Richard III

Ash Asudeh

Stanford University

Alongside nonfinite and predicative raising complements as in (1), English has finite raising complements, as in (2):

(1) Richard seems/appears to have won/sad.
(2) Richard seems/appears like/as if/as though he won.

Finite raising complements are typologically common; in many languages, they are the *only* raising complements, as illustrated by Greek (3) and Farsi (4):[1]

(3) I kopeles fenonde na fevgun.
the girls.NOM seem.$\boxed{\text{3PL}}$ SUBJ leave
The girls seem to be leaving.
(Perlmutter and Soames 1979:156) (also see Joseph 1976)

(4) Bacheha khaste benazar miand.
children tired opinion PRES.come.$\boxed{\text{3PL}}$
The children seem to be tired.

The phenomenon in (2)–(4) is standardly referred to as *copy raising*.

Rogers (1971, 1972, 1974a,b), in pioneering work on perceptual reports in English, proposed the transformation "Richard" (which is actually doubling and copying; also see Postal 1974) to account for an alternation in *physical perception verbs*:

(5) a. Richard smells/feels/looks/sounds/tastes like/as if/as though he smokes.
b. It smells like Richard smokes.

Rogers sought to assimilate copy raising verbs such as *seem* and *appear* in (2) to the Richard class of verbs:

(6) a. Richard seems like he smokes.
b. It seems like Richard smokes.

[1] Ghomeshi (2001) states that the subject of (4) is actually a topicalized constituent, but data that I have gathered from my informants challenges this contention, indicating that there could well be dialect variation at play. Further work is required.

Recent work continues to treat copy raising verbs (CRVs) and physical perception verbs (PPVs) as a unitary phenomenon (Bender and Flickinger 1999, Potsdam and Runner 2002),[2] but despite certain similarities, there is a striking difference between the classes of verb: CRVs require a pronominal copy in their complements, while PPVs do not.

This paper attempts an initial treatment of English copy raising and physical perception verbs that captures several interesting similarities between these verbs, as well as the crucial difference. My analysis is cast in Lexical Functional Grammar (LFG; Kaplan and Bresnan 1982, Bresnan 2001) with Glue Semantics (Dalrymple 1999, 2001). Glue Semantics (GLUE) is *resource-sensitive* (in a manner to be made precise shortly); this property allows an elegant treatment of the semantics of CRVs and PPVs which allows them to differ with respect to the necessity of a pronominal copy. The LFG theory of predicative complements is explored and extended.

My key claims about the syntax of CRVs and PPVs are as follows:

1. The **syntax** of copy raising and physical perception verbs is **identical**.
2. The **complement** clause is a predicative **prepositional phrase**.

The similarities between CRVs and PPVs follow.

My key semantic claim about CRVs and PPVs is:

1. The **semantics** of CRVs and PPVs is different with respect to their **mode of combination** with their **complements**: a CRV consumes a pronominal resource, a PPV does not.

The difference between CRVs and PPVs, that the former require a pronominal copy while the latter do not, follows.

1 The data

1.1 Four similarities between CRVs and PPVs

1. CRVs and PPVs take complements introduced by the same set of subordinating conjunctions (*like, as if, as though*); see (5)–(6) above.
2. PPVs and raising verbs can take predicative complements:

   (7) Richard seems drunk.
   (8) Richard looks/smells drunk.

[2] Potsdam and Runner's paper, from last year's CLS, is titled *Richard returns*, hence the title of this paper.

3. CRVs and PPVs can take expletive subjects:

(9) It seems like Richard won.
(10) It looks/smells like Richard is drunk.

4. CRVs and PPVs can raise expletives:[3]

(11) %There seems like there is a problem with the car.
(12) %There looks/smells like there is a problem with the car.

1.2 The crucial difference

1. A CRV needs a bound variable "copy" of its subject in its complement (Lappin 1983); a PPV does not:

(13) *Richard seems like Gonzo has been baking.
(14) Richard smells like Gonzo has been baking.

2 Previous approaches

The original Richard transformation posited by Rogers moves the subject of the clause after *like/as* into the matrix subject position and leaves a pronominal copy in its place. This kind of construction-specific, ad hoc transformation is clearly undesirable and does not fit into current linguistic theory, in which there is a general consensus that variation is principally lexically conditioned.

