SOME FUNCTIONAL RELATIONSHIPS IN GRAMMAR

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The theoretical observation that certain types of pronominal differentiation are functionally related to certain types of transformational rules leads to a loose concept of a 'functional component' (independent of formal relationships), within which these two aspects of grammar play complementary roles. This complementarity is matched by an empirically observed inverse relationship in the functional values of the two from one language to another. By looking at the functional component as a whole (i.e. at a system rather than at individual elements), we arrive at an interesting new kind of universal.

For the last several years, the preoccupation with purely formal aspects of grammar has been virtually complete within generative linguistics. Descriptive studies have aimed at finding out what rules occur in particular languages, rather than why they occur. The attempts that have been made to discover syntactic universals have dealt mainly with constraints on the forms of rules. Despite the great successes which have resulted from this approach, I believe that new approaches are both possible and necessary.¹

One consequence of formalism has been a rather sharp compartmentalization of linguistic theory, in practice if not consciously. I do not intend to advocate some vague synthesis of phonology, morphology, and syntax; in fact, I think that divorcing phonology from syntax may be a good idea. What I do wish to argue is that morphology and syntax are more closely interrelated than is usually suspected, and that a re-examination of even the simplest aspects of both, considering their communicative functions as well as their forms, can lead to surprising conclusions.

Let me say at once that, when I speak of relationships between morphology and syntax, I do not refer exclusively (or even primarily) to those aspects of morphology which actually interact with transformational rules—e.g. case systems, which are in part created by transformations, and may play a role in other transformations. Instead, I am thinking of the morphological indication of lexical categories like number and gender, which may have no effect whatever on any syntactic rules. I will claim specifically that the indication of these nominal and pronominal categories is intimately related with certain kinds of transformations such as Equi-NP Deletion.

¹ This paper results mainly from reflections based on fieldwork on Choctaw (Mississippi) and Nunggubuyu (Arnhem Land, Australia). The fieldwork was supported by the American Philosophical Society and by the Australian Institute of Aboriginal Studies. Comments on Turkish, Arabic, and Basque derive from coursework at Harvard and Chicago; I also benefited from a Basque study program in 1972 sponsored by the University of Nevada. R. M. D. Dixon commented on an earlier draft of the paper.

Since the paper was written during a period of prolonged fieldwork which is still continuing, it has been impossible to do adequate library work to test the conclusions offered here on additional languages, and to find out to what extent previous scholars have arrived at conclusions similar to mine. I would, however, like to acknowledge a special (but indirect) debt to Martinet's functional studies of various phonological problems; I believe that his methodological principles will eventually be recognized as having even greater value in the context of morpho-syntax.
Such a correlation may seem puzzling to linguists who have been trained in formalist linguistic theory. To see what the correlation entails, we must first remind ourselves of two cardinal principles: (a) language is a highly structured system, not a hodge-podge collection of elements; and (b) language must respond to the major requirements of communication determined by the structure of the speech act.

Because linguistic systems have been designed (by evolution) to carry out communicative functions, it follows that many individual elements of these systems also have functions—some great, some little. I think it is important for linguists to try to discover the functions of these elements (e.g. morphological oppositions, syntactic rules). This is a difficult task because there are so many different kinds of functions: an element may convey semantic information on the surface, it may help simplify the production and decoding of utterances, it may have sociolinguistic or affective functions, etc. It may even have several functions at once. Furthermore, it is usually impossible to interpret the function of a particular element in isolation; rather, we must consider its interaction with other elements in the system. Despite these problems, we must not continue to regard functional interpretations of grammatical phenomena as either hopeless or useless.

Although functional interpretations must be based on accurate formal descriptions of linguistic data, we need to recognize that functional relationships among grammatical elements are entirely distinct from formal relationships. Suppose language L has Equi-NP Deletion and Gapping, both of which delete elements under identity with elements in juxtaposed clauses. Suppose further that L has suffixes -M and -F which indicate masculine and feminine gender in 2nd and 3rd person pronouns. I claim that the functional connection here is between Equi-NP Deletion and the use of -M and -F in 3rd (but not 2nd) person pronouns, because they help reduce referential ambiguity. This will be discussed in detail later; for now, note the general point that functional similarities and dissimilarities are independent of formal ones.

Since functional analysis operates on a different level than formal analysis, the construction and refinement of a functional morpho-syntactic theory will require more than a minor change in the way we look at grammatical phenomena. It will require a slow and laborious restudy, starting from the beginning.

1. **The Problem of Referential Ambiguity.** One of the functions mentioned earlier was that of permitting semantic information to be overtly indicated on the surface. This is usually accomplished by making sure that surface structures express semantic oppositions by morphological contrasts, distinctive word order, distinctive stress etc. Tense and aspect can be expressed by verbal affixes; semantic ‘cases’ like agentive or dative can be recovered from surface cases expressed by affixes and/or word order; emphasis can be indicated by stress or word order, etc.

