A LINGUISTIC ACCOUNT OF QUANTIFIERS IN ENGLISH
AND
THEIR PLACE IN THE DEVELOPMENT OF SOME MODERN APPROACHES
TO
SYNTAX AND SEMANTICS

Thesis

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Introduction

"A lawyer who pleads his own case has a fool for a client". Bearing in mind this ancient dictum, quoted by Bolinger (1960), I shall do no more in this brief introduction than set out my principal aims in constructing this essay.

I should make it clear from the outset that I have no intention of trying to construct a calculus for the quantificational system of English as a natural language. My interests are purely linguistic with special emphasis on that part of the discipline traditionally known as semantics. Thus, although I offer a miniature survey of the development of quantificational studies in Philosophy in Chapter One, and have frequent recourse, in other chapters, to observations made by philosophers, especially Quine, I make no attempt whatever to emulate the logicians by constructing such things as rules of inference. I have also tried to avoid symbolic representations except in those cases in which they show up aspects of semantic structure very clearly, and where I have symbolised, I have alternated between the systems of Quine and Peano-Russell, selection in each instance being determined by judgements regarding clarity.

My principal motives for writing this essay were two in number. First, I was led by a long-standing interest in the history of linguistics, to study the role which quantificational studies have played in its development, especially during the course of our century. It is my belief that, as far as the development of theories, or models is concerned, the place of quantifiers has been central, especially in the area of Semantics and Syntax, or, to use a now popular term, Semantax. Chapters one through four are, accordingly, devoted to this topic, with the main emphasis, in Chapter one falling upon the related discipline of Formal Logic. In fact, my general approach throughout the essay has been unashamedly eclectic. As, however, the presentation of a synthesis of the works of many scholars without comment or expansion seems a somewhat barren exercise, I have, in these chapters, included many of my own views where this intrusion seemed appropriate.

My second....

My second motive in presenting this study springs from a deep fascination with the complexities of linguistic behavior which, presumably, prompts any student of Language to make Language his study. In my case, I am constantly amazed at the adroitness with which the ordinary and perhaps relatively ill-educated person handles quantifiers in almost every sentence he hears or utters. One has only to consider the complexity of a sentence such as (1), overheard in a restaurant, to see what a wonderful skill such speakers possess.

1) I have looked everywhere for that book I am always losing, and I just cannot find it.

I have, therefore, devoted chapters five and six to the presentation of my own account of quantifiers, although Chapter Five concentrates, in the main, upon an investigation of so-called 'variable rules' since, at first sight, it appears that that notion might offer a fairly rigorous framework within which to analyse them - an impression which, to my mind, closer study dispells.

In presenting my own account of quantifiers, I have followed my own intuition in innumerable cases, but have always attempted to verify my findings by consulting the intuitions of others. I have not gone about this checking procedure in anything like a systematic fashion, since to do so would have made demands upon me, e.g. statistical calculations with all their attendant difficulties, which would have forced me to restrict the scope of my enquiries to a few individual problems instead of looking at many.

In Chapter Six, where I look at a variety of problems surrounding the quantification of objects conceptualised as things, my approach is one which Bolinger would call 'data-oriented'. Of the data I examined, much has been drawn from the pages of the OED, in an attempt to escape the charge, so frequently levelled at modern linguists, that their discussions are not concerned with 'real language'. In this selection, I have not followed the OED closely in distinguishing between word-classes and have been careful to choose only such examples as seem to reflect current usage. I have, moreover, interspersed object sentences of my own among those taken from the dictionary, in order to ensure that I do not concentrate entirely upon 'literary English' at the cost

of 'the....

of 'the spoken word'.

In Chapter Six, I have, of course, tried to present my material in something like an organised system, but I have not attempted to elevate the system above the data. I would not presume to compare my work with Bolinger's, but I think it here appropriate to quote an observation which he made (1960, p.378):

> I wish to treat it [the relation between _any_ and _some_] ... as a case study of how necessary a data-oriented approach is, ... If in doing so I must cite "a large chunk of variously classified" (but I hope not entirely "unanalysed") data, I can only reiterate my belief that there is no substitute for facts.

When I made my original plan for this essay, I intended to include a chapter upon the quantification of properties, such as intelligence, this intention being prompted, in part, by the fact that this question is of no particular logical interest since judgements concerning such properties vary from speaker to speaker. However, during the course of my research, it became clear to me that to achieve any measure of competence in this area, I would have to place Sapir's brilliant paper, _Grading: a study in semantics_, published posthumously in 1944, in the forefront of my discussion and that, in order to do so, I would have to adjust his analysis so as to conform with current linguistic thinking. While I am greatly impressed with Bolinger's paper on grading (1971), I do not feel that that study has made truly significant advances upon the work of his predecessor and, taking into account the magnitude of the problem involved, I have decided to reserve such a study for another essay.

Chapter 1

Quantifiers within the Development of Formal Logic and Early Linguistics

1.0 General

In an essay which purports to say something about the history of its subject, it is as well to begin at the beginning. In this chapter, therefore, I shall sketch the broad outlines of quantificational studies in the context of the development of formal logic beginning with Aristotle. This outline will be taken only up to the work of Frege (1879), whose theories, though not clearly understood at the time, foreshadowed the development of the predicate calculus in common use today.

From Frege, I shall move into a brief discussion of the so-called illogicality of natural languages - an illogicality which, as Henry Sweet sensibly pointed out, requires no defence - and thence to a short discussion of Sweet's own thoughts concerning quantifying expressions in English. As I shall explain in the final section, my decision to take Sweet's work as representative of the early linguists is somewhat arbitrary. While arbitrariness is normally undesirable in any historical enterprise, the manner in which linguistics (with the possible exception of such philological work as that of Grimm and Verner) has, until comparatively recent times, been closely inter-twined with philosophical studies, makes it pardonable in this instance. As the proverb says:

> A tree well grafted may not be cleanly sundered.

