguistic theory, in particular the distinction between arguments/thematic roles and other participants in events and states. The analysis also allows us to solve two empirical puzzles. The first concerns the behaviour of an adjunct encoding the source of perception in Swedish and how this adjunct contrasts with an English adjunct that encodes the goal of perception, i.e. the perceiver. The second puzzle concerns a contrast that holds in both Swedish and English between copy raising and subject-to-subject raising in certain contexts.

1.2 Background

The alternation between infinitival and finite complements of raising predicates has been a central area of investigation in theoretical linguistics for quite some time (Rosenbaum, 1967, Postal, 1974). The alternation is demonstrated in (1.2) and (1.3) for the raising verb *seem* and the raising adjective *certain*:

(1.2) a. Thora seems to adore popsicles.
b. Isak is certain to adore popsicles.

(1.3) a. It seems that Thora adores popsicles.
b. It is certain that Isak adores popsicles.

The finite complementation pattern is a key piece of evidence that the “raised” subject in the infinitival alternant is not an argument of the raising predicate, since the subject can instead be realized as an expletive.

Copy raising is similar to the finite complementation pattern, since it too apparently involves a finite complement, although one introduced by *like*, *as if*, or *as though*:[2]

[2] *As if* and *as though* seem to belong to a slightly higher register than *like*. The latter seems to be preferred in colloquial speech, although there are no doubt also subtle semantic and pragmatic differences between the three forms, which we set

(1.4) a. Thora seems like she adores popsicles.
b. Isak appears as if / though he has been crying.

Asudeh (2002, 2004) argues that the complement to copy raising is not a finite clause, but rather a predicative prepositional phrase, headed by *like* or *as*, which in turn contains a finite complement. He assimilates the syntax of copy raising to predicative raising:

(1.5) a. Kim seems crazy / out of control.
b. Sandy appeared ill / under the weather.

Despite taking a predicative complement, copy raising does exhibit an alternation between a non-expletive and expletive subject, similar to the alternation between subject-to-subject raising and finite complementation in (1.2) and (1.3) above:

(1.6) a. Thora seems like she adores popsicles.
b. It seems like Thora adores popsicles.

If the possibility of an expletive subject for finite-complement raising verbs in (1.3) constitutes evidence that a raised subject is not a thematic argument of the raising verb, then the alternation in (1.6) similarly indicates that a copy raising subject is not an argument of the copy raising verb. We will henceforth refer to examples of a copy raising verb in its expletive-subject alternant, as in (1.6b), simply as 'expletive examples'.[3] We will take care to distinguish *that*-complement cases like (1.3) when appropriate. Another note on the terminology: Throughout this paper, we refer to 'raising verbs' and 'copy raising verbs'. The copy raising verbs *seem* and *appear* can also be used as raising verbs, and so the different terms are simply intended to separate the different uses of the verbs.

The fact that copy raising verbs require a pronominal copy of their subject to appear in their predicative complement, as shown in (1.1) and again in (1.7), lends further support to the conclusion that a non-expletive copy raising subject is not an argument of the matrix verb.

(1.7) a. Thora seems like she adores popsicles.
b. *Thora seems like Isak adores popsicles.

If *Thora* were analyzed as a thematic subject in (1.7a), the ungrammaticality of (1.7b) would be mysterious. Asudeh (2002, 2004) provides an analysis of copy raising that assimilates the phenomenon to resumption,

aside here. We will principally use only *like* in what follows.

[3]Although we do not discuss them explicitly, we mean remarks about expletive examples to extend to idiom chunk cases like *The cat seems like it's out of the bag* (see Potsdam and Runner 2001, Asudeh 2002, 2004).

as centrally exemplified by resumptive pronouns in unbounded dependencies (McCloskey, 1979, Sells, 1984). On Asudeh's analysis, the copy raising subject is not licensed by the copy raising verb and must instead compose in place of the copy pronoun, which is removed from semantic composition by a *manager resource* that is lexically contributed by the copy raising verb.

