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Gapping and grammatical relations

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1. THE SCOPE OF GAPPING

This paper will be concerned with the analysis of sentences like those in (1), which I think are all uncontroversial examples of the construction that is generally called 'gapping'.

(1) (a) \([\text{The man was haggard }] \) and \([\text{the girl, sick with exhaustion}]\).

(b) \([\text{Fred invited Mary} ] \) and \([\text{Bill, Jane }]\).

(c) \([\text{Fred tries to treat his parents well}, \text{and}][\text{them/they, him}]\).

(d) \([\text{At our house we play poker} ] \) and \([\text{at Betsy's house, bridge}]\).

The brackets mark the boundaries of the coordinate structures and of the conjuncts, and show that the second conjunct in each of these examples is incomplete, in the sense that it could not be used outside this particular construction. The term 'gapping' is appropriate because at least part of what is missing from the second conjuncts is needed at the point marked by the comma, and indicated by a gap in the layout I shall adopt. I shall follow the tradition in saying that there is a GAP between the two overt elements, the REMNANTS. In the examples, remnants will be immediately beneath the part of the first conjunct to which they correspond.

There has been a great deal of discussion of this construction since it was first drawn to the attention of generative grammarians by Gleitman (1965), with the example (1a). Much of the discussion has centred on very straightforward examples like (1b), where the remnants are respectively

[1] This paper is based on an earlier one called 'Gapping', which has been distributed by LAUD. I received insightful comments on the latter from Bob van Oirschot and a number of anonymous readers, for which I am most grateful. It is partly because of these comments that I decided to abandon the analysis in the earlier paper in favour of the present one. Another reason for the change is that the experience of producing a computer implementation of the earlier coordination analysis, with support from an ESRC Personal Research grant, led to some fairly minor changes which made a major change in the treatment of gapping possible. It is the earlier analysis that is outlined in the appendix to my paper on coordination (Hudson, 1988a); I hope this change will not cause any confusion.
subject and object of the gapped verb, but various other possibilities have been pointed out, which are illustrated by the other examples in (1).

Although there is general agreement that the examples in (1) all involve the same construction, there is disagreement about its scope. One particular area of debate is whether examples like (2) involve gapping.

(2) (a) I gave {[the girl a nickel] and
[the boy a dime ]}.  
(b) He took {{[John home ]} and
[Mary to the station]}.  

These examples are also taken from Gleitman (1965), who observes that they contain conjuncts which are not complete constituents. In this respect, of course, they are similar to the examples in (1), and both kinds of examples pose serious problems for any analysis of coordinate structures which presupposes that all conjuncts are complete constituents. According to some linguists – e.g. Sag et al. (1985) – the examples in (2) should be dealt with by the same machinery as is invoked for those in (1), whilst some have even suggested – e.g. van Oirsouw (1985, 1987) – that both (1) and (2) can be handled by the same machinery that deals with the coordination of complete conjuncts smaller than sentences.

In the absence of a gap in the second conjunct, the term ‘gapping’ hardly seems appropriate for the examples in (2). In each case a complete sentence could be made by combining the rest of the sentence with just one of the conjuncts: e.g. (2a) can be compared with *I gave the girl a nickel. and I gave the boy a dime.* This is the normal pattern for coordinations whose conjuncts are complete, like *I gave {[the boy] and [the girl]} a nickel.* In such cases, the conjuncts are linked to the rest of the sentence by some grammatical relation (e.g. *the boy* is indirect object of *gave*), and to each other by virtue (inter alia) of the fact that they share these links. We can call all such cases *EXTERNAL SHARING,* in order to contrast them with gapping. It will be seen that in the examples containing a gap, the sharing is internal to the coordinate structure. Whatever material is shared by the gapped conjuncts is located in the first conjunct of the same coordination.

The debate is clearly not settled by observations about the suitability of the term ‘gapping’. The position that one takes depends on the kind of analysis one assumes for a wide range of coordinate structures, and in particular on whether examples like (2) are covered by some part of the grammar other than the rules for gapping. If they are, then there is obviously no need to cover them by the gapping rules as well; if not, then it is possible that they should be covered by these rules (though this will still be a matter of debate, of course). As far as my analysis is concerned, I have already developed a partial grammar for coordinate structures which does generate examples like (2), but not examples like (1) (Hudson, 1988a), so I shall simply take it for granted that ‘gapping’ is not responsible for those like (2). (Section 4
contains a brief explanation of how these cases are treated.) At the same time, however, I shall show that the analysis of gapping minimizes the differences between the two kinds of coordinate structure. In so doing I shall be accepting the force of most of the negative comments in Sag et al. (1985) on Hudson (1982), in which I tried to prove profound differences between gapping and structures like (2).

The generalizations in this article, then, are meant to apply to any coordinate structure in whose non-initial conjunct there is a gap, which can be supplied (at least for purposes of semantic interpretation) by material in the first conjunct. We shall call all such structures ‘gapped’. Any sharing of material which is outside the coordination is dealt with by other rules, so we can ignore it. In most cases this means that the gap in a gapped conjunct is between the two remnants, but it is possible to construct examples, such as (3), in which this is not so.

(3) (a) [[In our house, the boys play bridge], and [in your house, the girls ]] 
(b) ? I wonder [[how pleased to be home Bill was], and [how keen to get away again, his wife]].

It will be seen that what is shared in (3a) is play bridge, and that this is inside the whole coordination although it is on the right periphery of its own conjunct. This will be allowed by our gapping rules, although the gap follows both the remnants.

One of the characteristics of gapping that has often been noted is that the gap centres on a verb. We shall see in Section 4 that this is not quite true, but it is a good approximation to the truth. However, some people have suggested (e.g. Jackendoff, 1971) that coordinated NPs can be gapped, because of examples like (4a).

(4) (a) [[John’s thoughts about Jane ] and [Bill’s about Betty]] were very different. 
(b) John’s thoughts about Jane were different from Bill’s about Betty. 
(c) [[John thought about Jane ] and [Bill, Betty]]. 
(d) *[John’s thoughts about Jane ] and [Bill’s, Betty]... 

However, examples like Bill’s about Betty can much more easily be taken as cases of NPs without a lexical head-noun, which can occur freely outside coordinate structures (as witness (4b)). Moreover, the ‘gap’ in such cases has quite different properties from those found in true gapping. Thus, in verb-centred gapping the gap can stand for more than one word (e.g. (4c)), but this is not possible if it centres on a noun, as in (4d).

How central to our definition of gapping, then, is the fact that the gap
occurs between two remnants? We have already seen, in relation to (3), that some English examples lack this property, so we should be prepared for it to be absent systematically in languages that have other typological characteristics. This seems indeed to be the case in German (and other Germanic languages which allow final verbs in subordinate clauses). I shall follow Ross (1970) in taking examples like (5a) as gapping.

(5) (a) Ich glaube, dass {Johann Fisch isst}, und [Willi Reis].
   'I believe that John eats fish, and Willi rice.'

(b) Ich glaube, dass {Johann Fisch}, und [Willi Reis] isst.

In (5a) the gap is in fact peripheral to its conjunct, but it contains the verb, so it is at least a candidate for gapping (in our sense). Furthermore, the shared material (isst) is internal to the coordination, which puts it outside the scope of the rules for ordinary, external-sharing, coordination. In contrast, I assume that these rules will deal with (5b), where the shared material is external to the coordination. Examples like this have also sometimes been referred to as gapping, but they are beyond the scope of our gapping rules – as are also coordinations of the pattern ‘S O V & S V’, where the O is shared (van Oirsouw, 1987: 269 quotes Turkish as a language that allows this).

In short the essential characteristics of gapping, as I shall use the term, are:

(a) shared material inside the first conjunct of a coordination (rather than outside the whole coordination);

(b) shared material which centres on a verb.

It cannot be assumed that every language allows gapping, nor that every language that does allow it has precisely the same restrictions on it as English. However, it is a very interesting question whether these two properties can ever occur separately, and if not, why not.

2. Previous analyses of gapping

2.1 Deletion analyses

A number of attempts have been made to analyse gapping. One approach is to invoke deletion rules (e.g. Jackendoff, 1971; Neijt, 1979; van Oirsouw, 1985, 1987) to explain the absence of the gapped material.

One serious problem for deletion analyses is that the string to be deleted need not be a constituent. This is illustrated in examples like (6), where the gap is has been working on:

(6) {Fred has been working on semantics} and [Bill, syntax].
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Moreover, the gap need not even be continuous. Relevant examples are (7a) and (7b), the latter from Hudson (1976).

(7) (a) ([Fred treats his parents well] and [them/they, him]).
(b) ([John has tried to persuade Mary to accept his hand in marriage] and [Bill, Jane]).

In (7a) the gapped material is *treats ... well*. The manner adverb must be part of the gap, because it is required by the subcategorization of *treat* (in this sense); and it must follow the second remnant because pronoun objects cannot be moved by 'Heavy NP Shift' (compare *they treated well him*). In (7b) the gap is *has tried to persuade ... to accept his hand in marriage*, where the discontinuity could only be avoided on the implausible assumption that *Jane* has been end-shifted by Heavy NP Shift. On the assumption that discontinuous strings cannot be treated as constituents, a deletion rule would have to be allowed to delete non-constituents.

I take it that there are fundamental objections to transformations which delete non-constituents (over and above any objections that could be raised to transformations in general). For one thing, it would be very difficult to specify the rule formally: what would be its structural description and structural change? For another thing, an analysis which allows any old discontinuous non-constituent string to be deleted in gapping will overgenerate wildly. For example, it would allow (8a) to have the same interpretation as (8b).

