CONSTITUENCY IN A SYSTEMIC DESCRIPTION OF THE ENGLISH CLAUSE*

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INTRODUCTION

Among current descriptions of the English clause (or simple sentence) we can distinguish two kinds, according to the amount and kind of structure which they assign to particular clauses. The first group segment the clause itself into a relatively small number of immediate constituents, but require a relatively large number of further segmentations before the ultimate constituents are reached, each segmentation yielding a further layer of structure. The second group of grammars segment the clause into a relatively large number of immediate constituents, each of which then requires a relatively small number of segmentations before the ultimate constituents are reached. For the purposes of this paper, I shall call the approach underlying the first kind of grammar the 'few-IC’s' approach, and that underlying the second kind the 'many-IC’s' approach. The few-IC’s approach is represented notably in Wells (1947), but also in all transformational descriptions of the English clause, of which I shall take that in Chomsky (1965: 106 ff) as representative 1). The many-IC’s approach is represented notably by Longacre (1960); it also underlies the description of the English clause currently being developed in University College London, on

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1) For Wells, segmentation is essentially binary, whereas this is not of course a requirement of transformational-generative descriptions; however, the latter segments in a way much closer to that proposed by Wells than to that proposed by Longacre.
the basis of the 'systemic' model of grammar (cf. Halliday, 1966; Huddleston, 1965).

Of the fragments of English grammar given in this paper, illustrating the kinds of statement which can be made in a systemic grammar, some are still tentative. It is to be hoped, however, that they will at least help to clarify the argument, even if they can be shown to be inadequate descriptions of English.

The difference between these two kinds of grammar can be seen clearly in the analyses they provide for a sample clause:

(1) John has paid ten pounds for his ticket.

A few-IC's analysis, following Chomsky (1965), would be

(T1)  

\[
\begin{array}{c}
\text{Clause} \\
\text{Noun-phrase} & \text{Verb-phrase} & \text{Noun-phrase} & \text{Preposition-phrase} \\
\text{John} & \text{has paid} & \text{ten pounds} & \text{for his ticket} \\
\end{array}
\]

A comparable many-IC's analysis would be (T1'); it is comparable with (T1) in that it indicates the category (= 'class' in the following discussion) but not the function of each IC:

(T1')

\[
\begin{array}{c}
\text{Clause} \\
\text{Noun-phrase} & \text{Verb-phrase} & \text{Noun-phrase} & \text{Preposition-phrase} \\
\text{John} & \text{has paid} & \text{ten pounds} & \text{for his ticket} \\
\end{array}
\]

The aim of this paper is to point out some disadvantages of describing the English clause on the basis of a few-IC’s approach, which do not arise if a many-IC’s approach is used, provided this is
incorporated in a systemic grammar. To summarise the argument, it is that the extra structure in a few-IC’s analysis is not necessary in order to show the syntagmatic interrelations among the parts of a clause – or rather, it is not necessary unless the grammar is so defined as to make it necessary (for the specification of grammatical functions or for the application of strict subcategorisation rules, for instance). Nor is it sufficient, since the syntagmatic interrelations are too specific and interdependent in too complicated a manner to be shown simply by the shape of a tree (or even a set of trees). On the other hand, if the simpler, many-IC’s kind of analysis is adopted, some means has to be found for showing these syntagmatic relations as an integral part of the description of the whole language.

It is claimed in this paper that if constituents are treated as realising (by their presence, their class, or their sequence relations to other constituents) defined systemic features, then the relations among the constituents are already implied by the relations among the features they realise; and since we can show directly any number of interlocking relations among the systemic features of a clause, it follows that we can show (albeit indirectly) any number of interlocking interrelations among the constituents realising these features. Moreover, since the latter relations are already implicit in the former, it is necessary in analysing a clause only to show the realisation function of each of its constituents – it is redundant to attempt to show the syntagmatic relations also, by a bracketing of the constituents. Therefore it is possible to segment the clause in the way represented in (T1)'.

Since this segmentation is clearly simpler than that shown in (T1) – (T1) has eight nodes and three layers of structure, to (T1)'s five nodes and one layer of structure – it is to be preferred unless (T1) can be shown to have powerful advantages over (T1)' in some other respect. That is, (T1) is preferable to (T1)' only if it can be shown that there are relations among the constituents which can be described formally in terms of (T1) but not in terms of (T1)'. That this is the case is denied, and in fact it is suggested that the converse holds. The discussion falls into six sections:
1. The nature of the relations among the constituents of a clause;
2. The use of a few-IC’s analysis to describe these relations;
3. The definition of ‘grammatical function’;
4. A fragment of a systemic description of the English clause;
5. The definition of 'dependence' in view of 4, and the possible methods of showing the dependence of one constituent on another;
6. The role of layering in a systemic grammar.

1. **The nature of the relations among clause-constituents**

Syntagmatic relations, such as those among the constituents of a clause, are of two kinds: part:whole (or whole:part) and part:part. For instance, the relation of *John* to the whole clause, *John has paid ten pounds for his ticket*, is a part:whole relation, while that of *John* to (say) *has paid* is a part:part relation. The syntagmatic relations discussed in this section will be of the part:part kind; the discussion in the following sections will, however, suggest that these part:part relations derive from part:whole relations, and need not in fact be described separately if the latter are already adequately described.

To return to clause (1), it is clear that the relations between some pairs of its IC's as shown in (T1') are in some way closer, more binding, than those between other pairs. For instance, the relation between *has paid* and *or his ticket* is clearly closer than that between *or his ticket* and *John*; one reason why the native speaker feels this is presumably that one could postulate rules governing the occurrence of preposition-phrases such as *or his ticket* without referring at all to the noun-phrase acting as subject of the verb: the only relevant factor is the class of the verb (and possibly also the presence or absence, and class if present, of a noun-phrase acting as object). Likewise, if we compare clause (1) with clause (2) below, it seems that the relation between *for his ticket* and *has paid* is closer than that between *since Christmas* and *has paid*.