A more difficult matter is the resolution of potential referential ambiguity in strings containing several NP’s. Thus a speech act involving a surface structure like ex. 1 is wholly successful only if the addressee is able to determine the reference of each NP:

(1) NP₁ wants [NP₂ kill NP₃].
In theory, referential ambiguity could be avoided by constant repetition of personal names or of descriptive NP's like the big man with the white hat. However, if a particular NP occurs repeatedly in a given discourse, it is hardly practical to use such expressions time after time. For reasons of style and of simple economy, no language tolerates unlimited repetition of such NP's. Instead, they are regularly pronominalized when used repeatedly. This fact, which all grammars have to live with, requires that they develop alternative mechanisms which insure a reasonable degree of referential clarity and thereby reduce (but do not entirely eliminate) the need for repeating personal names and descriptive NP's.

In the following sections, I will treat three types of grammatical phenomena which make direct contributions to referential clarity; subsequently, their mutual relationships will be discussed. We begin with pronominal morphology.

2. FIXED PRONOMINAL CATEGORIES. Like nearly all formally defined entities in grammar, pronominal systems are functionally very diverse. It is therefore necessary to pinpoint, as precisely as we can, the types of pronominal differentiation which have a genuine bearing on the problem of referential ambiguity.

The more or less universal division of pronominal categories into 1st, 2nd, and 3rd person forms is obviously crucial. Within a given speech act, the 1sg. and 2sg. categories are well-defined as speaker and addressee, respectively, and so no additional mechanisms are necessary to insure referential clarity. Again, 1pl. and 2pl. forms, while not completely well-defined, are at least partly defined as including the speaker and addressee, respectively; so with any help at all from the context, even these plural forms are likely to be referentially clear.

On the other hand, 3rd person pronouns are defined only negatively as non-speaker and non-addressee. While such negative definitions are better than nothing, and in certain contexts may be very helpful in pinning down the identity of a given NP, they are certainly not as helpful as the positive referential identifications provided by 1st and 2nd person pronominals. Referential ambiguity is therefore a major problem, particularly in constructions with several 3rd person pronominals.

Let us assume that the 1st/2nd/3rd split is universal, and that there is a universal singular/plural opposition, within the 1st person at least. The addition of further grammatical oppositions within the 1st and 2nd person types will only marginally reduce referential ambiguity, since there is not much ambiguity left to reduce. The key differences among the pronominal systems in various languages are located precisely within the 3rd person system.

In order to reduce referential ambiguity effectively, it would be desirable to have as many different subcategories within the 3rd person as possible. However, some types of categorial differentiation are functionally more useful in this respect than others.

First, we can dismiss case-marking applied to pronominal elements as not

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2 It is of course not strictly true that all languages make these distinctions in their OBLIGATORY pronouns; e.g., Spanish neutralizes 1st and 3rd singular in its obligatory pronominals (subject-marking suffixes on verbs) in certain tense-mood paradigms. However, it is probable that all languages make all such distinctions at least in optional pronominals, and that such ‘optional’ pronominals are virtually obligatory when ambiguous obligatory pronominals are not dis-ambiguated by context.
directly relevant. The primary function of case-marking is to permit the addressee to recover the semantic ‘case’ or function of each NP, not to give clues as to its referential identity. Thus the addition of accusative case-marking (through morphology or word order) to a given pronoun in a clause with to kill tells the addressee that this NP is the semantic victim, but does not help identify this NP.

It is also useful to make a distinction between categories of obligatory pronominal elements and those of optional ones. We may relax the definition of ‘obligatory’ here to include elements which can be omitted when a full NP is present, or those which can be deleted in such a way that they are recoverable. In this sense, the obligatory pronominal elements in English are the independent pronouns like he and she. They are omitted when a full NP occurs, and can be deleted by Equi-NP Deletion (which permits their recovery by means of simple interpretative conventions); but otherwise they are obligatory. In Basque, however, the obligatory pronominals are affixes added to verbs. In Spanish, for nominative case, the obligatory pronominals are suffixes added to verbs; for other case categories, they are clitics or independent pronouns. For our purposes the opposition obligatory/optional is more important than differences in form classes (independent, clitic, affixal etc.)

While optional pronominal elements may make some contribution to referential clarity, they can hardly be relied on. Frequently they become specialized as emphatic elements, used only when some cognitive prominence is attached to their referents. This makes them difficult to use in non-emphatic disambiguating functions. For example, in ex. 1 it is useful to indicate the referential identities of the various NP’s; and if the pronominal system can make a contribution, this will be welcomed. However, the use of special emphatic pronominals will be inappropriate when no real emphasis is intended for the NP’s in question.

I have suggested that there is a universal set of basic pronominal categories: lsg., 1pl., 2nd, and 3rd. The area within pronominal systems not determined by universals which is of greatest functional importance can now be specified as the set of categorial oppositions other than case within obligatory 3rd person pronominals. By analysing these sets of oppositions, we can determine which languages get the most disambiguating value from their pronominal systems.

The oppositions in question are almost entirely based on lexical features, many of which have a clear semantic basis: [± human], [± animate], [± feminine], [± non-singular] etc. It is only occasionally that deictic oppositions occur within obligatory (as opposed to optional) 3rd person pronominals.

All these oppositions share the important characteristic that they are predetermined by lexical and semantic features of the underlying NP, and (in the case of deictic oppositions) by the actual position of the referent with respect to the participants in the speech act. As a result, for a given referent in a given speech act, there is only one pronominal category which is applicable (e.g. animate non-singular or human feminine proximate).

