VP ellipsis beyond proper name subjects

Helle Frisak Sem

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In this paper we will be interested in two central aspects of the relation between the elliptic clause and its source, both of which are related to the question of on what representational level the interpretation takes place. The first aspect is which information parts are subjected to the comparison between the elliptic clause and its source, or - in other words - to what degree must the interpretation and syntax of the source be specified in order to explain the pattern of possible readings of the elliptic clause. The other aspect concerns the dividing line between an identity of predication approach, see, e.g., [Sag76, Wil77, GP90, DSP91], where the source and elliptic clauses are seen as instances of the same VP meaning or representation applied to different subject arguments, and an inferential or substitutional approach on some representational level, see, e.g., [FM94, Sem94, Cro94].

1 The Hirschbühler sentences.

There is a general agreement in the literature that the relative order of the quantifiers involved in the source clause must be reflected in the elliptic clause. The choice of one quantifier scope order reading of the source imposes the corresponding quantifier scope order reading for the elliptic clause. See, i.a., [DSP91, FM94] and references therein. Let us take this as given, and consider the Hirschbühler sentences[1]

(1) (a) A Canadian flag hangs outside every embassy, and an American flag does too.

(b) A Canadian flag hangs outside many embassies, and an American flag does too.

The problem noted by Hirschbühler is that in addition to the reading where one big Canadian flag hangs outside all the embassies and one big American flag hangs outside all the embassies, there is a reading in which each embassy has its own Canadian and American flags hanging in front of it. The former reading is given a formal description in (2a). The latter reading may be given different explanations. One explanation is that *a Canadian flag* denotes a particular type of flag and not a particular occurrence of a flag. Thus, even though there are several tokens of a

[1]From [Hir82]. Also discussed in, i.a., [GP90], [DSP91], [FM94].

Canadian flag, one for each embassy, they are all seen as the same type of flag, the same symbol. If so, the latter reading can be explained using the same formal description as the former reading. However, if we substitute *Canadian* by *Asian* and *American* by *African*, the reading corresponding to the latter reading of (1a) goes through, even if not all embassies have the same Asian and African flag in front of them. It is sufficient that they all have some Asian and some African flag in front. Even though we are quite willing to claim that two flags with the same pattern are the same flag, as occurrences of one symbol, we are normally not willing to say that flags from different states are the same flag. They are different, since they are occurrences of different symbols. The existence of such readings of *An Asian flag hangs outside every embassy, and an African flag does too* cannot be given a formal explanation by means of (2a).[2] One may conceive of two different ways of formalising the latter reading for the cases where we can not use (2a) as an explanation. One way is to think of *every embassy* as having scope over the entire sentence, as described in (2b). The other way is to think of *every embassy* as having wide scope relative to the existentially quantified subjects, but not over the full period, as in (2c).[3]

(2) (a) $[\exists x \in \mathrm{Cfl}(\forall y \in \mathrm{E}(x \text{ ho } y))] \quad \& \quad [\exists z \in \mathrm{Afl}(\forall u \in \mathrm{E}(z \text{ ho } u))]$

(b) $\forall y \in \mathrm{E} \quad ([\exists x \in \mathrm{Cfl}(x \text{ ho } y)] \;\&\; [\exists z \in \mathrm{Afl}(z \text{ ho } y)])$

(c) $[\forall y \in \mathrm{E}(\exists x \in \mathrm{Cfl}(x \text{ ho } y))] \quad \& \quad [\forall u \in \mathrm{E}(\exists z \in \mathrm{Afl}(z \text{ ho } u))]$

To represent the possible readings for (1a), it is sufficient with only one of (2bc), and arguments for a possible verdict between them must be on a structural level. Arguments against (2b) are that a quantifier like *every* doesn't have scope over sentence conjunctions like in (1) unless in modal subordination cases. We also may notice that if we use an 'if-then' construction rather than an 'and' construction, the corresponding reading still is possible. If-then constructs block elements inside the conjoined sentences from having wide scope over the whole if-then construct. If the corresponding to (1a) in an if-then-construction has a reading where *every embassy* takes wider scope than *a Canadian flag*, this reading must be constructed as in (2c) and not as in (2b). ¿From an identity of predication point of view, however, it is an argument in favour of (2b) that the same VP meaning occurs as a subformula that can be copied directly. The reading (2c) makes a serious challenge to this approach, since the common material cannot be reached by means only of abstracting away the parallel elements from the source clause.