(2) *John has paid ten pounds since Christmas.*

Here it becomes rather difficult to decide quite how closely two constituents are related, when one thinks only in terms of rules governing the occurrence of one of the constituents relative to the other. For it is not simply that *for his ticket* is related to *has paid* more closely than is *since Christmas*; it is rather that the two relations are of different kinds. On the one hand, *for his ticket*, is related both lexically and grammatically to *has paid* qua member of the paradigm of the verb *pay*: *pay* 'takes' a prepositional object as
well as a direct object, and, to be precise, the prepositional object must be a phrase introduced by for. On the other hand, since Christmas, is related grammatically rather than lexically to has paid, in that since Christmas is grammatically classifiable as a member of a particular class of adverbials which semantically specify the beginning of a period of time including the time of the action, and grammatically are compatible with a perfect tense (of which has paid is a representative); thus if we change has paid into pays or paid or is paying we must also remove since Christmas. That is, has paid is related to for his ticket by virtue of the feature realised by the presence in it of pai(d) – not, say, of sai(d); on the other hand, it is related to since Christmas by virtue of the feature that is realised in it by the presence of has (pai)d – as opposed, say, to is (pay)ing. That clauses (1) and (2) are different on the level of grammar – i.e. that the difference is not merely a semantic one – is further shown by a comparison of clauses (3) and (4) below:

(3) His ticket has been paid for.

(4) *Christmas has been paid since.

The grammaticality of (3) and the ungrammaticality of (4) must, and can, be accounted for in the grammar. How this is to be done cannot be described completely in this paper, but the difference between (3) and (4) is covered by the fragment of the grammar described in section 4 (cf. in particular the discussion relevant to clauses (37) and (38)).

Similarly, has paid, is related to John and to ten pounds in different ways: it is related to both John and ten pounds by virtue of the feature realised by pai(d) (as opposed, say, to compare(d)), but only to John (not to ten pounds) by virtue of the feature realised by has (as opposed, say, to have). Thus there are obvious lexical restrictions on the noun-phrases occurring as subject or object with pay: pay (but not snow or occur) can have a noun such as John (an animate noun?) as subject; and pay (but scarcely boiled or explored) can have as object a noun of the same lexical set as ten pounds. On the other hand, there are much more obviously grammatical restrictions on the kind of noun which can be subject with the auxiliary has (as opposed to have): these are described in terms of concord of number. Finally, the relation between has paid and ten pounds is of a special kind, in that the presence in the former of pai(d), as opposed to, say, wonder(ed), makes an object possible, whereas no object noun-
phrase at all is possible with wonder. This relation is quite different from any relation between lexical verbs and subject noun-phrases, since there are apparently no lexical verbs which cannot have any subject noun-phrase at all. The difference between pay and wonder, as far as the possibility of an object occurring with them is concerned, is handled in a transformational-generative grammar by 'strict subcategorisation rules', while all the other relations described above are handled by 'selectional rules' (Chomsky, 1965: 95 ff).

Thus, when we ask whether the subject or the object is more closely related to the verb in English, we have to specify the kind of relation we are referring to: from the point of view of one relation the object will be more closely related to the verb, while from the point of view of another relation it will be the subject which is the more closely related. The same applies to many other constituents in the English clause: a given constituent will be found to be related in some way to several other constituents, and perhaps there are relatively few pairs which can be treated as being completely unrelated.

The discussion above deliberately begs the question of the analysis of has paid: it presupposes that has paid is a single constituent, rather than two parts (has..d and pai-) of two larger constituents. The aim has been to explore the relations between has paid and other constituents of the clause, rather than, at this stage, to provide an analysis capable of showing these relations. It is true, however, that some of the relations described informally above could have been more simply described (informally, again) in terms of the has..d, pai- analysis: thus, instead of saying 'has paid is related to on several occasions by virtue of the feature realised in it by the presence of has (pai)d – as opposed, say, to is (pay)ing', we could have said simply: 'Has..d (as opposed to, say, is..ing) is related to on several occasions'. On the other hand, this would imply that we should also say, not 'John is related to has (as opposed to have)', but rather 'John is related to -s (as opposed to -oe)'. The analysis presupposed by this paper is based on the assumption that it is possible to describe cooccurrence-restrictions as holding between classes of items (e.g. between singular noun-phrases and singular verb-phrases), rather than between the characteristics which mark items as members of these classes (in this case, between the absence of plural -s in noun-phrases and the presence of singular -s in
that is, the syntagmatic relation is between the classes themselves, rather than between their realisations. This makes it possible to avoid the awkward discontinuity of *has . . d* – provided, as seems to be the case, that there are no relations which can be described in terms of *has . . d, pai-* but not in terms of *has paid*.

2. THE USE OF A FEW–IC'S ANALYSIS TO DESCRIBE THESE RELATIONS

If we return to tree (T1) we can see how this reflects a bracketing of the constituents of the clause such that some are shown to be more closely related to each other than to others: for instance, *ten pounds* is shown as more closely related to *pai-* than is *John*, but is as closely related as *for his ticket* is. As was suggested above, such a bracketing might be defended on the grounds that the class of the lexical verb (*pai-* , in this case) does not affect the subject as crucially as it does the 'direct object' and 'prepositional object': it determines only the class of the former, but determines the very presence or absence, as well as the class if present, of the latter. This follows the general rule suggested by Chomsky (1965:99) that selection restrictions whereby the presence of one constituent restricts the class of another constituent need not be between constituents immediately dominated by the same node; whereas this is a necessary condition for the selection restrictions represented by strict-subcategorisation rules.

