Double Objects, Grammatical Relations and Proto-Roles

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Abstract

In a sentence like *We gave them sweets*, which of the noun-phrases after the verb follows the same rules as the object of an ordinary single-transitive verb? It is widely believed that the possibility of passivizing *them* proves that this is the 'ordinary object', but a review of ten differences between *them* and *sweets* shows that passivization is the only one that supports this analysis. All the others show unambiguously that the ordinary object is the second one, contrary to what is generally assumed in modern analyses. I argue that this alignment cannot be shown without treating grammatical relations (such as 'indirect object') as basic categories. I then explain why indirect objects can separate the ordinary object from the verb, and also why they are so easy to passivize, by referring to Dowty's theory that the proto-roles 'proto-agent' and 'proto-patient' are used to map semantic roles onto syntactic subjects and objects.

1 Introduction

This paper is about the 'double-object' construction in English, as found in sentences like (1).

(1a) Ann gave [Fred]$_1$ [a book]$_2$
(1b) They spared [the widow]$_1$ [a trial]$_2$.
(1c) He built [his children]$_1$ [a tree-house]$_2$.

For simplicity I shall refer to the relevant parts as O1 and O2, meaning the first and second objects. This simple terminology will work well in virtually every case because of one of the properties which requires an explanation, the fixity of their surface order.

The double-object construction is of great interest to theoretical linguists for a number of reasons. One is that it challenges the claim that all functional categories can be defined configurationally, if by this is meant a definition in terms of just the category of the phrase concerned and of its mother. The problem is that on the simplest analysis (in which O1 and O2 are both sisters of the verb) both O1 and O2 are NPs which are daughters of the same mother (V' or VP), so they cannot be distinguished. We shall review below the reasons

why they must be distinguished, and some reasons why a purely configurational definition won't do.

The reverse problem is that of showing the similarities between each of these objects and some element found in other constructions. First, which of them is more similar to the single object found in monotransitive examples, which I shall call OO (for 'ordinary object' - or for 'object which is neither first or second')? I shall suggest that, contrary to many recent analyses, it is O2 that has the most similarities to OO, and that O2 and OO should therefore be treated as a single function.

Secondly, we must face the fact that in some sentences the O1 is more like an adjunct than a complement. For example, there are similarities between *his children* and *for his children* in (2).

(2a) He built [his children]$_1$ [a tree-house]$_2$.
(2b) He built [a tree-house]$_0$ for his children.

But *for his children* is clearly an adjunct, so how do we explain the apparently complement-like behaviour of *his children* in (2a)? Once again I shall advocate a non-configurational approach.

2 O1 and O2 compared with OO

The question is how the O1 and O2 of examples like (3a) relate (if at all) to the OO of (3b), and furthermore how O1 in (3a) relates to the prepositional phrase (PP) in (3c).

(3a) Ann gave [Fred]$_1$ [a book]$_2$
(3b) Ann met [Fred]$_0$.
(3c) Ann gave [a book]$_0$ [to Fred]$_{PP}$.

We can distinguish four traditions in the history of syntax.

1: Until the advent of transformational grammar the answer was that O2 = OO. This is reflected in the traditional term 'indirect object', which was applied to O1 but never to OO (or O2), whereas 'direct object' could be applied to either OO or O2, though OO was more often called just 'object'. Unfortunately 'indirect object' was used as a semantic category, which meant it could also be applied to prepositional phrases like *to Fred* in (4).

(4) Ann gave [a book]$_0$ [to Fred].

As Faltz (1978) rightly pointed out, this led to a great deal of confusion and it would have been much better to use a term like 'beneficiary' for the semantic role, reserving 'indirect object' for purely syntactic purposes. This would allow one to compare the surface realisations of beneficiaries in different languages and distinguish structures like those in (3a) and (4) as distinct realisations of the same semantic role. In this tradition, then, the alignments were as follows:

(5a) O2 = OO = (direct) object
(5b) O1 = PP = indirect object

This tradition can still be found in Matthews (1981: 129).

2: This tradition has been continued by some modern linguists, but without the link between O1 and PP. That is, O2 and OO are still merged as the '(direct) object', in contrast with the indirect object O1, but this is also contrasted with its synonymous PP counterpart (where such exists); in other words, 'indirect object' is a strictly syntactic category, not a semantic one. These are the alignments:

(6a) O2 = OO = (direct) object
(6b) O1
(6c) PP

This analysis seems to be particularly attractive to British linguists such as Huddleston (1984: 196), Quirk et al (1985: 54, 59) and myself (Hudson 1990: 234), though it is also defended by Ziv and Scheintuch (1979).

3: The transformational tradition has produced two kinds of analysis. In the early days there was a transformation called 'Dative movement' which converted PP into O1. The resulting structure contained two NPs as sisters of V, so it didn't distinguish their functions, and neither did it make explicit whether either of them had the same function as OO. On the other hand it did link O1 to the underlying PP, and O2 to the underlying OO.

(7a) OO = [NP, VP]
(7b) O1 = [NP, VP] < PP
(7c) O2 = [NP, VP] < OO
(7d) PP

This tradition is found in works such as Akmajian and Heny (1975: 183ff), but it also underlies the important analysis of Dowty (1982)[1].

[1] According to Dowty, a direct object can be defined (universally) as a term (i.e. NP)

4: The early 1970s saw the rise of interest in the question whether transformations changed grammatical relations, and the beginnings of Relational Grammar, a theory specifically concerned with relation-changing transformations (Blake 1990). Its originators, Perlmutter and Postal, argued that it was essential to take grammatical relations as primitives, and they suggested a small universal set of relations: subject, direct object and indirect object (labelled 1, 2 and 3 respectively). Building on the Dative movement transformation they claimed that in the underlying structure our PP was a 3, but that its relation (i.e. in our terms, its grammatical function) changed to a 2 in surface structure. This '3 to 2 advancement' meant that the original 2 (i.e. our O2) was 'demoted' to the relation 'chômeur' (an 'unemployed' 1, 2 or 3) - i.e. it fell outside the scheme of basic complement relations.

(8a) OO = 2
(8b) O1 = 2 < 3
(8c) O2 = chômeur < 2
(8d) PP = 3

The important step here is the explicit decision that O1, rather than O2, is the same as OO at surface structure.

As Dryer (1986) points out, this analysis replaces the distinction between direct and indirect objects by a completely different one between 'primary' and 'secondary' objects (a terminology adopted in Chomsky 1981: 94). The primary object of a transitive verb is of course its only object, but that of a ditransitive is the one nearest to it. According to Chomsky, this means that O1 receives Case from the verb in the usual way, on the assumption that this kind of Case is assigned only to adjacent phrases; but that O2 receives 'a secondary Case'.

An interesting precursor of Chomsky's analysis can be found in Emonds (1976: 80), which derives V - O1 - O2 from V - O2 - PP, but which argues that if the transformation is structure-preserving it must simply swap the positions of the two NPs, which means that O2 is actually inside PP (with a

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which combines with a transitive verb to make it into an intransitive one, while an indirect object is defined as a term that combines with a ditransitive verb to make it into a transitive one. Although this implies that the indirect object is more closely related to the verb than the direct object is, the obligatory application of 'right wrap' to all direct objects means that the basic indirect object is our PP. A verb that will allow OO + PP can then be converted by a lexical rule - actually, a pair of lexical rules - into one that allows O1 + O2. This is the sense in which O1 is derived from PP in Dowty's theory. However it is important to notice that O1 is also treated in other respects exactly like OO: it is the term which combines with a transitive verb to give an intransitive one, and which is located just after the verb by Right Wrap. It therefore shares the weaknesses of both our third and fourth analyses.

null preposition) at surface structure. This accentuates the difference in status between O2 and OO. Much more recently Larson (1988, 1990) has suggested an even more radical analysis in which O2 is treated as an adjunct of V', which again distinguishes it sharply from OO; but paradoxically, the analysis uses a latter-day version of Dative Movement without at any stage identifying O2 with OO.[2] What all these analyses have in common, then, is that they associate O1 with OO and dissociate O2 from OO.

This transformational tradition stemming from Relational Grammar is particularly important because it has set the pattern for virtually all subsequent work even in non-transformational theories. In Lexical-Functional Grammar it is explicit in the distinction between 'OBJ' (= OO or O1) and 'OBJ2' (= O2) (Bresnan 1982: 287), and in Head-driven Phrase-Structure Grammar (Pollard and Sag 1987: 174) by the ordering of complements in the verb's list of potential complements, where both OO and O1 occupy the same position (penultimate, just before the subject), and O2 is different (ante-penultimate in the list).[3]

The important question, of course, is who is right. It is true that the differences in analysis cannot be divorced from differences between the theories in terms of which the analyses are couched; for example, if a theory does not provide the apparatus needed for identifying O2 with OO, then either this option is wrong or the theory is wrong. This is precisely why the debate is important. Equally it could, in principle, turn out that the only way to choose among the alternative analyses is by invoking theory-internal principles; this conclusion will be forced on us if we can't find any relevant facts. However I think there are enough facts to make the choice on empirical grounds, which will allow us to draw appropriate theoretical conclusions afterwards.

I think we can probably drop the third analysis from consideration as it doesn't seem to be taken seriously by any transformational grammarians.[4] The

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[2] Larson's extremely abstract and idiosyncratic structures make it impossible to define grammatical functions in terms of configurations; for example an ordinary OO might be [NP, V'], as in *I saw Mary*, but the addition of an adjunct as in *I saw Mary yesterday* forces the OO into a completely different place in the structure, [NP, VP]. See Jackendoff (1990) for a discussion of this and other aspects of Larson's ideas.