The formulae (2bc) are logically equivalent, and one cannot judge the one as more correct than the other on the basis of referring to situations in which one of

[2] I will continue the discussion using examples with *a Canadian/American flag*. I believe that all the readings go through also with the indicated substitution with *Asian/African* and different types of flags involved, so that an explanation based on two flags of the same pattern being the same flag will not be sufficient.

[3] Cfl stands for Canadian flag, Afl stands for American flag, E stands for embassies, and ho stands for hangs outside.

them holds and the other one doesn't. For (1b), none of the corresponding three formulae are logically equivalent to any of the other, but (2b) with MANY for $\forall$ implies (2c) with MANY for $\forall$; any situation in which there are many embassies having a Canadian flag and an American flag hanging outside is a situation in which there are many embassies with a Canadian flag hanging outside, and many embassies with an American flag hanging outside, but not the other way around. With other words, reading b covers only a subset of the situations covered by reading c, and we are not in a position to judge whether the b reading is a reading separate from a special case of reading c.

On the basis of what possible situations we think (1) to describe, we may now say that we have support for the necessity of formal representations corresponding to (2ac). The structural arguments favouring (2b) as a description of the wide-scope reading of the inner quantifier to (2c) are severely weakened if (2c) with MANY for $\forall$ is necessary for (1b). But we can reach an even stronger position against using representations corresponding to (2b) as a systematic way of representing readings for the Hirschbühler sentences. Substituting the monotone increasing quantifiers $\forall$ and MANY by the monotone decreasing quantifier FEW, the formula corresponding to (2c) covers a proper subset of the situations covered by the formula corresponding to (2b). But the sentence *A Canadian flag hangs outside few embassies, and an American flag does too* can not count as true of the situation where there are only a few embassies with both a Canadian flag and an American flag, but many embassies with only a Canadian flag or many embassies with only an American flag. Such situations satisfy the formula corresponding to (2b) but not to (2c), however. I can see no structural arguments why the reading corresponding to (2b) should be worse when the quantifier FEW is involved than when the quantifiers MANY or $\forall$ are involved. Thus, I find it highly questionable to use a representation like (2b) for these examples, except possibly in cases where there is an obvious modal subordination involved.

[DSP91, p.429] explains the fact that the quantifier scope order is identical in the elided material and its source by referring to it as a consequence of all the quantifiers either being inside the copied semantic unit, or having scope over both clauses. The identity of scope order extends to examples like (1) also on the readings where this is not the case.[4]

According to [ZS74], an ambiguity in the source will be reflected in the elliptic clause. I would like to modify this claim to say that an ambiguity that is coded in the source on the level where the analysis of ellipsis takes place, must be reflected in the interpretation of the ellipsis. Turning the argument around, I will also claim that if an ambiguity is reflected in the pattern of possible readings under ellipsis, the source clause must be specified with respect to the possible ambiguity in question on the level where elliptic copy takes place. The fact that source and ellipsis follow identical patterns with respect to the scope of the quantifiers involved, points strongly in the

[4]For more examples of the same kind, see [FM94, pp.230-236], where Fiengo and May argues against an identity of predication approach on the basis of such examples, and [Lap92].

direction of ellipsis taking place on a level where disambiguation with respect to quantifier scope has taken place.

2 Parallel elements and parallel arguments.

We will assume that on each representational level, be it syntactic, semantic or intermediate level, we may read the representational level by means of the pattern $P(x_1, \ldots, x_n)$, where P is understood as some kind of relation or function and each x_i again may be understood according to the same pattern, or be a referent[5]. Let us simply call such a pattern a *clause*.