On the other hand there is no requirement that such a strict-subcategorisation relation should hold between every pair of nodes immediately dominated by the same node. This being so, the subject could equally well be shown as immediately dominated by the same node as the direct object; their respective syntagmatic relations to the verb would still be shown only in the underlying rewrite-rules, rather than in the shape of the tree.

Thus, the complexity of (T1), compared with (T1'), cannot be justified simply by the need to show selection relations among the parts of the clause: there is no simple 1 : 1 correspondence between the relative closeness of two nodes in the tree and their relative syntagmatic interrelatedness. The latter is implicit in the underlying rules, and does not need to be shown also by the shape of the tree. This applies not only to the relations of the subject and the direct object to the verb, but also to the relations of *for his ticket* and
since Christmas to the verb, as described above — although a few-IC’s tree (T2) gives, when contrasted with (T1), a very clear reflection of these relations.

(T2)

NP

Aux

VP

NP

# S #

Predicate phrase

Time

John has...d paid ten pounds since Christmas

A second principle followed in Chomsky (1965), for deciding on the appropriate shape for constituency trees, is that it should be possible, given category labels for all nodes in the tree, to deduce the grammatical function of each constituent in the deep structure of a sentence on the basis of a set of generally applicable rules. One of these rules, for instance, specifies that a node which is labelled as a noun-phrase, and is immediately dominated by a node labelled S (for ‘sentence’), will represent a constituent having the function ‘subject’, while a noun-phrase immediately dominated by a verb-phrase will have the function ‘object’. Provided these rules are such that they can be applied mechanically to any labelled tree, in order to discover the function of each constituent, it is redundant to indicate the function of any constituent directly, by means of a function-label attached to the node representing it (Chomsky, 1965: 68 ff). In order to make sure that the rules can be applied in this way, however, the trees must necessarily reflect a few-IC’s type of analysis, since otherwise — that is, in a many-IC’s type of tree such as (T1’) — a noun-phrase immediately dominated by a sentence could be either a subject or an object 3). Thus, the complex shape of the tree in a few-IC’s type of analysis serves not only to show some of the relations among a clause’s constituents, but also to show (indirectly) the grammatical function of each constituent. This

3) Of course, if order in the deep structure was taken into consideration, it would be possible to use a many-IC’s analysis and to define the subject and object as the noun-phrases dominated by S and respectively preceding and following the verb-phrase. There would thus be no reason for preferring a few-IC’s analysis to a many-IC’s one, as far as the need to show grammatical functions was concerned.
suggests that a constituent’s relations to other constituents in the same clause is closely linked to its function, since either one or the other can be deduced from a single tree; this is also the view put forward in this paper, except that it will be argued below that a constituent’s function should be allowed to define, indirectly, its relations to other constituents, rather than the other way round.

3. THE DEFINITION OF ‘GRAMMATICAL FUNCTION’

There are two methods of specifying the grammatical function of a constituent: either it can be deduced from the constituent’s class and its place in the tree, as explained above; or it can be specified directly by means of a function label. The former method is appropriate only to a few-IC’s analysis, for the reasons given, so that the latter is necessary only in a many-IC’s analysis. The two models mentioned in connection with the many-IC’s approach – the tagmemic model and the systemic, or ‘Scale and Category’ model – both allow one, indeed compel one, to specify the function of any constituent directly (as the ‘slot’ in which the constituent is the ‘filler’, or as the ‘element of structure’ at which the constituent is ‘operating’). The reasons for this are:

(i) A many-IC’s analysis does not give enough information in the shape of the tree to identify each function unambiguously;

(ii) These models provide for any sentence only one tree, which reflects directly the sequence of the sentence’s constituents; if only class-labels were assigned to trees, then clauses (1) and (2) would have identical trees, whereas (5) below would be different from (6), and it would be very complicated to formulate a rule to show that the function of a nicer girl in both (5) and (6) was the same:

(1) John has paid ten pounds for his ticket.

(T1')

\[
\begin{array}{c}
\text{Clause} \\
\text{Noun-phrase} & \text{Verb-phrase} & \text{Noun-phrase} & \text{Preposition-phrase} \\
\text{John} & \text{has paid} & \text{ten pounds} & \text{for his ticket}
\end{array}
\]
(2) John has paid ten pounds since Christmas.

(T2')

Clause

Noun-phrase Verb-phrase Noun-phrase Preposition-phrase

John has paid ten pounds since Christmas

(5) I can't imagine a nicer girl.

(T5')

Clause

Noun-phrase Verb-phrase Noun-phrase

I can't imagine A nicer girl

(6) A nicer girl I can't imagine.

(T6')

Clause

Noun-phrase Noun-phrase Verb-phrase

A nicer girl I can't imagine

(iii) It is not necessary for a given function to be available only for one class of items, nor for a given class in a particular environment to always have the same function; thus, on the one hand for instance the function 'object' is available for either noun-phrases or reported clauses (as in (7) and (8) respectively), while on the other hand a noun-phrase immediately following the verb can have the function 'object' or the function 'time adverbial' (as in (5) and (9)):

(7) He regretted his mistake. (5) I can't imagine a nicer girl.

(8) He regretted that he had come late. (9) I can't think this morning.