This fact is of considerable importance, since if there are two or more distinct NP’s in the same category, a pronominal marked for this category will be referentially ambiguous. Thus if a conversation dealing with the exploits of Ivan Skivitzki Skavar and Abdul El Bul Bul Ameer ends with the sentence He killed him, the ad-
dressee may be unable to determine which pronoun refers to which referent. The pro-
nominal system will have failed to insure referential clarity, and the speaker may be
forced to resort to the repetition of the personal names instead of using pronouns.

3. TYPES OF PRONOMINAL SYSTEMS. Obviously the structure of a given language’s
obligatory 3rd person pronominal system determines how helpful it is in reducing
ambiguity. Let us compare the systems found in Choctaw and Nunggubuyu:

(2) a. CHOCTAW
   3rd
b. NUNGGUBUYU
   3rd masc. sg. 3rd fem. sg.
   3rd masc. du. 3rd fem. du.
   3rd human pl.
   3rd non-human I
   3rd non-human II
   3rd non-human III (subclasses III.1, III.2)
   3rd non-human IV
   3rd non-human V

Choctaw has only a single obligatory 3rd person category, unspecified for gender,
number, deixis, or other features. The pronominals in question are affixes added to
verbs; but even deictic pronouns (the only 3rd person independent pronouns,
which are optional) lack number and gender marking, and show only a binary
deictic opposition.3

The single 3rd person category includes not only Ivan Skivitzki Skavar and
Abdul El Bul Bul Ameer, but also their wives and children (singly or in groups),
wild animals, trees, houses, rivers, and tools. Thus the only clue provided by this
3rd person category as to the intended referent in a given sentence is that it is
neither the speaker nor the addressee. Except when the context involves only one
3rd person referent, a 3rd person pronominal in Choctaw will be referentially
ambiguous.

On the other hand, Nunggubuyu requires the speaker to specify which of ten
(or eleven) 3rd person categories the referent belongs to. There are five human
categories marked for number and gender on semantic principles, and five more or
less arbitrary non-human classes, one of which has two subclasses. These categories
are indicated by subject and object pronominal affixes added to verbs. There are
several instances of syncretism in particular contexts (e.g. dual and plural are
merged in non-human object markers), but there is always a substantial degree of
overt differentiation.

3 It should be mentioned that some Choctaw verbs show number suppletion for subject
(intransitive) or object (transitive). Thus it is not quite true that there is no differentiation within
the 3rd person category: there is some differentiation, but it is expressed in the verb stem rather
than directly by pronominal elements. There is also a pre-verb oklah marking plurality of
subject, and some dialects have a corresponding dual post-verb. However, these pre- and
post-verbs are not obligatory, and suppletion affects only certain verbs; hence plurality is
indicated only in an unreliable fashion.
The difference in the contributions of the Choctaw and Nunggubuyu systems to referential clarity can be demonstrated as follows:

(3) If $X_i$ hits $X_j$, $X_k$ will kill $X_l$.

Suppose that all the $X$'s are 3rd person pronominals. In most instances it will be contextually appropriate for the same two referents in the first clause to turn up again in the second clause, so that there are only two different referents instead of four. For practical purposes, then, the correct interpretation of 3 will depend on (a) the correct referential identification of $X_i$ and of $X_j$, and (b) the correct referential correlation of $X_k$ and $X_l$ with the two $X$'s in the first clause. For (b), there are two possibilities: $X_i = X_k$ and $X_j = X_l$, or $X_i = X_l$ and $X_j = X_k$.

In Nunggubuyu, with all its 3rd person categories, the probability is fairly high that $X_i$ and $X_j$ will belong to different categories. If, for example, the conversation has been about Ivan Skivitzki Skavar (masc. sg.) and a crocodile (non-human class II), the surface structure corresponding to 3 is likely to be referentially clear. If $X_i$ and $X_k$ are masc. sg., while $X_l$ and $X_j$ are non-human class II, the first two are interpreted as referring to Ivan Skivitzki Skavar and the latter two as referring to the crocodile, and so forth for the other possibilities. Real ambiguity will occur only in the minority of instances where there are two referents of the same category, such as Ivan Skivitzki Skavar and Abdul El Bul Bul Ameer. The Nunggubuyu pronominal system does not eliminate referential ambiguity, but goes a long way toward reducing it to a manageable level.

On the other hand, in Choctaw there is no hope at all that the 3rd person pronominal system will help clarify references. What in Nunggubuyu is an occasional failure becomes institutionalized in Choctaw; here the disambiguating value of the 3rd person pronominal system is zero.

Nunggubuyu and Choctaw are clearly polar opposites, and there are many degrees of complexity of pronominal systems intermediate between them. Just ahead of Choctaw we can put Basque and Turkish, both of which have only a binary singular/plural opposition in the relevant pronominals. Next comes English, which has the same number categories, but adds a gender opposition of masculine/feminine/neuter to the singular category. Classical Arabic is slightly more complex, with six categories generated by the intersection of masculine/feminine and singular/dual/plural oppositions. We can therefore construct a rank-list of languages, going from least differentiation to most:

(4) a. Choctaw (least)
   b. Turkish, Basque
   c. English
   d. Arabic
   e. Nunggubuyu (most)

It is striking that, although referential ambiguity is an equally important problem in all languages, we have found rather extreme variation in the way languages respond to the problem in the area of pronominal differentiation. Clearly, we can make no universal claims about the structure of the 3rd person pronominal system, except to exclude certain fantastic possibilities.
4. Structure and content in pronominal systems. The conventional approach to pronominal systems differs considerably from the one I have adopted, and it may be useful to discuss the differences explicitly. When a linguist tackles the pronominal system of a language, he typically sees his task as identifying the overt oppositions and determining their cognitive content. Thus the description of English pronouns would consist of the observation that English has 1sg., 1pl., 2nd person, 3sg. masculine, 3sg. feminine, 3sg. neuter, and 3rd plural categories, and that the actual morphemes are such-and-such. Here the analysis ends. The assumption is usually implicit in such descriptions that the oppositions in question are 'regarded' as 'cognitively relevant' by speakers of the language.