(8) (a) *{[John bought a house in Hampstead] and [Bill cottage near ]}.
(b) {[John bought a house in Hampstead] and [Bill bought a cottage near Hampstead]}.
(c) {[John bought a house in Hampstead] and [Bill a cottage ]}.

If free deletion of discontinuous non-constituent strings is allowed, why is (8a) so terrible, in contrast with (8c)? At least one of the deletion analyses, that of van Oirsouw, is formulated in such a way that it does allow deletion of non-constituents, but it should be noted that it faces this problem of overgeneration.

A second class of problems for deletion analyses concern morphology. Firstly, one of the remnants may have a different form from what it would need if the gap were refilled. In particular, pronouns often appear in their non-subject form when they are in the subject position of a gapped conjunct: *He likes her, and her, him*. Some speakers say they prefer the subject form in such cases (*He likes her, and she, him*), but we simply do not know for sure who actually uses which form in speech. (A serious problem in the study of
gapping is that it seems to be extremely rare in spontaneous speech, and most of the examples one hears are in scripted speech such as broadcast news.) The main fact is that non-subject pronoun forms are far more acceptable in subject position when they precede a gap than in other situations. For many people (including Matthews (1981: 213), and me) the non-subject form is preferable in these contexts to the subject form, even though the subject form is obligatory in other subject positions (e.g. even after and, where many speakers use the non-subject form as in Mary and me went out together).

This fact requires an explanation, and an informally stated one is easy to find. This is that the non-subject form is the unmarked one, and is used in all cases except where the pronoun is the subject of an overt tensed verb. Thus, it is the form (normally) used in answers to wh-questions, when the corresponding wh-pronoun is the subject of its clause:

(9) Q. Who did it?
A. Me.

This generalization helps to explain the use of non-subject pronouns in coordinated subjects (e.g. Mary and me did it), since the subject-hood of the pronoun is less direct than it is without coordination, being mediated by the coordination. Clearly different groups, or different individuals, set their cut-off point for the use of subject forms at different levels of 'subject-hood', but all seem to recognize the same hierarchy. These facts distinguish English clearly from languages that have case, such as German, where (I gather) it would be unthinkable for anyone to use a non-subject form in any of these contexts. And in such languages, as expected, the non-subject pronoun forms are never used as the subject remnant of a gapped conjunct.

This explanation is much easier to present in prose than to build into a deletion analysis. The obvious way to do this is to assume that pronoun forms are assigned at a late stage in the derivation, after gapping and other such deletions have been applied. However, the snag is that by that stage, it is almost certain that various other transformations such as subject-auxiliary inversion will also have been applied, and it will not be at all easy to identify subjects as such. For instance, in a very simple case like Who is he?, the subject is in the post-verbal place normally associated with objects, and a non-subject is in the normal subject position. It remains for supporters of the deletion analysis to show that the relevant rules can be made to work.

Similar remarks apply to the other kind of morphological problem, which concerns verb agreement. Take (10), for example.

(10) [[Fred prefers Mary] and [his parents, Jane]].

Here the gap must be prefers, with suffix -s, if it is to be deleted under identity with the verb of the first conjunct; but it must be prefer, without the suffix, if it is to agree with its own subject. It should be noticed that this is not simply an example of the kind of 'sloppy' identity which is tolerated in
VP anaphora. In the latter there are no requirements of inflexional identity; thus a past-tense verb may be the antecedent for a missing infinitive (e.g. *Fred finished his thesis last year, and Bill will [sc. finish] next year*). In contrast, the gapped verb must be identical, in respect of inflexion, to its 'antecedent', with the sole exception of subject-agreement. For example, it would not be possible to interpret (10) as having a gapped past-tense verb based on the overt present-tense verb of the first conjunct; and this is not possible even if time adverbs indicate it: *John teaches syntax this year, and Bill, last year.* Deletion accounts, then, require a deletion rule which is remarkably unconstrained as to what it can delete, since it has to be able to delete non-constituents; and it remains to be seen whether there is any generally recognized level of structure to which it can apply in such a way as to make the correct morphological predictions. The problems just surveyed are all contained in example (11 = 1c).

\[
\text{(11) } \{[\text{Fred tries to treat his parents well}] \text{ and } [\text{them, him }]\}.
\]

The source of these problems is that for the deletion approach to work, it has to be possible to define what is to be deleted; but this is very difficult. In contrast, it is very easy to define what is left after the deletion: i.e. the remnants. First of all, in all the examples discussed so far, and more generally in the most widely accepted examples, there are just two remnants. Secondly, if we assume a transformational approach, with a complete clause underlying the gapped conjunct, then one remnant precedes the underlying root verb, and the other is something else, excluding the root verb. Unfortunately for the deletion approach, there is no precedent for a deletion rule which is defined in terms of what is left rather than in terms of what is deleted.

In spite of these problems, however, the deletion approach has the virtue of tying the analysis of the second conjunct firmly to that of the first conjunct, because the gap is created by deleting syntactic material from the second conjunct which is also contained in the first conjunct. As we shall see shortly, this is a necessary component of any adequate treatment of gapping.

Another virtue of the deletion approach is that it automatically generalizes to coordinate structures in which there are three or more conjuncts. This is because the deletion is a transformational rule, and all transformational rules are subject to the 'Across The Board' (ATB) principle of Ross (1967) and Williams (1978). Consider the non-gapped example (12a).

\[
\text{(12) (a) } \{[\text{Fred sat on a chair }], \\
[\text{Mary sat on a stool }] \text{ and } \\
[\text{Bill sat on a bench}]\}.
\]

\[
\text{(b) } \{[\text{Fred sat on a chair }], \\
[\text{Mary on a stool }] \text{ and } \\
[\text{Bill on a bench}].
\]

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If just \textit{sat} is the gap, it can be omitted from the second conjunct provided that it is also omitted from the third, as in (12b); and similarly if the gap is \textit{sat on}, as in (12c). However, the gap must not be \textit{sat} in one conjunct, and \textit{sat on} in the other; this gives (12d), which I find unacceptable (hence the *). Similarly, according to my judgments there must not be a gap in the second conjunct unless there is also a gap in the third conjunct, so I have put a star against (12e). All these restrictions follow from the ATB principle if a deletion rule is used; and if a deletion approach is rejected, whatever alternative treatment we adopt must also have the same effect if these judgments are to be predicted.

Another data problem arises in evaluating this argument. Some people accept examples like (12e) without reservation. For example, two of the people who commented on the earlier version of this paper independently told me that (12e) itself was fine for them (though, rather oddly, neither of them commented on (12d), which strikes me as better). I assume that this is a special case of a more general phenomenon related to ATB effects, which is that many speakers of English seem to ignore them in relation to conjuncts beyond the second. Thus examples like (13a) are very common in both speech and writing, although the ATB principle would require (13b) or (13c).

(I assume that a sequence of conjuncts of the form \textit{A, B and C} has to be taken as a single coordinate structure; if on the other hand layering is possible in such cases, then the discussion of ATB effects needs to be replaced by a discussion of coordinate structures in general.)

(13) (a) John has \{\textit{finished his thesis},
[had it bound], and
[is waiting for the viva]}. 
(b) John \{\textit{has finished his thesis},
[has had it bound], and
[is waiting for the viva]}. 
(c) John \{\textit{has \{finished his thesis\} and
[had it bound\]}}\textit{, and
[is waiting for the viva]}. 

Moreover, when I ask English speakers about such examples as (13a), they are often adamant that they are fine, and they see no reason at all to prefer
either of the alternatives. This raises a very general problem for the ATB principle, because in (13a) the deletion of *has* applies to the first two conjuncts, but not to the third. We return to these facts in Section 3, but for the present we note them as evidence that could be offered against any deletion analysis.

2.2. Restructuring analyses

Another way of approaching gapping (and incomplete conjuncts in general) is to change the constituent structure analysis in such a way that the incomplete conjuncts are generated as constituents. This then allows them to be coordinated by some kind of coordination schema which combines (complete) constituents. Two attempts have been made to develop this kind of analysis, though only one has been expanded to include gapped constructions as such.

Schachter and Mordechay (1983) offer a GPSG analysis of incomplete externally sharing conjuncts, such as those in (2): *I gave [[the girl a nickel] and [the boy a dime]],* etc. They suggest that there is a metarule which raises the shared material out of the VP, leaving two (otherwise incomplete) VPs which can be coordinated in the usual way. These VPs both have slash categories which indicate what is missing from them, and on the assumption that conjuncts must have similar categories, this guarantees the ATB effects. We simply note this analysis, as an example of restructuring applied to incomplete conjuncts. It does not apply to gapped constructions.

Steedman (1985, 1987) and Dowty (1985) have developed a very interesting and impressive series of Categorial Grammar analyses of ‘incomplete’ conjuncts, including gapped ones. Once again the principle is that the rules are formulated in such a way that it is possible to assign a structure in which each conjunct is in fact a single constituent. In order to achieve this, the repertoire of basic operations on strings of categories is enriched considerably, by the addition not only of operations like type-raising and functional composition, which are fairly widely used, and accepted, by categorial grammarians, but also by special rules like ‘English Forward Mixing Composition’, which is specially designed for gapping. The result of applying these rules is said to be that in examples like (14), the structure assigned is such that both conjuncts are single constituents with the same category analysis.

(14) Harry wants Ipswich to win and Barry Watford.

That is, the constituents of (14) include not only [Barry Watford], but also [Harry Ipswich] — a discontinuous constituent.