Asudeh (2002, 2004) observes that the true copy raising verbs in English are *seem* and *appear*, since these are the verbs that require a copy pronoun in their complements. He contrasts these with *perceptual resemblance verbs* (Rogers's *flip perception verbs*; Rogers 1971, 1972, 1973, 1974): *look*, *sound*, *smell*, *feel*, and *taste*.[4] The latter do not require a pronoun in their complement, as demonstrated by the following contrast:

(1.8)	*Thora	seems appears	like as if	Chris has been baking sticky buns.

(1.9)	Thora	smells looks sounds feels tastes	like Chris has been baking sticky buns.

Matters are further complicated by the fact that perceptual resemblance verbs may also occur with an expletive subject, thus exhibiting the alternation in (1.6) above. This is illustrated in (1.10) with data from English and Swedish:[5]

[4] These verbs occur in various other usages, such as the propositional attitude use of *feel* (*I just feel that they're so uncaring*) or the intransitive use of *smells* (*This shoe smells*). Also, *look* and *sound* can be used with quite bleached meanings in which an appearance or sound is not necessarily involved. In this paper we are only concerned with the uses of these perception verbs with a *like*-complement and in which a sensory modality is involved.

[5] The verbs *feel* and especially *taste* do not allow the expletive variant as easily. Nevertheless, this is not a linguistic constraint, since we have found attested examples in both English and Swedish. The difficulty is rather one of construal, i.e. finding an appropriate context.

(1.10) a. i. Thora looks / sounds / smells / feels / tastes like Chris has been baking sticky buns.

ii. Thora ser ut / låter / luktar / känns / smakar
T. looks out / sounds / smells / feels / tastes
som om Chris har bakat kladdkaka.
as if C. has baked sticky cake
'Thora looks / sounds / smells / feels / tastes like Chris has baked "sticky cake".'

b. i. It looks / sounds / smells / feels / tastes like Chris has been baking sticky buns.

ii. Det ser ut / låter / luktar / känns / smakar
It looks out / sounds / smells / feels / tastes
som om Chris har bakat kladdkaka.
as if C. has baked sticky cake
'It looks / sounds / smells / feels / tastes like Chris has baked "sticky cake".'

Asudeh concludes that a non-expletive subject of a perceptual resemblance verb is thematic (i.e., it is an argument of the verb), but that a non-expletive subject of a copy raising verb is non-thematic (i.e., it is not an argument of the verb). He treats perceptual resemblance verbs as ambiguous between a thematic subject reading, when they have a non-expletive subject, and a non-thematic subject reading, when they have a expletive subject. The subject of a copy raising verb is always non-thematic, though.

However, other recent literature proposes that a non-expletive copy raising subject is sometimes thematic (Potsdam and Runner, 2001) or even always thematic (Matushansky, 2002). Matushansky is not primarily concerned with copy raising and does not argue her position, so we will concentrate on Potsdam and Runner's claims. Potsdam and Runner (2001, 456–458) state that a copy raising subject is thematic in cases where the copy pronoun in the complement is not the highest subject or is in non-subject position (Potsdam and Runner, 2001):

(1.11) a. Bill sounds like Martha hit him over the head with the record.
(adapted from Rogers 1973, 97)

b. Ermintrude looks like the cat got her tongue.
(Rogers, 1971, 219, (51))

c. Mary appears as if her job is going well.

This data is partly problematic, since Potsdam and Runner (2001), like most work on English copy raising (e.g., Rogers 1971, 1973, 1974, Heycock 1994), do not distinguish between copy raising verbs and perceptual resemblance verbs. We have already seen that the perception verbs do not require a pronoun in their complement at all. It is therefore irrelevant whether any pronoun that happens to occur in the complement is a subject or not. However, the third example in (1.11) is an instance of the copy raising verb *appear*.

There are at least two problems with the claim that copy raising verbs can have thematic subjects. The first problem has to do with Potsdam and Runner's (2001, 457) claim that copy raising verbs in their thematic use are "reasonably paraphrased as 'act like' or 'put on the appearance of"'. But (1.11c) is not synonymous with any of the following sentences:

(1.12) a. Mary acts like her job is going well.
b. Mary puts on the appearance of her job going well.
c. Mary puts on the appearance that her job is going well.