[3] The idea of listing complements in order of decreasing obliqueness, which is so important in HPSG, derives from Dowty's theory mentioned earlier. However there is a crucial difference in the way the idea is applied to ditransitives, because in HPSG our O1 is identified with OO, whereas in Dowty's original it is identified with PP. Confusingly, Pollard and Sag refer to our O1 as the 'direct object' (ibid p. 175).

[4] It is true that Larson (1988) defends the basic idea of Dative Movement, which was that O1 is derived from PP, but his analysis is so different in detail from the original Dative Movement that it doesn't really count as an example of this analysis. In particular

problems are well known; in particular, how to accommodate lexical idiosyncrasies between verbs like GIVE, PRESENT and DONATE in a transformational analysis. This leaves us with just three candidates.

3 What are functional categories for?

Before we can evaluate the remaining analyses we have to be clear about what our aims are. It is all too easy to fall into the taxonomic trap of discussing analyses without considering the grammars that would generate them. We have to remember that any choice among alternative analyses for the same sentence implies a choice among alternative grammars for the language concerned - which may in turn imply a choice among alternative general theories of grammar. The question, then, is which of our four analyses is produced by the best grammar.

The choice before us involves the functional categorisation of the various kinds of objects. We are not concerned with whether they are NPs or PPs, for example[5], but with their relations to the rest of the sentence. This is what is generally called their 'grammatical function' (or 'grammatical relation'). The theoretical status of grammatical functions is an important matter for debate, and I shall discuss it below, but what is beyond debate is that grammatical functions need to be shown. And of course if they need to be shown, then they also need to be correct; so it is just as important to decide whether two phrases have the same grammatical function as it is to decide whether they belong to the same non-functional category (e.g. NP). And as we have seen this requires us to consider the consequences of alternative analyses for the grammar. What we most emphatically cannot do is to rely on traditional analyses just because they are traditional.

Bearing these rather obvious principles in mind we can now eliminate the first of our four analyses, the one in which O1 and PP are identified.[6] The only

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he distinguishes O1 from O2 at all levels by giving them different places in structure. He tries to explain the idiosyncratic differences between verbs like GIVE, PRESENT and CONTRIBUTE in terms of their respective semantic roles, but Jackendoff (1990) points out serious weaknesses in this part of his analysis.

[5] The question of non-functional labels comes up very indirectly for a few analyses. Emonds (1976) treats O2 as a PP with a hidden P; and of course in theories that recognise Case for English it is possible to assign different Cases to O1 and to O2, though so far as I know this possibility hasn't been exploited. I should also note that in GPSG our PP is given the type NP (Gazdar et al 1985: 205).

[6] Linguists used to Phrase Structure Grammar may wonder why I am taking the first analysis at all seriously, as O1 and PP could not have the same grammatical function in

motivation for this, as far as I can see, is that traditional grammar applies the term 'indirect object' to both O1 and PP. I doubt if any linguist would want to defend this analysis nowadays, but perhaps I should make the case against it explicit. A more detailed critique can be found in Faltz (1978).

The reason for identifying O1 and PP is that with some verbs they have the same semantic role. For example, (9a) and (9b) are synonymous.

(9a) Anne gave $[\text{Bill}]_1$ $[\text{a present}]_2$.
(9b) Anne gave $[\text{a present}]_0$ $[\text{to Bill}]_{PP}$.

One problem is that we can't use this semantic role as a defining criterion for 'indirect object' if we want this category to include all of our O1s as well as some PPs. Suppose we call the role 'receiver', and define it as follows:

(10) If R is the receiver of X at time T, then at time T R does not have X but at some later time R will have X.

The trouble is that each of the following sentences contains an O1 which lacks one of the defining properties of a receiver:

(11a) John showed $[\text{Mary}]_1$ $[\text{his etchings}]_2$.
(11b) John envied $[\text{Mary}]_1$ $[\text{her brains}]_2$.
(11c) John denied $[\text{Mary}]_1$ $[\text{her rights}]_2$.

In (11a) Mary never 'has' the etchings in any sense; in (11b) she has her brains, but she already has them; and in (11c) she doesn't have her rights now but neither will she have them in the future. Worse still, by this criterion *Mary* and *upon Mary* would have to be recognised as indirect objects in (12).

(12a) John presented $[\text{Mary}]_1$ with his etchings.
(12b) John bestowed his etchings $[\text{upon Mary}]_{PP}$.

If all the supposed 'indirect objects' had some other properties in common then we could easily accommodate these semantic idiosyncrasies; for example *Mary* in (11a) would have enough other properties in common with both *Bill* and *to Bill* in (9) to justify lumping them all together as indirect objects. But

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any case; the definition of a grammatical function (according to Chomsky) takes account of the category of both the daughter and the mother, so [NP, V'] must be distinct from [PP, V']. The issue does however arise in the approach advocated by Dowty (1982), because there the only thing that counts is the position of the element concerned in the list of complements. Therefore if PP and O1 both occupy the same place in the list, they must (by definition) have the same grammatical function.

in virtually every respect other than their semantic roles O1 and PP follow quite different rules; the semantic role is the only thing that they have in common. Where O1 is a noun-phrase, PP is a preposition-phrase; where O1 has to precede O2, PP normally follows it; and where O1 is passivizable, PP is not. The facts are all familiar, and can easily be illustrated by the following examples.

(13a) Anne gave [Bill]$_1$ [a present]$_2$.
(13b) Anne gave [a present]$_0$ [to Bill]$_{PP}$.

(14a) *Anne gave [a present]$_2$ [the person she liked most of all]$_1$.
(14b) Anne gave [to Bill]$_{PP}$ [a present she had bought him]$_0$.

(15a) [Bill]$_1$ was given [a present]$_2$.
(15b) *[To Bill]$_{PP}$ was given [a present]$_2$.

Our conclusion must, therefore, be that the first of our four approaches is also wrong. The reason why it is wrong is very simple: its distinguishing characteristic is that it recognises a functional category 'indirect object' which includes both O1 and PP, but this category does no work in the grammar. There are no generalisations to be made about all indirect objects because there are no characteristics which are common to them all. This isn't just an example of a 'family resemblances' type of category, in which every example shares several properties with a central prototype but no property is shared by every single member. O1 and PP are quite different syntactically, so all the weight falls on the similarities of semantic role; but as we have seen not all O1s do in fact have the same semantic role. Calling PP and O1 both 'indirect object' is therefore like calling an active subject and the corresponding *by*-phrase in the passive both 'subject'.

4 Similarities between double and single objects

We are left with two candidates to choose from: the second one, in which O2 = OO, and the fourth one, where O1 = OO. This choice is a simple question of which one, O1 or O2, is the more similar to OO. Both analyses imply that at least one of the 'double' objects has enough similarity to OO to justify a shared category; and they presumably both imply that these similarities are unequally shared between O1 and O2, allowing a choice between them. We shall in fact see that this choice is easy to make.

What, then, are the facts? The following is a list of characteristics which OO shares with only one of the double objects. It may not be complete, but it is at least long enough to draw some fairly clear conclusions.

1: O1 passivizes almost as easily as OO, and more easily than OO.

(16a) Fred met [Mary]$_0$.
(16b) [Mary]$_0$ was met by Fred.

(17a) Anne gave [the children]$_1$ [those sweets]$_2$.
(17b) [The children]$_1$ were given [those sweets]$_2$ by Anne.
(17c) %[Those sweets]$_2$ were given [the children]$_1$ by Anne.

I have flagged (17c) with % rather than * because there are some people who accept such sentences quite happily. Examples (18a) and (18b) come from Jaeggli (1986: 596) and Anderson (1988: 300) respectively, and Dryer (1986: 833) also recognises that some speakers accept such sentences.

(18a) [A book]$_2$ was given [John]$_1$.
(18b) [A gold watch]$_2$ was given [Jones]$_2$ by the railway when he retired.

I also find both of (19a,b) in a very traditional grammar with nothing one could remotely call a theoretical axe to grind, Nesfield (1916: 46). And although (19c) comes from a linguistics article (Arbib and Hill 1988: 63) it is from the text and not one of the examples quoted.

(19a) [The fault]$_2$ was forgiven [him]$_1$ by me.
(19b) [Two pounds]$_2$ were allowed [him]$_1$ by us.
(19c) [No information]$_2$ is given [the model]$_1$ about word classes.

Nevertheless the fact remains that a large number of English speakers, perhaps a majority, find sentences like these much worse than those where the passive subject is O1.

On the other hand, not all O1s are equally passivizable. Once again opinion seems to be divided, but Emonds (1976: 78) quotes Fillmore (1965) as rejecting all passives which are based on O1s which are synonymous with a *for*-phrase. His own starred examples are the following.

(20a) %The visitors must have been found some food.
(20b) %His parents were carved a statue.
(20c) %Mary is being built a table by John.
(20d) %The guests have just been roasted a duck.

I have marked these with % because I find them all quite acceptable, but Emonds' judgements show that O1s are not quite like OOs even as far as passivization is concerned. It seems fair, then, to conclude that O1 is almost as

easy to passivize as OO, but that passivizing O2 is much harder and for some speakers may even be impossible under all circumstances.

2: OO and O2 both extract easily, but O1 doesn't[7].

(21a) Fred met [someone]$_0$.
(21b) [Who]$_0$ did Fred meet #?

(22a) We give [children]$_1$ [sweets]$_2$.
(22a) [Which sweets]$_2$ do you give [children]$_1$ #?
(22b) %[Which children]$_1$ do you give # [sweets]$_2$?

Here the similarities are reversed, with O1 less similar to OO than O2. The data are less than clear, but many speakers find sentences like (22b) much worse than those like (22a); for example when I collected judgements on (23a) at a meeting of the Linguistics Association of Great Britain, before presenting an earlier version of the present paper, thirteen native speakers rejected it and only one person was sure it was fine. (I am among the rejecters.)