Ura's (1998) Minimalist proposal suffers from a similar weakness. He proposes a language-particular rule for copy raising, which he calls *Rule S*, that spells out a trace in an A-chain as a pronominal copy of the A-chain's head. Potsdam and Runner (2002) note this problem and further point out that since Ura's proposal treats Rule S as a last resort operation he predicts that copy raising should function like other last resort pronominal insertion operations in English, in particular intrusive pronouns (Chao and Sells 1983, Sells 1984); this prediction is incorrect, as shown in detail by Potsdam and Runner (2002).

Potsdam and Runner (2002) themselves propose that in fact both the copy-raised subject and its pronominal copy are base-generated and that an A-chain is formed between these two elements to make sure that the matrix subject does not violate Full Interpretation (Chomsky 1986). While this proposal avoids the difficulties noted above, it is still unclear what the difference is between a language that

[3]There is dialectal variation here (Horn 1981, Potsdam and Runner 2002), which will be accounted for below.

has copy raising and one that does not. In fact, there would seem to be nothing more lexicalist about Potsdam and Runner's proposal than Ura's. Second, although Potsdam and Runner rightly propose that this kind of A-chain formation, if available at all, must be available in general, it is unclear what conditions limit it, leaving us with the following question: if pronominal elements can form A-chains with nominals so that the latter can satisfy FI, why is this strategy not generally available? By contrast, the proposal in this paper conditions copy raising purely lexically, which accounts for the limited distribution of the relevant pronouns and also accounts for linguistic variation according to current theory. Third, Potsdam and Runner fail to notice the similarities between CRV/PPV complements headed by *like/as* and predicative complements. Fourth, no explanation is offered of why copy raising can occur with only these particular complements. They offer a speculative explanation in terms of Phases as to why copy raising from a CP headed by *that* is impossible, but as we will see in the next section there is reason to believe that the copy pronoun is sometimes contained in a CP anyway, so this is not a general solution.

I will argue in the next section that the fact that copy raising is possible from these complements has to do with them being predicative PPs, a fact that is noted by Maling (1983), Heycock (1994), and Potsdam and Runner (2002), but not explored in any detail. Lastly, no account of copy raising that I am aware of has noticed the distinction between CRVs and PPVs with respect to the pronominal copy requirement, as shown in (13)–(14) above.

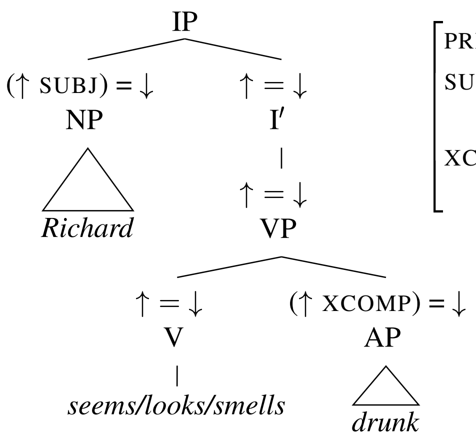
3 Similarities between CRVs and PPVs are syntactic

Recall from page 2 that the similarities between copy raising and physical perception verbs are to be accounted for by treating them as syntactically identical. Evidence for this comes from the behaviour of raising verbs and PPVs with respect to predicative complements, to which I turn next. I will afterwards argue that the *like/as if/as though* complements (henceforth *like*-complements) to CRVs and PPVs are arguments (rather than adjuncts, as might be supposed) and that they are predicative prepositional phrases and can therefore be assimilated to the class of predicative complements.

3.1 Predicative Complements

As shown in examples (7)–(8) above, PPVs take predicative complements, as do raising verbs. These can be treated as subject-to-subject raising from an adjectival predicate. The lexical entries for the raising verb and the PPV therefore require a functional control equation, (↑ XCOMP SUBJ) = (↑ SUBJ). Examples (7)–(8) have identical c-structures and f-structures, modulo the verb and adjective:

(15)



$$\left[\begin{array}{ll} \text{PRED} & \text{‘seem/look/smell}\langle(\text{XCOMP})\rangle(\text{SUBJ})\text{’} \\ \text{SUBJ} & \\ \text{XCOMP} & \left[\begin{array}{ll} \text{PRED} & \text{‘drunk}\langle(\text{SUBJ})\rangle\text{’} \\ \text{SUBJ} & \left[\begin{array}{ll} \text{PRED} & \text{‘Richard’} \end{array}\right] \end{array}\right] \end{array}\right]$$

In order to be a raising predicate, a predicate must not select for a thematic subject (or object). PPVs and raising verbs do not select for a subject. It is the predicative complement (AP) that licenses the subject. Of course, predicative complements are not necessarily APs, and can generally be of any major category. Note that raising and physical perception verbs tend to resist predicative NP complements (** Richard seems/looks/smells a student*) and take only non-spatio-temporal PPs (** Richard seems/looks/smells under the bed* vs. *Richard seems/looks/smells under the weather*) (see Maling 1983 and references therein).