Definition 1 *Let* $P(x_1, \ldots, x_n)$ *be a clause. Then* P *is said to be the* top-level relation *of* $P(x_1, \ldots, x_n)$*, and* $x_1, \ldots, x_n$ *are said to be the* top-level arguments *of* $P(x_1, \ldots, x_n)$*.*

On an identity of predication approach, we may say that VP ellipsis is analysed as follows. Suppose A corresponds to the subject of the source, B to the subject of the elliptic clause, both top-level arguments of the clause representing the main clause of the source and elliptic clause, respectively. Suppose further that the source can be analysed as $A \cdot C$. Then the elliptic clause has $B \cdot C$ as its analysis, $\cdot$ being some kind of operation. Note that for an identity of predication approach, it is easy to treat strict and sloppy copies of elements coreferent with the subject, even though there may be some complications with respect to the treatment of the problem of "missing readings", see [OD73, DSP91, Keh93, FM94, Sem94, Cro94]. These complications may be solved by constraints on C.

By a substitutional approach is meant an approach where on some level, the source and elliptic clauses are recognised as belonging to the same clausal pattern, where some of the top-level arguments are missing in the elliptic clause. These arguments in the elliptic clause and the corresponding arguments in its source are called the *parallel arguments* of the ellipsis. Furthermore, there may be other factors that are parallel between the source and the elliptic clause, either in the specified parts of the elliptic clause and the corresponding parts of the source, or in parallel contexts of the elliptic clause. We will call these *parallel elements*, and we will give examples of such below. By a *parallel element referent* we mean a referent that is coreferent with parallel elements.[6] A representation for an interpretation of the elliptic clause can then be reached by taking an alphabetic variant of the source clause as a starting point, substituting the elliptic parallel arguments for the corresponding source parallel arguments, and for the elements coreferent with parallel elements, either let it have the reference from its original, or (optionally) let it have its reference from the copy of the referent that its original had its reference from to obtain the sloppy copy reading (only possible if the referent that its original

[5] Or variable, or constant, ...

[6] By coreferent is meant "must refer to the same entity if they refer" rather than "have the same referent".

had its reference from is a sloppy copy). In [Sem94], it was shown that provided that the relation 'have its reference from' is subjected to some hierarchical restrictions that for most cases coincide with the c-command hierarchy, but may deviate from this when it comes to psychological predicates depending on the internal perspective, this explains the problem of the "missing readings".

Fiengo and May show in their book [FM94] that parallel elements may be embedded within the top-level arguments of the elliptic clause and its source, and that they may even come from outside of these, that is, from parallel contexts of these clauses.

(3) (a) All of Jane's colleagues admire her, but none of Brenda's students do.[7]

(b) The person who introduced Mary to John would not give her his phone number, nor would the person who introduced Sue to Bill.[8]

(c) The cop who SALLY said arrested Bill beat him up, but the one who MARY said arrested Sam didn't.[9]

(d) If Tom was having trouble in school, I would help him. On the other hand, if Harry was having trouble, I doubt that I would.[10]

Fiengo and May furthermore give convincing arguments against an identity of predication account of ellipsis, see in particular [FM94, pp.230-236]. (3a-c) we see that parallel elements may occur embedded in the parallel arguments. The reason why it is necessary to view some embedded elements as parallel is that they give rise to strict and sloppy copy readings. If *her* in (3a) is read as coreferent with *Jane*, we may read the elliptic clause as if none of Brenda's students admire Jane (strict) or as if none of Brenda's students admire Brenda (sloppy). In (3b) we see that the parallel argument may contain more than one parallel element, in (3c) we see that sloppy readings are possible also for elements that are not focused. The last example, (3d), shows that parallel elements may occur in larger parallel contexts for the source and the elliptic clause. *I would help him* is the source for *I would*, but still a sloppy copy reading of *him* is possible since the context gives us that *Tom* and *Harry* are parallel elements and *him* is coreferent to the source parallel element *Tom*.