From my point of view, cognition plays only a peripheral role in the historical evolution of pronominal systems. The fundamental role of pronominal categories is to assist the addressee in matching particular referents with particular semantic functions (e.g. Abdul E1 Bul Bul Ameer with 'victim'). This is not the only function of pronominal systems, but it is by far the most important one.

If we agree that referential disambiguation, rather than the expression of 'cognitively relevant' categories, is the principal function, then we begin to see that the functional value of a pronominal system depends on its structure, rather than on the cognitive content of the oppositions which make up this structure. Suppose that, of two languages, each one has only a binary opposition A/B in the third person, with A occurring 70% of the time, and B 30% of the time. In each language the functional value of the opposition is identical (other things being equal), even if A/B is singular/plural in one language and masculine/feminine in the other.

I would suggest that, in general, the existence of categorial oppositions within the system of obligatory 3rd person pronominals is motivated (and historically determined) by functional rather than cognitive considerations. However, since functional factors leave the content of the oppositions open, there is no reason why cognition cannot play the major role in determining the content; in fact, it usually does. In most languages, oppositions within the 3rd person can be labeled [+animate] or the like, even if there are a few instances of arbitrary categorization of borderline nouns.

However, it is not necessary that the oppositions in question have clear cognitive bases. French has a masculine/feminine opposition which is cognitively meaningful for human nouns, but is also applied to inanimate nouns in an essentially arbitrary fashion. An even more dramatic case is that of Nunggubuyu, with five (or six) arbitrary non-human noun classes, each of which contains birds, animals, fish, and inanimate objects. The linguist trained only in the cognitive analysis of pronominal systems would presumably attempt to understand the oppositions in terms of the latest advances in perceptual psychology, ethnoclassification, and a study of Nunggubuyu mythological associations. There is, however, no escaping the conclusion that there are no general principles at work in the non-human noun class system (except for recent loanwords). The linguist may mitigate his despair with the soothing thought that the classes were cognitively motivated not so long ago, and that only the vicissitudes of history have obscured this.

To my mind this misses the whole point. The Nunggubuyu noun classes have
a perfectly respectable disambiguating function which would not be appreciably increased by re-aligning the classes on cognitive principles to suit the linguist.

A further defect of cognitive analysis is that it fails to appreciate the functional differences among categories within 1st, 2nd, and 3rd person pronominals. Thus in the 3rd person, a gender opposition masculine/feminine has a considerable disambiguating function. Within the 1st and 2nd persons, however, the same opposition would be completely redundant in the singular, and of very little value in the plural.

The fact that gender oppositions are more common in the 3rd person than elsewhere is often interpreted as a mere reflection of the markedness of 1st and 2nd persons with respect to the unmarked 3rd person. The general principle adduced in this context is that marked categories tend to show less internal differentiation than unmarked ones. I agree that the 3rd person is grammatically unmarked, and that the general principle mentioned is theoretically sound. However, I think that this principle has been much overworked in practice, and that it is not helpful in this particular context. The major reason why gender oppositions are associated with the 3rd person is that they are most useful there.

It is true that one does sometimes find gender oppositions in the 2nd person and (rarely) in the 1st. If such an opposition has no functional value, one may well ask, why does it occur? There are two possible answers, depending on the language.

If there is gender opposition in the 2nd person exactly parallel to the same opposition in the 3rd, we conclude that the existence of the opposition is motivated by its disambiguating functions within the 3rd person. Given its existence here, it would not seriously complicate the grammar to extend it to the 2nd person, where it would be neither helpful nor harmful. In general terms, when we attempt functional interpretations of specific aspects of grammar, we must be continually aware of the possibility that some of them may be functionally motivated in certain environments, but have also ‘spilled over’ into certain others where they are functionally inert.

This is not the whole story behind 2nd person gender, however. Basque has a masculine/feminine opposition in verbal suffixes of the 2sg. familiar, but nowhere else in the nominal or pronominal systems. We can hardly use the spill-over explanation here, since there is nowhere the gender opposition could spill over from. Markedness theory gives us even less help, since the 2sg. familiar is probably the most highly marked pronominal category, and is therefore the one place where the canons of this theory would prohibit additional differentiation.

The explanation is sociolinguistic. In Basque the entire 2nd person pronominal system is dominated by the expression of the addressee’s status vis-à-vis the speaker. The familiar/formal opposition in the singular is the most obvious manifestation of this; but the gender opposition in the familiar is also of sociolinguistic relevance, since the addressee’s sex is one of the factors determining the nature of the addressee–speaker relationship. Even the singular/plural opposition has sociolinguistic implications.