3.2 *Like*-complements

In this section, I will argue that *like*-complements to copy raising and physical perception verbs are arguments (not adjuncts) and that they are in fact predicative prepositional phrases. This allows them to be treated much like other predicative complements.

3.2.1 Arguments or adjuncts?

Various syntactic tests show that *like*-complements are in fact arguments. I will present evidence from extraction, deletion, and coordination. [4]

It is possible to extract from CRV and PPV *like*-complements (16)–(20), but not from more clearly adjunct *like*-phrases (21)–(22):

[4] See Bender and Flickinger (1999) for further evidence that these are arguments.

(16) What did Richard seem like he was ashamed of?
(17) What does Richard smell like Mary has been baking?
(18) Who does this place look like the floor has been designed by?
(19) How much does Richard seem like he enjoys running?
(20) How badly did Richard look like he lost in Vegas?
(21) a. Richard slinked away like he was ashamed of his actions.
b. *What did Richard slink away like he was ashamed of?
(22) a. Richard runs like he enjoys it a lot.
b. *How much does Richard run like he enjoys it?

It is not possible to delete the *like*-complement: it either leads to ungrammaticality (23) or changes the meaning of the verb (24). By contrast, an adjunct *like*-phrase can be dropped without affecting semantics or grammaticality (25):

(23) *Richard seemed/sounded/tasted/felt.
(24) ≠Richard looked/smelled.
(25) a. Richard ran like he couldn't be bothered.
b. Richard ran.

Lastly, it is possible to coordinate the *like*-complement with a predicative argument (26)–(27), but it is impossible to coordinate an adjunct *like*-phrase with an argument (30):

(26) Richard seemed like Gonzo had scolded him or at least quite ashamed.
(27) Richard looked filthy and as if the the disposal had exploded again.
(28) Richard put the ice cream in the freezer like he meant to eat it later.
(29) Richard put the ice cream in the freezer and on the shelf.
(30) *Richard put the ice cream in the freezer and like he meant to eat it later.

In conclusion, evidence from extraction, deletion and coordination shows that *like*-complements to CRVs and PPVs are in fact arguments.

3.2.2 Categorial Status

If these complements are arguments, what is their categorial status? There are at least two sensible options for the categorial status of the *like*-complement:

1. *Like*-complements are CPs: *like*, *as if* and *as though* are complementizers (Bender and Flickinger 1999).
2. *Like*-complements are PPs: *like* and *as* are prepositions (Maling 1983, Heycock 1994, Potsdam and Runner 2002).

I will argue that the second analysis is correct; in particular *like* complements are headed by prepositions with clausal complements.

The first argument comes from the fact that *like*-complements take the same pre-modifiers as prepositions (31)–(32); these cannot modify complementizers (33):

(31) a. Richard put the book just on the shelf.
b. Richard smells just as though he has been drinking.

(32) a. Richard passed the ball almost at the sideline.
b. Richard seems almost like he's been drinking.

(33) a. *Richard thinks almost/just that he won.
b. *Richard wonders almost/just whether he won.
c. *Richard asked almost/just if he had been bad.
d. *Richard wanted almost/just for Gonzo to leave.

The second argument comes from two different kinds of uniformity: uniformity of *as/like* with prepositions, and uniformity of *if/though* with complementizers. First, treating *as* and *like* as prepositions (there goes one now!) allows us to assimilate their uses in *like*-complements to prepositional uses:

(34) Richard dressed like/as Charlie Chaplin.

(35) Richard is wary of actors as directors.

(36) With transformations like these, who needs global rules?

Second, treating *as* as a preposition taking a clausal complement allows us to assimilate the occurrences of *if* and *though* in *as if/as though* to the normal complementizer uses:

(37) Richard rarely drinks, though he enjoys the occasional beer.

(38) Richard wondered if he should leave early.

In other words, *as* in *like-complements* takes a CP complement introduced by *if* or *though*.