A relevant question to ask, given that non-parallel arguments may give rise to sloppy copies, is whether the pattern of missing readings that we can find in elliptic clauses having sources with several pronouns coreferent with a parallel argument, can be found for cases of ellipsis with coreference to other parallel elements.

(4) All of Bill$_i$'s friends believed that he$_i$ kissed his$_i$ wife, but all of Harry's friends did too.

[7] From [FM94, p.108].
[8] From [FM94, p.109, footnote 13].
[9] From [FM94, p.109].
[10] From [Har92].

If only the consistently sloppy and the consistently strict readings are possible for (4), it would point in the direction that the elements coreferent with parallel elements embedded in a parallel argument are treated differently from elements that are coreferent with a full parallel argument. If it is possible with a mixed reading where Harry's friends believe that Harry kissed Bill's wife, the possibility of strictness and sloppiness follows the pattern of the parallel argument that contains the internal parallel elements. The reading where Harry's friends believe that Bill kissed Harry's wife is clearly not possible.
The subject of the source in (3b) contains two NPs that have parallel NPs in the subject of the elliptic clause, both of which may be coreferent with pronouns in the elided material. The pronoun occurrence *her* can only refer to *Mary*, whereas *his* may refer to either *John* or *The person who introduced Mary to John*. One can thus pose the question whether there are readings in which one of the pronouns are read sloppily and the other one strictly, and if so, whether both or only one of the possible combinations of strict and sloppy readings are possible, and whether this is dependent of whether *his* refers to the entire subject or only the internal element *John*. Clearly the consistently sloppy and the consistently strict readings are possible in both cases. I believe, however, that if *his* is coreferent with the entire subject, the reading that the person who introduced Sue to Bill would not give Mary his own phone number is possible, whereas the reading that the person who introduced Sue to Bill would not give Sue the person who introduced Mary to John's phone number is out. If *his* is read as referring to John, I believe that no mixed readings are possible, that is, that it is not possible to read (3b) in such a way that the person who introduced Sue to Bill would not give Bill's phone number to Mary/John's phone number to Sue. An explanation may be that a parallel element inside a parallel argument cannot have a sloppy copy reading if the parallel argument has a strict reading, and that parallel elements embedded in a parallel argument must either all have a sloppy copy reading, or all have a strict copy reading. Further support for this claim is given in (5).

(5) (Carlota has only just moved into town, but people seem to like her a lot.)
John suggested to Fred's wife that they go to the theatre together, and Bill to Alan's wife.[11]

The pronoun *they* in the source of (5) may refer to several different combinations of persons. The reading of the hidden 'they' in the elliptic clause must have a reading that corresponds to the reading in its source. If *they* refers to John and Fred's wife in the source, the elliptic clause must either be read strictly as referring to John and Fred's wife, or as sloppy and referring to Bill and Alan's wife. Correspondingly with each combination of parallel elements of the source; John and Fred, John, Fred and Fred's wife, or Fred and Fred's wife. There is no reading of the elliptic clause where, i.e., John and Alan's wife should go to the theatre together. This supports

[11]Example from Hans Kamp (p.c.).

the claim that parallel elements embedded in a parallel argument must either all have a sloppy copy reading, or all have a strict copy reading.

Particularly interesting is what happens if we read the source as saying that Carlota is among the persons referred to by *they*. Then she will also be among the persons referred to by the elliptic clause, regardless of whether the rest of the elements referred to by *they* are copied sloppily or strictly.

3 Tanya Reinhart's examples.

In [Rei83, p.153-154], Tanya Reinhart presents a list of examples to show that sloppy copy readings are only possible for elements that are c-commanded by the parallel element in question. The examples in (3) show that this is not a necessary condition, however, but how can we explain the material given in [Rei83, p.153-154]? Only some of her examples involve VP ellipsis, and we will only look at these here.[12]

(6) (a) For her seventieth birthday Rosa requested a Stravinsky record and Zelda did too.

(b) Upon entering his office, Siegfried found a suspicious object under the desk, and Felix did too.

(c) Thinking about his problems, Siegfried got depressed, and Felix did too.