It is hard to evaluate a proposal as radical as this, and it is probably best to wait until it has been worked through by other categorial grammarians. However, some possible weaknesses can be identified even at this stage. One
is that the analysis rests very heavily on the now discredited assumption that conjoined elements must have the same category analysis. It has long been recognized that it is possible to conjoin elements as different as NPs and PPs, and the evidence is presented especially cogently in Sag et al. (1985). Another objection is that the analysis seems psychologically implausible. This is because it assumes that radically different analyses are assigned to a sequence like *Harry wants Ipswich to win* according to whether or not it is conjoined with a (following) gapped conjunct. Indeed, its analysis will vary according to what the remnants of this conjunct contrast with: in (14) they contrast with *Harry and Ipswich*, but they could have contrasted e.g. with *Harry and win*. Examples like this do not feel like 'garden path' sentences, but this is what seems to be implied by the Categorial Grammar analysis.

The analyses which adjust the constituent structure to fit the needs of coordination implicitly recognize that the demands imposed by coordination on constituent structure are distinct from, and in some cases incompatible with, the demands imposed by other kinds of construction. This is the central thesis of the analysis which I shall defend below, so the trend is to be welcomed. It is a matter of debate whether it is better to try to make constituent structure satisfy both kinds of requirement, or whether it might be better to reserve constituent structure strictly for coordination and to use some other kind of structure for other constructions.

2.3. Interpretive analyses

A very different approach is suggested in Stump (1978), a purely interpretive account where no constraints at all are placed on the syntactic relations between the two conjuncts. According to Stump the second conjunct has a semantic structure in which the two remnants are arguments, and which is derived from the semantic structure of the first conjunct. In a simple case like *John invited Mary, and Bill, Sue*, there is little difference between the two semantic structures, because each of the remnants corresponds to an argument of the first conjunct, but in more complex cases the second conjunct’s semantic structure can be derived by lambda abstraction.

However, as Sag et al. (1985) point out, the syntactic relations between the two conjuncts cannot be ignored in this way. For example, let us assume that the two sentences in (14) are synonymous, and therefore have identical semantic structures.

(14) (a) Fred gave a present to Mary.
(b) Fred gave Mary a present.

If this is so, then a purely interpretive account predicts that they should be interchangeable as first conjuncts before a gapped one; but this is clearly not the case.
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(15) (a) {{Fred gave a present to Mary} and [Bill, to Jane]}.
(b) *{{Fred gave Mary a present} and [Bill, to Jane]}.

Similar remarks apply to pairs like discuss and talk about which have similar (or identical) semantic structures but distinct syntactic structures. Thus (16a) is good, but (16b) is not, in spite of having the same semantic structure.

(16) (a) {{Fred talked about music} and [Bill, about art]}.
(b) *{{Fred discussed music} and [Bill, about art]}.

The conclusion, then, is that a purely interpretive account fails because it disregards the requirement that the syntactic structure of the second conjunct must be compatible with that of the first conjunct (in some sense of ‘compatible’ which we shall make more precise below), though as we have seen some differences in the morphology can be tolerated.

On the positive side, however, Stump's analysis could be seen as recognizing the need not only to focus on the remnants rather than on the gap, but also to pay attention to the elements in the first conjunct with which the remnants contrast. Since these elements are so important, we can give them a name: they are the CONTRAST-POINTS of the first conjunct. When we refer to one of these contrast-points in relation to a remnant, we can call it the remnant’s PARALLEL. Thus in (16a), Fred and about (music) are the contrast-points of the first conjunct, and Fred is the parallel of the first remnant of the second conjunct, Bill. Focusing on the contrastive relation between the remnants and their parallels allows us to explain the observation of van Oirschouw (1987:218) that neither of the remnants may be coreferential with its parallel. This can be seen from examples like those in (17), where the pronouns are to be taken as coreferential with the appropriate noun in the first conjunct.

(17) (a) *{{Fred likes Mary} and [he, Jane]}.
(b) *{{Fred likes Mary} and [Bill, her]}.
(c) {{Fred likes Mary} and [her, him]}.

Notice that (17c) is fine, although each of the remnants is coreferential with one of the contrast-points. This is because neither is coreferential with its own parallel.

Now, it would be possible to see Stump’s analysis as implying that in some sense the remnants and the commutees are highlighted in the semantic structure by being treated as arguments at the highest level, irrespective of
their depth of embedding in the syntactic structure. Thus in an example like (18a) the semantic structure of each conjunct is equivalent to that shown crudely in (18b).

(18) (a) \{[Fred tried to get someone to invite Mary] and [Bill, Jane].
(b) predicate: X tried to get someone to invite Y
   X: Fred/Bill
   Y: Mary/Jane

This semantic structure is reflected directly in the phonological structure by the location of intonation focus on the elements which identify X and Y, the contrast-points and the remnants. Although Stump's analysis was not intended to help with the intonation, and need not be given this 'pragmatic' interpretation, it is certainly worth noting that any analysis of gapping ought to show in some way that the remnants must contrast with the contrast-points and that the analysis must therefore give these elements some special status in their respective conjuncts.

2.4. Syntactic matching analyses

Finally we have the GPSG analysis of Sag et al. (1985), which combines the virtues of the previous analyses, although it too faces problems. In this analysis the remnants are generated directly, by a rule which freely allows any number of phrases to be combined into a conjunct (provided this is itself either a sentence or a VP), without imposing any other constraints on what can combine with what. This far the analysis is like Stump's. However, there is also a 'substitutional generalization' which controls the remnants, namely that 'if the result of substituting the remnant for the corresponding element in the preceding conjunct is well-formed, then the Gapping structure is well-formed as well'. Like Stump's analysis, this relates the remnants to their parallels, but does so at the level of syntax, because the substitution process referred to involves replacing each contrast-point by its remnant. In this way they avoid the problems raised by sentences like (15) and (16). Presumably this substitution process could easily be related to a theory of contrast which would explain why the remnants must not be coreferential with their commutes, and why they must bear intonation focus.

One problem with the GPSG analysis has to do with the status of the substitutional generalization. According to Sag et al. gapping is definitely not part of sentence grammar, but is rather a 'discourse anaphoric process'. More precisely, the rules of grammar generate the remnants, as explained above, and a discourse anaphoric process interprets them (according to the substitutional generalization). This claim rests on the observation that a change of speakers is possible between the first conjunct and the gapped one, as in (19).
(19) SPEAKER A: I shall miss you.
SPEAKER B: and me/I you.

Sag (1976), quoted in Neijt (1979:37), was unsure what conclusion to draw from this observation. ('It's not at all clear what to make of examples like [(19). It] seems to some people to be a peculiar case of two people collaborating on what is actually a single sentence…') Neijt's comment on this is as follows: 'To my knowledge, there is no other rule of sentence grammar which spreads across speakers'. However, this is surely quite the reverse of the truth: ANY rule of sentence grammar — or rather, the construction which it defines — can spread across speakers, as I shall now demonstrate.

Van Oirsouw (1987) points out that the speaker can change in the middle of an ungapped coordinate structure like (20) or (21).

(20) SPEAKER A: I shall miss you.
SPEAKER B: and I shall miss you.

(21) SPEAKER A: Fred loves me.
SPEAKER B: and hates me.

As with example (19), the objection to treating the two contributions as parts of the same sentence is that the normal rules for deictic semantics are broken — for instance I is used to refer to two different people in the same sentence. But what is the force of this objection? Surely there is an extremely simple and obvious pragmatic explanation for the change of reference, and no need at all for sentence grammar to impose any ban on speaker-change in mid sentence. The speaker can change in the middle of any construction provided there is some pragmatic reason for one person taking the floor from the other at that point. For example, it is easy to imagine an exchange like (22), where the ellipsis represents a deliberate pause for rhetorical effect, or (23).

(22) SPEAKER A: I looked in the mirror and saw...
SPEAKER B: yourself.

(23) SPEAKER A: I've fallen down again.
SPEAKER B: And hurt yourself, I suppose.

According to Sag et al.'s reasoning, (22) and (23) should be taken as evidence that reflexivization is a 'discourse process'; but this way lies madness. A much easier conclusion is that speakers can change freely in the middle of any construction, so the fact that this is possible in gapped constructions proves nothing whatsoever about the status of gapping.

The conclusion, then, is that gapping is indeed a rule of sentence-grammar, just like, for example, reflexivization. If this is so, a theory of sentence-grammar, such as GPSG, must allow the rule. But the rule proposed by Sag
et al. does not appear to fit any of the rule-types permitted by GPSG; they do not formalize it, and it is unclear whether it could be formalized in GPSG.

A number of other objections can be raised to Sag et al.'s proposal. One is that it does not explain why the gapped conjunct must immediately follow the ungapped one—this is simply stipulated in the full version of the substitution generalization. There is no attempt to relate this fact to the fact that the gapped structure is always introduced by a conjunction, and conjunctions are used in sentence grammar to link adjacent conjuncts. It is very odd for a discourse anaphoric process to be limited in this way—unlike clear cases such as anaphoric pronouns, VP anaphora, and so on (Hankamer & Sag, 1976), where the anaphoric item and its antecedent may be separated by large amounts of material. We can contrast (19), where the gapped conjunct is adjacent to its 'antecedent', with the bad (24a), where it is not, and with the good (24b), where a genuine discourse anaphor is separated from its antecedent.

\[(24) \begin{align*}
(\text{a}) & \quad \text{SPEAKER A: I shall miss you.} \\
(\text{b}) & \quad \text{SPEAKER A: I shall miss Fred.}
\end{align*}\]

SPEAKER B: *That's funny—and I you.