Treating *if* in *as if* as a complementizer also explains the possibility of subjunctive mood with *as if*, since the complementizer *if* generally licenses subjunctive:

(39) If he were alive today, John Lennon would probably protest the war.

(40) But the way the section was constructed, **it seemed as if he were** telling the party it was bigoted and no longer welcome at his convention. (Peggy Noonan, "Welcome to Hard Truths", *Time*, August 26, 1996. `http://www.cnn.com/ALLPOLITICS/1996/analysis/time/9608/26/noonan.shtml`)

The alternative is to postulate, less parsimoniously, that *if* and *as if* are both complementizers that license the subjunctive.

The third argument comes from dialect variation:[5] certain dialects of English use full CPs after *like*. An internet search turned up several examples, of which I present just two:

(41) I had some interest in Bill Bradley but **it seemed like that he totally catered** to the pro-choice people on the abortion side and I thought that he supported some reconciliation on this issue as Tony Campolo and Jim Wallis have promoted.

`http://www.sojo.net/sojomail/index.cfm/action/sojomail/issue/031700.html`

(42) My bike barely missed him as **he seemed like that he didn't even notice us**.
(Douglas T., "Drunken Apparition", *Paranormal Story Archives*, March 2002
`http://paranormal.about.com/library/blstory_march02_01.htm`)

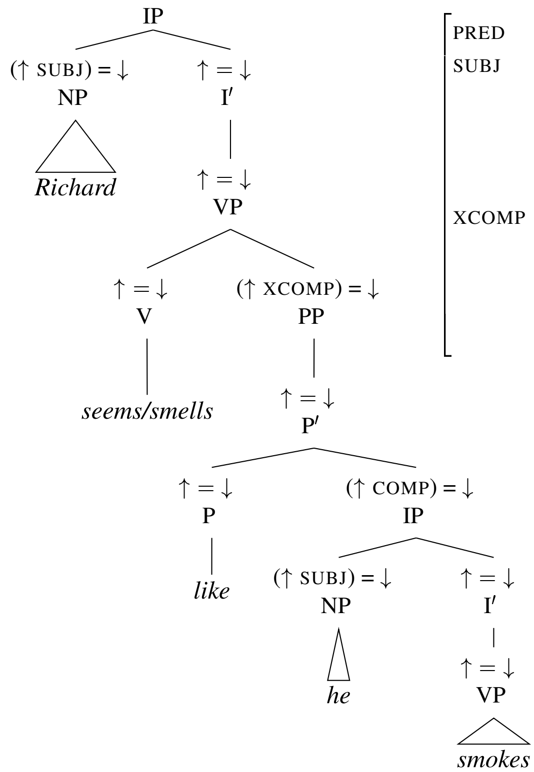
If we were to maintain that *like* is a complementizer, then the *like that* dialect would either have a double complementizer or we would have to maintain that in this dialect *like* is a preposition while in the standard dialect it is a complementizer. By contrast a more elegant explanation is possible if we assume that *like* is a preposition in both dialects: in the *like that* dialect *like* takes a CP complement, whereas in other dialects (including the one reported here) it takes an IP complement.

In conclusion, evidence from modification, uniformity, and dialect variation suggests that *like*-complements are prepositional phrases, headed by *like* or *as*. *Like* takes an IP or CP complement, depending on dialect, while *as* takes a CP complement, headed by *if* or *though*.

Having established that *like*-complements are PPs and that raising verbs and PPVs can take predicative PP complements, it is a natural move to treat *like*-complements of copy raising verbs, as well as PPVS, as predicative PPs. In other words, CRVs and PPVs are syntactically just raising verbs with predicative complements. Recall the CRV and PPV examples (5a) and (6a); as we observed for raising verbs and PPVs with AP complements, (5a) and (6a) have identical c-structures and f-structures, modulo relevant lexical substitutions:

[5] I thank Mary Dalrymple for bringing these to my attention (p.c.). I have not found any generalization about these dialects, but they seem to be concentrated in the American South.