First, notice that the most salient readings for these sentences involve a generic/habitual present tense (i.e., *Mary always / usually acts like . . .*), whereas the most salient reading of (1.11c) is a simple present tense in which Mary at this moment appears a certain way. Second, the sentences in (1.12) entail that Mary is doing something, and perhaps also entail that she is doing it purposefully. However, (1.11c) does not entail that Mary is actually doing anything that gives off the appearance that her job is going well; she could just be in a state of happiness, for example. Both of these points have to do with the fact that *appear* in (1.11c) is a stative verb whereas the ones in (1.12) are not.

Second, the predicates *act like* and *put on the appearance of* require agents capable of intentional action, but copy raising verbs with non-subject copy pronouns do not. Consider the following contrast:

(1.13) a. The corpse seemed like the coroner had done an exceptionally bad job of dissecting it.
b. # The corpse acted like the coroner had done an exceptionally bad job of dissecting it.
c. # The corpse put on the appearance that the coroner had done an exceptionally bad job of dissecting it.
d. # The corpse put on the appearance of the coroner having done an exceptionally bad job of dissecting it.

The corpse cannot *do* anything to convey the impression that the coroner botched the job. Nonetheless, the copy raising sentence is well-formed and felicitous.

These arguments indicate that the particular semantic sketch that Potsdam and Runner (2001) give of putatively thematic copy raising verbs cannot be right. However, there could still be a thematic use of these verbs with some other, as yet unidentified, meaning. A more pernicious problem with the claim of thematic copy raising verbs is that it erroneously predicts the possibility of copy raising with no copy pronoun whatsoever. Potsdam and Runner (2001, 457–458) cite Heycock (1994) for well-formed examples, but these all involve perceptual resemblance verbs. Copy raising verbs, as we noted above, are in fact ungrammatical without copy pronouns. We have encountered certain speakers who accept some instances of copy raising without any copy pronoun. For these speakers, a thematic analysis may be desirable. However, there are speakers — in fact, the majority of our informants — who reject copy raising without a copy pronoun, although they accept examples where the complement contains a pronominal copy (and the copy pronoun is not necessarily a subject). This pattern of data would be completely unexpected if these speakers had a thematic use of copy raising verbs. We therefore conclude, following Asudeh (2002, 2004), that copy raising subjects are non-thematic.

There is, however, a contrast between copy raising verbs and ordinary raising verbs that is puzzling if both classes of verb have a non-thematic subject and a single, propositional argument. Consider the following context:

(1.14) A and B walk into Tom's kitchen. Tom is at the stove doing something, but exactly what is a little unclear.

In this context, the following statements by A to B are all felicitous:

(1.15) a. Tom seems to be cooking.
b. It seems that Tom is cooking.

(1.16) a. Tom seems like he's cooking.
b. It seems like Tom's cooking.

Now consider the following alternative context:

(1.17) A and B walk into Tom's kitchen. There's no sign of Tom, but there are various things bubbling away on the stove and there are several ingredients on the counter, apparently waiting to be used.

Given this context, (1.15a), (1.15b), and (1.16b) are still felicitous, but (1.16a) is odd:

(1.18) #Tom seems like he's cooking.

If *Tom* is not a thematic subject of *seems*, why is this sentence not felicitous like the infinitival version? We will call this *the puzzle of the absent cook*.

The next section introduces Swedish copy raising, which gives rise to a puzzle of its own. We will show that the two puzzles are connected.

1.3 Copy raising in Swedish

Swedish has only one true copy raising verb, *verka* ('seem'). An example is given in (1.19), where Maria is the non-thematic subject of *verkar*, and the finite complement clause contains a coreferential pronoun *hon*:[6]

(1.19) Maria verkar som om hon är glad.
M. seems as if she is happy
'Maria seems as if she's happy.'

As expected of a copy raising verb, the complement clause requires a pronominal copy:[7]

(1.20) * Maria verkar som om Jonas är glad.
M. seems as if J. is happy

In (1.20), the complement clause does not contain a pronominal copy of *Maria* and the example is ungrammatical.