SPEAKER B: That's funny—I shall too.

Another objection to Sag et al.'s analysis is that it does not generalize easily to coordinate structures with more than two conjuncts. Their footnote 28 admits that their discussion is simplified by being restricted to two-conjunct constructions, but this restriction is crucial because it avoids the question of ATB application. The earlier part of their paper explains how they can achieve the ATB effect quite automatically in other kinds of coordinate structures by requiring both the coordinate-structure node and each individual conjunct node to bear whatever features are required by the linguistic context. This mechanism is clearly irrelevant to the gapped constructions as the gapped conjunct has no features which predict the nature of its gap—or even the existence of a gap. This leaves the pattern of judgments in (12) in need of an explanation.

Lastly, the GPSG analysis does not place any syntactic restrictions on the contrast-points—the phrases for which the remnants are substituted. As we have seen, these must not include the main verb of the conjunct, but the GPSG analysis makes it hard to explain the badness of sentences like (25).

\[(25) \quad *([\text{John likes Mary}] \text{ and} \\
[\text{Bill loves }]\rangle).\]

It seems, therefore, that the GPSG analysis fails because of its failure to relate gapping to the other kinds of coordinate structure, and to pay
attention to the syntactic constraints which are specific to gapping. It is on the right tracks, though, because it combines some of the virtues of the deletion and interpretive approaches: a respect for surface syntax, and a recognition of the contrastive relation between the remnants and their parallels. The most general conclusion, then, is that none of the analyses of gapping that have been suggested so far is completely successful, but each has moved us a little nearer to understanding how gapping works.

3. THE GRAMMAR OF REPLACEMENT

3.1. Introduction

We turn now to a new analysis. This will be based on the theory of Word Grammar (Hudson, 1984; 1985; 1986; 1987a, b; 1988a, b, c; forthcoming a, b), whose main features I shall introduce and explain as they become relevant, although space restrictions will oblige me to keep these explanations rather brief. Some parts of the analysis break new ground for the theory, others are areas of grammar that have already been discussed in published work. We start with new ground.

Previous work makes it clear that a successful analysis of gapping will have to include a convincing account of the relation between each of the remnants of the gapped conjunct and the contrast-points of the first conjunct to which it corresponds. This is the relation characterized by Sag et al.'s 'substitutional generalization', but of course any theory of gapping must say something about it (e.g. van Oorsouw points out that the two phrases must not be coreferential). The account will, however, say not only that the remnant contrasts with its parallel, the contrast-point, but also that the gapped conjunct as a whole contributes a meaning which is the same as that of the first conjunct in every other respect - i.e. it is a copy of the meaning of the first conjunct in which the contributions of the contrast-points are replaced by the meanings of the remnants. Thus, (26a) has the same meaning as (26b), for instance.

(26) (a) {[John kissed Mary] and [Beth, Bill]}.  
       (b) {[John kissed Mary] and [Beth kissed Bill]}. 

We can refer to this relationship by the rather obvious name of REPLACEMENT.

3.2. Some examples of replacement

Replacement is not confined to gapping, and an adequate theory will provide an analysis of replacement which can be separated from other parts of the gapping analysis and applied to other constructions.
Consider an exchange like (27).

(27) SPEAKER A: Someone left the door open.
SPEAKER B: Yes, me.

This is an example of replacement, in which *me* indicates (to use a deliberately vague term) a proposition which is the same as the meaning of the first utterance, except that the meaning of *someone* is replaced by that of *me*. To refer to this relationship we can use the (again obvious) terms REPLACEE (for *someone*) and REPLACER (for *me*).

There are some important differences between this kind of replacement and what we find in gapping. For example, in the former there is only one replacee/replacer pair, and they do not contrast with one another (instead, the replacer defines a hyponym of the replacee). However, the similarities are also important. They both have a similar function (producing a slightly changed copy of a previous proposition by specifying only one argument, which defines the change), and they both have some formal properties in common. For example, the facts about the choice of pronoun forms in English which we noted above in connection with gapping also apply to these replacements; the unmarked, non-subject, form is used even if the replacee is a subject, whereas in case-marked languages like German case requirements are respected in the replacer as well as in the replacee. These similarities are unlikely to be due to chance, so we should hope to make them explicit by means of partially similar analyses.

The features shared by gapping and the above example are also shared by a range of other patterns, which we can simply list below without much comment.

(i) Corrections, produced either by the same speaker or by a different one.

(28) (a) John did it – no, (I mean), Bill.
(b) SPEAKER A: John did it.
SPEAKER B: You mean, Bill.

(ii) Answers to *wh*-questions.

(29) SPEAKER A: Who did it?
SPEAKER B: Bill.

(iii) Alternatives introduced by *instead of, not, rather than*, etc.

(30) (a) John did it instead of Bill.
(b) John did it, (and) not Bill.

(iv) Temporal comparisons introduced by prepositional *before*, etc.

(31) (a) John did it before Bill.
(b) John has been there since Bill.
(v) Comparisons introduced by like or than.

(32) (a) John did it like Bill.
(b) John ran faster than Bill.

Napoli (1983) contains an interesting discussion of many of these constructions, which she groups together under the heading 'gapping'. I prefer to reserve this term for the more narrowly defined topic of this paper, but I agree with her that the similarities among the patterns are striking and deserve formal recognition.

One of the main differences between gapping (in our narrow sense) and some of these constructions is that gapping allows – indeed, requires – two replacers, namely the two remnants. In contrast, most of those listed above allow no more than one replacer, even when it would be easy to process more than one. For example, it is possible to ask a multiple question, containing more than one argument expressed by a wA-phrase, but (rather oddly) it is not possible to give a multiple answer to such a question, in which just the wA-phrases are replacers.

(33) FIRST SPEAKER: Who ate what?
SECOND SPEAKER: *John, a pizza, and Bill, a hamburger.

However, gapping is not quite unique in this respect. As Napoli points out, double replacements are possible in some of the other patterns. This is shown by the following examples, most of which are derived from Napoli's collection. To make the similarities to gapping clear, I shall lay out the examples with the replacers under their replacers.

(34) (a) The villain ended up with the woman instead of the hero with her.
(b) She paid for him instead of him for her.
(c) He helped her rather than her, him.
(d) ‘It [a plaster-cast] got dirtier and dirtier, and at last he shed it like a snake its skin.’
(e) He likes her more than her, him.

Another major source of difference lies in the grammatical relations, or lack of them, between the full clause and the replacement. In gapping, this is fully grammaticized: the full clause is the first conjunct of a coordination, and the replacement is a conjunct-root of any later conjunct of the same coordination. The same degree of grammaticization is found in some of the other constructions, though the grammatical relation concerned is quite
different. For instance, instead of is a (complex) preposition, with the remnant as its complement, whereas not is something else, which can be linked to the full clause, or even directly to the replacee, by and. On the other hand, there is no grammatical relation at all (of the kind definable in a normal sentence grammar) between a question and its answer, less still between an utterance and a correction.

It is important, then, to distinguish clearly between two kinds of relation which may hold between the full clause and the replacement:

A. The replacement relation, in which we are concerned with the replacee and replacer as such.

B. The 'sanctioning' relations between them which are such as to permit the replacement relation to be recognized as such.

Thus we can say that all the patterns discussed above involve the same replacement relation, but different sanctioning relations, one of which is gapping – more precisely, the relation between a remnant and its parallel in the first conjunct.

3.3. The syntax of replacement

In the rest of Section 3, we shall be concerned exclusively with the first kind of relation, the 'replacement relations'. For simplicity we shall use examples in which the sanctioning relation is gapping, but it should be borne in mind that whatever we say is intended to apply equally to all replacement patterns, of which gapping is just one example.

The first task is to define the syntactic relations between replacee and replacer. Given the syntactic context in which the replacee occurs, what syntactic properties must the replacer have? We clearly cannot say that they have to have the same syntactic properties, because there are some syntactic respects in which they can differ – e.g. if both are noun-phrases, they can differ in number. Nor can we say that they must belong to the same general syntactic category, because they can differ in just the same ways that coordinated dependents of the same head can differ – for example, if the replacee is a predicative adjective, the replacer could easily be a predicative noun-phrase:

\[(35) \{[\text{Mary is good at driving } ] \text{ and } [\text{Bill, an excellent gardener}]\}.
\]

As Sag et al. observe, the real restriction is roughly that the replacer must be able to occur in the same context as the replacee, without change of grammatical relation. The details which then remain to be sorted out concern morphological matters of pronoun-form and verb agreement.

To build this generalization into the grammar, we first introduce the terms 'replacer' and 'replacee'. A Word Grammar (WG) grammar consists of a
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number of hierarchies of concepts which allow generalizations to be made by inheritance, and these two terms seem to fit into the hierarchy whose summit (at least as far as the grammar is concerned) is the concept 'companion' - a word which occurs along with the word concerned. Other concepts in this hierarchy are 'head', 'dependent', 'subordinate', 'pre-linker' (the conjunction before a conjunct) and the various kinds of dependent ('subject', 'object', etc.). Their relational character is shown in the fact that they are followed, when used in stating grammatical facts, by 'of' and a relatum. Thus, a word is stated to be the replacer of some other word, rather than just a replacer, and similarly for 'replacee'.

A WG analysis of a sentence consists of a list of propositions about the words and word-strings in the sentence. Some of these propositions define the dependency relations among the words, others define their referents and the semantic relations among the referents, others again define their morphological structure and their features. A complete list would include far more than these types of information as the analysis is intended to include everything that is knowable about a word, including facts such as the identity and nature of the speaker, its spelling, and even the purpose of its utterance. There can thus be no theoretical objection to including propositions regarding replacement relations.