(43)



$$\left[\begin{array}{ll}
\mathrm{PRED} & \text{‘seem/smell}\langle(\mathrm{XCOMP})\rangle(\mathrm{SUBJ})\text{’} \\
\mathrm{SUBJ} & \\
\mathrm{XCOMP} & \left[\begin{array}{ll}
\mathrm{PRED} & \text{‘like}\langle(\mathrm{SUBJ}), (\mathrm{COMP})\rangle\text{’} \\
\mathrm{SUBJ} & \left[\mathrm{PRED}\ \ \text{‘Richard’}\right] \\
\mathrm{COMP} & \left[\begin{array}{ll}
\mathrm{PRED} & \text{‘smoke}\langle(\mathrm{SUBJ})\rangle\text{’} \\
\mathrm{SUBJ} & \left[\begin{array}{ll}
\mathrm{PRED} & \text{‘pro’} \\
\mathrm{PERS} & 3 \\
\mathrm{NUM} & \mathrm{SG} \\
\mathrm{GEND} & \mathrm{MASC}
\end{array}\right]
\end{array}\right]
\end{array}\right]
\end{array}\right]$$

The f-structure in (43) is essentially the same as the f-structure in (15) for the adjectival complement. The only added complication is that the preposition *like* takes a clausal argument as well as a SUBJ. It is the *like*-complement that licenses the subject; the functional control equation in the lexical entry for the CRV/PPV raises the subject to be the matrix subject, too. Importantly, since the PP lacks a c-structural position to host a subject, the shared subject is realized in the matrix subject position and not in the PP (see page 12 below).

We have thus far accounted for the following similarities between CRVs and PPVs: 1) PPVs and raising verbs take predicative complements; 2) CRVs and PPVs take *like*-complements. Next I turn to an account of their behaviour with expletives.

3.3 Expletives

Recall that CRVs and PPVs have interesting behaviour with respect to expletives:

(44) a. It seemed/looked/smelled like Richard was drunk.
b. It seemed/looked/smelled like it rained.
c. It seemed/looked/smelled like there was a problem.

d. %There seemed/looked/smelled like there was a problem.
e. *There seemed/looked/smelled like it rained.

There are two noteworthy aspects here. First, as shown in examples (44a–44c), CRVs and PPVs can take expletive subjects and the expletive is *it*, as we would expect. Second, and more surprisingly, some dialects (including my own) allow these verbs to take a *there* expletive subject (44d), but only if the complement of *like/as* is headed by a verb that independently licenses a *there* subject (44e). Not only is it surprising that a verb such as *seem* takes an expletive subject with form *there* rather than *it*, it is also surprising that the verb apparently raises *there* not from its own complement, but rather from the complement of its complement. Since raising is a local operation, we would expect that the CRV/PPV could raise only the subject of the *like*-complement; otherwise we would have to give up the locality of raising.

A more natural assumption is the following, which maintains the locality of raising, but has consequences for LFG's theory of open complements, as we will see shortly:

(45) *Like* and *as* have raising alternants.

This means that *like* or *as*, the head of the *like*-complement, raises the expletive subject from its complement, and then the expletive is raised one step further by the CRV/PPV, which we know independently can raise the subject of its predicative complement. Thus, we have double raising, but each step is completely local.

Let us next explore the consequences of assumption (45) for our theory before turning to a more detailed exposition of the expletive pattern in (44). We have already noted that the head of the *like*-complement, i.e., *like* or *as*, licenses the subject of a copy raising verb. Thus, assumption (45) means that there must be two entries for *like*, one that licenses thematic subjects and one that licenses non-thematic subjects:

(46) $like_1$ P $(\uparrow \textsc{pred}) = \text{`like}\langle(\uparrow \textsc{subj}), (\uparrow \textsc{comp})\rangle\text{'}$
$\text{IP} \in \text{CAT}(\uparrow \textsc{comp})$
$\text{CP} \notin \text{CAT}(\uparrow \textsc{comp})$
$(\uparrow \text{PTYPE}) = \text{clausal-comparative}$

(47) *like*$_2$ P $(\uparrow \textsc{pred}) = \text{`like}\langle(\uparrow \textsc{cf})\rangle(\uparrow \textsc{subj})\text{'}$

$$\begin{array}{l}
\mathrm{IP} \in \mathrm{CAT}(\uparrow \textsc{cf}) \\
\mathrm{CP} \notin \mathrm{CAT}(\uparrow \textsc{cf}) \\
(\uparrow \mathrm{PTYPE}) = \text{clausal-comparative} \\
\left\{ \begin{array}{l} (\uparrow \textsc{subj}) \ = \ (\uparrow \ \textsc{xcomp subj}) \ \mid \\ (\uparrow \textsc{subj expletive}) \ =_c \ \textsc{it} \end{array} \right\}
\end{array}$$

The PRED of *like*$_1$ states that it subcategorizes for a thematic subject as well as a complement, whereas the PRED of *like*$_2$ states that it has a non-thematic subject. The second and third line of each entry uses the CAT operator[6] (Kaplan and Maxwell 1996, Dalrymple 2001) to ensure that the complement is an IP, not a CP.[7] The lexical entries for dialects that have *like that* would simply lack the line precluding CP. The fourth line identifies that this *like* heads a PP that functions as a clausal comparative, setting it apart from other uses of *like*, such as nominal comparatives (*John talks like Bill*) and appositive uses (*Some sentences contain appositive "like", like in this one*).