(23a) %[Which authors]$_1$ did they give [a prize]$_2$?
(23b) %The girl [who]$_1$ I gave # [flowers]$_2$ is Mary.
(23c) %[My lawyer in the USA]$_1$ I send # [a telegram]$_2$ every month.
(23d) %[Which worker]$_1$ did you deny # [his paycheck]$_2$?
(23e) %[Who]$_1$ did you give # [a book]$_2$?

Extraction of O1 also seems to be rejected by Ziv and Scheintuch (1979), who classify sentences like (23b,c) as ungrammatical. Larson takes it for granted that extraction of O1 is impossible (1988: 355), quoting not only Ziv and Scheintuch but also Kayne (1983) and Whitney (1983). On the other hand, Barss and Lasnik (1986: 348) quote (23d,e) without querying their acceptability at all. And Jackendoff repeats these judgements without comment (1990: 428).

In short, opinion is divided over the possibility of extracting O1, but O2 seems as easy to extract as OO. Somewhat unexpectedly, however, I find that extraction **out of** O1 - i.e. in dependency terms, extraction across O1 - is acceptable to everyone I have asked, including those who reject extraction of O1 itself. A plausible example is (24a):

(24a) Which book shall we give [the author of]$_1$ [a prize]$_2$?

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[7]Where an element is extracted I put '#' in the place where it would have occurred if it had not been extracted. I think readers may find it helpful, but they should not draw any conclusions about the theoretical status of #. In particular, # is not an empty category or trace, such things being excluded in principle from Word Grammar.

(24b) Which authors do you think # will get prizes?
(24c) *Which books do you think [the authors of #] will get prizes?
(24d) When did you fall asleep #?
(24e) ?Which lectures did you fall asleep [during #?]

This is unexpected because extraction of the whole is usually easier than extraction of a part - e.g. both subjects and adjuncts can extract in toto, as in (24b, d), but constitute more or less inescapable islands for partial extraction (24c, e).

3: O2, but not O1, can follow a particle as easily as OO can.

(25a) The secretary sent out [a schedule]$_0$.
(25b) The secretary sent [the stockholders]$_1$ out [a schedule]$_2$.
(25c) %The secretary sent out [the stockholders]$_1$ [a schedule]$_2$.

Once again we find variation among speakers. The most thorough study of this variation that I know is in Emonds (1976: 82-3), who finds that (25b) is impeccable for everyone, but some people reject (25c). These examples are repeated by Jacobson (1987), who finds (25c) fine; for me, however, (25c) is awful.[8]

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[8]A separate question is whether a particle can follow O2. Both Emonds and Jacobson think this is not in general possible, though Emonds recognises that it depends on the particle, with BACK sometimes being possible in this position. My own judgement on examples like (i) is that they are impeccable.

(i) I gave [John]$_1$ [his money]$_2$ back.

I have the impression that most other native speakers share this judgement. This means that we cannot conclude that particles can't follow O2, so we must at least make sure that our general theory allows this pattern in principle (contra Jacobson). We are left, of course, with the problem of explaining why so many people reject sentences like (ii).

(iia) *The secretary sent [the stockholders]$_1$ [a schedule]$_2$ out.
(iib) *The teacher put [the children]$_1$ [the trucks]$_2$ together.

The obvious avenue to explore is an explanation in terms of the complexity and 'weight' of the combined object phrases. We already know that particles tend not to follow a single complex OO, as in (iii).

(iiia) The teacher put together [the trucks that the children were going to play with]$_0$.
(iiib) ??The teacher put [the trucks that the children were going to play with]$_0$ together.

4: O2 can be moved by Heavy NP Shift as easily as OO can, but this is quite impossible for O1.

(26a) Fred met [Ann]$_0$ on Sunday.
(26b) Fred met on Sunday [someone he hadn't seen since he was in college]$_0$.

(27a) Fred gave [Ann]$_1$ [some flowers]$_2$ on Sunday.
(27b) Fred gave [Ann]$_1$ on Sunday [some lovely flowers that he'd bought in the market the day before]$_2$.
(27c) *Fred gave [some flowers]$_2$ [the girl he had met at the party the night before]$_1$.
(27d) *Fred gave on Sunday [the girl he had met at the party the night before]$_1$ [some lovely flowers that he'd bought in the market the day before]$_2$.

So far as I know there is absolutely no disagreement over these judgements; indeed the badness of examples like (27c) has been the starting point for most discussions of double objects. This example shows that O1 must precede O2, but (27d) shows more generally that it must also precede every other dependent of the same verb (save the particle, as we noted above). Unlike every other dependent of a verb, then, O1 cannot be delayed by Heavy NP Shift. However long and complex it may be, it has to be next to the verb.

5: In closely related languages such as German which have overt case-marking, O2 is typically accusative, just like a typical OO, whereas O1 is dative.

(28a) Ich kaufte [ein Buch]$_0$. 'I bought a book (ACC)'.
(28b) Ich gab [dem Jungen]$_1$ [ein Buch]$_2$. 'I gave the boy (DAT) a book (ACC)'.

6: O2, like OO, is always lexically specified in the verb's valency (alias subcategorization), but O1 often isn't. As has often been pointed out, the possibility of an O1 that means 'for ...' can be predicted on the basis of general rules. The following formulation of these rules is that of Jackendoff (1990: 447):

> The conditions on the double object are (1) that the verb must be a transitive verb of creation or preparation, and (2) that the created or prepared entity be intended to benefit the Beneficiary NP.

It would not be at all surprising if a pair of separate phrases counted as more complex than a single phrase containing the same number of words.

Jackendoff's examples are the following (with my annotations):

(29a) *Harriet jumped [the coach]$_1$ up and down.
(29b) *Susan ate [the audience]$_1$ [an apple]$_2$.
(29c) *Enrico sang [Luisa]$_1$.
(29d) Enrico sang [Luisa]$_1$ [an aria]$_2$.
(29e) Beulah peeled [Mae]$_1$ [a grape]$_2$.

The point is that it is extremely implausible that a verb such as PEEL is subcategorised as taking an O1, whereas it would be widely agreed that it does need to be subcategorised for an O2/OO.

Indeed, one could go further than this (as Jackendoff does), and claim that it would in fact be wrong to mention O1 in the subcategorisation for these verbs, because even the semantic role of the O1 is optional: 'There is nothing in the inherent meaning of singing an aria, peeling a grape, or fixing a sandwich that requires an intended Beneficiary - one could just be doing these things for the hell of it.'[9] In this respect the 'beneficiary' O1 contrasts very sharply with both O2 and OO, which always express a semantic role which is inalienable from the action; e.g. you can't just 'sing' without singing something, even though the object which normally identifies this something can be left unexpressed. In short, O1 with verbs like SING and PEEL is more like an adjunct than an OO.

7: Closely related to this difference is the fact that it is typically O2, not O1, that has the same semantic role as OO in those cases - the majority, in fact - where the same verb can occur with either one or two objects. This alternation is possible not only where O1 means 'for ...' but also when it means 'to ...', as with GIVE.

(30a) We gave [the children]$_1$ [sweets]$_2$.
(30b) We gave [sweets]$_0$.
(30c) *We gave [the children]$_0$.

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[9]Larson notes the same set of facts, though he uses them as evidence for a transformational relation between PP and O1. He quotes Marantz (1984) as pointing out that beneficiary O1 can be used even with a neologism such as the verb SHIN (meaning 'kick with one's shin'), as in (i).

(i) Elmer shinned [me]$_1$ [the ball]$_2$ during soccer practice.

He doesn't mention the important fact that the PP from which this must supposedly be derived can't be mentioned in the verb's subcategorisation frame either, for precisely the same reasons, which means that it must be an adjunct.

(The asterisk against (30c) means that it can't be interpreted as 'We gave the children something'.) It is true that there are a handful of verbs including TEACH, TELL and SHOW which allow OO to have the semantic role of either O1 or O2:

(31a) We told [the children]$_1$ [fairy stories]$_2$.
(31b) We told [the children]$_0$.
(31c) We told [fairy stories]$_0$.

But such verbs seem to be only a small minority, and so far as I know there are no verbs in which the main generalisation is reversed, i.e. for which OO can have the same semantic role as O1 but not that of O2.

Apart from a handful of verbs like ASK, SPARE, ENVY and SAVE, a very simple generalisation is possible: any verb which allows O1 + O2 also allows OO + PP, and assigns one semantic role (e.g. 'theme') to OO or to O2, and another one ('receiver' or 'beneficiary') either to PP or to O1.[10] This was, of course, the motivation for the old 'Dative movement' transformation, which gave the same status in deep structure to O1 and PP and to O2 and OO. It has become relevant once again since the widespread acceptance of the Uniformity of Theta Assignment Hypothesis (UTAH) of Baker (1988):

> Identical thematic relationships are represented by identical structural relations between the items at the level of D-structure.

Larson's analysis of double object constructions is an attempt to reconcile the UTAH with these apparently recalcitrant data (though he later agrees (1990) with Jackendoff that the UTAH is hard to take seriously for other reasons).

It is interesting to notice that these facts about O1 make it quite fundamentally different from O2 in the light of the distinction made in Bresnan (1982: 287) between 'semantically restricted' and 'semantically unrestricted' grammatical functions. If O1 allows (in general) only two semantic roles, receiver and beneficiary, then it cannot be semantically unrestricted, as Bresnan claims. In contrast, of course, she is quite right to classify O2 and subject as semantically unrestricted.

8: Another closely related difference between O1 and O2 is that O1 is typically a human, whereas O2, like OO, is typically non-human. This is perhaps

[10] Somewhat more precisely, if O1 has the semantic role 'beneficiary', which can also be expressed by *for* ..., then this role is not 'assigned' by the verb. As we noted a couple of paragraphs above, beneficiaries are similar to adjuncts, so if (as is widely assumed) adjuncts are not assigned semantic roles by their head, the same must be true of beneficiary O1s.

understandable where O1 is a beneficiary or a receiver, if we assume that people are more likely to do things for other people than for non-humans, and people are more likely to be 'owners', and therefore potential receivers, than non-humans. It is not surprising that O1 denotes a human if it has one of these semantic roles, so we might consider this fact to be nothing but an automatic consequence of the facts about semantic roles which we have already noted.