Just like English *seem*, *verka* can take an expletive subject and a finite complement, as in (1.21). It is also a subject-to-subject raising verb, as illustrated in (1.22):

(1.21) Det verkar som om Maria är glad.
it seems as if M. is happy
'It seems as if Maria is happy.'

(1.22) Maria verkar vara glad.
M. seems be.INF happy
'Maria seems to be happy.'

The verb *verka* thus displays the key copy raising characteristics: First, it does not require a thematic subject, as shown in (1.21); second, it can take a non-expletive subject and a finite subordinate clause, as shown in (1.19); and third, when it does take a non-expletive subject and a complement containing a finite clause, a pronominal copy is required

[6] In the examples presented in this paper, the complement of *verka* is introduced by *som om*. It should be noted that many speakers can omit *om* and the complement is then introduced by *som* alone. Some speakers also allow *som att* ('as that') and even a plain *att* ('that').

[7] Some speakers find (1.20) at least marginally acceptable. Those speakers arguably do not have true copy raising, i.e. their grammars treat *verka* as having a thematic subject. As noted above, some English speakers also have a thematic *seem*; see van Egmond (2004) for a discussion of similar dialectal variation in Dutch.

in the lower clause. To our knowledge, Swedish copy raising has not previously been discussed in the literature.[8]

Swedish has other raising verbs that are very similar to *verka* in many respects, but they are not copy raising verbs. These verbs are *förefalla* ('seem'), *tyckas* ('seem') and *se ut* ('look'):

(1.23) a. Det förefaller / tycks / ser ut som om Maria är glad.
it seems / seems / looks out as if M. is happy
'It seems / looks as if Maria is happy.'

b. Maria förefaller / ser ut att vara glad.
M. seems / looks out to be.INF happy
'Maria seems / looks to be happy'

c. Maria förefaller / tycks vara glad.
M. seems / seems be.INF happy
'Maria seems to be happy'

The verb *se ut* requires an infinitival complement to have the marker *att* ('to'), the verb *tyckas* cannot take *att* and *förefalla* can take a complement with or without *att*. The verbs *tyckas* and *förefalla* can only take a finite complement if the matrix subject is an expletive:

(1.24) * Maria förefaller / tycks som om hon är glad.
M. seems / seems as if she is happy

The verbs *förefalla* and *tyckas* are thus not copy raising verbs.

The verb *se ut* also has a perceptual resemblance alternant. However, Swedish perceptual resemblance verbs are not true copy raising verbs, because they do not require a pronominal copy in their complement, as shown in (1.10) above and again here:

(1.25) Maria ser ut / låter som om Jonas är glad.
M. looks out / sounds as if J. is happy.
'Maria looks / sounds as if Jonas is happy.'

The perceptual resemblance verbs in Swedish are thus parallel to their counterparts in English: Although they can take an expletive subject, as in (1.10bii) above, they can also appear with a thematic subject, as in (1.10aii) and (1.25).

[8] Although a copy raising example is listed in a recent comprehensive reference grammar (Teleman et al., 1999, vol. 4, p.56).

1.3.1 A contrast between Swedish and English and a second puzzle

According to the data that has been presented so far, the Swedish verb *verka* is exactly parallel to English *seem*. In examples (1.26–1.28), the Swedish sentences correspond closely to the English translations. Example (1.29) is ungrammatical, as is its English equivalent.

(1.26) Det verkar som om Tom har vunnit.
it seems as if T. has won
'It seems as if Tom has won.'

(1.27) Tom verkar ha vunnit.
T. seems have won
'Tom seems to have won.'

(1.28) Tom verkar som om han har vunnit.
T. seems as if he has won
'Tom seems as if he has won.'

(1.29) * Tom verkar som om Kalle har vunnit.
T. seems as if K. has won

Examples shown in previous sections and examples (1.26–1.29) demonstrate the close similarity between *seem* and *verka*.