1.1 Quantifiers and the Syllogism

The analysis of propositions involving quantification has played a central role in the development of Formal Logic since the time of Aristotle. Prior (1962, p.2) writes:

> Aristotle's main interest was in inferences involving propositions of the forms 'Every X is a Y', 'No X is a Y', 'Some X is a Y' and 'Some X is not a Y' ...

We may illustrate Prior's propositional functions with the following.

1) All....

1) All priests are paupers.

2) Some priests are paupers.

3) No priests are paupers.

4) Some priests are not paupers.

Statements of these types - later known as the A, I, E and O statements, possibly from Latin affirmo and nego - represent respectively: universal affirmative, particular affirmative, universal negative and particular negative.

The A, I, E and O statements were not simply studied in isolation. They were basic to Aristotle's greatest invention, the syllogism. In the Prior Analytics, where the technique of syllogistic inference is developed, it is shown that each proposition out of which a given syllogism is constructed, must have the form of one of these statements. Thus, for instance, we may construct a 'categorical' syllogism like:

5) All Englishmen are gentlemen.
Some Englishmen are professors.
Therefore, some professors are gentlemen.

Not only were syllogisms constructed from A, I, E and O statements, but the traditional tests for valid syllogisms were couched largely in terms of quantificational notions. For example, it is a rule that the 'middle term' (the term which appears only in the major, i.e. first premise and the minor, i.e. second premise) should be 'distributed', i.e. apply singly and without exception to the members of a set, at least once. According to this test, (6) below is invalid since its 'middle term', plants, is not 'distributed'.

6) Some plants are poisonous.
All flowers are plants.
Therefore, all flowers are poisonous.

Syllogisms are of different kinds, and were later given mnemonic names by the scholastics. That exhibited under (5), for example, is known by the name Darii, because its statements are A, I and I respectively. Three other basic types are:

7) Celarent:
No trees are capable of self-locomotion.
All animals are capable of self-locomotion.

Therefore,...

Therefore, no animals are trees.
i.e. E, A, E.

8) Ferio:
No foxes are vegetarians.
Some animals are foxes.
Therefore, some animals are not vegetarians.
i.e. E, I, O.

9) Barbara:
All men are mortal.
All Englishmen are men.
Therefore, all Englishmen are mortal.
i.e. A, A, A.

It will be noted that, in the case of Barbara (9), the second, or minor premise, is universally quantified as is the first, or major. A more familiar form of this type is:

10) All men are mortal.
Socrates is a man.
Therefore, Socrates is mortal.

It will be noticed that, in (10), only the major premise is overtly quantified as universal, the second premise containing a proper name, Socrates, where (9) had all Englishmen. In fact, as far as Aristotle and his followers were concerned, proper names like Socrates and overtly universal words like all men are of the A type, so that, to them, (9) and (10) represent the same syllogistic type. Mitchell (1962, p.43) explains this curious equation as follows:

> Traditional logic represents singular and universal propositions as of the same form, 'all X is Y', a procedure which appears perverse but is intelligible. Just as in the phrase 'All men' the term 'men' is distributed, so we may say that the term 'Socrates', as the subject of a proposition, is also distributed, since it is used to refer to all that it can refer to, viz. the individual whose name is Socrates. In this respect 'all men are mortal' and 'Socrates is mortal' are analogous propositions in which mortality is predicated of all that to which the subject-term can apply.

While this....

While this assumption is, in Mitchell's words 'intelligible,' it is, to many scholars, unsatisfactory and, in the case of Russell, forms a major objection to the acceptance of this type of inference. Russell (1946, p.219) writes:

> Let us begin with the two statements "Socrates is a man" and "all Greeks are men". It is necessary to make a sharp distinction between these two, which is not done in Aristotelian logic. The statement "all Greeks are men" is commonly interpreted as implying that there are Greeks; without this implication, some of Aristotle's syllogisms are not valid. ... If we are to be explicit, we must .. divide the one statement "all Greeks are men" into two, one saying "there are Greeks," and the other saying "if anything is a Greek it is a man." The latter statement is purely hypothetical, and does not imply that there are Greeks.
>
> The statement "all Greeks are men" is thus much more complex in form than the statement "Socrates is a man." "Socrates is a man" has "Socrates" for its subject, but "all Greeks are men" does not have "all Greeks" for its subject, for there is nothing about "all Greeks" either in the statement "there are Greeks" or in the statement "if anything is a Greek it is a man."
>
> This purely formal error was a source of errors in metaphysics and theory of knowledge.

It would be out of place for me to enter upon the details of Lord Russell's metaphysical objections here. However, his main point is (p.221):

> It made it possible to hold that, in some sense, "all men" denotes an entity of the same sort as that denoted by "Socrates." This led Aristotle to say that in a sense a species is a substance. He was careful to qualify this statement, but his followers, especially Porphyry, showed less caution.