However it is interesting to notice that the same is also true of those cases where O1's semantic role is less plausibly defined as 'beneficiary' and 'receiver', as with verbs like ASK, DENY, SPARE and ENVY. With all these verbs too the natural O1 is a human, with a non-human O2:

(32a) We asked [her / ?it]$_1$ [a question]$_2$.
(32b) We denied [him / ??it]$_1$ [a place]$_2$.
(32c) We spared [her / ??it]$_1$ [any trouble]$_2$.
(32d) We envied [him / ??it]$_1$ [that success]$_2$.

It has often been pointed out that if a verb has two arguments, one of which is typically a human and the other a non-human, then the human tends to be denoted by the subject and the non-human by the object (e.g. Keenan 1976). In this respect, then, O1 shares characteristics with subjects, whereas OO is a very typical object.

9: Both O2 and OO are frequently part of an idiom which also involves the verb, but O1 rarely, if ever, is. For example there are plenty of idioms like GIVE / LEND O1 A HAND and GIVE O1 THE BIRD / THE COLDSHOULDER / A TASTE OF ONE'S MIND, where O1 is free to be any noun phrase, just as there are idioms like KICK THE BUCKET which consist of V + OO; but there are no idioms of the form V O1 O2, where O1 is fixed and O2 is free.[11] This is part of the evidence that Tomlin gives (1986) for his

[11] Larson notes (1988: 340, quoting Emonds (1972)) that there are idioms whose fixed elements are the verb and a prepositional phrase:

(ia) Lasorda SENT [his starting pitcher]$_0$ TO THE SHOWERS.
(ib) Mary TOOK [Felix]$_0$ TO THE CLEANERS / TO TASK / INTO CONSIDERATION.
(ic) Felix THREW [Oscar]$_0$ TO THE WOLVES.
(id) Max CARRIES [such behaviour]$_0$ TO EXTREMES.

However these examples are clearly irrelevant to double-object constructions as none of the prepositional phrases alternates with O1. These examples are puzzling, it is true, as they suggest a surprising close semantic link between a verb and a directional adjunct. The same puzzle presumably arises with the many verb + particle or verb + preposition idioms that English boasts, many of which seems to relate to directional and locative phrases (e.g.

universal principle of 'Verb Object Bonding': the principle that a verb is linked semantically to its object more closely than to any of its other dependents. Similarly Jespersen (1927: 279) is quoted by Anderson (1988: 295) as saying that O2 is 'more closely connected' with the verb than O1 is. What is odd about O1 is, of course, that the word order suggests that a verb is more closely linked to its O1 than to its O2, but facts such as idiom-formation suggest the reverse.

10: Lastly, we may recall a difference between O1 and O2 in their relation to infinitival adjuncts: O2, like OO, can provide an extracted object, but O1 can't. For example, consider (33).

(33a) I bought [it]$_0$ [to put # on the table].
(33b) He gave [her]$_1$ [it]$_2$ [to put # on the table].
(33c) *He gave [her]$_1$ [it]$_2$ [to cheer # up].

In the first two examples the object missing from the infinitive (indicated by the '#') is supplied[12] by the OO or O2. But in the third example we find that it can't be supplied by O1; i.e. (33c) can't mean 'He gave her it in order to cheer her up'. Once again O2 patterns like OO, but O1 doesn't[13]. cf Bach 1982]

RING UP, LOOK INTO, DEPEND ON).

[12] I assume that the relation between the object and the # in these examples involves extraction, as in the rather similar 'Tough movement' construction. The details of this analysis aren't relevant here.

[13]Dowty (1982: 102) says that Bach (1982) says that an infinitival purpose clause with a non-subject gap must be added to a transitive verb - i.e. must cooccur with an object. I have to admit that I can't find the relevant passage in Bach's article, though there is interesting discussion of examples like (i).

(ia) This book is to read # to the class.
(ib) Here's *Bambi* to read # to your children.

These examples show that my generalisation isn't the end of the matter, because the non-subject gap isn't supplied by an object.

It is worth pointing out that the generalisation which Dowty attributes to Bach is problematic for Dowty's own analysis, because it seems to predict that purpose infinitivals with non-subject gaps should be compatible with transitive verbs such as *give ... to Mary* as in (ii).

(ii) *We gave [a book]$_0$ [to Mary]$_{pp}$ to keep # out of mischief.

This completes my comparison of O1, O2 and OO. The findings are summarised in Table 1. What is striking about this table is that passivization is the only property which groups O1 with OO. There is no other evidence in favour of our fourth analysis, the one in which O1 = OO, and which is the most widely accepted at present. On all the other properties it is O2 rather than O1 that patterns with OO, as in the second analysis. On balance, then, it seems clear that the second analysis wins.

	Property	O1	O2	OO
1:	X passivizes easily	+	-	+
2:	X extracts easily	-	+	+
3:	X can follow a particle	-	+	+
4:	X can be moved by Heavy NP Shift	-	+	+
5:	X is accusative in a true case system	-	+	+
6:	X must be subcategorised for	-	+	+
7:	X has same semantic role as some OO	-	+	+
8:	X is normally non-human	-	+	+
9:	V + X may constitute an idiom	-	+	+
10:	X = extractee of infinitival	-	+	+

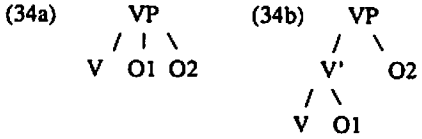
Table 1. Comparison among O1, O2 and OO

5 Some theoretical consequences

Merely listing ten properties is, of course, only a first step towards an analysis, and we shall take another step later in the paper. But before we do so it is worth considering some theoretical consequences of what we have found so far, namely that it is O2, not O1, that is like OO.

The conclusions concern the claim that grammatical relations can be defined configurationally, by a simple formula such as [NP, VP] as the definition for 'object' (our OO). If O1 and O2 are both daughters of VP or V', as in more traditional analyses, how can they be distinguished at all, let alone

distinguished in such a way as to align only one of them with OO? This eliminates (34a), so what about (34b) as an alternative? (For the sake of continuity in the argument I replace the usual category label 'NP' with my ad hoc functional labels 'O1' and 'O2'.)



The structure in (34b), suggested in Chomsky (1981: 171), does indeed distinguish O1 from O2, since they are [NP, V'] and [NP, VP] respectively. But this analysis faces a number of serious problems.

a. It wrongly aligns O1 with OO, which would also be [NP, V']. Moreover Chomsky underscores this alignment by insisting that O1 'receives structural Case ... in the normal way [from V]'.

b. The dominance relations between O1 and O2 are inverted. (This problem is discussed at length by Larson (1988).) According to (34b), O2 c-commands O1, but not vice versa, so O1 should be in the domain of O2 for various relations such as reflexive pronouns. It ought to be possible for O1 to be a reflexive with O2 as its antecedent, but the truth is in fact just the reverse of this:

(35a) *We showed [herself]$_1$ [Mary]$_2$ in the mirror.
(35b) We showed [Mary]$_1$ [herself]$_2$ in the mirror.

c. It breaks the link between subcategorization and sisterhood which was one of the most impressive and enduring insights of Chomsky 1965. This explained why verbs choose (lexically) how many complements, and what types of complement, they may have, and why they don't choose their subjects or their adjuncts in this way. According to (34b) the O2 is not a sister of V, but an 'aunt', so it ought not to be involved in subcategorization, but of course it is; for example, GIVE is distinct from LIKE, but the only difference between them according to (34b) is in whether or not they allow an 'aunt' NP.

d. It presents O2 as a 'specifier' of VP according to the definition of this term in Chomsky (1986: 3). This conflicts with two claims of the latter work: that in English specifiers precede their heads, and that the specifier of VP is in fact the subject. In other words, the analysis of double objects offered by Chomsky

in 1981 is incompatible with the analyses that he gives to other constructions in 1986.

The conclusion must, then, be that (34b) is also a failure. These two structures are the obvious candidates; some much less obvious ones are surveyed in Larson (1988), and Larson adds an even less obvious one to the range of possibilities, but none seems to come remotely near to offering a solution to our problem.[14] An important theoretical conclusion seems inescapable: at least some grammatical relations cannot be identified configurationally.

This conclusion shows that the most promising way to distinguish O1 from O2, and to align O2 with OO, is to use explicit grammatical relations as basic analytical categories. This solution is of course allowed by various theories, notably Lexical-Functional Grammar, Relational Grammar, Functional Grammar (Dik 1989, Siewierska forthcoming) and Word Grammar (Hudson 1990). However we have to recognise that in at least LFG and RG the existing analyses are tied explicitly to the assumption that O1 = OO, and it is unclear how easy it would be to untie them without serious ramifications for the rest of the theory.

6 Towards a solution

Before we move towards a solution, let us be clear what the problem is. We have seen that in most respects O2 is like OO, so the problem is to show this similarity without at the same time losing sight of the similarities between O2 and O1 (the fact that they are both noun-phrases following the verb) and between O1 and OO (the fact that both are easily passivizable). We should also recall that in at least one respect (denoting a human) O1 is similar to the subject. The challenge, then, is two-fold: to develop a theory of functional categories which will allow us to show that O2 = OO, but at the same time to explain why O1 is in some respects like OO, like O2, and also like the subject.