We start with a simplified version of the propositions concerned. Let us assume that we are describing the sentence in (36).

\[
\text{(36) } \{[\text{John loves Jane}] \text{ and } [\text{Bill, Beth}] \}.
\]

A sample of other propositions about the sentence is given in (37).

\[
\begin{align*}
\text{(37) (a)} & \text{ subject of } \text{loves} \text{ is } \text{John}. \\
\text{(b)} & \text{ referent of } \text{John} \text{ is } \text{John}. \\
\text{(c)} & \text{ linker of coordination-1 is } \text{and}. \\
\text{(d)} & \text{ pre-linker of conjunct-string-2 is } \text{and}. \\
\text{(e)} & \text{ number of } \text{John} \text{ is singular}. \\
\text{(f)} & \text{ word-form of } \text{loves} \text{ is } \text{s-form}. \\
\text{(g)} & \text{ parts of } \text{loves} \text{ is } [\text{love, morpheme-s}].
\end{align*}
\]

We now add the propositions about replacements.

\[
\begin{align*}
\text{(38) (a)} & \text{ replacer of } \text{John} \text{ is } \text{Bill}. \\
\text{(b)} & \text{ replacer of } \text{Jane} \text{ is } \text{Beth}. \\
\text{(c)} & \text{ replacee of } \text{Bill} \text{ is } \text{John}. \\
\text{(d)} & \text{ replacee of } \text{Beth} \text{ is } \text{Jane}.
\end{align*}
\]

This propositional format is used for representing not only the analysis of sentences, but also all the information in the grammar. The advantage of representing information in this way is that it allows ordinary inference rules to be applied, so that parsing (for example) is an exercise in inference, and
the analysis of the sentence is a set of propositions that can be inferred. Thus the axioms of the system are the propositions of the grammar, the temporary premises are whatever properties of the sentence can be observed directly (e.g. the form of its constituent words), and the conclusions constitute the analysis of the sentence – from which further inferences can be drawn if needed.

As far as replacement is concerned, one of the main facts to be dealt with is that the replacer must be compatible with the grammatical context of the replacee. In order to express this fact we shall exploit the concept ‘actual-function’ (to be contrasted shortly with ‘possible-function’), which is needed elsewhere in the grammar. For example, the grammar of coordination contains a proposition which says that conjuncts can share one or more actual-functions, where an example of an actual-function would be ‘head of John’ (an actual-function shared by both sang and danced in John sang and danced). Roughly speaking, we want to say that in our replacement example (36), Bill is allowed to be a replacer for John because they can both have the same actual-function, namely subject of loves.

However, this is only a first approximation, because it implies that both words are actually subject of loves, the word in this particular sentence. This would indeed be the correct analysis for a simpler example like John and Bill love Mary, in which the two nouns share the same actual-function; but it cannot be right for our gapped example – otherwise why should the verb agree only with John, for example? To show this difference, then, we introduce the concept possible-function, which will link a word to a general class of words rather than to another word in the same sentence. In our example, Bill has the possible-function ‘subject of verb’, but not the actual-function ‘subject of loves’, where loves is the name we are giving to the second word of our example sentence.

Both ‘actual-function’ and ‘possible-function’ are part of the vocabulary of WG theory, and as such they need to be defined. It seems reasonable to assume that in each case the definition is provided within the pragmatics (which is also part of the theory). Just as different operations are involved in relating a word to its parts and to its companions, so different operations apply for actual-functions and possible-functions. If the actual-function of W is ‘subject of X’, then X is sought among the other words in the sentence; but if the possible-function of W is ‘subject of X’, X is part of the grammar. However, we can also provide a proposition from which this processing difference will follow, using ‘relatum’ in its obvious sense (the relatum of ‘subject of loves’ is loves, etc.):

(39) relatum of possible-function of word is definition of relatum of actual-function of itself.

(The term ‘itself’ is a device to ensure coreference within the proposition to the last concept before ‘is’.) Thus the sentence-word John has both an actual-
function ('subject of loves’) and also a possible-function, namely ‘subject of verb’. In contrast, we want its replacer Bill to have only the latter.

An important characteristic of dependency structures is that the dependency relation can be expressed in either direction. If the actual-function of John is ‘subject of loves’, then it is also true that one actual-function of loves is ‘head of John’. Either of these relations can in principle allow a word to impose restrictions on its actual-function, but the normal pattern seems to be for the head to impose restrictions on the dependent, rather than vice versa (Nichols, 1986). Thus it is the properties of loves that make a subject obligatory, that make the subject precede the verb, that require it to be a noun, and so on. We shall see shortly that the reverse is true of pronoun-form and verb agreement, in fact, precisely of those properties which cause trouble in gapping; but all the features which have to be shared by replacee and replacer are of the kind which are imposed by the head.

For instance, the replacer for a bare, preposition-less, indirect object cannot be introduced by to (cf. example (15)), and it is reasonable to assume that this is because the verb allows only the former (even if a homonymous verb also allows the latter, but not the former). Thus the reason for the badness of (40a) is precisely the same as that for (40b), namely that the prior choice of a bare indirect object forces the verb to have a definition which does not allow the prepositional object any more than does the verb in (40c).

(40) (a) *[John gave Mary a record] and [Bill, to Jane]

(b) *John gave [Mary and to Jane] a record that he had recently heard at a friend’s.

(c) *John begrudged her success to Mary.

We can immediately explain the badness of examples like this by requiring the replacer and replacee to have the same possible-functions:

(41) possible-function of replacer of word is possible-function of itself.

This rule in fact imposes on the replacer all the syntactic requirements that are needed, and gives due recognition to the importance of surface structure in replacement. It will work provided we make two further rather natural assumptions.

The first of these is that ‘actual-functions’ and ‘possible-functions’ are both sub-cases of a more general category, ‘function’ – in WG terms, each of them ‘isa’ the category ‘function’, so that any proposition about the latter automatically applies to either of the sub-cases. The precise mechanism of this inheritance need not detain us here; there are various ways in which the logic can be formalized, some of which are discussed in Fraser and Hudson (1988).

The second assumption is that the possible-function of a word W can be ‘F of R’ only if W satisfies whatever restrictions the grammar imposes on any
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'F of R'; and conversely, these restrictions apply to W only if it is 'F of R'. In other words, if a word W₁ is the subject of some particular kind of verb, and that kind of verb requires its subject to have some property P₁, then W₁ must have P₁; and conversely, if W₂ is the predicate of some particular kind of noun, which requires its predicate to have property P₂, then W₂ must have P₂. (The sudden appearance of the concept 'predicate' in this example will be explained below.)

We can now offer an explanation for the apparently odd fact that in English the normal requirements of pronoun-form and verb-agreement are waived in the case of replacement, allowing examples like (42).

(42) {[John loves his parents] and [them, him ]}.

In this example, simply replacing the replacee by the replacer would produce an ungrammatical string: *Them loves... We could say that this is because them has the wrong form and the wrong number, assuming that the requirements are imposed by the verb, but we could equally say that it is the verb that fails to match the requirements of the subject: a plural noun requires its predicate to have the value 'plural-subject' for the feature 'agreement' (if the predicate has any value at all for this feature), and a non-subject-form pronoun cannot have the function 'subject of tensed verb' (but would be fine as subject of a non-finite verb, e.g. I want them to come). We must now justify these analyses.

Both of these patterns show lexical differences among subjects, which in itself suggests that they are imposed by the subject rather than by the verb. Take verbs whose value for 'agreement' is what we are calling 'plural-subject' (a misleading term, as we shall see), that is to say present-tense verbs without -s. It is true that these are used with plural subjects, and cannot be used with most singular subjects; but there are two systematic lexical exceptions, namely I and you, which are (or can be) singular but require a 'plural-subject' verb-form. Furthermore, the plural-subject form is used if the subject is a coordination containing and, but not or.

It is at least as easy to explain these facts as restrictions imposed by the subject on the verb as to do the reverse, because the properties of I and you can be located among the lexical idiosyncrasies of these words, and likewise for and, leaving just a pair of very general rules for the normal pattern:

(43) (a) Agreement of predicate of singular noun is singular-subject.
(b) Agreement of predicate of plural noun is plural-subject.

It should be clear that we could not express these facts in terms of the concept 'head', because the same verb could be the head of many different dependents, and it is only its relation to the subject that counts. 'Predicate', which is only available as a converse of 'subject', solves this problem (and has many other uses elsewhere in the grammar).
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As far as pronoun-form is concerned, it is even more obvious that the restrictions are imposed by the subject, because they apply only to a handful of pronouns — I, he, she, they and (marginally) who being the only subject forms. Assuming that we can raise the level of generality to the category 'personal pronoun' (and that special arrangements can be made for who), we can express the relevant restrictions easily in terms of the notion 'function':

(44) function of subject-form personal-pronoun is subject of tensed verb.

Propositions of this form are understood to prevent any other word-form from having the function concerned, hence the badness of examples like *Them came.

Moreover it is easy to allow this proposition to interact with others which refer to whether or not the pronoun is a 'conjunct' of a conjunction — i.e. the root of a conjunct. This allows us to distinguish grammars according to whether they allow in subject position forms like Mary and he or Mary and him, and likewise for non-subject positions. For instance, if the grammar allows the same pronoun-form irrespective of whether it is coordinated or not, then there is no further proposition; but if the subject form is required in all positions when the pronoun is coordinated, (44) is accompanied by (45a) and the grammar generates the forms in (45b, c).