For all these reasons, it is necessary to add function-labels to all the many-IC trees, (T1'), (T2'), (T5') and (T6'); but in view of the third reason, it is also necessary to keep the category-labels as well. A useful notational convention for combining function- and category-labels is that used for representing tagmemes: the function-
label is written before the category-label, and the two are separated by a colon. Thus \((T1')\) augmented by function-labels is:

\[
\begin{align*}
&T: \text{Clause} \\
&S: \text{Noun-phrase} \\
P: \text{Verb-phrase} \\
O: \text{Noun-phrase} \\
A_{\text{nuc}}: \text{Preposition-phrase} \\
\end{align*}
\]

\[
\begin{align*}
&\text{John} \\
&\text{has paid} \\
&\text{ten pounds} \\
&\text{for his ticket}
\end{align*}
\]

\((S\) stands for 'Subject'; \(P\) for 'Predicator'; \(O\) for 'Object', \(A_{\text{nuc}}\) for 'Nuclear Adjunct' – for which see below) On the other hand, the augmented tree for (2) would be:

\[
\begin{align*}
&T: \text{Clause} \\
&S: \text{Noun-phrase} \\
P: \text{Verb-phrase} \\
O: \text{Noun-phrase} \\
A_{\text{time}}: \text{Preposition-phrase} \\
\end{align*}
\]

\[
\begin{align*}
&\text{John} \\
&\text{has paid} \\
&\text{ten pounds} \\
&\text{for his ticket}
\end{align*}
\]

\((A_{\text{time}}\) stands for 'Time Adjunct').

Whereas the original trees \((T1')\) and \((T2')\) were identical, their augmented equivalents, with function-labels attached, are distinct: 
\textit{for his ticket} is shown as having the function 'Nuclear Adjunct', whereas \textit{since Christmas} is shown as having the function 'Time Adjunct'. However, although \((1)\) and \((2)\) are now shown as being different, there is nothing yet to show that the difference is the kind of difference shown by the few-IC's trees \((T1)\) and \((T2)\); that is, there is nothing to show that \(A_{\text{nuc}}\) and \(A_{\text{time}}\) represent constituents related respectively relatively closely and relatively loosely to the lexical verb, and that a Time Adjunct is more directly related to the verb's tense than a Nuclear Adjunct is. Clearly it is necessary to

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4) Whether or not the clause as a whole has a function (in a sentence with which it is coterminous) is a question which is beyond the scope of this paper. The general rule, if the arguments in this section are sound, is that a function presupposes a part:whole relationship, and therefore the clause can have a function only if it enters into such a relationship.
find some way of showing these facts if the description is to be at all adequate.

One way would be to include the last part of the previous sentence but one, from ‘A\text{nuu} and A\text{time} represent...’ to ‘...than a Nuclear Adjunct is’, in the body of the description. This solution is quite inadequate, however, since it is impossible to attach any precise meaning to the terms ‘more directly (or “indirectly” or “closely” or “loosely”) related to’. Such statements can hardly have a central place in a grammar which aims to be explicit. In fact, it is difficult even to say precisely what we mean if we say that \textit{John} has one function – Subject – in (10), and a different one – Object – in (11):

(10) \textit{John} came to supper last night.
(11) I saw \textit{John} yesterday.

This raises the question of the definition of grammatical functions.

Grammatical functions can be defined in one of two ways: with reference to a part:part relation, or with reference to a part:whole relation (see Section 1 above). Thus we can say \textit{either} that in (10) \textit{John} is subject of the verb-phrase (or of the Predicate-phrase if the analysis is a few-IC’s one), while in (11) \textit{John} is object of the verb-phrase (but \textit{not} of the clause, or of the Predicate-phrase as the case may be); \textit{or} that in (10) \textit{John} is subject of the clause, while in (11) \textit{John} is object of the clause (or the Predicate-phrase). To say that \textit{John} is the subject of the verb-phrase is to give \textit{John} a part:part function, since both \textit{John} and the verb-phrase are IC’s of the same item; whereas to say that \textit{John} is the subject of the clause is to give \textit{John} a part:whole function, since \textit{John} is an IC of the clause.

Having distinguished these two conceptions of grammatical function, we must ask whether one is more helpful, or even ‘truer’, than the other. Chomsky (1964) points out the distinction outlined above, without giving any preference for one or the other, but in Chomsky (1965) he treats functions consistently as part:whole relations. His reason seems to be that the function of a constituent can be most simply defined, in terms of a few-IC’s model, with reference only to its own class and to the class of the item of which it is itself an IC: that is, it can be defined without reference to the other IC’s of the same item. This seems the correct answer; another argument in favour of it is that one can assign a function to an item which is the \textit{only} IC of another item; for instance, we can assign to
the verb-phrase *run* the same function, *qua* IC of a clause, in (12) as in (13):

(12) Run!

(13) Run to the next tree!

If the function of a constituent indicated only its relation to other IC's of the same item, it would be meaningless to give the verb-phrase *run* in (12) any function at all.

We shall assume then that the grammatical function of a constituent is a relation between it and the item of which it is an IC; this use of the term 'function' is consistent with that of Haas (1966: 125). What kind of relation can this be?

One suggestion is that it is a sequence relation; that is, an item's function is that of being initial, medial or final in its constitute (Juilland, 1961: 24). This is certainly inadequate as a definition of grammatical function, since we wish to show *a nicer girl* as having the same function in clauses (5) and (6) above.

Another commonly suggested kind of part:whole relation is that which determines whether an IC is optional or obligatory; an obligatory IC is one which cannot be deleted without the constitute becoming ungrammatical, whereas an optional one can be either present or absent, without affecting the grammaticality of the constitute. However, it is important, in talking of 'optional' and 'obligatory' elements, to distinguish between endocentric and exocentric constructions: an optional element in a truly endocentric construction can be either present or absent without affecting either the grammaticality or the class (at least as far as most of the least delicate classifications are concerned) of the constitute, whereas an optional element in an exocentric construction can be deleted without making the constitute *ungrammatical*, but its presence or absence may affect the class of the constitute. For instance, both *very* and *the* are optional in the noun-phrases *very poor* and *the poor*, but whereas *very poor* belongs to the same classes (at least to the same primary classes) as *poor, the poor* does not: *the poor* is substantival, whereas *poor* is adjectival. (One obvious formal grammatical difference between adjectival and substantival noun-phrases is that the latter can, but the former cannot, have the function Subject.)