(d) According to him, Siegfried is an unrecognised genius, and Felix is too.

(e) In her wedding picture, Rosa is wearing a pink dress, and Zelda is too.

While (6a-c) have both sloppy and strict readings, (6d-e) only have strict readings. If *according to him* and *in her wedding picture* were not topicalised, the sentences would have sloppy copy readings. I will claim that the reason why (6d-e) does not have sloppy copy readings is that the topicalised material is not inside the source clause material, whereas in (6a-c) it may be. Material that does not fall within the material to copy or reconstruct, can evidently not obtain sloppy copies.

Note in particular that for the sentences (6bc), a sloppy reading is only possible if Felix is doing the entering/thinking. (6b) may thus have the following three readings.

(7) (a) Upon Siegfried's entering Siegfried's office, (Siegfried found a suspicious object under the desk, and Felix found a suspicious object under the desk)

(b) (Upon Siegfried's entering Siegfried's office, Siegfried found a suspicious object under the desk), and (upon Felix's entering Felix's office, Felix found a suspicious object under the desk)

[12] The examples are all written as VP ellipses, with *did* or *is* in the elliptic clause, as given as alternatives for most of them in [Rei83], and not as stripping, as is given as an alternative for all of these examples in [Rei83].

(c) (Upon Siegfried's entering Siegfried's office, Siegfried found a suspicious object under the desk), and (upon Felix's entering Siegfried's office, Felix found a suspicious object under the desk)

In [Sem94], I have argued that a controlled argument, like the subject of *entering* in (6b) does not have an independent status with respect to ellipsis, and must receive a sloppy reading when its controller, here the subject of the source, does. If this is true, the possibility of (7a) can only be explained by the possibility of the topicalised material to be topicalised out of the conjunction, and thus not be a part of the common material for the elliptic clause and its source.[13] The topicalised material in (6a-c) may also be read as within the first conjunct, and may thus be subjected to elliptic copy. Tanya Reinhart herself points out the correspondence to bound anaphora for these examples.

(8) (a) Thinking about his_i problems, everyone_i got depressed.[14]

(b) *According to everyone_i, he_i is an unappreciated genius.

Fiengo and May point out that the following sentences only have strict readings ([FM94, pp.109-111]):

(9) Mary's picture of John amused him, and Mary's picture of Bill did, too.

They note that the downstressed reconstruction, that should be equivalent to the ellipsis, also only gives the strict reading. The sentences in (9) contain a factor that has been shown in [Sem94] to effect what readings are possible, namely a psychological predicate, *amused*. The internal perspective in the source clause is on *him*, not on the picture. If we use the same kind of construction of the parallel element with a predicate that has a non-experiencer object, we obtain two readings.

(10) Mary's picture of John resembled him to perfection, and Mary's picture of Bill did, too.

I thus conclude that the impossibility of a sloppy reading for (9) lies in the internal perspective on the object for some uses of *amused*, and not because *John* does not c-command *him*. But why does the psychological predicate give the effect that only strict readings are possible for (9)? Our explanation follows the lines of our explanation for the hierarchical effects for the sloppy and strict readings otherwise, see in particular [Sem94]. Strict copy is always possible, sloppy copy only if coreferent with parallel element and the element that it gets its reference through is copied

[13] It may be argued that topicalising out of the conjunct gives *upon entering his office* a status as a reference to the location point, and the entering and finding an arbitrary connection, whereas the topicalising within the source material may give it a status as interlinked with the finding more than just as an arbitrary temporal simultaneity. We will not go into these matters here.

[14] The indices are added to indicate the intended coreference. (8ab) are from [Rei83, P.155].

sloppily. With psychological predicates, when the subject position or an element therein is coreferent with the object, the reference may be said to get to the subject position or an element embedded therein from the object position, even though the subject or the element embedded therein is surfaced with the independent NP, whereas the object is surfaced as a pronoun. Linearity in such cases gives other requirements than the ones suggested by the psychological predicate, and it may be seen as an accidental result of the linear order that the object is surfaced as a pronoun whereas the element embedded in the subject is surfaced as a proper name. Note that a swap of *John* and *him* is possible, if not required, for the psychological predicate case, yielding exactly the same meaning, except for in the case where the subject has the internal perspective. See also [Eng90].