Turning to *like*$_2$, in the standard fashion for raising predicates, the non-thematic subject can be filled either by an expletive or by raising its complement's subject. This latter possibility is standardly expressed by a functional control equation, as we have previously seen for raising verbs. The optionality of the equation allows the use of an expletive to fill the subject position instead. As with the majority of raising predicates, *like*$_2$ subcategorizes for an *it* expletive; a *there* expletive can only serve as the subject of *like*$_2$ if it is raised from a complement that licenses the *there* expletive, such as an existential or locative predicate. Lastly, *like*$_2$ subcategorizes for a COMPLEMENT FUNCTION (CF), i.e. XCOMP or COMP. When the functional control equation is realized the CF is an XCOMP, otherwise it is a COMP.

The entries for *as* in its *like*-complement usage would be similar, except that they would state that the category of the complement *is* CP and place further restrictions on the form of the complementizer, which must be *if* or *though*.[8]

[6] This operator returns, using the inverse of the ϕ function, the set of c-structure labels that map to the f-structure node identified by its argument.

[7] Information from CP and its IP complement generally map to the same f-structure node. It is therefore insufficient to only state that IP is in the set of labels of the complement, because this does not preclude CP from also being in the set.

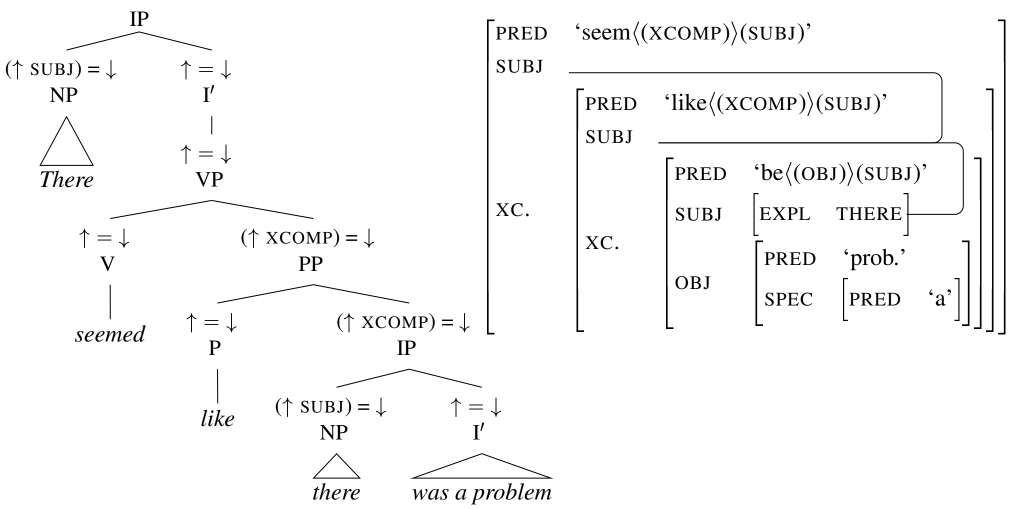
[8] Presumably this would be done by lexically specifying the mood of the clause the complementizer introduces, in this case subjunctive, as this should be compatible with the lexical specifications of only the relevant complementizers; otherwise we would have to resort to an approach that selects for specific complementizers.

The assumption that the prepositions *like/as* in *like*-complements can be raising predicates has immediate consequences for the theory of open complements (XCOMPS; Bresnan 1982, 2001). It is standardly assumed that XCOMPS are complements that have an f-structural SUBJ, but that they are projections of lexical categories (i.e., P, V, A, or N) and therefore do not host subjects in their specifiers at c-structure. Since these complements subcategorize for a SUBJ but cannot host it in c-structure, they can only be licensed as complements of a verb that shares its SUBJ with the XCOMP via a functional control equation and provides an IP host for the subject at c-structure Bresnan (2001). The key point is that the criterial difference between a COMP and an XCOMP is that the latter lacks a c-structural position to host a subject, while the former does not.