The same kind of thing can be said about the order (sequence) of elements: in some cases two or more different orders of elements
are possible, while in others only one is possible, all other orders being ungrammatical. For instance, within the noun-phrase the article (if present) must precede the head, so that *poor the or *man the are not grammatical; whereas within the clause, the subject can either precede the whole of the verb-phrase, or follow the finite word in the verb-phrase, as in (14) and (15) below.

(14) John can do it for us.
(15) Can John do it for us?
The difference in order between (14) and (15) does not reflect a difference in the grammaticality of the clauses, but it does reflect a difference in their classes, (14) being declarative, (15) interrogative. Similarly, both clause (5) and clause (6) above are grammatical, but they belong to different classes, having 'unmarked theme' and 'marked theme' respectively.

Likewise, the class of an IC can determine whether or not the constituent is grammatical, or, if it is grammatical, what class(es) it belongs to. For instance a change in the number-class of a noun-phrase functioning as subject can change a grammatical clause into an ungrammatical one, as in (16) and (17):

(16) My friends usually met at the Britannia.
(17) *My friend usually met at the Britannia.

On the other hand, changing a noun-WH noun-phrase functioning as subject into a WH noun-phrase changes the class of the whole clause from declarative to interrogative:

(18) The children did it.
(19) Which children did it?

To return to the question of the definition of grammatical functions, it was suggested above that a constituent's function was its function in the constituent, but no preciser definition was attempted. We are now in a position to suggest a further definition: a constituent's function is to mark the constituent (more precisely, the item of which the constituent is an IC) as belonging to a certain class or classes; this it does (i) simply by virtue of its presence in the constituent, (ii) by virtue of its sequence relative to other IC's of the same constituent, (iii) by virtue of the class to which it belongs, or (iv) by a combination of these. That is, a constituent's function is a realisational, or marking, function.

This suggests that we can assign functions adequately to IC's of English clauses only to the extent that we have an adequate
classification of clauses; until we have a fully adequate classification, we shall inevitably find ourselves making ad hoc decisions about the definitions of functions, and these definitions will tend to reflect the classification of the IC's themselves rather than that of the clauses containing them— for instance, we shall define 'Adjunct' primarily as the function of certain classes of phrases (and dependent clauses). However, it is significant that one of the functions about which there is the least doubt, as far as the systemic descriptions of English are concerned, is the subject: this has been defined with reference to the distinction between declarative and interrogative clauses, such that its sequence relative to the verb-phrase reflects the class to which the clause as a whole belongs. This is a definition of function fully in accordance with the suggestion made above.

Having defined the functions of IC's relative to the properties which they realise— i.e. relative to the class of which they show their constitute to be a member— we can now turn to a small sample of the systemic features which English clauses can have, in order to see how the interrelations of these features in the system-network imply certain interrelations among the IC's of clauses.

4 A FRAGMENT OF A SYSTEMIC DESCRIPTION OF THE ENGLISH CLAUSE

What follows is a simplified account of a few small parts of a description of the English clause. For the purposes of this illustrative fragment, the clause's syntagmatic environment is disregarded, though in any particular syntagmatic environment not all the possibilities described here will be open to a clause. Thus we can assume that every clause described here constitutes a simple sentence (except for those in (24)–(26)).

Let us consider again clause (1):

(1) John has paid ten pounds for his ticket.

This clause is indicative, which means that it is not imperative 5); it is thus the same in this respect as (20), but different from (21)–(23):

(20) What did you do?

5) Clauses which are neither indicative nor imperative— exclamations, answers to questions, etc. — are ignored here for the sake of simplicity. Moreover, since we are concentrating here on clauses constituting simple sentences, we shall ignore all dependent clauses.
Saying that clause (1) is indicative means that it belongs to the class of clauses named 'indicative'; this can be expressed in another way, by saying that (1) has the systemic feature 'indicative' – the feature shared by all clauses belonging to the class 'indicative'. This class is set up in order to show clauses of different structures as being semantically similar in at least this respect (Halliday, 1965: 62 f). On the other hand, it is necessary to specify the characteristics internal to any indicative clause which mark it as being indicative, not imperative; in other words, it is necessary to specify the realisation or realisations of the feature 'indicative'.

The realisations of these features are as follows: Imperative clauses contain a non-finite verb-phrase (the infinitive without to), and in many cases they have no subject (as in (21)), though a subject is possible (as in (22) and (23); (22) is in fact ambiguous as between imperative and indicative). Indicative clauses contain a finite verb-phrase, and a subject, either of which can be either overt or covert (as in (24)–(26) below).

(24) John arrived at nine and left at ten.
(25) John will arrive at nine and Bill at ten.
(26) John will arrive at nine and leave at ten.

As these details of the realisations of the features 'indicative' and 'imperative' suggest, we can allow the realisation relations to be of any degree of complexity in order to keep the classes thus distinguished semantically homogeneous; the realisations given above almost certainly need supplementing, and a complete list of the realisations of 'indicative' and 'imperative' would be extremely complicated. From this relatively simple description we can also see, however, how the IC's of a clause fulfill their role as realisations of the clause's features: for instance, part of the definition of the predicator is that it is the IC which, by its class, marks a clause as indicative, as opposed to imperative, while the subject is that IC whose absence marks a clause as imperative. Many of the other features to be discussed below have similarly complex realisations, but in this paper there is no space to specify these in detail.