1.2 Quantifiers....

1.2 Quantifiers and the Scholastics

During the so-called Scholastic period, a number of important advances were made with respect to the understanding of quantifiers conceived of as distinct entities. The Terminists, i.e. Ockham and his followers (see Russell, 1946, p.534 ff) who played a major role in the development of Logic in the Middle Ages, until the decline of Scholasticism at the Renaissance, were particularly interested in the logic of speech '*scientia sermoncinalis*' and this interest caused them to make a special study of the syncategorematic terms (in modern parlance 'empty words') as distinct from the categorematic terms (i.e. 'full words') - a distinction which probably goes back as far as the Stoics. While categorematic terms were held to have a definite referent which they signify by convention, e.g. *tree*, syncategorematic terms were equivalent to what we now know as the 'logical constants', e.g. connectives such as *and*, *or*, *if .. then*; the copula *be*; the negator *not* and the quantifiers, *all*, *every*, *each*, *some* and so on. This distinction caused the schoolmen to regard such terms as logical operators or functors (*officiales* as they called them) and from this approach, they received a syntactic rather than a semantic interpretation. Bochenski (1961, p.157) provides a typical account from Ockham:

> Categorematic terms have a definite and certain signification, e.g. this name 'man' signifies all men, ... But syncategorematic terms, such as are 'all', 'no', 'some', 'whole', 'besides', 'only', 'insofar as', and such-like, do not have a definite and certain signification, nor do they signify anything distinct from what is signified by the categoremata. Rather, ... a syncategorema properly speaking signifies nothing, but when attached to something else makes that signify something or stand for some one or more things in a determinate way, or exercises some other function about a categorema. Hence this syncategorema 'all' has no definite significate, but when attached to 'man' makes it stand or suppose for all men..

As Bochenski observes (p.158):

> Evidently, the syncategoremata are our logical constants. That they determine logical form is expressly and

consciously....

> consciously propounded by Buridan whose text is later adopted almost word for word by Albert of Saxony.

One of the most important preoccupations of the classical Scholastics was the development of the theory of suppositio (ways in which an expression could stand for or apply to an object). This theory, described in detail by Boehner (1952), had played a central role in Scholastic thinking from the beginning of the second half of the 12th century. Bochenski (1961, pp.162-163) stresses its importance:

> This [the doctrine of supposition] was one of the most original creations of Scholasticism, unknown to ancient and modern logic, but playing a central role here.

As the theory was developed, it was gradually extended and included the analysis of quantified expressions. Boehner writes (p.28):

> Since supposition is principally, though not exclusively, concerned with the quantity of terms, it deals for the most part with the extension or range of predicates in reference to individuals. On this point the theory of supposition is, to a very large extent, one with the modern theory of quantification.

Four types of quantification seem to have been recognised: the universal quantifier, e.g. every; the particular, or existential quantifier, e.g. some; the collective quantifier, e.g. all and the so-called disjunct or 'confused' quantifier, e.g. every. The 'confused' quantification clearly corresponds to what we now know as 'distribution'. This is apparent from the following account by Peter of Spain (Bochenski, 1961, p.172):

> ... confused supposition is the taking of a common term for a number of things by means of the sign of universality, as when it is said: 'every man is an animal', the term 'man' is taken for a number by means of the sign of universality, being taken for each of its individuals.

Expressions containing these quantifiers could be formally analysed according to the following rules:

1) A universally quantified proposition is equivalent to a series of copula propositions in which the common term is particularised.

Thus, according to (1), the proposition: Every Roman is powerful is equivalent to: This Roman is powerful and that Roman is powerful and this Roman ...

2) A particularly quantified expression is equivalent to a series of propositions connected disjunctively.

Thus, according to (2), the proposition: Some people loathe horses is equivalent to: This person loathes horses, or that person loathes horses, or this person loathes horses, ...

3) A collectively quantified proposition is equivalent to a series of propositions connected conjunctively in each of which the quantified term is particularised.

According to (3), the proposition: All the colours of the rainbow are seven is equivalent to: This colour and that colour (for all the colours of the rainbow) are seven.

4) A disjunctively quantified proposition is equivalent to a series of disjunctively connected propositions in each of which the quantified term is singularised.

By (4), the proposition: Every man is an expert is equivalent to: Each single man is this or that or the other expert.

Even so incomplete a discussion of quantificational studies during the Scholastic period will have been sufficient to demonstrate the extent to which the thinking of the scholars of that period was dynamic. Many writers give the impression that the schoolmen did little but slavishly follow the principles and techniques which were to be extracted from the Organon, as the works of Aristotle were collectively known. An extreme example of this attitude is represented by the following assertion made by Lord Russell (1946, p.218):

> His [Aristotle's] present-day influence is so inimical to clear thinking, that it is hard to remember how great an advance he made upon all his predecessors ... or how

admirable....

> admirable his logical work would still seem if it had been a stage in a continual progress, instead of being (as in fact it was) a dead end, followed by over two thousand years of stagnation.

If one considers Bochenski's account of the Scholastics in all its massive detail, as a layman, one cannot help feeling that such a cavalier dismissal, even though emanating from one of the greatest intellects of our time, is unwarranted.

However, it does appear that the Scholastics, while they did much with A, I, E and O statements, failed entirely to make significant progress in the treatment of propositions involving multiple generality (i.e. propositions containing more than one quantifier). Nowhere did Aristotle handle propositions like:

5) Everybody wants something.

and the schoolmen, in spite of the doctrine of Suppositio were quite unable to determine the truth conditions of such propositions in anything like an adequate manner. Dummett (1973, p.8) expresses himself strongly:

> As a result ... the whole subject of logic fell into disrepute at the Renaissance, as part of the general rejection of the achievements of the scholastic era. Apart from Leibniz - whose work likewise failed to tackle the problem of multiple generality - no more serious work was done in logic by European mathematicians or philosophers until the nineteenth century. Indeed, what would otherwise have been the scandal of the failure, over centuries, to resolve the problem of inferences involving multiple generality was for long concealed by doctrines entailing the non-existence of the problem.

According to Dummett, central among these doctrines was that which held (p.8):

> ... any sentence involving predicates of more than one place can in principle be reduced to one involving only one-place predicates [this belief] implied that the study of multiple generality ... is unnecessary.