However, the complement of *like/as* is always an IP or CP, even when it is an XCOMP. The alternative would be for it to be a COMP and for the functional control equation in *like*$_2$ to read ($\uparrow$ SUBJ) = ($\uparrow$ COMP SUBJ). But, this effectively removes the distinction between open and closed complement functions at f-structure, despite the fact that grammatical functions in general are f-structural entities. Arguably, it is better to remove the c-structural requirement that an XCOMP always correspond to a lexical projection. Under the modification to LFG theory proposed here, the defining property of XCOMP is not its c-structural category, but rather *whether it contains a grammatical function that is the target of a functional control equation.*

The following c-structure and f-structure for (44d) illustrate the proposal:

(48)



The verb *was* subcategorizes for a *there* expletive subject. This subject is raised to be the subject of the *like*-complement via the functional control equation in the entry for *like*$_2$. The matrix raising verb or PPV raises the same expletive again to matrix subject position. Each raising step is entirely local, from complement's subject to own subject, resulting in the same expletive filling three SUBJ values. Given that there are three f-structural subject positions, why do only two expletives occur in the c-structure? That is, what prevents the occurrence of sentences like * *There seemed there like there was a problem*? The reason is that the *like*-complement, being a PP headed by the lexical category P, cannot host an NP subject in its specifier.

We have thus far accounted for example (44d), the puzzling case of long distance *there*-raising. We have seen that we can maintain the locality of raising if we assume that *like/as* have raising alternants. Yet we noted that not all dialects have the possibility of *there*-raising with *like*-complements. Horn (1981) argues that these dialects nevertheless have expletive raising with *it* expletives, as in sentence (44c) above.[9] We can capture the raising difference easily if in dialects with *there*-raising the *like* and *as* heads of *like*-complements do not subcategorize for the form of the expletive (allowing either *it* or *there*) when they raise their complement's subject (as in the entry for *like*$_2$ in (47) above), while in dialects with only *it*-raising these heads subcategorize for an *it* expletive whether the expletive is raised or not.[10] The difference between the two dialects is reduced to a minor lexical difference. Notice that we lack clear motivation for stating this dialectal distinction in the entries for the relevant verbs, because the dialects that prohibit *there*-raising for CRVs still allow it for raising verbs with non-finite complements, as in *There seems to be a problem*.

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[9]Horn notes that the Richard sentence (i) below is non-contradictory, even though the closely related extraposition sentence (ii) is contradictory.

(i) It seems like it's raining harder than it is.
(ii) It seems that it's raining harder than it is.

Since (i) patterns like raising sentences, Horn argues that there is *it*-raising through *like*-complements, even in dialects without *there*-raising.

However, in the present analysis there would still be raising from the subject of *like* in (i) to the matrix subject, which may in fact be the crucial difference between raising sentences and extraposition sentences. Even if this were not the case, this does not preclude an alternative where the uppermost *it* is structure shared between the subject of *seems* and *like*, but not with that of *raining*. If this second reading is contradictory, the first reading would nonetheless be available.

[10]This amounts to modifying the entry for *like*$_2$ so that the material in braces is replaced by:

(i) $((\uparrow \text{SUBJ}) = (\uparrow\ \text{XCOMP SUBJ}))$
$(\uparrow \text{SUBJ EXPLETIVE}) =_c \text{IT}$

Accounting for the other examples requires no further assumptions. Sentence (44a) and (44b) are licensed by the instantiation of *like*$_2$ that selects for a CF that is COMP and an *it* expletive subject. Sentence (44b) can be alternatively realized similarly to (44d), by double raising the *it* expletive subject of *rained* (see footnote 9). Sentence (44c) is essentially like (44a); it cannot be an instance of double raising, because there would then be unification failure for the value of the EXPLETIVE feature (IT versus THERE). Lastly, (44e) is not licensed, because the expletive *there* is not licensed by either the matrix raising/PPV verb or raising *like*, since these select for an *it* expletive or else raise their complement's subject. The latter option is again not possible due to unification failure for the EXPLETIVE feature.