My solution builds on an interesting idea recently propounded by Dowty (1988). He suggests that people internalise two 'proto-roles', which he calls

[14] One possible way of patching up the configurational definition of grammatical relations would be to use the abstract Cases which are so widely accepted nowadays: subjects have nominative case, O1 has dative, and both O2 and OO have accusative. The configurational definition would then simply refer to the Case: subject = [[nominative], X], OO or O2 = [[accusative], X], O1 = [[dative], X]. This is such an obvious solution that there must be some very good reason why it has not been adopted, other than the (to my mind overriding) fact that there is no evidence whatsoever that English has Case (Hudson 1990: 231). Maybe the reason why this solution has not been explored is precisely that it is incompatible with the most widely accepted analysis of double objects, in which O1 = OO.

'proto-agent' and 'proto-patient' (which I shall call just 'agent' and 'patient' for short). The main work done by the proto-roles is to allow semantic structures to be mapped onto syntactic ones, since they allow a very simple generalisation: the agent is denoted by the subject and the patient by the object.[15] The generality of the proto-roles comes from their flexibility: each has a set of default properties, any of which may be overridden. In other words, each of them is a 'prototype'. This approach to categorization is of course familiar in those theories which use default inheritance and/or prototypes, and most obviously in the theory of Lakoff (1987), in Head-driven Phrase Structure Grammar (Pollard and Sag 1987), in Cognitive Grammar (Langacker 1987) and in Word Grammar (Hudson 1984, 1990).

In Dowty's theory, we assume that a predicate may have a number of arguments which may be identified in some way (independently of the proto-roles). The theory includes an 'Argument Selection Principle' which picks out one of these arguments as the agent, and (where relevant) another as the patient. This principle runs as follows:

> - The argument of a predicate having the greatest number of proto-agent properties entailed by the meaning of the predicate will, all else being equal, be lexicalized as the subject of the predicate.
>
> - The argument having the greatest number of proto-patient properties will, all else being equal, be lexicalised as the direct object of the predicate.

The properties of agents and patients include those listed in Table 2[16].

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[15]Dowty notes the similarities between this idea and the very general roles recognised in Foley and Van Valin's Role and Reference Grammar; cf e.g. Van Valin and Foley 1980.

[16]The list of agent properties is reminiscent of the much longer list in Keenan (1976) of properties of subjects. The most important difference between the two is that Dowty's characteristics are all 'semantic', whereas Keenan's list includes morphological and syntactic consequences of being a subject (e.g. subject-verb agreement and nominative case).

agent properties	patient properties
exercises volition	changes state
is sentient	is affected 'incrementally'
causes the event	is causally affected by the event
moves	is stationary
exists independently of the event	needn't exist independently of the event

Table 2. Properties of proto-agent and proto-patient

Dowty applies his theory convincingly to a wide range of interesting cases, including the so-called 'spray/load' verbs. He explains why sentence-pairs like (36) are not synonymous.

(36a) We sprayed [the wall]$_0$ with [the paint].
(36b) We sprayed [the paint]$_0$ on the wall.

This is because in each case it is the object NP, not the prepositional phrase, that is the incremental theme[17]. If the wall is the incremental theme, as in

[17]What Dowty calls the 'incremental theme' is the entity which is affected to the extent that the event is complete - completely affected when the event is complete, half affected when it is half done, and so on. For example, take sentences (i).

(ia) We built a house.
(ib) Fred ran a mile.

Sentence (ia) refers to an event which gradually led to the completion of a house, so the house is the incremental theme. In contrast, in (ib) the theme is Fred, but this is entirely affected at each point in the running; what is incrementally related to the running is the path covered.

The notion 'incremental theme' is important in the semantics of aspect, which is primarily concerned with questions about whether or not an event is complete. For example, consider the difference between the sentences in (ii).

(iia) He sang the song in two minutes.

(36a), then when the job is half done half the wall is sprayed.[18] Once the whole wall is sprayed, the job is done, even if some of the paint remains unused. If it is the paint that is the incremental theme, on the other hand, this relation is reversed; the job is finished only when all the paint is used up, even if part of the wall is unpainted.

The Argument Selection Principle says that a phrase will be the syntactic object of some verb V only if it is an argument of V and has more semantic properties in common with the (proto-)patient than any other argument of V does; and similarly for the subject, where the relevant properties are those of the (proto-)agent.

The main question which we have to address (but which Dowty doesn't pursue in detail) is what happens to the remaining arguments. In brief, what I shall suggest is that the O1 is an argument which has some characteristics in common with both the agent and the patient, but not enough of either to qualify as subject or OO/O2. This leads to the development of a compromise grammatical relation which is half-way between a subject and an object.

The question, then, is how Dowty's analysis of subjects and objects might be applied to double objects. This question actually breaks down into two separate questions, according to who we consider to be applying the analysis: the English-speaking community over the centuries, or the English-learning child. We shall start by taking the community perspective, and then turn to the individual later.

Consider the semantics of the most straightforward double-object verb of all, GIVE. This refers to an event which involves three participants:

(iib) ?He sang in two minutes.

The first sentence is fine because it contains an explicit incremental theme, the song. It is easy to decide when the event of him singing the song is complete simply by paying attention to the song. But how do you know when the event in (iib) is completed? The problem, of course, is simply that the target isn't defined, so you don't know when it has been reached.

[18]Actually the notion of incremental theme is a little problematic. For example, painting a wall may involve a series of actions, each of which affects the whole wall: namely, applying different coats of paint (the undercoat and a couple of top coats). So at a point half-way through spraying the wall with paint, the whole wall might have been equally affected by just one of the coats. I don't think this undermines Dowty's main point, which is that the object is typically affected incrementally; the complexity lies in the homomorphism between the event and this incremental effect, and what examples like this show is that the homomorphism may be related to the incremental them via some other incremental series.

a. the giver, typically a human;
b. the receiver, typically another human;
c. the gift, typically not a human.

In choosing the subject, the giver wins out over the other two candidates because it has all the five agent properties listed in Table 2 (including the property of moving; notice how hard it is to give someone something without moving at all.) This leaves the gift and the receiver to compete for the object status.

In this competition the result is a tie. The gift and the receiver seem to have the same number of patient properties from Table 2: both change their state (of ownership) because of the event, but whereas the receiver may well be stationary (a typical patient property), it is the gift that is affected incrementally. This can be seen from the next example.

(37a) He gave [his grandchildren]$_1$ [his fortune]$_2$ in two years.
(37b) He gave [his grandchild]$_1$ [his fortune]$_2$ in two years.
(37c) He gave [his grandchildren]$_1$ [his house]$_2$ in two years.

The event in (37a) is finished when all his fortune has been distributed, rather than when all his grandchildren have received some; so the sentence could have continued as *but one of his grandchildren received nothing*, but not as *but some of his fortune was left over*. In (37b) the fact that there is only one grandchild obliges us to understand the event as applying incrementally to the gift, not to the receiver. And (37c) is odd because it is hard to imagine how giving could apply incrementally to a single object such as a house; the fact that there are many receivers doesn't help.

If the gift and the receiver are equally good candidates for the status 'patient', why does the gift win (as it seems to do in most languages, with a few exceptions documented by Andrews 1985)? One possible explanation is that the list of patient properties is incomplete; if we were to add other properties it would turn out that the gift had more of them than the receiver. In particular if we were to add 'is not human' to the patient properties, this would favour the gift over the receiver. Another possibility is that what counts is not only the number of patient properties but also the number of agent properties: the more agent properties an argument has, the lower its chances of being taken as the patient. This too would disfavour the receiver as the patient.

because being a human is an agent property. There are other possibilities[19], but I shan't try to explore them in detail.

Whatever the reason, the gift is chosen in preference to the receiver as the verb's object. What it is most important to notice is that the properties which counted against the receiver in this competition are precisely those which qualified it as a candidate for choice as the subject - being human and existing independently of the event. This contrasts with other double-complement pairs such as the *spray/paint* verbs, where neither candidate for object status is particularly subject-like. In other words, the reason why the receiver is not chosen as the patient is because it is too agent-like. This fact will play an important part in my explanation for the idiosyncrasies of English O1s, which present the receiver as something between a subject and an object.

If the receiver can't be expressed by the verb's object, then how can it be expressed? The easy option is to use the same construction as is used for any other argument which is left over after the subject and object have been chosen: a prepositional phrase. This gives our PP, a phrase introduced by *to*. But this misses the fact that the only reason why the receiver failed to qualify as object was because it was too much like a subject. If we express the receiver as a prepositional phrase this puts it on a par with 'mere' adjuncts and oblique complements such as instruments and purposes. Ideally the receiver should be like the subject and object in being expressed directly by a noun-phrase, without an intervening preposition. This is of course the other option adopted in English: O1.

The status of the receiver as something between an agent and a patient also explains why O1 occurs where it does, in between the subject and the object. Interestingly, most languages position the expression of the receiver before that of the gift, where this order is not overridden by the need to put prepositional phrases after noun-phrases (Allen 1987, quoting Mallinson and Blake 1981).

To summarise the argument, then, the receiver is a candidate for both agent-hood and patient-hood, but is less agent-like than the giver and less patient-like than the gift, so it can't be expressed by either the subject or the

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[19]Another possible reason why the recipient is a worse patient than the gift has to do with the semantic structure associated with the concept 'give'. As I explain in Hudson (1990: 151ff) each concept which serves as the sense for a word (as 'give' does for the lexeme GIVE) is related to other concepts, which ultimately make up the whole of our conceptual structure. I assume that 'give' is related to other concepts via the relations 'giver', 'receiver' and 'gift', but it also has a 'result', namely the change of ownership. (Bach 1982 calls this the 'result state'.) This result is a new situation in which the receiver (and not the giver) owns the gift; and in this new situation it is very clear that the gift is the patient and the receiver is the agent (hence the distribution of subject and object relations with the verbs OWN and HAVE). The roles of the gift and the receiver in this closely related situation could be taken into account in deciding which of them to take as the patient in the 'give' situation itself.

object. On the other hand the fact that it has some properties of both agents and patients qualifies it clearly as a central argument which deserves expression by a noun-phrase rather than by a prepositional phrase; and the fact that it fails as a patient because of its agent-like features can easily be expressed iconically[20] by locating this noun-phrase, in terms of surface word order, between those which express the agent and the patient[21].