The dominance of sociolinguistic considerations is dramatically demonstrated by the occurrence, in several Basque dialects, of special ‘pseudo-dative’ 2nd person suffixes added obligatorily to verbs which would otherwise not mark 2nd person
categories (e.g. in the sentence ‘He saw him’). This reveals a strong tendency overtly to indicate the addressee’s status with respect to the speaker, even when the addressee has nothing to do with the actual predication. The point is, then, that we cannot understand pronominal systems if we regard them only as cognitive taxonomies, and disregard their ambiguity-reducing and sociolinguistic functions.

5. ID RULES. Pronominal differentiation is not the only way to attack the problem of referential ambiguity of NP’s. Another way is to indicate overtly the coreferentiality or non-coreferentiality of two NP’s. The transformations which do this can be called IDENTIFICATION RULES, abbreviated as ID RULES.

There are a number of subtypes, each with special properties. We first distinguish STRICT ID rules, where the two NP’s are uniquely defined in terms of surface structure, from FREE ID rules, where both are not uniquely defined. Second, we distinguish SIMPLE ID rules, which apply to single-clause constructions, from COMPLEX ID rules, which apply to constructions of two or more clauses. These terminological distinctions are useful, even if they are occasionally inapplicable to particular rules.

In English, Equi-NP Deletion is a STRICT COMPLEX ID RULE, since it applies to a two-clause construction, and the two NP’s whose coreferentiality is indicated are uniquely defined by the nature of the construction. Obligatory pronominalization is a FREE ID RULE, not specifiable as simple or complex, since here the antecedent NP is not uniquely defined. Reflexivization is a SIMPLE ID RULE, since it normally applies within a single clause.

It is likely that every language has a simple ID rule with the same functions as English reflexivization, though the form may vary. The minimal contribution of this rule is the overt differentiation of surface structures like these:

(5) a. X₁ killed X₁.
    b. X₁ killed X₂.

In English, 5a undergoes reflexivization, which converts the second X₁ into a special reflexive form. This distinguishes 5a from 5b, since in the latter X₁ cannot be a reflexive pronoun under normal conditions.

Nunggubuyu has no special reflexive forms. Instead, the first X₁ in 5a is deleted, resulting in a surface intransitive clause where the second X₁ becomes the subject. This transformation is formally identical to the medio-passive transformation, which similarly deletes the subject and makes the underlying object the surface subject. Ambiguity between reflexive and medio-passive constructions is possible (e.g. ‘I got cut’ vs. ‘I cut myself’); but in practice this is not much of a problem, since many verbs do not undergo medio-passivization.

Note that, although the English and Nunggubuyu simple ID rules differ in the actual processes applied, they are equivalent functionally since both permit surface differentiation of 5a and 5b. For the most part, such rules can be labeled STRICT SIMPLE ID RULES, since they usually apply to single-clause constructions, and

This is not intended to be a general denunciation of cognitive analysis of morphological oppositions. This mode of analysis works perfectly well when we are dealing with such phenomena as tense and aspect. I am merely suggesting that cognitive analysis is not in itself adequate in treating pronominal systems.
usually precisely define the two NP’s whose coreferentiality triggers them. Language-specific details may make either or both of the adjectives ‘strict’ and ‘simple’ technically inappropriate. However, in the context of this type of rule, it does not make much difference functionally whether the rule is 100% strict and simple, or only 90%, so.

Since some sort of strict simple ID rule appears to be universal—and apart from details, carries out essentially the same functions in all languages—the major areas of variation in the matter of ID rules are FREE ID RULES and STRICT COMPLEX ID RULES, which I will now discuss in turn.

6. FREE ID RULES. Rules of this type include pronominalization and other rules which alter the form of a NP when it is coreferential to an antecedent NP. As indicated above, ‘free’ means that the antecedent NP is not uniquely defined by the surface structure; so there is often a possibility of ambiguity. Consequently, free ID rules in general make a smaller contribution to surface referential clarity than do strict ID rules.

The principal rule of this type in English is obligatory pronominalization. Thus in 6a, the coreferentiality of the object NP in the complement with Jack in the matrix clause brings about the obligatory pronominalization of the former, and 6b is not a possible alternative:

(6) a. Jacki told me to kill himi.
   b. *Jacki told me to kill Jacki.

This pronominalization rule can be regarded as having two functions. One is simply to reduce the complexity of surface structures; 6a is simpler than 6b, and the difference would be much greater if we substitute Abdul El Bul Bul Ameer or the man in the beaver hat for Jack. A second function is disambiguation of referential identities: thus 6b becomes grammatical if the two men named Jack are referentially distinct. Because of obligatory pronominalization in 6a, there will be no confusion between 6a and this interpretation of 6b.

The disambiguating function of obligatory pronominalization in English is slight, because it is often impossible to distinguish it from optional pronominalization. The latter occurs when the antecedent is some distance away structurally, so that pronominalization is not obligatory but is possible. Thus surface structure 6a is identical with a structure having himi in object position in the complement, referring to some previously mentioned NP (e.g. Fred), or to some person at whom the speaker is pointing. We should probably consider the disambiguating function of English pronominalization to be subordinated to its simplifying function.