(45) (a) function of subject-form personal-pronoun is conjunct of conjunction
    (b) [John] and [he] came.
    (c) I saw [John] and [he].

It is particularly hard to explain forms like (45c) in a grammar which treats the choice of pronoun form as a rule imposed from above on the pronoun.

To summarize these comments on pronoun forms, what I am suggesting is essentially that English does not have case, contrary to the very widespread assumption that it does. The vestiges of the case-system of Old English are now enshrined as a restriction which is imposed by a very small handful of words on their morphological form, and which relates this to their function. 'Function' in this case refers not only to whether or not they are subject of a tensed verb, but also to whether or not they are part of a coordinate structure. In this respect the grammar of English differs quite radically from that of a true case language such as German, in which case restrictions are indeed imposed by the head on its dependent. It is because of this that it would be unimaginable for any German dialect to allow non-subject forms to occur as subjects in any of the contexts that I have discussed here, including replacement.

Returning to the analysis of replacement, then, we now have an
explanation for the fact that a singular subject can have a plural, non-subject-form, pronoun as its replacer. This is because our rule (41) requires the replacer and replacee to have the same possible-function, thereby ensuring only that they will comply with any restrictions imposed by the replacee’s head. It does not, and could not, require their heads to have the same functions; it could not, for the simple reason that the replacer has no head. Accordingly, none of the restrictions which the replacee itself imposes on its occurrence apply to the replacer, and the normal constraints on pronoun form and verb agreement are waived. Furthermore, it is worth recalling that this explanation applies equally to all kinds of replacement, and not just to gapping.

3.4. The semantics of replacement

We now consider the semantic consequences of adding a replacer after a clause. Returning to our elementary gapping example, *John loves Jane and Bill, Beth*, we can see that the whole sentence refers to two ‘processes’ of loving, one expressed in the usual way by the first conjunct, and involving John and Jane, the other expressed by the gapped conjunct and involving Bill and Beth. Generalizing to other kinds of replacement, we can say that the replacer contributes a partial copy of the full clause’s meaning, in which the meanings of the replacers are substituted for those of the replacees. What remains to be explained is how this generalization can be incorporated into a formal theory.

Semantic structures are represented in WG by the same means as other kinds of structure, namely as a set of propositions. Most of the words in a sentence have a ‘referent’—the concept referred to, not a real-world object—which is a particular instance of the referent of the corresponding lexical item. One particularly important reason why the referent of a sentence-word is more specific than that of its lexeme is because its dependents identify particular concepts as its arguments; thus in *John loves Jane*, the second word is more specific than the lexeme *love* because unlike the latter its two arguments are not just unspecified people or objects, but John and Jane. Provided we distinguish clearly between the sentence-word and the corresponding stored grammar-word, this means that the referent of the sentence-root—the independent verb—actually carries the meaning of the whole sentence, because it includes the specifying effects of all the subordinates of the root.

Thus the meaning of *John loves Jane*, and the referent of the word *loves* as it is used in this sentence, are in fact one and the same. Of course it would be nonsense to make the same claim about the grammar-word *love* (or even its inflected form *loves*, if this is stored). Since this distinction is so important, we shall now adopt the normal WG practice of naming: sentence-words are called ‘word N’, where N is a number showing the word’s position in
The propositions which comprise a word's semantic analysis are propositions about the word's referent, which is a nonce concept named 'concept N' (N an arbitrary number). Let us call the concept referred to by word 2 in our example 'concept 1234', which again allows us to distinguish it from the general concept 'love', of which it is an instance.

(46) (a) referent of word 2 is concept 1234.
(b) concept 1234 isa love.
(c) experiencer of concept 1234 is John.
(d) source of concept 1234 is Jane.
(e) time of concept 1234 is now.

What we need in order to express the semantic effects of replacement is another concept-name (say, 'concept 5678'), whose properties are almost a copy of those given for the full clause except that the referents of the replacers are substituted for those of the replacees. In order to keep the effects of different replacers for the same replacee distinct, we can assign this concept to the replacer concerned, though we shall have to distinguish it from the latter's ordinary referent by calling it something other than the referent - we can use the term copied-referent. Thus, for our gapped example, we want to generate not only the partial structure shown in (46), but also the following (where words 5 and 6 are the two replacers, Bill and Beth).

(47) (a1) copied-referent of word 5 is concept 5678.
(a2) copied-referent of word 6 is concept 5678.
(b) concept 5678 isa love. [same]
(c) experiencer of concept 5678 is Bill. [different]
(d) source of concept 5678 is Beth. [different]
(e) time of concept 5678 is now. [same]

It will be seen that the two remnants both have the same copied-referent; this is because they contribute jointly to the definition of the concept concerned.

Now the easiest way of making a copy of a set of propositions is by exploiting the inheritance system. Suppose we said that concept 5678 'isa' concept 1234. It would then follow automatically that any propositions which referred to concept 1234 would also apply to concept 5678 unless they were overridden by the latter's known properties. In other words, the propositions in (47) which are marked 'same' would be redundant, because they could be derived by general principles from those in (46). Let us develop this idea.

If some word W is a replacee, then its head must define two referents, one for W and another for W's replacer. For example, take (48).

(48) {[John bought pictures of Jane] and
     [Bill, of Beth]}.
Here *bought* is the head of *John*, one of the replacees, and defines two referents, one of its own and one for the replacer to use as a copied-referent. Each referent is an act of buying, but one involves John and the other involves Bill. In fact, more generally, the same is true for any root of a replacee (where X is a root of Y if X is Y’s head, or Y’s head’s head, and so on recursively). In (48), the second replacee is of (*Jane*), whose roots are both *pictures* and *bought*. Replacing *of Jane* by *of Beth* has the effect of making *pictures* define a different set of pictures, as well as making *bought* define a different act of buying. By invoking the term ‘root’ we automatically guarantee that the effects of replacement apply recursively up the dependency chain, each root supplying a different copied-referent for the replacer.

If a word is a replacer, then, it will have not only a referent but also one copied-referent for each root that the replacee has. The rules for introducing copied-referents, and for treating them as instances of the corresponding non-replaced referents, are as follows (‘mony’ means ‘one or many’ – i.e. at least one):

(49) (a) replacer of word has mony copied-referent.
    (b) copied-referent of word isa referent of root of replacee of itself.

So far, then, what we have arranged is that each replacer should have a series of referents copied from the referents of the replacee’s head and any other roots. Unless we do something more, each of these copied-referents will be a true and perfect copy of its model, without recognition of the crucial effect of the replacement.

The necessary refinement can be achieved quite simply, by the propositions in (50).

(50) (a) function of referent of replacer of word is function of referent of itself.
    (b) head of copied-referent of word is copied-referent of itself.
    (c) head of copied-referent of word isnot referent of head of replacee of itself.
    (d) copied-referent of word is referent of itself.

Rule (50a) says that the replacer must have the same semantic function as the replacee, so if the latter is (say) experiencer of concept 1234 then so must the former be. This is acceptable because concept 5678 is in fact a particular case of concept 1234, so (50a) is compatible with it having concept 5678 as its semantic head. However this is made mandatory by (50b), which says that its semantic head must be one of its own copied-referents, and by (50c) which bans it from having the original semantic head. These patterns are allowed to apply to the referent of the replacer itself by (50d).

The result of these rules, then, is that an example like (48) has the
following semantic structure. To help the reader I add glosses after concept numbers.

(48) \{[John bought pictures of Jane] and [Bill, of Beth]\}.

(51) (a) referent of word 2 is concept 234 (buy).
    (b) actor of concept 234 (buy) is John.
    (c) referent of word 3 is concept 345 (picture).
    (d) affected of concept 234 (buy) is concept 345 (picture).
    (e) referent of word 4 is Jane.
    (f) referent of word 5 is Jane.
    (g) scope of concept 345 (picture) is Jane.
    (h) time of concept 234 (buy) is before now.

(53) (a) referent of word 7 is Bill.
    (b) copied-referent of word 7 is concept 771 (buy).
    (c) concept 771 (buy) isa concept 234 (buy).
    (d) actor of concept 771 (buy) is Bill.

(54) (a) referent of word 8 is Beth.
    (b) copied-referent of word 8 is concept 881 (picture).
    (c) concept 881 (picture) isa concept 345 (picture).
    (d) scope of concept 881 (picture) is Beth.
    (b') copied-referent of word 8 is concept 771 (buy).
    (c') see 54c.
    (d') affected of concept 771 (buy) is concept 881 (picture).

Many of the details in this analysis are of course open to debate, but I hope the example will have made the general approach comprehensible.

4. A WG TREATMENT OF GAPPING

4.1. An overview

Now that we have an analysis of replacement, the task of generating gapped coordinations is greatly reduced. Let us assume that we can generate coordinate structures along the lines detailed in Hudson (1988a), and that the analysis already deals with conjuncts which have more than one conjunct-root, such as those in (54).

(54) He drinks \{[coffee in the morning] and [tea in the afternoon]\}.

The main point about the WG analysis is that it uses constituent structure exclusively for coordination. A coordinate structure is a string of words, and so is each of the conjuncts. These strings are not classified in terms of the categories used elsewhere in the grammar, and are not expected to fit any
phrase type defined elsewhere in the grammar. Consequently sentences like (54) raise no special problems.