However, Swedish *verka* allows a type of expression not available in English:

(1.30) Det verkar på Tom som om han har vunnit.
it seems on T. as if he has won
~'Tom gives the impression that he has won.'

Example (1.30) is close in meaning to example (1.28). The *på*-PP specifies that the impression that he (i.e., Tom or someone else) has won originates with Tom. It is not specified how Tom gives off this impression: It could be the way he looks or acts, or it could be something he said.[9] The verb *verka* thus allows for a *på*-PP which specifies the *source* of perception, which we will call the *p-source*. This PP is an adjunct: It is not selected for by *verka*, which only takes a single argument (since it is a raising verb). Moreover, the PP is both syntactically and semantically optional, as is typical of adjuncts.

However, a crucial difference between (1.30) and (1.28) is that (1.30) does not require a copy pronoun in its complement:

[9] A *på*-PP can also be used with perceptual resemblance verbs such as *se ut* ('look') or *låta* ('sound'). In such cases, the means of conveying the impression is expressed by the verb.

(1.31) Det verkar på Tom som om Kalle har vunnit.
it seems on T. as if K. has won
∼'Tom gives the impression that Kalle has won.'

The *på*-PP thus gives Swedish speakers the capacity to express what (1.29) and the following English sentence would arguably express if they were grammatical:

(1.32) *Tom seems like Kalle has won.

Although the intended meaning of (1.29) and (1.32) is intuitively clear, speakers all but uniformly reject them.

The *på*-PP can be contrasted with the English *to*-PP, which specifies the *goal* of perception (*p-goal*; i.e., the perceiver):

(1.33) It seemed to me as if Tom had won.

The verbs *verka* and *tyckas* can take a plain NP object with the same interpretation as the English *to*-PP, as exemplified in (1.34–1.35).

(1.34) % Det verkade mig som om Tom hade vunnit.
it seemed me as if T. had won
'It seemed to me as if Tom had won.'

(1.35) Det tycktes mig som om Tom hade vunnit.
it seemed me as if T. had won
'It seemed to me as if Tom had won.'

The PP *to me* in (1.33) and the NP *mig* in (1.34–1.35) do not have the same interpretation as the *på* -PP in (1.30): In (1.30), there is something about Tom that makes it seem as if he has won. Examples (1.33) and (1.34), on the other hand, leave unspecified what gives off the impression that Tom has won, but rather express to whom the impression has been given. A note on the Swedish data: The Swedish goal NP illustrated in (1.34–1.35) does not appear to be as commonly used as the English *to*-PP. Some speakers find (1.34) unacceptable. Example (1.35) is more generally accepted, although some find it quite formal. In contrast, the *på*-PP is not marginal or particularly formal.

Let us now return to copy raising, which is surprisingly not compatible with *på*-PPs. Compare (1.28) above to (1.36):

(1.36) * Tom verkar på Lisa som om han har vunnit.
T. seems on L. as if he has won

The ungrammaticality of (1.36) is unexpected: Why should the PP adjunct be excluded? This is our second puzzle, which we will call *the* på *puzzle*. It is easy to understand what the intended meaning of (1.36) is: Lisa gives the impression that Tom seems as if he has won. Yet the example is ungrammatical. Example (1.36) can be contrasted with (1.37), which contains a *to*-PP, and Swedish (1.38–1.39), which contain plain NP objects comparable to the English *to*-NP:[10]

(1.37) Tom seemed to me as if he had won.

(1.38) % Tom verkade mig som om han hade vunnit.
T. seemed me as if he had won
'Tom seemed to me as if he had won.'

(1.39) Tom tycktes mig ha vunnit.
T. seemed me have won
'Tom seemed to me to have won.'

The PP *to me* in (1.37) and the NP *mig* in (1.38–1.39) denote a perceptual goal (the perceiver), not a perceptual source.

We propose that the two puzzles, the puzzle of the absent cook and the *på* puzzle, are connected. The essence of our proposal is as follows. Both puzzles arise due to the linguistic expression of perceptual reports. The examples that led to the puzzle of the absent cook are odd because the subject of the copy raising verb is interpreted as the source of perception when it is unavailable to offer perceptual evidence. The examples that led to the *på* puzzle are ungrammatical because two distinct linguistic expressions specify the source of perception.