The other semantic role regularly associated with O1 is 'beneficiary', which can also be expressed by a *for*-phrase as in Jackendoff's examples quoted above (see (29)).

(38a) Enrico sang [Luisa]$_1$ [an aria]$_2$.
(38b) Beulah peeled [Mae]$_1$ [a grape]$_2$.

The semantics of these examples is much more complex, and I don't pretend to understand it[22]. However two things seem clear.

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[20]The idea that surface syntax can express semantic structures iconically has been espoused especially interestingly by Haiman in a series of publications such as Haiman (1983, 1985).

[21]The facts about receivers allow an interesting comparison between Dowty's Argument Selection Principle and hierarchical views of grammatical relations such as that of Relational Grammar or Head-driven Phrase Structure Grammar (Pollard and Sag 1987: 117ff).

According to the latter, a verb's arguments can be arranged on an 'obliqueness hierarchy', with the subject as the least oblique argument and adjuncts, or adjunct-like complements, as the most oblique ones. This is equivalent to a system in which all arguments are organised around a single pole, the subject, and are ranked according to how close they are to that pole. This hierarchy combines semantic and syntactic properties: the more subject-like an argument is semantically, the higher it is on the hierarchy of grammatical relations (and conversely, the lower its obliqueness is). If, as I have argued, receivers are more agent-like than gifts are, they must be higher than gifts on the hierarchy, so they should occupy the same position as objects of transitive verbs. But we have seen that this is not in fact so; O2 = OO, i.e. it is the gift, not the receiver, that is like the object of a transitive verb. The conclusion is, then, that an approach based on a single hierarchy such as the obliqueness hierarchy makes the wrong predictions.

Dowty's approach, in contrast, makes just the right predictions. It claims that grammatical relations are organised around not one pole, but two, the diametrically opposed poles of subject and object. This allows receivers to be more subject-like than gifts without thereby usurping the latter's grammatical function.

[22]In particular I can't decide how far to follow Wierzbicka (1986, 1988: 361ff) in believing in a unitary semantic treatment of recipients and beneficiaries. On the one hand we find that the beneficiary may also be the recipient:

(ia) We made [Fred]$_1$ [a cake]$_2$.

One is that the beneficiary is an argument, rather than a part of an argument - ie. its semantic relation to the verb is a direct one. For example if we compare sentences like (39), we find that coreference is impossible for the beneficiary but possible for the locative.

(39a) Enrico kept [a pizza]$_0$ for him.
(39b) Enrico kept [a pizza]$_0$ behind him.

As I have argued elsewhere (1984: 185, 1990: 299), this difference is easily explained if *for* has the same referent as *him*, and therefore as a codependent of *Enrico* cannot be coreferential with it (just as in *Enrico saw him*). In contrast, *behind* refers to a place, defined in relation to *Enrico*, so the latter's referent is not a co-argument of *Enrico* and coreference is allowed. In other words, the prepositional phrase introduced by *for* is semantically just like a noun-phrase, and might just as well be one (as its synonym, O1, is).

The other clear fact about beneficiaries is that they are typically humans, just like receivers; and since humanness is a characteristic of proto-agents, this qualifies beneficiaries too as candidates for agent-hood. Taken in conjunction with the other fact about beneficiaries being direct arguments, it is perhaps not surprising that they are picked out for special treatment along with receivers; but I recognise that these comments don't constitute a proper explanation of this fact.

Between them, beneficiaries and receivers account for almost all O1s. However it is interesting to look at the remainder, found with the verbs ALLOW, ASK, BEGRUDGE, BET, CHARGE, DEAL, DENY, ENVY, EXCUSE, FINE, FORGIVE, HIT, REFUSE, SAVE, SPARE and WISH[23]. None of these verbs allow O1 to be replaced by either *to* ... or *for* ..., and I think it would be hard to argue that their O1 always denotes either a receiver or a beneficiary, however loosely these categories were applied. However they

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(ib) She painted [me]$_1$ [a picture]$_2$.

In both these examples the assumption is that O1 defines both the beneficiary and the recipient, rather than forcing a choice between these interpretations. On the other hand, there are very few sentences where O1 could equally be converted into either to ... or for ..., as we might expect if these were alternative expressions of a single semantic super-category.

(iia) We made [a cake]$_0$ for / *to Fred.
(iib) We gave [a cake]$_0$ to / *for Fred.

[23]The list is as complete as I could make it, but I'm sure there are gaps, especially in verbs whose O2 is restricted (as is DEAL, whose O2 must be a blow). My list includes all those given by Quirk et al (1985: 1211).

all have one striking property in common: the entity referred to by O1 is typically a human, while O2 typically denotes a non-human (more precisely, an abstraction). When we look at the other properties of the human at O1, we come to just the same conclusion as we reached above in relation to receivers and beneficiaries: this person has fewer qualifications as the verb's agent than the one denoted by the subject, but more of them than the abstraction denoted by O2.

What I have tried to do in this section is to show that the denotatum of O1 is semantically similar to the typical agent in being typically human. It is not chosen as either subject or object because there are better candidates for both these proto-roles, but it is nearer to the agent prototype than the denotatum of the O2 is. Just as agents and patients map naturally onto subjects and objects (according to Dowty's theory), so there is a natural mapping for all these non-agent humans, onto a noun-phrase which stands between the subject and the object. I shall now apply this explanation to the details of the English O1.

7 A solution

In view of the evidence reviewed earlier I take it for granted that syntactic theory allows us to refer directly to functional categories including 'subject' and 'object'. I shall continue to use the function 'O1', but the traditional 'indirect object' will do just as well provided it does not include our PP (phrases introduced by *to* ...).

What should a grammar tell us about O1s? In the following discussion I shall present the rules in prose, because we don't yet understand the details sufficiently to warrant formalisation.

a. How many O1s are possible per verb? Answer: not more than one (although it is semantically possible for a beneficiary to combine with a receiver). Although with a few verbs (e.g. HIT, WISH) the O1 is obligatory, in general it is an option[24], but it is an option that does not exist for some verbs whose

[24]Randall (1990) claims that 'in a maximal projection, optional elements are attached outside of obligatory elements'. She recognises that double-object constructions threaten this generalisation, but argues that although O1 seems to be optional, this is actually an illusion produced by the fact that O1 + O2 alternates with O2 + (PP), where the PP is optional. The crucial examples here are those double-object constructions which don't alternate with O2 + PP, such as those after ASK and ENVY:

(ia) We asked [Mary]$_1$ [a question]$_2$.
(ib) *We asked [a question]$_0$ [to/for Mary].
(ic) We asked [a question]$_0$.

meanings involve a receiver (e.g. DONATE). As we have seen, the possibility or otherwise of an O1 expressing a beneficiary depends on whether the verb has an object which is 'created or prepared'.

b. What semantic roles do O1s express? Answer: receiver, beneficiary, and whatever semantic roles are associated with verbs like ENVY and HIT. Some of these mapping rules are unique to individual lexemes while others - in particular the ones for beneficiaries - apply to verbs in general.

c. What kinds of phrase can be O1s? Answer: noun-phrases. In a case language, one could specify the case as dative.

d. Do O1s belong to any more general type of function? Answer: yes, they are reasonably clear complements because of (a) (the limit of one per verb) and (c) (the fact that the possibility or otherwise of an O1 varies with the verb's lexeme), in spite of the adjunct-like and subject-like tendencies that we have noted.

e. Where do O1s occur? Answer: Being complements (as just noted), they must follow the verb; but being more subject-like than objects, they must precede the object. Now the most interesting question arises: precisely how should this order of words be arranged?

Before we address this question, let us return to the main problem of this paper: how to explain the restrictions on O1s which make them in some ways similar to ordinary objects, but in so many other ways so different. Here is a summary of what remains to be explained:

(40a) O1s cannot be delayed by Heavy NP shift.
(40b) %O1s cannot follow a particle.
(40c) %O1s cannot extract.
(40d) O1s do allow their dependents to be extracted across them.
(40e) 'Receiver' O1s can be passivized.
(40f) %'Beneficiary' O1s can be passivized.
(40g) %OOs cannot passivize when accompanied by an O1.

(The facts prefixed with '%' are not true of all speakers.) The analysis developed so far already explains all the other facts summarised in Table 1 and in the discussion of section 3. A set of relevant examples is given in (41).

These verbs allow O1 to be either present or absent, showing that double-object constructions are indeed a threat to Randall's claim.

(41a) *We gave [sweets]$_2$ [every child who came to the party]$_1$.
(41b) %The secretary sent out [the stockholders]$_1$ [a schedule]$_2$.
(41c) %[Which authors]$_1$ shall we give # [a prize]$_2$?
(41d) Which books shall we give [the authors of #]$_1$ [a prize]$_2$?
(41e) [The children]$_1$ were given [sweets]$_2$ by the teachers.
(41f) %[The visitors]$_1$ must have been found [some food]$_2$.
(41g) %[Those sweets]$_2$ were given [the children]$_1$ by the teachers.

The immediate question, then, is precisely how to formulate the rule which positions O1 before OO. I shall suggest that various slightly different answers are possible, and are each included in the grammars of a different range of speakers. I assume that a grammar will generate all the sentences in (41a-d) unless prevented from doing so by whatever restrictions apply to O1. The passive sentences raise special problems to which we shall return below.

First, suppose the answer is (42).

(42) O1 must precede O2.