1.3 The Solution....

1.3 The Solution to the Problem of Multiple Generality

In 1879, the mathematician and logician Gottlob Frege published his Begriffsschrift which probably represented as great and important a revolution in logic as Aristotle's invention of the syllogism. In the following sketch of Frege's work, I draw almost entirely on the extremely clear exposition provided by Dummett (1973).

In essence, what Frege accomplished was a formal means whereby the truth conditions of sentences involving multiple quantification could be worked out using only the rules which are necessary for the analysis of sentences involving single-quantification.

Although philosophers had, long before Frege's time, been aware of the fact that the left to right linear ordering of words in sentences is not a reliable guide to their interpretation (see, for instance, Arnauld, 1660, p.74 ff) the practice persisted of construing sentences, including those involving multiple generality, as though they had been constructed by, as it were, a simultaneous combining of their individual words.

Frege's approach rests upon the assumption that sentences should be thought of as being produced through a step by step construction in which ordering between the steps is often vital to the interpretation of the whole. Following the common practice among logicians such as Dummett and Copi (1961-7), a very simple arithmetical example will suffice to demonstrate this step by step principle. The expression:

$$2 + 5 \times 3$$

is clearly ambiguous between the two meanings "21" and "17", depending upon whether we regard it as being constructed from "2+5" combined with 3 by the operator "x" or else from the expression "5x3" combined with 2 by the operator "+". To avoid such ambiguity, we employ parentheses to mark off the first stage in construction from the second, e.g. either (2+5) x 3 or 2 + (5x3).

In natural language, however, we do not employ such devices as parenthesis and we are, in consequence, forced to rely instead upon arbitrary conventions which may, or may not be observed. Thus, with respect to:

1) Everybody wants something,

the"normal" interpretation is that for every individual, there is something (or things) that individual wants, the something (or things) possibly varying from individual to individual, rather than, for every individual, there is something (or things) which he wants, this something (or things) being wanted by each individual. This "normal" interpretation, however, depends upon the convention that in the interpretation of such a sentence as (1), the quantifiers are introduced in "inverse order of occurrence" (Dummett, p.12) in the left-to-right arrangement of words in a sentence. Put another way, we can say that one quantifier falls within the scope of any quantifier which is to the left of it in a given string, where, by scope, we mean, something like "is dominated by", that is, "is introduced prior to".

The observation of the convention referred to above led Frege, and still leads logicians as distinct from linguists, to postulate a level of redundancy in natural languages like English. If, for instance, we wish to convey the "abnormal" sense of (1), we must, by the convention stated, apply the passive transformation,

2) Something is wanted by everyone,

or form an existential statement containing a restrictive relative clause, e.g.:

3) There is something which everyone wants,

at least one of these manoeuvres being necessary to get the quantifier "something" to the left of the string, or, put another way, to get "everybody" to the right of the string.

To Frege, this convention was unsatisfactory on two counts. First, it is unreliable - one can never be sure that a given speaker is making use of it. At least in the absence of more information than the sentence in question provides the convention fails to preclude ambiguity. Secondly, Frege saw in the convention a source of redundancy in the language as a whole. The passive, as he saw it, was necessary in order to establish the convention. On the other hand, many sentences not exhibiting multiple quantification seemed to him to admit of the passive transformation without change of meaning, for instance, the following:

4) Oliver wants the pony.

5) The pony is wanted by Oliver.

Such redundancy....

Such redundancy, argued Frege, contributed to the inefficiency of natural language. I am not, of course, trying to support Frege's contention regarding the passive. Clearly, the passive has many functions other than the indication of quantifier-scope.

Frege's achievement in avoiding such ambiguity and redundancy, as well as his resolution of the specific problem of assigning truth values to sentences containing multiple generality, was made possible by his notion of the step-by-step construction of sentences plus the technique of substituting proper names for quantifiers.

If we consider (1), Frege's reconstruction may be expressed in the following manner. As Dummett demonstrates (pp. 10 ff), we assume an initial string containing two proper names, e.g.:

6) Oliver wants Aurora.

This string is now transformed into a one-place predicate by removing the proper name Aurora:

7) Oliver wants ϵ .

where " ϵ " serves merely to indicate the slot corresponding to the second place. Next, we fill the slot " ϵ " by the quantifier something, giving:

8) Oliver wants something.

In the following stage, we remove the name Oliver giving the one-place predicate:

9) ϵ wants something.

Finally, we fill the slot " ϵ " in (9) with the quantifier everybody, giving the sentence (1).

According to this reconstruction, the quantifier which is inserted last has the other quantifier(s) within its scope. Thus, while we can interpret (1) with something in the scope of everybody because everybody is added to the one-place predicate (9) we cannot interpret everybody as falling within the scope of something since we did not postulate a one-place predicate of the form:

10) Everybody wants ϵ .

It is obvious that such a reconstruction in terms of one-place predicates allows for the application of rules of validity which

are....

are appropriate to one-place predicates in order to solve problems arising from two or more places, provided only that the rules be applied at the stage(s) at which the quantifiers are to be inserted. Thus, for example, (7) is true if and only if at least one of the following is true.

11) Oliver wants Aurora, Empress, Easter Pride, ...

Such a reconstruction does not, of course, disambiguate (1) unless we continue to appeal to the adhoc convention previously cited. In order to avoid this convention, Frege devised the symbolic notation of quantifier variables which has since been developed as the predicate calculus or functional calculus. In this notation, instead of inserting a quantifier in the appropriate argument-place of a predicate, we insert a variable, x, y, z, ... in the place in question and bind the variable to a quantifier appearing as a prefix to the predicate. Thus, while (1) is ambiguous, (12) below is not since the left hand quantifier always has any following quantifier(s) in its scope and was, therefore, in terms of Frege's step by step reconstruction inserted last.