1.4 Implications for perceptual reports

We will not present a formal analysis of these facts here, but will instead spell out the proposal in general, but explicit, terms. In copy raising sentences, the subject of the copy raising verb is interpreted as the source of perception (*p-source*). This is why (1.40) and its Swedish equivalent (1.41) are both odd in a context where the speaker does not have perceptual evidence of Tom, as discussed at the end of section 1.2:

(1.40) # Tom seems like he's cooking.

(1.41) # Tom verkar som om han lagar mat.
T. seems as if he makes food
'Tom seems like he's cooking.'

Examples (1.40) and (1.41) can be paraphrased as follows: It seems like Tom is cooking and what gives this impression is Tom himself. The example is thus not felicitous in a situation where Tom is not available to be the source of the report. Swedish and English are equivalent with respect to the interpretation of copy raising, and so the Swedish translation of (1.40) is equally odd in the given context.

[10] Example (1.39) is a raising example instead of a copy raising example, as *tyckas* is not a copy raising verb.

Nevertheless, *p-sources* are not the same as the theta-role *source*. First, the theta-role *source* proto-typically encodes a spatial argument and *p-source* does not. Second, theta-roles are connected to arguments, but the subject of a copy raising verb is not a thematic argument of that verb. Copy raising subjects are licensed only through their connection to the obligatory copy pronoun in the complement. Thus, the subject *Henrika* is not a *thematic* subject of *seem* in (1.42):

(1.42) Henrika seems like she's had enough.

We contend that the verbs *seem* and *appear* and their Swedish counterpart *verka* entail a source of perception, but that this source is not connected to an argument. Rather, we analyze p-sources (and p-goals) as entailed participants in the states that these verbs denote. There are thus parallels between perceptual sources/goals and temporal and locative modifiers of eventualities, where we understand the latter to be a cover term for different kinds of events and states (Bach, 1981). Eventualities in general entail a time and location, yet these entailments are only sometimes overtly realized. In sum, the solution to the puzzle of the absent cook is that a copy-raised subject is interpreted as the p-source — the source of perception — and ascribing the role of p-source to the subject is infelicitous if the individual in question is not perceivable as the source of the report.

Since we treat the Swedish *på*-PP as contributing a p-source, our analysis treats (1.43) as synonymous to (1.44), if *Tom* and *han* are understood coreferentially:[11]

(1.43) Det verkar på Tom som om han lagar mat.
It seems on T. as if he makes food
'Tom seems like he's cooking.'

(1.44) Tom verkar som om han lagar mat.
Tom seems as if he makes food
'Tom seems like he's cooking.'

Given our solution to the puzzle of the absent cook, this predicts that (1.43) is infelicitous in the same contexts as (1.41). This prediction is correct. For example, in the scenario where Tom is absent but the kitchen shows signs of cooking, (1.43) cannot be felicitously uttered.

Let us now turn to puzzle number two, the *på* puzzle, which concerned the ungrammaticality of examples like the following:

(1.45) * Maria verkar på Per som om hon är glad.
M. seems on P. as if she is happy

[11] Note that (1.44) is grammatical. Recall that the infelicity of (1.41) was due to the 'absent cook' scenario.

In (1.45), both Maria and Per are specified as the source of perception, and the example is ungrammatical.

Now the question is: Why can't two p-sources be specified? The restriction cannot be due to the state of the world or our knowledge of it. It is after all possible to report that Maria gives the impression that Per gives the impression that she is happy or that Maria and Per together give the impression that she is happy. However, (1.45) cannot express either of these propositions. We therefore conclude that there is a linguistic constraint against expressing multiple perceptual sources. This can be understood as a generalization of the notion that eventualities have at most one instance of each thematic role (Carlson, 1984, Chierchia, 1984, 1989, Dowty, 1989, Parsons, 1990, Landman, 2000), which Carlson (1984, 271) similarly argues cannot be due to "the nature of the world itself". Just as an eventuality cannot have more than one theme, for example, an eventuality cannot have more than one perceptual source. Landman (2000, 38) proposes the following principle for thematic roles:

(1.46) **Unique Role Requirement**
If a thematic role is specified for an event, it is uniquely specified.