This correctly prevents Heavy NP shift of O1 but otherwise allows all the active sentences in (42). It belongs to the most liberal dialect.

Now suppose we replace (42) by (43).

(43) O1 must precede all other postdependents.

Here 'postdependent' includes all complements and also all adjuncts which normally follow the verb (Hudson 1990: 189ff). This has much the same effect as (42), since O1 always occurs with an O2, and O2, *qua* OO, has to precede almost all other postdependents. The 'almost' here acknowledges the fact that an object may be preceded by a particle. Rule (42) allows O1 to follow a particle (on the assumption that particles are allowed to precede OO/O2), but rule (43) makes O1 precede them, along with all the other postdependents. Therefore (43) excludes sentence (41b).

A third possibility is rule (44).

(44) O1 must be immediately after the verb.

This would again have the same effect as (42) and (43) in the majority of cases, but it adds the extra restriction that O1 cannot be extracted, because it would then precede the verb. This rules out example (41c) as well as (41b), but of course it still allows extraction out of O1, as in (41d). Rule (44) therefore defines the most restrictive dialect for active sentences.

Are there any other possible rules for putting O1 before O2? In the absence of any further ideas we may assume that there aren't, in which case we have

an interesting and testable hypothesis: there is no imaginable rule which bans extraction without also banning a particle before O1. In other words, anyone who rejects (41c) must also reject (41b). It remains to be seen whether this is true.

The remaining problems concern passive sentences:
a. If O1s are not objects, how is it that they can be passivized so easily (sentence (41e)), especially if the rule for putting O1 before OO also puts it after the verb (44)?
b. Why is passivization easier for receivers than for benefactives (41f)?
c. Why is passivization so difficult for ordinary objects when accompanied by O1 (41g)?

These questions all take us back to the earlier discussion of proto-agents. We saw that O1 is potentially a reasonably good agent because it is typically human, and fails to qualify as the agent only because a better candidate is available. But the situation is quite different when a verb is passive because its ordinary agent is demoted from the subject link, which means (somewhat crudely speaking) that we start the hunt for an agent all over again. This time the O1's referent has no competition, so it wins hands down as a reasonably good agent in its own right. When we have filled in a few gaps in the argument this will explain why O1 makes such a good passive subject, and why O2, in contrast, makes such a poor one.

Any theory has to have some equivalent of the rule in (45) for promoting objects into subject position.

(45) The subject of a passive verb also has the characteristics expected of its object.

The way in which this rule is expressed differs in important ways from theory to theory - as a particular case of a much more general rule (GB) or as a rule which achieves just this effect and no more (LFG, HPSG, GPSG, RG); as a 'lexical' rule, which operates only on lexical subcategorisation entries (LFG, HPSG) or as a transformation or metarule which operates on complete syntactic structures (GB, GPSG, RG); as a rule which changes the object function into the subject function (all these theories) or as one which merges the two (Word Grammar); and so on. In this paper I am not concerned with matters such as these, important though they are, but rather with a more pre-theoretical level of analysis.

The rule in (45), as it stands, leaves all our problems unsolved, because it leads us to expect that O2 will passivize easily, and O1 not at all, whereas the facts are the reverse of this. Suppose we now change (45) slightly, replacing the word 'object' by the more general function 'complement'.

(46) The subject of a passive verb also has the characteristics expected of one of its complements.

(I had to add 'one of' because some verbs have more than one complement, whereas no verb has more than one object.) In most cases this will have precisely the same effect as (45) if we assume that a subject must be a noun-phrase or a noun-clause. On this assumption, complements such as particles and prepositional phrases will not qualify as subjects. Let's assume, furthermore, that a predicative noun-phrase (e.g. *a linguist* in *He became a linguist*) has the wrong kind of semantic structure for any function other than predicative[25], which means that it cannot passivize.

The rule in (46), plus the auxiliary assumptions, mean that any noun-phrase or noun-clause which is a complement should be able to passivize, regardless of whether it is an object; and in particular, it allows O1 to passivize. This solves one problem: passivization is possible for O1 because passivization isn't restricted to objects[26]. In other words, contrary to what most of us have assumed hitherto, the fact that O1 passivizes is quite irrelevant to whether or not it is an object.

Why then is O1 so much better than O2 as a passive subject? The obvious explanation is that O1, but not O2, refers to a human, and humans make the best subjects. As I have already emphasised, their humanness makes O1s subject-like to the extent of being located between the subject and the object; but passives offer O1 a chance to be the real subject, because the active subject

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[25]For one suggestion as to what the semantic structure of a predicative noun is, see Hudson (1990: 132f).

[26]Unlike most other linguists, I don't believe we are likely to find a single rule which handles all passive promotions, including those in prepositional passives like the following (Hudson 1990: 346ff).

(ia) This bowl has been eaten from.
(ib) *This bowl has been eaten porridge from.
(ic) He has been made fun of.

The first two examples show that the preposition must be next to the verb, but (ic) shows that this need not be so if the separator is part of an idiom. Similarly in (ii).

(iia) This paper has been written on one side of.
(iib) *This table has been written on one side of.
(iic) He is expected to come late.

The first two examples show that the passive subject must be actually affected by the action, but this does not apply to (iic), where the passive subject has no semantic relation whatsoever to the passive verb.

is demoted to an optional *by*-phrase. What, then, could be more natural than for O1 to take over the subject role in preference to O2?

In order to make this explanation work we must add another auxiliary assumption:

(47) A subject typically refers to a human.

In most cases this assumption follows automatically from Dowty's Argument Selection Principle, since humanness[27] is one of the properties of agents and the agent is normally mapped onto the subject. Given this regular link between the subject and the agent it would not be surprising if some of the agent's features rubbed off onto the referent of the subject, so that they were available in those cases where the subject is not in fact the agent. This arises in particular in passives, because in a passive sentence like (41e), *[The children]$_1$ were given [sweets]$_2$ by the teachers*, the agent is denoted by the *by*-phrase. This leaves the subject free to be defined by some complement noun-phrase (following the analysis above), so (47) selects, where possible, a subject that refers to a human - i.e. O1, rather than O2. This explains, then, why O1 is a better passive subject than O2.

Why are receivers somewhat better passive subjects than beneficiaries? Here we may make a rather similar set of assumptions, but this time about the subjects of passives. The typical passive subject is of course an object, and an object typically denotes the patient. Consequently we may imagine some of the properties of agents rubbing off onto the referent of a passive subject. These properties include being causally affected by the event, and undergoing a change of state. Both these properties are true of receivers: if I receive something then my state does change, from not having it to having it, and therefore I am causally affected. But the same is not so obviously true if I am a beneficiary. For example, consider

(48a) They must have found [the visitors]$_1$ [some food]$_2$.
(48b) %[The visitors]$_1$ must have been found [some food]$_2$.

Ultimately the food presumably benefitted the visitors, but their state wasn't immediately changed at the time of the finding; indeed it is quite easy to imagine circumstances in which the food never reached them:

[27]Actually Dowty's principle refers to the agent 'being sentient', but I have assumed throughout this paper that this should be strengthened to 'being human'. It may be that the two claims amount to the same thing, if being sentient is a matter of degree and humans always rank highest in sentience.

(49) They must have found [the visitors]$_1$ [some food]$_2$, but unfortunately everyone was killed by an avalanche before they had time to give them the food.

One explanation, then, for why some people feel unhappy with sentences like (48b) is that they have internalized a rule which favours affected passive subjects:

(50) The subject of a passive verb changes state and is causally affected by the event.

The one outstanding problem concerns the interaction between these rules for passives and one of the three rules that I suggested for locating O1 before O2, rule (44): O1 must be immediately after the verb. This rule doesn't just stop O1 from occurring after a particle or O2, but it also stops O1 from ever being the subject of a passive verb, which is clearly wrong. It is easy to stipulate that rule (44) doesn't apply if O1 is also a subject:

(51) If O1 is a subject it does not immediately follow the verb (i.e. rule (44) doesn't apply).

But if this rule is needed to patch up the effects of (44), why should anyone bother to postulate (44) in preference to its two alternatives, especially given the extremely slender evidence in favour of (44)?

Somewhat unexpectedly, the answer may lie in the grammar of inverted subjects. It seems that when a subject and an auxiliary verb are inverted (as in questions, etc.), then the same restriction applies to the inverted subject as to O1: it must not be separated by anything at all from the verb. This can be seen from examples like the following.

(52a) He may well be right.
(52b) Not only may he well be right, but ...
(52c) *Not only may well he be right, but ...

Notice that *well* must depend on *may*, and not on *be*, because it collocates with the former and modifies it semantically.

(53a) She hasn't finished.
(53b) Hasn't she finished?
(53c) She has not finished.
(53d) Has she not finished?
(53e) *Has not she finished?

These examples show that *-n't* is part of the verb (an inflection rather than a clitic, according to Zwicky and Pullum 1983), whereas *not* is a separate word depending on the auxiliary.

(54a) They can already swim.
(54b) Can they already swim?
(54c) *Can already they swim?

Here too it is important that *already* depends on *can* rather than on *swim*; this can be seen from the meaning, since (54a) means 'they are already able to swim' rather than 'they are able to already swim'.

In all these examples the auxiliary verb has three words depending on it: (a) a subject, (b) a non-finite verb and (c) an adverb (*well, not, already*). When the subject precedes the auxiliary, the adverb is the next word after the auxiliary; but when the subject follows the auxiliary, the adverb has to make way for it. In other words, rule (55) applies.

(55) The subject of an auxiliary either precedes it, or immediately follows it.

If this rule were already known, then it would provide a precedent for O1: if the subject may be either in the normal position for a subject or immediately after the verb, why should the same not also be true for O1 - especially given the subject-like properties of O1 which we have already noted? Given this precedent, we can understand why a learner might postulate both rule (44), 'O1 immediately follows the verb' and also rule (51), 'if O1 is the subject rule (44) doesn't apply'.