12) For every x for some y if x is a person, x wants y

or, in a fully symbolic notation:

13) $(x)\ (\exists\ y)\ Px \supset Wxy$

where x is the universal quantifier, and $\exists$ y is shown by "$\exists$ " to be the existential or particular quantifier, P and W represent the predicates "is a person" and "wants" and "$\supset$" stands for "if....then".

Frege's work has long since passed into the accepted corpus of logical technique. So successful was his solution to the problem of multiple generality that, as Dummett puts it (p.9):

> We are no longer conscious of the problem of which it was the solution as a philosophical problem at all.

His invention of the quantifier variable notation, has become so well established that relatively few text-books on symbolic logic bother to acknowledge the debt they owe to him. Changes have, of course, been made. For instance, Frege's system did not allow explicitly for free variables as does modern logic, although it is apparently possible to view his predicate-place markers such as " ϵ "

as equivalent....

as equivalent. There are, in addition, several points central to his analysis which cause difficulty. The question arises, for example, whether it is always possible to reconstruct sentences containing signs of generality in terms of proper names. Must we suppose that a language must contain a proper name for everything to which it may refer? Matters of this sort do not belong properly in this essay and I shall, therefore, not pursue them.

I have devoted some space to an elementary exposition of Frege's work on quantifiers because I believe that the debt which linguists as well as pure logicians owe to him is great and that an acknowledgement of this debt adds considerably to our understanding of much recent work in linguistics as a whole and the study of quantification in particular. The reader of Frege cannot help being struck by the similarity between his insistence upon levels of construction and the Chomskian advocation of a multi-level approach in syntax. Again, when we examine the analysis of quantifiers offered by the generativists such as Lakoff, we cannot but be aware of the Fregian basis for the so-called "precede" and "dominate" relationships which there play so fundamental a role - a basis not usually acknowledged by the generativists themselves.

1.4 The Assumed Illogicality of Natural Language

As it is not my intention further to pursue the development of quantificational theory in logic, but rather to devote myself to the linguist's view of the subject, I should, at this point, be able to turn to work of a more strictly linguistic nature. However, in so far as semantics is concerned, it often proves extremely difficult to distinguish the logicians and philosophers on the one hand from the linguists on the other. Again, the influence of Frege is central. Although it cannot be claimed that he was solely responsible for the rise of Linguistic Philosophy, his Conceptual Notation was certainly an important stimulus to the emergence of that study. In the introduction to his translation of Frege, Bynum (1972, p.14) suggests:

> ... the Conceptual Notation ... ushered in the so-called "linguistic turn" in philosophy.

Frege's primary concern was with mathematics, but he was unable

to avoid....

to avoid making observations about natural languages and, in the consequence, provide an alternative to their use - his own symbolic meta-language. He makes this very clear in his preface (p.104), when he says: (I shall restrict quotations from Conceptual Notation to the translation by Bynum.):

> I sought first to reduce the concept of ordering-in-a-sequence to the notion of logical ordering, in order to advance from here to the concept of number. So that something intuitive ... could not squeeze in unnoticed here, it was most important to keep the chain of reasoning free of gaps. As I endeavoured to fulfil this requirement most rigorously, I found an obstacle in the inadequacy of the language; despite all the unwieldiness of the expressions, the more complex the relations became, the less precision - which my purpose required - could be obtained. From this deficiency arose the idea of the "conceptual notation" presented here.

Frege, then, like others before him (e.g. Leibnitz) found natural language to be inadequate for the purposes of mathematics. As other disciplines, e.g. logic, also require that we should be able in Frege's words (p.104):

> ... to test in the most reliable manner the validity of a chain of reasoning and expose each presupposition which tends to creep in unnoticed ...

natural language was inadequate for them also.

Katz (1966) devoted an entire volume to a discussion of the question of the inadequacy of natural language especially as that inadequacy is attributed, as by Carnap and others, to supposed irregularity basic to all natural languages. In spite of innumerable pages of symbolised exposition, all that Katz is able to offer by way of proof for his counter theory is his own theory of componential analysis set forth in Katz and Fodor (1963), again in Katz and Postal (1964) and in many subsequent papers by Katz himself. However, as this theory has, notably by Weinreich (1967) been shown to be basically inadequate as a description of semantics, ironically partly because it does not provide for ordering between subject and object, Katz's rejection of the charge against natural

language presumably falls away, or, at best, remains an unsupported assertion. In any case, many linguists must feel that natural language does not really need any defence. Frege, comparing his artificial language with a microscope says in his Preface (p.105):

> ... this "conceptual notation" is devised for particular scientific purposes; and therefore one may not condemn it because it is useless for other purposes.

Clearly, it would require little adjustment in wording to make Frege's observation applicable to natural language.

The view that natural language is, in fact, sufficient to everyday needs was expressed in 1891 by Sweet when he says (p.40), discussing the relations between logical and grammatical categories:

> It must not be assumed that defective correspondence between logical and grammatical categories is necessarily injurious to language considered as a means of expression. On the contrary, illogical and ungrammatical constructions often add greatly to ease, and even to accuracy, of expression.

It was only natural that, hand in hand with this rejection of natural language as an analytic tool both by logicians and mathematicians, should go a renewed, or at least, special interest in language itself. Having decided that natural language is inefficient, and having (in Frege's terms) a formula language to take its place, it then becomes possible to examine the inefficiencies of the former with the precision of the latter. This is evident from Quine, (1941-66, p.68), when he says:

> Most things can be explained clearly enough by the common-sense sort of statement: it is rather when the statement itself becomes an object of analysis that its full translation into the logical notation becomes particularly advantageous.