Some languages, however, get more mileage out of their free ID rules than does English. Instead of a single set of 3rd person pronominals, there are two. One set is the common or unmarked type, which may be anaphoric to an antecedent, or may be accompanied by pointing. The other type is explicitly and often emphatically anaphoric to an antecedent. Examples of the latter are Turkish forms in kendi- and Basque forms in bera-.

These explicitly anaphoric pronominals have much in common with reflexive pronouns in English and other languages; in fact, kendi- is usually referred to as a reflexive pronoun in Turkish grammar. However, we should make a distinction
here, since English reflexive pronouns (except in their emphatic sense) indicate coreferentiality to a NP within the same clause in the great majority of instances, while kendi- and bera- may be anaphoric to a NP in a preceding clause.

The details of usage of kendi-, bera-, and their analogs in other languages differ, and so too do their linguistic functions. In some instances, they indicate coreferentiality with an antecedent 'some way back' in the discourse, or with a NP which the addressee would not normally connect with the pronoun if the unmarked pronominal type were used. Thus in Choctaw, the addition of a:$ to a noun or pronoun indicates coreferentiality to an antecedent which is usually several clauses back: -okfo:co$a:$ ‘that duck we were talking about earlier’. By specifying that the antecedent is not one of the NP’s in the immediately preceding clause or clauses, a:$ helps narrow down the possibilities for antecedent, and thus helps the addressee determine the reference of the noun or pronoun to which a:$ is attached. Similar interpretative conventions apply to Turkish kendi-, Basque bera- etc., though the details differ.

Even in these languages, where free ID rules make a greater contribution to reducing ambiguity than do the English ones, these rules are less important functionally than the use of fixed lexical and deictic oppositions (cf. §2), or of the transformations to be described in the following section.

7. **Strict Complex ID Rules.** These are the ID rules which show the greatest variety in form and functional significance from one language to another. All the strict complex ID rules that I know of are based on a structural description like Figure 1.

\[
\begin{array}{c}
\text{NP} \\
[+\text{controller}] \\
S_1 \\
\text{NP} \\
[+\text{pivot}] \\
S_2 \\
V_B \\
\end{array}
\]

**Figure 1**

The syntactic function of $S_2$ is variable (direct object, gerundial adverb etc.) For the purposes of these strict complex ID rules, one NP in the higher clause is designated the controller, and one NP in the lower clause is designated the pivot. Thus in English, the pivot is the NP in nominative case (expressed by word order and morphology) of the lower clause, while the controller is determined by the nature of the construction (e.g. the subject of *to want*, the direct object of *to persuade* etc.) These two uniquely defined NP’s, and only they, determine whether and in what way the transformation will apply. Furthermore, the transformation must apply in different ways depending on whether or not the two NP’s are coreferential.

There are three possibilities: (a) the rule applies only when the two are coreferential; (b) it applies only when they are non-coreferential; and (c) it applies in one way when they are coreferential, in a different way when they are not. The
important thing is that the rule must distinguish constructions where the controller and pivot are coreferential from those where they are not. By this differential application, the addressee can determine whether the two NP’s are referentially identical or distinct, and this will help him considerably in making the correct referential identification.

For example, Equi-NP Deletion applies obligatorily to 7a below, but never affects 7b; hence the corresponding surface structures are 8a and 8b respectively. Without a strict complex ID rule like Equi-NP Deletion, there would be no way to distinguish 8a from 8b overtly, and a vital clue as to the referential identity of the lower-clause subject would be lost:

(7) a. He, wants [he, go].
   b. He, wants [he, go].
(8) a. He wants to go.
   b. He wants him to go.

It would be a dreadful mistake to suppose that the primary function of Equi-NP Deletion is to simplify surface structures by removing ‘deadwood’ in the form of ‘redundant’ lexical material. While structural simplification is admittedly one beneficial result of the application of the rule, surely this is less significant than its disambiguating function. The important thing about the deletion of the second he, in 7a is not that it makes 8a a bit simpler, but that it overtly differentiates 8a from 8b. From the functional viewpoint, Equi-NP Deletion has very little in common with Gapping, another deletion rule of similar form whose principal function probably is simplification. Instead, Equi-NP Deletion carries out much the same functions as categorial differentiation does within the obligatory 3rd person pronominal system described in §2.

In Choctaw, an instance of lexical insertion can be considered to be a strict complex ID rule. Instead of a single ‘to want’ construction, there are two, depending on whether or not the controller (the ‘wanter’) and the pivot (the subject of the lower clause) are coreferential. If they are, ‘to want’ is -banna- (also ‘to need’), and the complement clause is in the simple present tense. If they are not coreferential, the main-clause verb is -ahni- ‘to think’, and the whole construction can be glossed literally as ‘X thinks “Y ought to do so-and-so”’:

(9) a. 0- iya -h 0- banna -h
   3SG go PRES 3SG want PRES
   ‘He wants to go.’
   b. 0- iya: -hij:la -h 0- ahni -h
   3SG go POTENTIAL PRES 3SG think PRES
   ‘He wants him to go.’