To return to clause (1), it is declarative, as opposed to interroga-
tive; this means that (1) is in this respect like (27)–(29) below, but not like (30) and (31):

(27) A thin haze hung over the woods.
(28) Over the woods hung a thin haze.
(29) Only in the evenings does the haze hang over the woods.
(30) Did you say something?
(31) What did you say?

A clause can, however, be either declarative or interrogative only if it is also indicative. In set-theoretical terms, ‘declarative’ and ‘interrogative’ are the names of two mutually exclusive subsets of the set of indicative clauses, which together exhaust this set; in terms of systems and features, the system representing the choice between the features ‘declarative’ and ‘interrogative’ presupposes the selection of the feature ‘indicative’ from the system whose terms are ‘indicative’ and ‘imperative’. This situation can be represented in the following way:

\[(S1) \quad \text{clause} \rightarrow \begin{cases} \text{indicative} & \rightarrow \text{declarative} \\ \text{interrogative} & \rightarrow \text{imperative} \end{cases} \]

From what has just been said it follows that the feature ‘declarative’ depends on the feature ‘indicative’.

The ‘mood’ systems outlined above are not the only systems relevant to clause (1). Another dimension on which it can be classified can be referred to as ‘transitivity’, though it will be seen to include more than the distinction between the presence and absence of a direct object.

As far as its ‘transitivity’ is concerned, clause (1) has the feature ‘directed-action’, which it shares with (32) and (33) but not with (34):

(32) John will pay.
(33) The money was paid by John.
(34) John is sleeping.

Moreover, the goal of the directed action is explicitly specified in (1), and also in (33), whereas in (32) the goal is not thus specified;

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6) The analysis presented here represents an adaptation of a more comprehensive analysis worked out by Professor Halliday, with the addition of one system, that of ‘circumscription of the action’. The feature named ‘directed action’ here corresponds to the intersection of his ‘operative’ and ‘effective’, and ‘specified-goal’ to his ‘goal-transitive’. (See Halliday (1967)).
i.e. (1) and (33) have the feature 'specified-goal', while (32) has the feature 'unspecified-goal'. These two properties depend on the feature 'directed-action':

\[
\text{(S2) clause } \rightarrow \begin{cases}
\text{directed-action} & \rightarrow \text{specified-goal} \\
\text{undirected-action} & \rightarrow \text{unspecified-goal}
\end{cases}
\]

Clause (1) differs from (33) in that (1) is active while (33) is passive; temporarily, we can represent this system in an expanded version of (S2):

\[
\text{(S3) clause } \rightarrow \begin{cases}
\text{directed-action} & \rightarrow \text{specified-goal} \rightarrow \text{active} \\
\text{undirected-action} & \rightarrow \text{unspecified-goal} \rightarrow \text{passive}
\end{cases}
\]

Clause (1), however, contains not only a 'direct object' – ten pounds – but also a 'prepositional object' – for his ticket. A tentative suggestion for treating prepositional objects is to consider them as realising a feature to which we can give the name 'circumscribed-activity'; thus clause (1) would have this feature, as would also (35) and (36) below:

(35) John has paid for his ticket.
(36) We're waiting for John.

One characteristic of clauses such as (35) and (36) is that they have a corresponding passive form (cf. Chomsky, 1965: 105 f):

(37) His ticket has been paid for.
(38) John is being waited for.

However, there is also another set of clauses in which the verb is followed by a preposition-phrase which share this characteristic; these are certain clauses containing preposition-phrases indicating the place or direction of the action, as in (39) and (40), but not (43) and (44):

(39) Someone has sat on this chair.
(40) Someone has eaten from this plate.
(41) This chair has been sat on.
(42) This plate has been eaten from.
(43) John sings in his bath.
(44) John waited until closing-time.
(45) *His bath is sung in.
(46) *Closing-time was waited until.

It is suggested that all these clauses, (1) and (35)–(42), share the feature 'circumscribed-activity', which is realised by the presence in them of a constituent whose function is labelled 'Nuclear Adjunct'. The clauses (35)–(42) have this feature, and are also either active or passive, the subject of the passive clauses being the items which in the active clauses are object of the preposition. Of course, if the preposition-phrase was removed from the active clauses, there would be no corresponding passive. The situation is thus as follows:

\[
\text{(S4)} \quad \text{clause} \rightarrow \begin{cases} \text{circumscribed-activity} & \rightarrow \text{active} \\ \text{uncircumscribed-activity} \end{cases}
\]

It follows that a simplification of the grammar could be achieved by combining (S3) and (S4), thus:

\[
\text{(S5)} \quad \begin{cases}
\text{clause} & \rightarrow \begin{cases}
\text{undirected-action} & \rightarrow \begin{cases}
\text{directed-action} & \rightarrow \begin{cases}
\text{specified-goal} & \rightarrow \begin{cases}
\text{active} \\
\text{passive} \\
\text{uncircumscribed-action} \\
\text{circumscribed-action}
\end{cases}
\end{cases}
\end{cases}
\end{cases}
\]

(S5) should be interpreted as follows: a clause has either the feature 'directed-action' or the feature 'undirected-action'; it also has either the feature 'circumscribed-action' or the feature 'uncircumscribed-action'; if it has the feature 'directed-action', then it must have either the feature 'specified-goal' or the feature 'unspecified-goal'; if it has either of the features 'specified-goal' or 'circumscribed-action', it must have one of the two features 'active' and 'passive'. There are ten possible combinations of these features, exemplified in (47)–(56) below:

(47) John eats porridge from this plate.
\begin{itemize}
  \item \text{(directed-action, specified-goal, active; circumscribed-action)}
\end{itemize}

(48) John eats porridge.
\begin{itemize}
  \item \text{(directed-action, specified-goal, active; uncircumscribed-action)}
\end{itemize}