The rest of the grammar is based exclusively on dependency structures, without reference to any units larger than words, but of course there are severe constraints on the way in which dependency and coordinate structures interact. These constraints are expressed in the Dependency In Coordinate Structures (DICS) principle, that if a dependency function crosses the boundary of a conjunct, it must be shared by other conjuncts of the same coordination. (This is a slightly different formulation of the principle from the one given in Hudson, 1988 a.) Any word in a conjunct which has such external dependencies must be a conjunct-root of the conjunct—a word which has no head within the conjunct, but which may of course be the root of other words. There must be at least one conjunct-root in any conjunct, and there may be more than one, example (54) being a case in point. The same is of course true of gapped coordinations in which there are normally just two conjunct-roots per conjunct.

Although we can already generate conjuncts with more than one conjunct-root, this grammar will not in itself generate gapped coordinations because they clearly infringe ordinary dependency rules. Sentence (54) is well-formed because every word is part of a coherent dependency structure, and the dependency relations are distributed correctly among the conjunct-roots, as required by the DICS principle: the conjunct-roots coffee and tea share the dependency function ‘direct object of drinks’, and the conjunct-roots in (the morning) and in (the afternoon) share the function ‘post-adjunct of drinks’. Moreover, the remnants have copied-referents which match those of the replacees as required by the semantics of replacement.

But if we now look at our example (36), and our analysis of it, we find the grammar makes the wrong predictions.

(36) \{[John loves Jane] and
[Bill, Beth]\}.

In this sentence we are assuming that the first conjunct has a fully coherent dependency structure, but that the second conjunct has no external dependency relations at all (though each of the conjunct-roots could of course have been the root of a completely coherent string of words). We considered the possibility of taking Bill as subject of loves, and Beth as its object, and rejected it, leaving both these conjunct-roots without any head at all. But a very general rule requires every word to have a head, and is overridden only in the case of a few particular word-types (notably, finite verbs). This rule is infringed by both of the remnants in (36).

Against this background we have to answer a number of questions.
(a) How can we link the coordinate structure to the kind of structure which we have developed for replacements?
(b) How can we adapt the DICS principle so that the sharing found not
only in (36) but also in ungapped, external-sharing, coordinations applies across the board (or however is appropriate, bearing in mind the discussion of ATB phenomena in Section 2)?

(c) How can we adapt the DICS principle in order to permit structures like (36)?

4.2. Gapping and replacements

Each of the conjunct-roots in a gapped coordination is a replacer for some replacee in the first conjunct of the same coordination, and these replacees are in fact the ‘contrast-points’ which we discussed in Section 2. As we mentioned in the discussion of replacement the relations between replacers and replacees are relatively grammaticized in the case of gapping, so we can now turn to the grammatical rules which control them.

We start by distinguishing gapped strings from other kinds of word-string which can occur as conjuncts. Given that word-strings are not classified to show their possible dependency relations (as ‘noun-phrases’, ‘clauses’ or whatever), we are free to build an isa hierarchy of strings which reflects other differences which are relevant to the grammar of coordination. One such subdivision is that between GAPPED-STRINGS and others. Of course, if ‘gapped-string’ isa ‘string’ all generalizations that apply to the latter automatically apply to the former too, so there is no loss of generality.

(55) (a) gapped-string isa string.
(b) definition of conjunct of coordination is string.

The generalization in (55b) is an example of one which will apply, by inheritance, to gapped-strings.

Now we make a similar distinction between ordinary conjunct-roots and what we can, conveniently, call REMNANTS. The proposition in (56a) shows this relation:

(56) (a) remnant isa conjunct-root.
(b) gapped-string has many remnant.

Only gapped-strings can have remnants, and we assume that each such string has at least two (‘many’) of them (leaving open the possibility that processing constraints might limit the number to just two in most cases).

It will now be convenient to establish a direct link between the gapped-string and the root of the full clause – i.e. the conjunct-root of the first conjunct. This will allow us to refer directly to the latter when imposing the syntactic restrictions that are peculiar to gapping, and also in dealing with the semantic structure. We can call it the PRE-ROOT of the gapped-string.

(57) (a) gapped-string has a pre-root.
(b) pre-root of conjunct of coordination is conjunct-root of first-conjunct of itself.
If we apply this analysis to \(\{[\text{John loves Jane}] \text{ and } [\text{Bill, Beth}]\}\), then loves is pre-root of the gapped-string \([\text{Bill, Beth}]\).

Having provided ourselves with the concepts ‘remnant’ and ‘pre-root’, we can use them in establishing replacement links.

(58) remnant of string is replacer of X of pre-root of itself.

The ‘X’ in this rule is a temporary stop-gap to be replaced after we have discussed the syntactic constraints on the replacees – alias contrast-points – of a gapped construction. We can consider the constraints on the pre-root separately from those on the remnants.

(i) Pre-root. We saw in Section 2 that some kinds of word cannot be taken as the pre-root of a gapped-string. In particular, the discussion around (4) showed that a noun cannot be used in this way; and I made the simplifying assumption at that point that the gap always centres on a verb. We can now reconsider this simplification, in the light of examples like the following.

(59) (a) With \([\text{John keen on Mary}] \text{ and } [\text{Mary, on Bill}]\),

the holiday that the three of them are planning looks doomed to failure.

(b) With \([\text{John’s parents fans of Bach}] \text{ and } [\text{his sisters, of Beethoven}]\),

someone is always taking him to a concert somewhere.

In (59a), the gap seems to have the adjective keen as its root, and in (59b) it is the noun fans. A natural dependency analysis for an example like *with John keen on Mary* has John acting as subject of keen, so the latter is its predicate (as explained earlier); and both John and keen are complements of the preposition with. A similar analysis suggests itself, *mutatis mutandis*, for *with them fans of Bach*, and distinguishes this use of a noun clearly from the case considered in (4), where we found that gapping was not possible. What the examples in (59) have in common, which distinguishes them from those in (4), is that the noun (or adjective) which acts as pre-root for the gapped-string has a subject – i.e. it is used predicatively.

The same is of course true of most verbs, so we might assume that a word must have a subject if it is to act as pre-root. This is not quite right, however, because a verb without a subject can still act as pre-root. This can be seen in an imperative example like (60).

(60) \([\text{Always eat slowly}, \text{ never noisily}, \text{ and } \text{ sometimes moderately}]\).

At least as far as the surface structure is concerned – and that is all we are entitled to refer to in a monostratal theory – the verbs in (60) have no subject, and yet the second and third conjuncts are clearly gapped.

The conclusion must therefore be that the pre-root of a gapped-string must
satisfy either or both of two conditions: either it has a subject, or it is a verb.

(61) (a) pre-root of gapped-string has a subject.
(b) definition of pre-root of gapped-string is verb.

(ii) Remnants. In the standard examples the remnants have parallels on opposite sides of the pre-root, typically its subject and its object. However we have shown that both the parallels can precede the pre-root, as in example (3).

(3) [[In our house, the boys play bridge] and
[in your house, the girls]].

And it is even possible to construct examples in which both the parallels follow the pre-root; one such is (62).

(62) John [[treats his students well at work] and
[ his children at home]].

This looks remarkably similar to examples like (63), in which there is no gapping at all but just multiple external sharing:

(63) John treats [[his students well at work] and
[ his children badly at home]].

The crucial difference between these two examples is the absence of well from the second conjunct of (62), which is not explicable at all by the analysis of external sharing, and cannot be explained in terms of optionality (a manner adverb is obligatory after treat).

These examples suggest that any two dependents of the pre-root can serve as parallels for the remnants, that is as contrast-points. Let us now consider another aspect of the relations between contrast-points and pre-root: how closely related must the contrast-points be to the pre-root? In the examples just considered the contrast-points were dependents of the pre-root, but we have already seen that this need not be so; examples like (7b) show that at least the second contrast-point may be only remotely related to the pre-root.

(7) (b) [[John has tried to persuade Mary to accept his hand in marriage] and
[Bill, Jane]].

In this example the second contrast-point, Mary, is a subordinate of the pre-root has only by virtue of three intermediate subordinates: persuade, to and tried. It is easy to multiply such examples. However, it is also easy to find examples of similar separation between the first contrast-point and the pre-root; as in (64), for example.

(64) [[The criticisms of John were inaccurate] and
[ of Jane, irrelevant]].
Here the first contrast-point is of (Jane), which is not a dependent of the pre-root were, but of criticisms. In other words, the first contrast-point is a subordinate of the pre-root, but not a dependent of it.

It follows from the fact that each replacer is a separate conjunct-root of its conjunct, and therefore not subordinate to any other conjunct-root, that no replacee should be subordinate to another. Otherwise the rules allow any two (or more) words from a clause to be selected as contrast-points, a freedom which can be illustrated in paradigms like the following.

(60) (a) \{[On Wednesday, John sat on a chair for breakfast] and [on Tuesday, Bill ]\}.  
(b) \{[On Wednesday, John sat on a chair for breakfast] and [ Bill on a stool ]\}.  
(c) \{[On Wednesday, John sat on a chair for breakfast] and [ Bill for lunch ]\}.  
(d) \{[On Wednesday, John sat on a chair for breakfast] and [ Bill a stool ]\}.  
(e) ?\{[On Wednesday, John sat on a chair for breakfast] and [ Bill lunch ]\}.  
(f) \{[On Wednesday, John sat on a chair for breakfast] and [on Tuesday, for lunch ]\}.  

Once again there may be limits to the structural distance between a replacee and the conjunct-root, but I assume for the present that processing explanations will be found for these. For example, according to our semantic account of replacement the number of 'copied-referents' that have to be postulated goes up as the distance from the conjunct-root increases, because each node between the replacee and the top root has a separate one. This clearly adds to processing costs.