Thus, in many instances it is difficult to say of a given writer that his work is properly the domain of logic or of linguistics. In what follows, therefore, although my intention is to discuss the history of quantificational studies in linguistics, I shall feel free to include in that discussion some consideration of the output of recognised logicians like Quine when their writings have a distinctly linguistic flavour.

In an....

In an essay of this kind I cannot, of course, leave a notion like "distinctly linguistic flavour" entirely undefined - what has a distinct linguistic flavour to one person may have a distinctly logical or mathematical flavour for another. The best that can be done is for each writer to define his own terms as precisely as possible, thus minimising ambiguity with respect to his own work.

For my definition, I shall once more draw upon the thinking of Frege. In his Grundlage, "Foundations of Arithmetic", Frege sets out what has become an accepted distinction between the sinn ("sense") of a string and its beleutung ("tone or colouring"). To the "sense" of a statement belong all and only the factors which determine its truth value (truth or falsity) all other elements of meaning belong to its "tone". Thus, taking an example from Quine (1966), if we substitute although for and in the following sentence, no difference whatever will be made as far as its sense (truth value) is concerned, though a substantial difference is made to its tone.

1) Robinson is away and Jones is ill.

Whereas the connective and merely joins statements together although joins and, at the same time, expresses the speaker's attitude towards the subjects of the statements and their connection - Robinson is away even though Jones is ill; or: Robinson is away in spite of the fact that Jones is ill.

When a writer is exclusively concerned with "sense", as defined above and the bearing upon the truth values of sentences carried by that notion, we may say that it does not have a "distinctly linguistic flavour", but rather a logical or mathematical one.

My definition of "distinctly linguistic flavour" offered in the preceding paragraph should be taken as providing a rule for justifying my inclusion of the work of recognised philosophers. It should not, of course, be used as a criterion for excluding the writings of professed linguists from the discussion. This proviso would scarcely need stating if it were not for the fact that a number of modern linguists (linguists who have produced work in the last fifteen to twenty years), despairing of handling the question of tone (in Frege's use) has stated that truth or false-hood of sentences are the only things we can be sure of and, as

linguistics tries to be a scientific discipline, so runs their argument, truth values are the things linguists should most talk about when meaning is in question. Thus, Leech, (1969, p.9) for example, in his discussion of the empirical ground of semantics says:

> Among the notions I take to be more fundamental than others .... are IMPLICATION, PARAPHRASE, and MEANINGLESSNESS .... Implication, a relation between two assertions, is reducible to judgements of truth value, in many respects the "safest" of all starting-points for semantic investigation. .... Paraphrase, ... may be defined in terms of implication: .... I shall apply the term "meaningless" not only to assertions like 'The paint is silent', but also to contradictions (necessarily false assertions) and to tautologies (necessarily true statements) ...

Observations of this nature clearly constitute hypotheses about the discipline of linguistics itself and they do not, in consequence, render the works in which they appear inappropriate to my study.

1.5 Quantifiers among the Early Linguists: a point of departure

Unlike logic, linguistics has no immediately recognisable Aristotle and the question where to begin a historical review either of the whole discipline, or, as here, of one particular corner, must be settled in a largely arbitrary fashion.

I have decided, in this study, to begin with the work of Henry Sweet, but I do not mean to imply by my choice that this is the only possible choice. Observations concerning quantification were, indeed, made by scholars before Sweet who might, in one sense and another, be described as linguists, such as Lancelot and Arnauld (1660). Among such observations, Bishop Lowth, in his grammar of 1762, remarked (p.13) that:

> There is a remarkable exception to this rule [a marks nouns as singular] in the use of the Adjectives few and many ... which though joined with plural Substantives, yet admit of the singular Article, a: as, a few men, a great many men: ... The reason of it is manifest from the effect, which the article has in these phrases: it means a small or great number collectively taken, and

> therefore gives the idea of a Whole, that is, of unity. Thus likewise a hundred, a thousand, is one whole number, an aggregate of many collectively taken; and therefore still retains the Article a, though joined as an Adjective to a plural Substantive; as, a hundred years.

While such observations are clearly useful and show a combination of insight and analytic dexterity on the part of the author, they are too fragmentary to answer my purpose here.

Sweet's reputation is undoubtedly greatest in the field of historical linguistics, particularly Old English studies. However, his New English Grammar Logical and Historical (1891/1960) offers, in the part devoted to New English, a remarkably well organised and insightful approach to a large range of problems still central in modern studies, especially problems in the area of what would now be called semantics.

Sweet's treatment of quantification is basically taxonomic, the taxonomy being founded upon considerations of meaning.

In the quotation from Lowth given above, words which we would call 'quantifiers', few, many, are described as 'adjectives'. According to Sweet, modifying words may be 'attribute-words', or else 'qualifiers'. Attribute-words, he believed, tell us something about the referent of the noun to which they are attached. Thus, he says (p.12):

> ... Substances are known solely to us by their attributes, that is, the impressions these substances make on our senses. Thus the substance 'gold' is known to us by its attributes of 'hardness,' 'heaviness,' 'yellow colour,' etc. ...

On the other hand, words like many, all, some, few, are not 'attribute words' "they are only one kind of qualifier" (he distinguished a further type which he called 'mark words', e.g. this, that). Such words, he contended, do not provide any information regarding their nouns, they merely (p.13):

> ... qualify, or limit, or define the idea expressed ... [thus] it is easy to distinguish between an attribute-word and a qualifier by asking ourselves, Does this word,

which at....

> which at first sight looks like an attribute-word, give us any direct information about the word it is connected with?

With typical insight, Sweet (p.13) supports the cited contention by pointing out, as did Jespersen later:

> In many cases, indeed, a qualifier cannot be used to make a statement with at all. Thus from these tall men we can infer these men are tall, but we cannot make some Englishmen into *Englishmen are some, or half the island, into *the island was half.