(49) Porridge is eaten from this plate.
\begin{itemize}
  \item \text{(directed-action, specified-goal, passive; circumscribed-action)}
\end{itemize}
(50) Porridge is eaten.
(directed-action, specified-goal, passive; uncircumscribed-action)

(51) John eats from this plate.
(directed-action, unspecified-goal; circumscribed-action, active)

(52) This plate is eaten from.
(directed-action, unspecified-goal; circumscribed-action, passive)

(53) John eats.
(directed-action, unspecified-goal; uncircumscribed-action)

(54) John sleeps in this bed.
(undirected-action; circumscribed-action, active)

(55) This bed is slept in.
(undirected-action; circumscribed-action, passive)

(56) John sleeps.
(undirected-action; uncircumscribed-action)

On the basis of the above examples, we can say that the subject of a passive circumscribed-action clause corresponds to the object of the preposition in the active clause, while the subject of a passive specified-goal clause corresponds to the direct object of the active clause. Thus we would show the relation between, say, (35) and (37) as being the same, as far as the differences in features are concerned, as that between (57) and (58) below, although the structural relations are not the same:

(57) We chose John.
(58) John was chosen.

Moreover, where a clause has both the feature ‘specified-goal’ and the feature ‘circumscribed-action’, it obeys the realisation-rules in the passive for clauses having only the former feature; this rule thus excludes (59) and (60): 7

(59) We made use of thermometers.
(60) Thermometers were made use of.

The only exception to this rule, which is not covered here, is provided by those clauses whose direct object and verb are particularly closely connected lexically, and which must also contain a preposition-phrase whose preposition is selected by the verb and direct-object together; such clauses have two possible forms in the passive:

We took advantage of the weather.
Advantage was taken of the weather.
The weather was taken advantage of.
(59) *His ticket has been paid too much for.
(60) *This plate has been eaten porridge from.

It can be seen from the above discussion that the feature ('circumscribed-action') realised in (1) by for his ticket is integrated into the 'transitivity' stems of the clause, in the sense that the features 'active' and 'passive' depend on it (as well as on 'specified-goal'). We can contrast this situation with that of since Christmas in clause (2): whatever feature is realised by since Christmas, we can be sure that it will have nothing to do with transitivity. On the other hand, as we noted earlier (in Section 1), it is connected in some way with tense; and to be precise, the feature ('beginning of period specified') realised by since Christmas depends on the feature 'perfect tense'. Since the former must be a feature of the clause as a whole, so must the latter. This would therefore allow (61) as well as (2) — i.e. (the feature realised by) the presence of since Christmas is optional; and it would exclude (62), in that the feature ('beginning of period specified') presupposes the feature 'perfect'.

(61) John has paid ten pounds.
(62) *John paid ten pounds since Christmas.

All the above suggestions about the features one can assign to clauses, and about the interrelations of these features, can be brought together in a single display, in which, again, { is placed on the left of two systems which apply simultaneously:

(S6) $\begin{align*}
\text{indicative} & \rightarrow \text{declarative} \\
\text{imperative} & \\
\text{undirected-action} & \rightarrow \text{specified-goal} \\
\text{directed-action} & \rightarrow \text{active} \\
\text{circumscribed-action} & \rightarrow \text{passive} \\
\text{uncircumscribed-action} & \\
\text{perfect} & \rightarrow \text{beginning of period specified} \\
\text{non-perfect} & \rightarrow \text{beginning of period unspecified}
\end{align*}$
5. THE DEFINITION OF SYNTAGMATIC DEPENDENCE

To return to the discussion in Section 1 above, we want in some way to show the relative degrees of interrelatedness among the constituents of clauses, of the kind outlined in that section. Two problems arise in doing this:

(i) How to establish precisely what the interrelations among the constituents are;
(ii) How to describe them in an explicit, formal grammar.

The aim of this paper is to suggest that both these problems are most easily solvable in terms of a grammar of the kind illustrated in Section 4 – a systemic grammar, assigning many-IC's trees to clauses.

It seems that all the syntagmatic relations described informally in Section 1 can be given a more rigorous basis in terms of the description of the clause in Section 4 (or of an extension of this description along the same lines). For instance, it was said in Section 1 that for his ticket in clause (1) and since Christmas in clause (2) are related to has paid in different ways. This is confirmed when we look at (S6) and the preceding discussion, since for his ticket realises a feature which is involved in the transitivity system-network, whereas since Christmas realises a feature completely unrelated to transitivity, but related to tense. It was also suggested that for his ticket might be more closely related to has paid than since Christmas is; it was found difficult, however, to substantiate this or to explain quite what it meant, since both preposition-phrases were related to the verb-phrase in one way or another. However, if we rephrase this claim, and say that for his ticket is a relatively 'integral' part of the clause, while since Christmas is a relatively 'peripheral' one, we can again justify this with reference to (S6): the feature realised by for his ticket is integrated with other systems in a way that the feature realised by since Christmas is not. We can thus give a precise meaning to the difference between the function-labels A\text{\textsuperscript{nucl}} and A\text{\textsuperscript{time}} in (T1') and (T2')

Similarly, all the other syntagmatic interdependences described in Section 1 can be interpreted in terms of a grammar such as that in Section 4 (to the extent, that is, that these interdependences are statable in grammatical, rather than lexical, terms); e.g., the relation between the lexical verb and the object can be described as being a consequence of a complex realisation of a clause feature. That is,
there is a feature (or rather, there are features) of the clause which are realised both by the presence (or absence, as the case may be) of an object, and by the class of the verb; and similarly, it should be possible to isolate further features of the clause which are realised both by the class of the verb-phrase and by the class of the noun-phrase functioning as object. Concord is especially easy to handle in this way, since it involves clearly delimited grammatical classes; thus, to simplify, clauses could be classified as either singular or plural, the feature 'singular' being realised both by the class (singular) of the noun-phrase functioning as subject, and by the class (singular) of the verb-phrase. Note that another difficulty is avoided by this approach -- that of deciding which of the two terms of a concord-relation determines the class of the other.