The most general conclusion regarding remnants, then, is that the contrast-points must be subordinates of the pre-root, but that no other strictly grammatical constraints apply. Strictly speaking, 'subordinate' is defined in WG in such a way that any word is a subordinate of itself (see e.g. Hudson, 1988c), so to make our rules compatible with this definition we must require the contrast-points to be subordinates of dependents of the pre-root.

(65) parallel of remnant of string is subordinate of dependent of pre-root of itself.

We now return to rule (58) to fill in the meaning of 'X'.

(66) remnant of string is replacer of subordinate of dependent of pre-root of itself.

Now that we have connected gapping to replacement, we can leave most of the work to the analysis of replacement which we discussed earlier. The
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rules for replacers will look after the syntactic compatibility of the remnants and the contrast-points (and their possible morphological incompatibility), and they will also produce a coherent semantic structure for each of the gapped conjuncts.

4.3. The DICS principle and ATB effects

The DICS principle, as presented in Hudson (1988a), consists of the following clause (the notion ‘function’ was not available in WG theory when the earlier paper was written, so this is a reformulation of the earlier version).

(67) Any syntactic function which crosses a conjunct-boundary in a coordination C must also cross every other conjunct-boundary internal to C.

This does not cater for gapped conjuncts, but we shall return to these in the next subsection. The important point for our present discussion is that (67) requires functions to be shared across the board.

If this is correct, then a sentence like (68) is ungrammatical.

(68) ? John has {[finished his thesis],
[taken it to the binder], and
[is impatient for the viva]}.

Unfortunately, as I noted in Section 2, many native speakers of English use sentences like (68) both in speech and in writing, and accept them as completely ordinary when asked to pass judgement on them. At the same time, of course, there are other speakers (myself included) who reject them as ill-formed. It seems that we must recognize two different sets of rules governing sharing, one requiring it to occur across the board, and one slightly less restrictive.

It should be noticed that the less restrictive variety is only slightly less restrictive than what we can call the ATB variety. So far as I know the varieties are similar with respect to binary coordinations, and would agree in rejecting standard examples like (69).

(69) *Who did you {[see] and [read a newspaper]}?

The differences emerge only when there are three or more conjuncts, but even here the non-ATB variety seems to recognize a clear rule, namely that one conjunct cannot share a word which is not shared by the previous conjunct. This rule is respected by example (68), in which the first two conjuncts share both John and is, while the third shares only John. It would not have been possible to reorder the conjuncts so that the third conjunct shared is but the second did not:

(70) *John {[has finished his thesis],
[is impatient for the viva], and
[  taken it to the binders]}.
It is possible that the difference between the two kinds of grammar is that between a ‘top-down’ approach which considers the coordinate structure as a whole, and a ‘left-to-right’ approach which considers only each pair of adjacent conjuncts. However, it would be somewhat more plausible, psychologically, to see both approaches as working on adjacent conjuncts, and to distinguish them according to the relation they required between the sets of elements shared by the two conjuncts. It is this latter view that we shall develop here, as we shall see that it will generalize more easily to gapped constructions.

Let us take it for granted that our grammar for coordinate structures generates structures in which adjacent conjuncts are linked by the relation ‘is PREVIOUS-CONJUNCT of’. This is not in fact dealt with in Hudson (1988a), but it is clearly an easy concept to define (and breaks no new theoretical ground because it is a kind of companion, like other companion relations already needed in coordinate structures – e.g. each conjunction is a ‘pre-linker’, which isa companion, of the next conjunct). The term ‘previous-conjunct’ is to be interpreted in the obvious way.

If a grammar requires sharing to apply across the board to all conjuncts, then each conjunct-root of one conjunct must be matched by a conjunct-root of any conjunct for which it is previous-conjunct. In terms of our earlier terminology, every conjunct-root of a non-final conjunct must act as a parallel of a conjunct-root of the next conjunct. If every conjunct obeys this rule, then the result will be that any shared function will be shared across the board. Rule (71) ensures this effect.

\[(71)\] conjunct-root of previous-conjunct of string is parallel of conjunct-root of itself.

If on the other hand a grammar is of the more liberal kind, it will simply require any conjunct-root to have a parallel in the previous-conjunct, without requiring the converse as well.

\[(72)\] parallel of conjunct-root of string is conjunct-root of previous-conjunct of itself.

According to this kind of grammar, sentence (68) is fine because each conjunct-root of a non-initial conjunct has a parallel in the immediately preceding conjunct, but (70) is out because the conjunct-root of the third conjunct, *taken*, has no parallel in the second conjunct.

What this discussion suggests, then, is that the so-called ATB effects are in fact the consequence of these constraints on adjacent conjuncts. In some grammars the result is that sharing must apply across the board, to all conjuncts, but in the liberal kind of grammar the term ‘across the board’ is an overstatement. Although the shared functions must (obviously) be shared by at least the first two conjuncts, they need not be shared by any remaining
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ones. The DICS principle can now be reformulated to take account of these differences, so instead of (67) we have (73) or (74).

(73) Any conjunct-root of a conjunct \( C_1 \) which is the previous-conjunct for some other conjunct \( C_2 \) must act as the parallel for a conjunct-root in \( C_2 \).

(74) Any conjunct-root of a conjunct \( C_2 \) which has another conjunct \( C_1 \) as its previous-conjunct must have a conjunct-root in \( C_1 \) as its parallel.

4.4. Gapped conjuncts

Finally we come back to gapping and address the question of how the DICS principle applies to gapped coordinations. We start with the simple example (36) again.

(36) {[John loves Jane] and [Bill, Beth]}. The second conjunct contains two conjunct-roots, but neither of these should have a parallel according to the rule in (73/74). According to this rule the parallel of one conjunct-root is always another conjunct-root, but the conjunct-root of the first conjunct in (36) is \( \text{loves} \). Does this matter? After all, we have already made provision for the semantic relations between the replacers and replacees without referring to the concept ‘parallel’, and sorting out the semantics was given earlier as the main use of the ‘parallel’ relation. However, we now have another use for it, namely in the rules for spreading shared relations across the coordinate structure.

Suppose we say that \( \text{John} \) in (36) is not only the replacee of \( \text{Bill} \), but also its parallel. This will allow rule (73/74) to apply to any later conjuncts as well as to the first two, thereby guaranteeing whatever ATB effects are needed for the grammar concerned. We can now predict that speakers who expect external sharing to apply across the board expect the same of gapping, and that liberality in external sharing will go with liberality in the sharing of gaps. As we saw earlier, examples like (12e) are accepted by some speakers but not by others.

(12) (e) {[Fred sat on a chair ], [Mary on a stool ] and [Bill sat on a bench]}.

If we treat the contrast-points as parallels of the conjunct-heads of the gapped conjunct, then this sentence is allowed by rule (74) but not by rule (73), because the gapped conjunct is the previous-conjunct of the third conjunct, but neither of its conjunct-roots is the parallel for a conjunct-root in the third conjunct.
More generally, the consequence of applying the notion of 'parallel' to
gapped coordinations is to take care of all coordinations with more than two
conjuncts, so that the analysis of binary gaps generalizes automatically to
more complex cases.

5. CONCLUSIONS

The analysis of gapping that I have offered is highly modular and involves
the interaction of three quite different areas of grammar:

(i) Dependency structure
(ii) Coordinate structure
(iii) Replacement structure.

Each of these modules can in principle apply without either of the others:

(i) Dependency structure only: ordinary non-compound sentences.
(ii) Coordinate structure only: coordinations of single words (e.g. {[John],
    [Bill], [Harry] and [Tom]}).
(iii) Replacement structure alone: a one-word correction of a one-word
    sentence (e.g. Sing! - no, whistle!).

Moreover, none of them is limited to apply only to a small set of structures
defined by either of the others. In short they are independent. Interestingly,
each module is based on a completely different organizing principle:

(i) Dependency structure: whole:whole relations between cooccurring
    words whose respective meanings are to be combined to form a coherent
    semantic dependency structure.
(ii) Coordinate structure: part:whole relations between conjuncts and
    coordinate structures, paralleling the semantic relation between members
    and sets.
(iii) Replacement structure: whole:whole relations between cooccurring
    words one of whose meanings is to be substituted for the other in a semantic
    structure.

In my earlier paper on coordination and grammatical relations (Hudson
1988 a), I discussed the way in which dependency structure and coordinate
structure interact. I suggested there that their interaction is controlled by one
principle, the DICS principle. The present paper has offered a reformulation
of the DICS principle - in fact, two alternative reformulations, each needed
for a different kind of speaker. More importantly, though, it has offered an
analysis of replacement, and discussed its interactions with the other two
systems.

What emerges from this discussion, I think, is that replacement is
subordinate to dependency, in the sense that the central rules for replacement
refer crucially to dependency structures, to the notions 'root' and 'function'
in particular. In contrast, the relation between replacement and coordination
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is more incidental, and there is certainly no sense in which either of them is built on the other. The only interesting area of overlap is in gapped coordinations, where a few special rules are provided to control their interaction: notably, the requirement that the root of the first conjunct must either be a verb or have a subject, and the rule that there must be at least two replacees. Neither of these restrictions seems to follow from anything else, so it would be interesting to know whether they apply to all languages.

The analysis which I have offered is quite parsimonious. It does not assign any structures other than a surface syntactic one and a semantic one. Nor does it assign to the first, complete, conjunct a structure which conflicts in any way with the structure it would have had if followed by non-gapped conjuncts (or by no conjuncts at all). At the same time it indicates directly the contrastive relation between the remnants and the corresponding phrases in the first conjunct, and also explains the syntactic constraints on them — why the remnants must in general be compatible with the syntactic context of the phrases they replace, and why exception is made for the morphological rules about pronoun-form and verb agreement.

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