(11) (a) ?A picture of John amused him.
(b) A picture of him amused John.
(c) A picture of John resembled him.
(d) *A picture of him resembled John.

If (11a) and (11b) provide identical input to the ellipsis, with the reference to John originating from the object position, so that the copied material contains a representation corresponding to a proper name rather than a pronoun, it follows that there are no sloppy copies. The situation is in that case comparable to the lack of sloppy copy readings for *John washed John's car and Bill did too.*

The opposite problem is found in (12). For this example there is only a sloppy reading. This poses a problem for frameworks where the strategy is that all elements may have a strict copy and explain the pattern of possible readings by restrictions on when sloppy readings are possible, as in [Sem94].

(12) John thinks Mary likes his work, but in Bill's case, I think she actually does.[15]

The impossibility of a strict reading may be due to the construction *in Bill's case.* There is no way in which *Mary likes his work* can be *in Bill's case* other than if *he* is coreferent with *Bill.*

Another problem turns up in the following example, where a pronoun in the text may have a sloppy reading without being coreferent with any parallel argument or element within the parallel arguments or in parallel contexts of the elliptic clause and its source.

(13) The two little boys were discussing their parents. In particular, they talked about how difficult it is to please a conservative father. John helped him wash the car, and Bill did too, but not so often.[16]

[15] From [Har91].
[16] Example from Hans Uszkoreit, (p.c.).

The discourse in (13) is interesting because the last sentence has a reading where Bill is said to wash Bill's father's car less often than John washes John's father's car. That is unexpected, since *him* in the source clause in this case refers to John's father, a person different from John, and we would expect only a strict reading. If *him* is substituted with *his father* or *his conservative father*, the mentioned sloppy copy is one of the readings. My claim is that the source has to be read in this way to open for the reading in question. If *him* is read as referring to some particular conservative father mentioned in the previous discourse, only strict readings are possible. The same holds if *him* is read as *a (conservative) father*, without a connection to John. If *him* is read as dependent on John, i.e., as obtaining its reference by use of the reference of John, then a strict and a sloppy copy option for the possible readings of the elliptic clause is according to what is expected. The source clause in (13) is ambiguous between a reading of *him* where it depends on *John* and readings where it doesn't. On a dependent reading, we have a strict and a sloppy copy reading of the elliptic clause as expected, otherwise we have only strict readings.

4 Conclusions

We started out with the aim to shred light on what information need be represented for the source clause in order to explain the pattern of possible readings and on what kind of approach to the interpretation of VP ellipsis can give the most accurate results. ¿From the discussion above, we may extract the following points.

- Sloppy copies are possible in connection with other parallel elements than parallel arguments. Also elements embedded in parallel arguments and elements in parallel contexts may give rise to sloppy copy readings.

- Ellipsis takes place on material that is specified with respect to quantifier order, and common material may have wider scope than the parallel arguments.

- Only elements that are within the material that undergoes elliptic copy and that are coreferent with or dependent on parallel elements, may have sloppy copy.

- The possibility of sloppy copy extends to elements for which the reference is in part decided by the referents of parallel elements.

Our discussion of the Hirschbühler sentences shows that an interpretation mechanism relying on abstraction of all elements having wider scope than the subject of the source outside a compound containing both elliptic clause and source cannot account for those readings of Hirschbühler sentences that have wide scope of the VP internal argument. In addition to this, our discussion has brought to light that an explanation for strict and sloppy readings that build on the possibility of plugging a subject argument into a representation of a VP representation with open slots corresponding to elements within the VP that are coreferent with the subject of the source is not sufficient. We may thus conclude that a substitutional or inferential approach on some intermediate representation level have received further support in comparison with an identity of predication approach through our discussion. Further research is needed in order to decide the conditions under which elements embedded in parallel elements or in parallel contexts may be regarded as parallel elements.

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