8 The learner's problem

Most of this paper has been about the grammar of mature speakers of English: what are the rules, and how does the semantics of double-object constructions explain them? I have argued that the semantic properties of receivers and beneficiaries are such that it makes good sense to have rules in the grammar which allow them to be denoted by a noun-phrase complement with the characteristics of our O1. I also suggested that these characteristics are to some extent fluid, because there are different and equally good ways of achieving the desired effect, which is to locate O1 between the subject and O2.

What I have not really addressed is the problem that the learner faces in acquiring this system. It is the familiar problem, that many of the rules that have to be learned must be based largely on negative evidence. In particular,

how do some of us come to know that examples like the following (taken from (41)) are not possible?

(56a) *We gave [sweets]$_2$ [every child who came to the party]$_1$.
(56b) %The secretary sent out [the stockholders]$_1$ [a schedule]$_2$.
(56c) %[Which authors]$_1$ shall we give # [a prize]$_2$?
(56d) %[The visitors]$_1$ must have been found [some food]$_2$.
(56e) %[Those sweets]$_2$ were given [the children]$_1$ by the teachers.

The answer, I suggest, is that the child learner must be able to appreciate the semantic rationale for ordinary sentences like (57).

(57) Mummy gave [me]$_1$ [a sweet]$_2$.

The child recognises that *me* denotes the receiver, and that the reason for putting it between the verb and the object is to reflect its subject-like properties. (This presupposes, of course, that it also recognises that the object is *a sweet*, and not *me*, on the basis of the patient-like properties of the former.) Having heard just one sentence like (57), it starts to work out what rules might be at work, and guesses one of the three rules considered above, (42-44), which I repeat here for convenience.

(42) O1 must precede O2.
(43) O1 must precede all other postdependents.
(44) O1 must be immediately after the verb.

At this stage the choice is presumably arbitrary, but once a choice has been made it could in principle still be revised in the light of disconfirming evidence, such as hearing a sentence like (56b) or (56c). Equally, however, the child would probably have to wait a very long time before hearing a relevant sentence of this type, and if it did eventually materialise it could be discounted by the child as representing a different dialect, or a performance error. There is a good chance, then, that the original guess will persist till adult-hood, which would explain the variation among adult speakers that we actually find in the literature; the variation is not only apparent but real, but it does not correspond to anything one could reasonably call 'dialect' differences, if dialect features are learned. I predict, then, that the differences among speakers that we have discussed here will turn out to be more or less randomly distributed among native speakers of English.

In conclusion, I have shown that the 'ordinary object' in a so-called 'double-object' construction is very clearly **not** the first noun-phrase but the second one. The traditional term 'indirect object' is a very suitable name for

the first noun-phrase, provided it does not mislead us into thinking of it (as I did in Hudson 1989 and 1990: 233) as a kind of object.

I have also shown that several unusual restrictions on indirect objects can be explained in terms of rules which are motivated by their semantic properties. In particular, I argued that indirect objects are semantically similar to subjects as well as to objects, which means that a natural position for them is between the subject and the object; and that the easy passivizability of indirect objects, which has led most linguists to treat them as ordinary objects, can be explained by their subject-like properties.

References

Akmajian, Adrian and Frank Heny. 1975. *An Introduction to the Principles of Transformational Syntax*. Cambridge, MA: MIT Press.

Allen, Keith. 1987. Hierarchies and the choice of left conjunct (with particular attention to English). JL 23.51-78.

Anderson, Stephen. 1988. Objects (direct and not-so-direct) in English and elsewhere. *On Language*, ed. by C. Duncan-Rose and Theo Vennemann, 287-314. London: Routledge.

Andrews, Avery. 1985. The major functions of the noun phrase. *Language Typology and Syntactic Description 1: Clause structure*, ed. by Timothy Shopen, 62-154. Cambridge: Cambridge University Press.

Arbib, Michael and Jane Hill. 1988. Language acquisition: schemas replace Universal Grammar. *Explaining Language Universals*, ed. by John Hawkins, 56-72. Oxford: Blackwell.

Bach, Emmon. 1982. Purpose clauses and control. *The Nature of Syntactic Representation*, ed. by Pauline Jacobson and Geoffrey Pullum, 35-57. Dordrecht: Reidel.

Baker, Mark. 1988. *Incorporation: A Theory of Grammatical Function Changing*. Chicago: University of Chicago Press.

Barss, Andrew and Howard Lasnik. 1986. A note on anaphora and double objects. LI 17.347-54.

Blake, Barry. 1990. *Relational Grammar*. London: Routledge.

Bresnan, Joan. 1982. Control and complementation. *The Mental Representation of Grammatical Relations*, ed. by Joan Bresnan, 282-390. Cambridge MA: MIT Press.

Chomsky, Noam. 1965. *Aspects of the Theory of Syntax*. Cambridge, MA: MIT Press.

Chomsky, Noam. 1981. *Lectures on Government and Binding*. Dordrecht: Foris.

Chomsky, Noam. 1986. *Barriers*. Cambridge, MA: MIT Press.

Dik, Simon. 1989. *The Theory of Functional Grammar 1: The structure of the clause*. Dordrecht: Foris.

Dowty, David. 1982. Grammatical relations and Montague grammar. *The Nature of Syntactic Representation*, ed. by Pauline Jacobson and Geoffrey Pullum, 79-130. Dordrecht: Reidel.

Dowty, David. 1988. Thematic proto-roles, subject selection and lexical semantic defaults. Paper presented to the LSA.

Dryer, Matthew. 1986. Primary objects, secondary objects and antidative. Lg 62.808-45.

Emonds, Joseph. 1972. Evidence that Indirect Object Movement is a structure-preserving rule. *Foundations of Language* 8.546-61.

Emonds, Joseph. 1976. *A Transformational Approach to English Syntax*. New York: Academic Press.

Faltz, L. M. 1978. On indirect objects in universal syntax. *Chicago Linguistics Society Proceedings* 14. 76-87.

Fillmore, Charles. 1965. *Indirect Object Constructions in English and the Ordering of Transformations*. The Hague: Mouton.

Gazdar, Gerald; Ewan Klein; Geoffrey Pullum, and Ivan Sag. 1985. *Generalized Phrase Structure Grammar*. Oxford: Blackwell.

Haiman, John. 1983. Iconic and economic motivation. Lg 59.781-819.

Haiman, John. 1985. *Natural Syntax*. Cambridge: Cambridge University Press.

Huddleston, Rodney. 1984. *An Introduction to the Grammar of English*. Cambridge: Cambridge University Press.

Hudson, Richard. 1984. *Word Grammar*. Oxford: Blackwell.

Hudson, Richard. 1989. English passives, grammatical relations and default inheritance. Lingua 79.17-48.

Hudson, Richard. 1990. *English Word Grammar*. Oxford: Blackwell.

Jackendoff, Ray. 1990. On Larson's treatment of the double-object construction. LI 21.427-56.

Jacobson, Pauline. 1987. Phrase structure, grammatical relations and discontinuous constituents. *Discontinuous Constituency = Syntax and Semantics* 20, 27-69. New York: Academic Press.

Jaeggli, Osvaldo. 1986. Passive. LI 17.587-622.

Jespersen, Otto. 1927. *The Philosophy of Grammar*. London: Allen and Unwin.

Kayne, Richard. *Connectedness and Binary Branching*. Dordrecht: Foris.

Keenan, Edward. 1976. Towards a universal definition of 'subject'. *Subject and Topic*, ed. by Charles Li, 303-333. New York: Academic Press.

Lakoff, George. 1987. *Women, Fire and Dangerous Things*. Chicago: University of Chicago Press.

Langacker, Ronald. 1987. *Foundations of Cognitive Grammar 1: Theoretical prerequisites*. Stanford: Stanford University Press.

Larson, Richard. 1988. On the double object construction. LI 19.335-91.

Larson, Richard. 1990. Double objects revisited: reply to Jackendoff. LI 21.589-632.

Mallinson, Graham and Blake, Barry. 1981. *Language Typology: Cross-linguistic studies in syntax*. Amsterdam: North Holland.

Matthews, Peter. 1981. *Syntax*. Cambridge: Cambridge University Press.

Nesfield, J. C. 1916. *Manual of English Grammar and Composition*. London: Macmillan.

Pollard, Carl and Ivan Sag. 1987. *Information-based Syntax and Semantics 1: Fundamentals*. Stanford: CSLI.

Randall, Janet. 1990. Catapults and pendulums: the mechanics of language acquisition. *Linguistics* 28.1381-1406.

Quirk, Randolph; Sidney Greenbaum; Geoffrey Leech, and Jan Svartvik. 1985. *A Comprehensive Grammar of the English Language*. London: Longman.

Siewierska, Anna. forthcoming. *Functional Grammar*. London: Routledge.

Tomlin, Russell. 1986. *Basic Word Order: Functional principles*. London: Routledge.

Van Valin, Robert and William Foley. 1980. Role and reference grammar. *Current Approaches to Syntax*, ed. by Eve Moravcsik, 329-52. New York: Academic Press.

Whitney, R. 1983. The syntactic unity of Wh-movement and Complex NP shift. Linguistic Analysis 10.299-319.

Wierzbicka, Anna. 1986. The semantics of 'internal dative' in English. Quaderni di Semantica 7.121-35.

Wierzbicka, Anna. 1988. *The Semantics of Grammar*. Amsterdam: Benjamins.

Ziv, Yael and Gloria Sheintuch. 1979. Indirect objects reconsidered. *Chicago Linguistics Society Proceedings* 15. 390-403.

Zwicky, Arnold and Geoffrey Pullum. 1983. Cliticization versus inflection: English *n't*. Lg 59.502-13.