Nunggubuyu has an interesting raising rule in the ‘to want’ construction. The controller is again the ‘wanter’, and the pivot is the intransitive or transitive subject of the lower clause. Raising applies preferably to the pivot, making it the surface object of the verb -yanbanda- ‘to want’. However, if the pivot and controller are coreferential, the pivot cannot be raised. If the lower clause is intransitive, there are no other candidates for raising, so a dummy 3rd person neuter (class III.2) object marker is added to -yanbanda-. If the lower clause is transitive, the direct object is
raised when the pivot and controller are coreferential. Raised NP’s are inflected both as object markers with -ŋaŋ banda- and with the appropriate case-specified marker in the verb of the lower clause. Intransitive examples are as follows:

(10) a. ni- wu- ŋaŋ banda -i: ani- ya: -ri:
he III.2 want PRES he go POTENTIAL
‘He wants to go.’

b. nu- ŋaŋ band -i: ani- ya: -ri:
he/him want PRES he go POTENTIAL
‘He wants him to go.’

We could continue surveying the details of such rules in assorted exotic languages, but I will stop here. The actual transformational processes I have described—deletion, lexical insertion, raising—have nothing whatever in common. There is no unity here, but there is a real unity at a different level. All these rules permit the overt differentiation of such pairs as 7a–b, as can be seen by glancing at 8–10, and therefore all contribute in the same way to the referential clarity of pronominal elements. The common bond is a functional one: the only formal correlate is not in the nature of the structural change, but rather in that of the structural description, which must be of the form in Fig. 1.

8. SCOPE OF STRICT COMPLEX ID RULES. In addition to the different formal processes used by various languages in their strict complex ID rules, there are also differences in the extent of their application, and hence in their over-all functional importance. In Nunggubuyu, the raising rule described in §7, used in the ‘to want’ construction, is the only strict complex ID rule which I have found in several months’ fieldwork. Thus the contribution of such rules comes close to being zero in this language.

In English, Equi-NP Deletion and related deletion processes are moderately important, since they apply with disambiguating value in constructions containing to expect, to intend, to be afraid of, to prefer, and many other verbs in addition to to want. Furthermore, the deletion of NP’s in gerundial clauses can have disambiguating value, especially when such clauses precede matrix clauses, as in 11. Note that the deleted subject of the gerundial clause must be coreferential to he (not him) in the second clause:

(11) Going home, he saw him.

In Classical Arabic, strict complex ID rules play a somewhat smaller role in disambiguating references than they do in English. There is an infinitive used to some extent like English finite complements to which Equi-NP Deletion has applied; but not as many constructions are affected as in English—e.g., the ‘to want’ construction is not normally affected.

In both Turkish and Basque, on the other hand, we find strict complex ID rules closely resembling English Equi-NP Deletion applied to a broad range of constructions. In addition, these languages have gerundial constructions which are much more common than those of English, and which more rigorously indicate the referential relationship between the subject of the gerundial clause and the subject of the main clause. Therefore Turkish and Basque get greater functional value out of their rules than English does out of its.
However, Choctaw has to take the prize as the language which uses strict complex ID rules with greatest efficiency. In this language, virtually all clause sequences—including conditional constructions and clause conjunctions of various sorts, in addition to complement-clause constructions—are organized into strings where only the last clause is formally a main clause; all other clauses are formally subordinated to it as gerunds and the like. All subordinated clauses are obligatorily marked either 'same-subject' or 'switch-subject' by a particle or suffix added to the verb. Same-subject particles indicate that the subject of the clause is coreferential to the subject of a clause of reference; switch-subject particles indicate that the two subject NP's are non-coreferential. The clause of reference may be the immediately following clause, or the final clause of the sequence. In the following examples, SA = same-subject subordinator, sw = switch-subject subordinator:

(12) a. 0- 0- pi:sa -ća: 0- iya -tok
   3SG 3SG see SA 3SG go PAST
   AGENT PATIENT AGENT
   ‘Hei saw him, then hei went.’

b. 0- 0- pi:sa -na: 0- iya -tok
   sw
   ‘Hei saw him, then hei/hek went.’

In all the clauses of these examples, the agent NP is the subject. In 12a, the two clauses have the same subject; in 12b the two subjects are distinct.

The effect of this is that the addressee is always provided with useful clues as to the referential identity of the subject NP of a clause by means of strict complex ID rules. This is in contrast to languages like English, and especially Nunggubuyu where such rules apply only to certain limited types of constructions. It is no exaggeration to say that the strict complex ID rule which inserts same-subject and switch-subject particles in Choctaw is of massive communicative significance; without it, the language would have to be completely restructured in order to fulfil the minimal requirements of communicative efficiency. This is especially true in view of the negligible contribution made to referential clarity by the pronominal system (§3) and by free ID rules (§6) in this particular language.

The only important exception to the generalization that (nearly) all clause-sequences become strings of subordinated clauses followed by a matrix clause is direct quotative complements, which of course are not affected by any embedding transformations. There is also a minor exception which is more interesting. In 9a, the complement clause is in the ordinary present (unmarked) tense, without subordinating suffixes or particles. Furthermore, it cannot be taken as a direct quotative complement, although the complement of 9b is of this type. There is, however, a very good reason why 9a does not have a formally subordinated complement clause; namely, that the verb -banna- occurs only in type 9a and not in 9b. That is, the very fact that the verb is -banna- already indicates that the subjects of the matrix and complement clauses are coreferential. Since the function of subordinating suffixes and particles is to indicate whether the two subjects are coreferential, they would be redundant in this particular construction, and so are dispensed with.