Following Chierchia (1984, 1989), Landman (2000, 44) captures this requirement formally by defining thematic roles as partial functions from eventualities to individuals. Unlike thematic roles, p-sources are not arguments, but we extend the uniqueness requirement to p-sources by similarly defining them as partial functions on eventualities.

The range of the p-source function is however not the set of individuals, but rather the union of the set of individuals and the set of eventualites, thus further distinguishing p-sources from thematic roles. This means that eventualities, in addition to individuals, can be p-sources. For example, a state-as-*p-source* analysis is appropriate for the felicitous expletive-subject sentence in the absent cook scenario:

(1.47) A and B walk into Tom's kitchen. There's no sign of Tom, but there are various things bubbling away on the stove and there are several ingredients on the counter, apparently waiting to be used.

a. It seems like Tom is cooking.

In this case, the p-source is the state of the kitchen. Recall that we refer to examples of a copy raising verb in its expletive-subject alternant simply as 'expletive examples'.

We treat such expletive examples as having an existentially bound p-source. This existential closure is obligatory in English expletive examples, but only optional in Swedish, since Swedish allows a *på*-PP expression of the p-source to co-occur with an expletive subject, as in (1.43) and the following example:

(1.48) Det verkar på Per som om Maria är glad.
it seems on P. as if M. is happy
∼'Per gives the impression that Maria is happy.'

However, when the *på*-PP is absent, as in (1.49), the existential closure is obligatory. Our analysis therefore assigns the following Swedish sentence the same broad interpretation as English (1.47a) above:

(1.49) Det verkar som om Tom lagar mat.
it seems as if T. makes food
'It seems like Tom is cooking.'

In sum, expletive examples involve existential closure of the p-source: obligatorily in English and optionally in Swedish.

There is reason to believe that there is also existential p-source closure in Swedish subject-to-subject raising and that in this case it is obligatory. This assumption explains why it is ungrammatical to have a *på*-PP in such cases:

(1.50) * Maria verkar på Jonas vara glad.
M. seems on J. be happy.

Recall from section 1.2 that in subject-to-subject raising, the subject of the raising verb is not tied to the perceptual source interpretation, since such sentences can be felicitous in the absence of the individual in question (i.e., subject-to-subject raising does not give rise to the puzzle of the absent cook). Example (1.50) is thus not ruled out because of a p-source clash between *Maria* and *Jonas*. However, if the verb has an existentially bound p-source, the definition of p-source as a (partial) function ensures that there can be no other p-source and as a result there cannot be a *på*-PP contributing a p-source. We do not have direct evidence that English subject-to-subject raising involves an existentially bound p-source, but it is reasonable to assume parity with Swedish, given the lack of evidence to the contrary and given the general similarities between English and Swedish raising.[12]

[12]This leaves the matter of English *seem/appear* with *that*-complements. If arguments that this sort of *seem/appear* is purely epistemic and does not involve a perceptual report are correct (see Matushansky 2002 and references therein), then the *that*-complement cases lack p-sources (and p-goals) entirely. However, we think a more tenable position is that all uses of these verbs involve both an epistemic

Lastly, let us briefly return to the puzzle of the absent cook and the truth conditions of the perceptual reports we have been discussing. We assume that the result of equating an eventuality p-source with an individual is not false, but rather undefined. We noted that the likeliest p-source in an absent cook scenario, such as (1.47), is a state. This means that if a sentence that attributes the p-source to an individual, such as a copy raising example or a Swedish expletive example with a *på*-PP, is used to describe an absent cook situation in which the p-source is actually an eventuality, the equality between the actual p-source and the asserted p-source is undefined. Thus, if sentences like (1.40), (1.41) or (1.43) (repeated below) are used in a scenario like (1.47), the result is not falsehood, but rather presupposition failure:

(1.51) #Tom seems like he's cooking.