3.4 Manager resources: the difference between CRVs and PPVs

Glue Semantics is a theory of the syntax-semantics interface initially developed principally for LFG (Dalrymple 1999, 2001), but recently extended to various other formalisms (see Asudeh and Crouch (2002) and references therein). Semantic composition in GLUE is performed on meaning constructors obtained from lexical items instantiated in particular syntactic structures. Each constructor has the form $\mathcal{M} : G$, where $\mathcal{M}$ is a term from some meaning language (any semantics that supports the lambda calculus will do), and G is a formula of propositional linear logic (Girard 1987, Dalrymple et al. 1999) (the colon is an uninterpreted pairing symbol). The constructors are used as premises in a linear logic proof. Linear logic is unlike classical logic in being *resource-sensitive*: premises are literally used up in producing conclusions and cannot be freely replicated or discarded (unlike in classical logic, where replicating or discarding premises is allowed). As we will see shortly, the resource-sensitivity of GLUE is the key to explaining the difference between CRVs and PPVs, which is namely that CRVs require an anaphoric copy of their subject in their *like*-complements, while PPVs do not.

Anaphoric elements in this theory are represented as follows in the linear logic, where A is the resource corresponding to the antecedent, B is the resource corresponding to the anaphor, '$\multimap$' is linear implication, and '$\otimes$' is linear conjunction (tensor):[11]

(49) $A \multimap (A \otimes B)$

The antecedent is consumed to produce the anaphor and copy of the antecedent.

[11] This representation needs modification to deal with inter-sentential anaphora, but this is unnecessary for present purposes, as copy raising is clause-bounded. See Dalrymple (2001) for a GLUE theory of inter-sentential anaphora that extends this formalism.

In the meaning language this will correspond to the anaphor picking up the reference of the antecedent.[12]

(50) $\lambda Z.Z \times Z : A \multimap (A \otimes B)$

Suppose the antecedent of this pronoun were the proper name *Kim*, which contributes a meaning constructor $kim : A$. Combining this with the pronoun yields:

(51) $kim \times kim : A \otimes B$

This is basically equivalent to having the two resources $kim : A$ and $kim : B$.

The proposal I wish to make is that certain linguistic expressions contribute resources that consume anaphoric resources; since these resources help to manage anaphoric resources, I will call them *manager resources*. We can think of manager resources as being a formalization of *resumption*. In this sense, copy raising is a kind of resumptive environment and tight connections should be drawn with better-studied resumptive environments such as resumptive pronouns in the typical sense (McCloskey 1979, Sells 1984) and with other environments that are traditionally not understood in terms of resumption but for which it may be profitable to do so, such as anaphoric control (Asudeh in progress).

Manager resources have the following linear logic:

(52) $[A \multimap (A \otimes B)] \multimap (A \multimap A)$

In the meaning language, a manager resource takes the function corresponding to the anaphor and disposes of it. The result is a modifier on the pronoun's antecedent, which has the identity function as its meaning. Thus, a manager resource, the pronoun that it manages, and the pronoun's antecedent combine to yield a copy of the antecedent. In other words, the manager resource consumes a pronoun that has resolved its reference, leaving only the antecedent. The process is illustrated here:

(53)
$$\dfrac{a : A \qquad \dfrac{\lambda z.z \times z : A \multimap (A \otimes B) \qquad \lambda P \lambda y.y : [A \multimap (A \otimes B)] \multimap (A \multimap A)}{\lambda y.y : A \multimap A}}{a : A}$$

Manager resources allow us to succinctly capture the difference between CRVs and PPVs lexically: copy raising verbs contribute manager resources in their lexical entries, while PPVs do not. As a result, CRVs require a pronominal copy of their antecedent for the manager resource to consume, while PPVs do not.

[12]The Curry-Howard Isomorphism (Howard 1980) ensures that each operation in the linear logic has a correspondent in the meaning language. Modus ponens corresponds to functional application, for example. Space prohibits a full presentation of the isomorphism and the linear logic proof rules; see Girard et al. (1989), Dalrymple (2001), Crouch and van Genabith (2000).

4 Conclusion

The similarities between copy raising verbs and physical perception verbs with respect to predicative complements, to *like*-complements, and to expletive behaviour have been explained by treating them as syntactically identical. It was argued that *like*-complements are a subtype of the predicative complements and that the head of these complements (*like/as*) has a raising alternant itself. The expletive behaviour is thus explained without compromising the locality of raising. The previously unnoticed difference between CRVs and PPVs, that the former but not the latter require a pronominal copy, is explained by a difference at the syntax-semantics interface, the presence of a manager resource. The analysis is in every respect lexicalist, accounting for variation across and within languages and across related constructions through lexical differences.

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