In this discussion of the Choctaw data, I use the term ‘subject’ in a loose sense, covering not only the subject (nominative) case in nominal morphology, but also the syntactic notions of pivot and controller, all of which are determined by the same rules.

The term ‘switch-subject’ is an adaptation of the term ‘switch-reference’, first suggested by William Jacobsen.
Since all languages seem to have reflexivization or functionally similar simple ID rules, and free ID rules like obligatory pronominalization, the main area of variation within the over-all rubric of ID rules is in the strict complex ID rules we have been discussing. Some languages make almost no use of such rules, while others use them constantly and with highly beneficial effect. We can construct a rank-order of the languages discussed here on the basis of the importance of their strict complex ID rules:

(13) a. Nunggubuyu (least)
b. Arabic
c. English
d. Turkish, Basque
e. Choctaw (most)

9. UNDERLYING PRINCIPLES. At last we can perceive the unity which relates these languages, in spite of the apparently unconstrained and chaotic variation we have found: The two rank-orders, 4 and 12, are the exact inverses of each other. The explanation for this is simple as soon as we begin to think of pronominal systems and ID rules in terms of their communicative functions, as well as in terms of formal description. The two phenomena measured in 4 and 12 are the only two important mechanisms, aside from universal ones shared by all languages, which can play major roles in the clarification of referential identities of NP's.

A language with an especially low 'score' in rank-order 4, such as Choctaw, must compensate for this by a high score in 12 to attain an adequate level of referential clarity. Similarly, a low score in 12 makes a high score in 4 obligatory, as in Nunggubuyu; and a medium score in 12 entails a medium score in 4. No language could function efficiently with low scores in both rank-orders, since referential ambiguity would be intolerable. On the other hand, if a language has a high score in 12, there is no need to develop an elaborate set of obligatory 3rd person pronominal categories, since there would already be a high degree of referential clarity. The development of a complex pronominal system would therefore make only a minor, 'mopping-up' contribution to the reduction of ambiguity; and this would not justify the 'cost' in terms of morphological complexity. Thus a high score in both 12 and 4 would be worse than a medium score in both, or a high score in one combined with a low score in the other. Each language develops enough devices to insure reasonable referential clarity, but uses no more devices than are really necessary.

On the basis of these theoretical arguments and the limited empirical evidence adduced here, I offer 13 below as a possible universal, subject to further testing. Other previously-mentioned universals, relevant here, are given as 14 and 15:

(14) In every language, there is an inverse relationship between the extent of application of strict complex ID rules and the degree of categorial differentiation other than case-marking within obligatory 3rd person pronominal elements.

(15) There is a universal structure of pronominal systems distinguishing at least the following categories: lsg., 1pl., 2nd person, and 3rd person.

(16) Every language has a basic simple ID rule (e.g. English reflexivization).
The combination of these universals shows how little freedom languages really have in the face of the necessity to insure adequate referential clarity. In every language, this factor makes severe demands which cannot be refused. The only freedom is in the choice of grammatical mechanisms used, and even here the choice is limited to pronominal differentiation and the use of transformations of a very specific sort. While the content of the pronominal differentiation may be cognitively based, and the structural change in the transformations is variable, the existence of the differentiation and of the transformations is imposed on languages by the structure of the speech act.

10. CONCLUSION. I wish to conclude with some speculative and probably premature remarks about the potential contribution to linguistic theory which may be made by the functional structuralism I have espoused and attempted to exemplify in this paper. For the sake of argument, let us assume that 13–15 all turn out to be valid universals, with at most minor refinements. Let us assume further that other functional correlations among formally unrelated elements of grammar have been discovered, so that we can begin to see the outlines of 'functional components' in language, similar to but distinct from the well-known formal components like phonology and morphology. The phenomena we have discussed here belong to the component dealing with the problem of referential identity of NP's.

In the first place, we will have provided new dimensions to the study of universals by freeing it from exclusive concentration on isolated aspects of surface structure. We can begin talking about universal conditions on functional components as a whole—conditions on systems rather than on elements. Principle 13 is an example of a condition on a system which is not expressable as conditions on individual elements. By shifting to a more abstract level, a step away from surface structure, we can begin to discern fundamental organizing principles of language, rather than just listing observed recurrent low-level similarities.

Second, we can develop typologies which are more revealing than those presently in use. Thus if 13 is valid, we can develop a single typology replacing the individual typologies expressed in rank-orders 4 and 12, since the two are interdependent. This is only one example of how we can base typologies on systems rather than on single elements. Contrast this with such typologies as tonal/non-tonal, synthetic/analytic etc., which relate to aspects of surface structure and which hardly can be said to go to the heart of grammatical systems.

Finally, principles like 13 will also have considerable potential for historical applications. If a language increases the complexity of its obligatory 3rd person pronominal system, and simultaneously reduces the scope of its strict complex ID rules, we can understand the two developments as merely two manifestations of a single historical process. A change in the functional value of one aspect of grammar will lead to a compensatory and inverse change in the functional value of other functionally related aspects. The more precisely we define the functional relationships among the different elements which make up grammatical systems, the better prepared we will be to develop an explanatory historical morpho-syntax.

[Received 22 February 1974.]