As we shall see, when considering the views of the so-called Generative Semantists, particularly George Lakoff, an entirely opposite view may be taken to that expressed by Sweet. If we are prepared to postulate some sort of underlying structure having much in common with the predicate calculus (where quantifiers are prefixed to propositional functions), we can propose structures of the type:

1) Englishmen are many.

In his section entitled Quantitative Pronouns (p.85), Sweet makes an important distinction with respect to the notion of quantity as reflected in natural language:

> Quantity is of two kinds, (a) continuous quantity, expressed by such words as size, big, long, much, less, and (b) discrete or broken quantity, called 'number,' expressed by such words as number, numerous, count, three, both, many.

Unfortunately, Sweet does not offer any precise definition of the notions discrete and continuous quantity, presumably thinking them too transparent. However, it is often rather difficult to say to which category a given item would belong. Even so, that the distinction is valid is easily seen by considering the traditional, school-book rejection of such sentences as (2) and (4) in favour of (3) and (5).

2) *The farm produced fewer milk this year.
3) The farm produced less milk this year.
4) *The farm produced less eggs this year.
5) The farm produced fewer eggs this year.

It must....

It must be conceded, however, that even in these examples, many speakers are uncertain with respect to the level of acceptability. Sentence (4), in particular, is regarded by many as normal, perhaps due to the influence of the equivalent expression:

6) ... less in the way of ...

Clearly, precise definitions of Sweet's 'continuous' and 'discrete' quantity are necessary before the distinction can be used and presumably such definitions must involve the notions of [+count] and [-count].

Even though such definitions are absent from Sweet's work, it is rather surprising that Jespersen (1924) does not relate his discussion of mass-nouns to the distinction drawn by his predecessor. It would have been especially appropriate for him to have done so in the footnote on page 200, where he criticises Sweet, for among other things, failing "to see the essential similarity between his 'material nouns' and 'abstract nouns'" while commending Noreen (1903) for making a distinction between <u>impartitiva</u> and <u>partitiva</u> which he describes as "very original" but which, in my opinion, is fairly closely related to the Sweet distinction under discussion.

When we contrast Sweet's lists with the quantifiers of formal logic, we find words like <u>whole</u> which he described as terms of 'continuous' quantity but which would not by some logicians, e.g. Quine, be regarded as quantifiers at all. Quine (1966) illustrates this point. When discussing the item <u>all</u>, he observes (p.86) of the sentence:

7) Smith can outplay all the members of the team.

> [this sentence] illustrates an ambiguity that does sometimes arise in the use of 'all' for we cannot be quite sure whether [7] is supposed to mean the same as
> [8] Smith can outplay every member of the team.
> or to mean that Smith single-handed can outplay the whole team in a body. This latter sense has little to do with [8] and indeed involves no quantification at all; it could be phrased simply 'Smith can outplay the team'.

Words like whole, entire, all (in its 'continuous' interpretation), at least in Quine's view, are logically redundant. I use the qualification "at least" because, as Professor H.J. Schutte has pointed out to me, it is not entirely clear that such expressions are not, in some sense, to be regarded as quantified even in logic, especially if one takes a Platonic view.

Other quantifiers from Sweet's list are usually excluded from the province of formal logic on different grounds. Items like many, few, which form what modern linguists like Seuren (1969) or Fowler (1971) call 'proportional quantifiers', are not usually studied within the framework of symbolic logic because the assignment of truth values to sentences containing them may vary from speaker to speaker. Thus, while (9) may be true for an actor on a given occasion, it may be false for his manager on the same occasion.

9) Many people attended the performance.

As far as logic is concerned, sentences like (9) and others containing proportional quantifiers like: few, most, much, little are simply reducible to the particular quantifier and are not, in consequence, distinct with respect to truth values. This is not to say, of course, that we cannot use the apparatus of symbolic logic, suitably modified, to analyse the behaviour of such words linguistically. Several recent writers, as we shall see later, e.g. Lakoff and Sueren have in fact done so. However, in my opinion, important though these attempts are, they often amount to little more than an acknowledgement of the primacy of given logical relations such as those of 'dominating' or 'preceding' already briefly mentioned.

One fact concerning these quantifiers is sufficiently fundamental and has a sufficiently logical flavour to deserve comment in this first chapter. Certain of these items function very much as do the so-called 'gradeable adjectives' discussed by Sapir (1944-49) and Lyons (1968). If the sentence:

10) Many cars left the circuit.

is true, then:

11) Few cars left the circuit.

is false,...

is false, presuming both statements refer to the same event. On the other hand, denial of (10), i.e.:

12) Not many cars left the circuit.

does not necessarily assert (11). The same would seem to be the case with the corresponding 'continuous' quantifiers much and little. If I assert (13),:

13) We had much discussion.

I obviously deny 14):

14) We had little discussion.

On the other hand, if I deny (13), I do not necessarily assert (14). It will be seen, however, that in the case of much versus little, this point is only illustrated weakly. I put this down at least partly to the fact that much is far more common in negative sentences than in positive, at least in modern English, while little tends to be restricted to positive sentences except where it is preceded by the indefinite article. I shall return to such points in chapter six.