(1.52) # Tom verkar som om han lagar mat.
T. seems as if he makes food
'Tom seems like he's cooking.'

(1.53) # Det verkar på Tom som om han lagar mat.
It seems on T. as if he makes food
'Tom seems like he's cooking.'

These sentences involve a conjunction of two propositions: 1) It seems like Tom is cooking and 2) Tom is the p-source. Since the second conjunct is undefined, rather than false, the sentence as a whole cannot be assigned a truth value.

This correctly predicts that the negation of these sentences is equally infelicitous in this scenario:

(1.54) #Tom doesn't seem like he's cooking.

Our solution to the puzzle of the absent cook thus treats the infelicity of copy raising in the absence of perceptual evidence of the subject as presupposition failure.

This contrasts with a scenario that we have not so far considered in which there is an individual present to serve as a p-source, but it is not the individual named in the sentence (and both A and B know that the two individuals are not the same):

(1.55) A and B walk into Tom's kitchen. Robin is at the stove doing something, but exactly what is a little unclear. A and B

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and a perceptual aspect. It is otherwise unexplained why a PP expressing a p-goal (perceiver) can be used with a *that*-complement:

(i) It seemed to her that they did not pose a threat.

recognize Robin and know that Robin is not Tom.

a. A: Tom seems like he's cooking.

In this scenario, our analysis treats A's statement as simply false. The p-source is Robin, not Tom, and since Robin and Tom are both individuals, the result of checking whether the p-source (Robin) is Tom is not undefined, but rather false. This is in turn renders false the larger conjunction representing the sentence as a whole.

1.5 Conclusion

Let us now review our proposal and how it accounts for the English and Swedish data. The key point is that verbs like *seem* and *verka* entail a source of perception, *p-source*, which may or may not be overtly expressed. The p-source is not an argument of the raising verb, and therefore not a thematic role, but rather an entailed participant in its eventuality. A further difference between thematic roles and p-sources is that the latter can be realized by eventualities, in addition to individuals. The pattern of p-source expression in English and Swedish is as follows:

1. English and Swedish copy raising:
   The copy-raised subject is the p-source.
2. English and Swedish subject-to-subject raising:
   The p-source is obligatorily existentially closed.
3. Expletive subjects:
   (a) English: The p-source is obligatorily existentially closed.
   (b) Swedish: The p-source is optionally existentially closed.

We can thus see that one principal typological difference between the two languages with respect to p-source realization lies in whether existential closure of the p-source is obligatory or only optional in expletive-subject examples. The evidence for this difference comes from another typological difference, which is the capacity of Swedish to alternatively express the p-source in a *på*-PP adjunct.

We pointed out two puzzles along the way: the puzzle of the absent cook and the *på* puzzle. The first puzzle was solved by the assumption of an obligatory p-source contributed by the copy-raised subject. The attribution of p-source to the subject is infelicitous in a scenario where the subject is not available as the source of perception; it results in presupposition failure. The assumption of a subject p-source in copy raising — along with the extension of the uniqueness requirement on thematic roles to p-sources — also solved the second puzzle. If each eventuality has a unique p-source and the p-source is either filled by the subject (copy raising) or existentially bound (subject-to-subject raising), then the p-source cannot also be realized by a *på*-PP adjunct. However, since existential closure of the p-source is only optional in Swedish expletive examples, a *på*-PP is possible.

We have largely set aside the matter of p-goals, but an extension of the account to include these is apparent. P-goals can be defined on a par with p-sources as partial functions on eventualities. The key contrast is that the p-goal function is into individuals, instead of into eventualities or individuals, since only individuals can be perceivers. The definition of p-goal as a function means that p-goals are equally subject to the generalized uniqueness requirement. This correctly predicts that there cannot be multiple instances of English *to*-PP adjuncts expressing p-goals of a single eventuality:

(1.56) *Tom seems to me to Sara like he is cooking.

We have not formalized our analysis, but we hope that we have been sufficiently explicit that it is clear how a formalization should proceed.

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