Thus, any syntagmatic relation between two constituents of a clause is a consequence of their functions as realisations of the clause's features: both the constituents may together realise a single feature, by virtue of their sequence relative to each other, or by virtue of their respective classes; or one constituent may realise a feature which is in some way related in the system-network to a feature realised by the other constituent. The nature of the syntagmatic relations among constituents can thus be established by working out the features which they realise, together or individually, and then discovering how these features are related in the system-network.

As for the problem of how to represent these syntagmatic relations, it no longer exists as a problem for a systemic grammar, once the system-network has been described: a constituent is assigned a function-label which specifies the feature (or features) towards whose realisation it is contributing; and the relation of this feature (or these features) to other features in the system-network automatically tells us the relation of this constituent to any other constituents in the same clause.

When we consider the possibility of indicating these syntagmatic relations by means of a few-IC's tree in which category-labels are attached to nodes but function-labels are to be derived from these, the difficulties seem much greater. The main difficulty is that a tree can only show a single bracketing of the constituents: it cannot show two overlapping bracketings. In fact, no attempt is made in Chomsky (1965) to reflect selection relations in the shape of the tree:
thus the subject noun-phrase can act as the environment for the verb-phrase in the same way as the object noun-phrase can, though the latter is much more directly related to the verb-phrase than the former is, as far as their positions in the tree are concerned. Only one kind of dependence relation must, by definition, be reflected by the two terms of the relation both being immediately dominated by the same node: this is the kind of relation dealt with in strict subcategorisation rules. This being so, the only advantage of having a few-IC’s tree-structure, for a grammar of the type exemplified in Chomsky (1965), is that it allows the functions of constituents to be deduced from their place in the tree (as described above in Section 2). This is a doubtful advantage if it compels one, as it seems to, not only to add otherwise unnecessary structure to trees, but also to generate two trees, one of which can be generated so as to show functions unambiguously, while the other can reflect the actual sequence of the elements in the clause (see the discussion in Section 3 above).

6. THE ROLE OF LAYERING IN A SYSTEMIC GRAMMAR

Finally, we must briefly consider one objection which could well be raised against the approach suggested here: if we can show syntagmatic relations between IC’s of the clause in terms of the systemic relations among the features of the clause, is there any need for any layering at all between the clause and the formatives, morphemes, or whatever the ultimate constituents are? To suggest that there is in fact no need for such layering would clearly be to undo much of the progress of the last decades in linguistics, in which it has been insisted that it is easier to describe clauses as consisting of phrases than to describe them as consisting of words.

One reason for not adopting this approach, and having a single layer of structure for the whole sentence, is that one would thereby miss many useful generalisations whose inclusion in the grammar would simplify it considerably. For instance, if one suggested that the was an IC of clause (63):

(63) The wind was blowing hard then one would have to show it as in some way dependent on wind, by assigning to the clause a feature such as ‘definite-subject’, which would depend on a feature ‘common-subject’, which would in turn depend on any feature (say, ‘indicative’) which was realised by the
The presence of a subject in the clause. This could be represented as in (S7):

(S7) indicative \[ \rightarrow \text{common-subject} \rightarrow \text{definite-subject} \rightarrow \text{indefinite-subject} \]

On the other hand, an exactly parallel network would be needed for every feature which could be realised by the presence of a combination of \textit{the}-plus-noun; for instance, any feature realised by the presence of an object would have depending on it the two features 'common-object' and 'proper-object', the first of which would again have 'definite-object' and 'indefinite-object' depending on it. This being so, it is much simpler to treat \textit{the wind} as an IC of clause (63), a noun-phrase, and to treat 'common' and 'definite' as features of this noun-phrase; thus it would have the same features whatever its function in the clause, and (more or less) the same system-network would apply to any noun-phrase with any function.

Moreover, it is not just that such a description would be simpler than one in which \textit{the} was an IC of the clause: it would also avoid the difficulties which would otherwise arise in handling embedding recursion. If we set up noun-phrases, then we can say that a noun-phrase may contain a noun-phrase within it (as for instance \textit{the man in the brown jacket contains the brown jacket}), and each of them selects features from the same systems; in this case the grammar would contain a single system-network, from which the features of any number of such phrases could be selected. On the other hand, if we did not set up noun-phrases as intermediate constituents, we would need either an indefinite number of system-networks, or some mechanism for making a single system-network recursive. At the same time, having intermediate constituents would still not solve the problem of handling linear recursion (e.g. coordination), since this requires a system contrasting an indefinite number of features, each realised by the presence of a different number of elements in the coordinated structure.

Thus one advantage of having intermediate constituents between the clause and the morpheme is that the resulting description will be simpler, since some statements in it will be more general, than would be the case if the description had no such intermediate constituents. Linguists have always recognised this in practice, and
everyone would presumably agree that it is not only desirable but essential to be able to talk about noun-phrases in describing English grammar, even though it is also essential to refer to larger items in describing how noun-phrases are used. On the other hand, implicit in the systemic model is a claim that only a limited number of such intermediate constituents – phrases and words, in the case of English – are needed for the description of a language's grammar. For instance, there is no need for a constituent called the ‘Predicate-phrase’ between the clause and the noun-phrase and verb-phrase, since all the features of such a Predicate-phrase could equally well be described as features of the whole clause. Thus, the description becomes less simple either if there are fewer intermediate constituents than in the many-IC’s analysis described in this paper, or if there are more intermediate constituents, as in the case of a few-IC’s analysis.

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