Chapter 2

Otto Jespersen

2.0 General

In spite of occasional lapses from strict objectivity, as when he described English as "manly" (Growth and Structure of the English Language, 9th Edition, 1945, Blackwell, p.2), Otto Jespersen is certainly one of the most important linguists of our century both as a student of English in particular and as a general and comparative linguist. The scope of his writings is so great and the profundity of his insight so deep that, even within the limitations imposed upon me by my title, I have found it difficult to synthesise his work satisfactorily and have confined my attention to the following texts: The Philosophy of Grammar (1924); The Essentials of English Grammar (1933); and Analytic Syntax (1937) (these works will henceforth be referred to as: PhG, EEG and AS). My reason for excluding the six volume A Modern English Grammar on Historical Principles (1909-1949) is that its contents are very carefully summarised in EEG, there being no significant details, as far as I can see, concerning quantifiers which this summary bypasses. I should add that, although I draw upon all three of the above named texts, I concentrate chiefly upon PhG and EEG since Jespersen did not radically alter the views they set forth and, to my mind, they offer the clearest formulation.

I do not, in this section, follow the usual convention of numbering object sentences since, with very few exceptions, I draw entirely upon Jespersen's own material and have, in consequence, to follow his mode of presentation. All parentheses within quotations are Jespersen's unless in square brackets. I continue to use underlining for object words appearing in my own discussion.

Of the grammatical phenomena which Jespersen investigated, the following seem to me to have a central role in his remarks concerning quantification: Word Classes especially Pronouns; Rank; Nexus and Junction; Negation.

2.1 Word Classes....

2.1 Word Classes

Jespersen's account of word classes, described in PhG as Parts of Speech, is particularly interesting with respect to the distinction between substantives and adjectives and the account of pronouns.

In PhG, Jespersen bases the distinction between substantives and adjectives upon the philosophical notion of properties, very clearly discussed by Russell (1912/1968) whose views are summarised and countered, though not, I think, convincingly by Searle (1971). On page 74, he writes that, to the question why the distinction between nouns and adjectives is everywhere found:

> ... an answer very often given is that substantives denote substances (persons and things) and adjectives qualities found in these things. This definition is evidently at the root of the name substantive, but it cannot be said to be completely satisfactory.

Jespersen's objection to this definition is based upon the fact that many abstract nouns, e.g. wisdom, denote qualities which are also denoted by adjectives, e.g. wise. He devises a way around this difficulty by claiming that abstract nouns are "nexus words" - words which enable the speaker to formulate propositions without the use of additional clauses etc., e.g. The doctor was clever and ... becomes The doctor's cleverness ... (PhG, Chapter 10, pp. 133-138).

Jespersen then, leaving abstract nouns out of account at this point, continues:

> ... I find the solution to our problem in the view that on the whole substantives are more special than adjectives, they are applicable to fewer objects than adjectives, in the parlance of logicians, the extension of a substantive is less and its intention is greater than that of an adjective. The adjective indicates and singles out one quality, one distinguishing mark, but each substantive suggests ... many distinguishing features (by which to recognise) the person or thing in question. (PhG, p.75).

In a footnote....

In a footnote (p.75) in which he compares his definition to a similar one made by Paul, Jespersen adds:

> ... I do not mean to say that the extension of any substantive is always under all circumstances less than that of any adjective ...

Such a view would obviously not stand up to examination and Jespersen gives examples, e.g. Napoleon the third, which demonstrate the point. On page 79, he continues:

> Applicability to a greater or lesser number is only one side of what is implied by the words special and general and I am inclined to lay more stress on the greater complexity of qualities denoted by substantives as against the singling out of one quality in the case of an adjective.

Jespersen's approach to adjectives is relevant to the topic of quantifiers because, following the established practice, he regarded quantifiers in pre-modifying position as adjectives. Thus in EEG (p.67) we find a sample list of adjectives grouped as follows:

> beautiful, healthy, kind, ... (possessing such and such a quality: "qualifiers"); numerous, many, few, much, etc. (quantifiers).

The question now arising is, of course, if Jespersen regarded the function of the adjective as that of singling out a particular quality in the referent of the noun, to what quality does a word like many refer in a combination like many books?

In AS (p.118) Jespersen says that quantifiers:

> ... are different from ordinary (restrictive) adjuncts [He uses the term "adjunct" here, because the observation is made in the context of a discussion of Rank.] While these qualify, i.e. specify, define a primary, this is not the case with quantifiers. Nice girls says something about the kind of girls, many girls speaks only of the number. Nice girls may be paraphrased "girls who are nice",

but no....

> but no similar paraphrase is possible with <u>many girls</u>. "I saw many nice girls" = "I saw many girls who were nice." but not = "I saw nice girls who were many."

To this point (already noted by Sweet) Jespersen adds:

> ... where a quantifier and a qualifier are combined, the former is always placed first. Similarly in "I drank a bottle of good wine" which in spite of the preposition is parallel with "I drank much good wine."

Jespersen makes no clear attempt, other than these few remarks, to untangle the difficulty which arises from the classification of quantifiers as a subgroup of adjectives - a difficulty only compounded by his penetrating observation concerning the difference between adjectives and substantives.

I do not wish, in this section, to anticipate too fully what is to come later, but it is obvious enough that if Jespersen had taken the quantifier in such combinations as <u>many girls</u> as, in some way, qualifying a given set of girls, rather than seeing it as directly modifying <u>girls</u>, he would have been able to maintain his position concerning the function of adjectives by saying, in effect, that <u>many</u> singles out a quality of the set: that of having an extensive membership. (This is not intended to be a rigorous formulation.)

As well as classing quantifiers among adjectives, Jespersen includes them among pronouns, calling them "indefinite pronouns". Thus, in EEG (p.68), we find the list:

> one, an(a), some, any, either, all, both, every, each, none(no), neither.

Jespersen also classes adverbial quantifiers, e.g.:

> somewhere, anywhere, everywhere, nowhere, never, ever, always, somehow, anyhow

with pronouns, calling them indefinite pronominal adverbs. (EEG, p.68).

Finally,....

Finally, he notes the fact (EEG, p.68) that some grammarians take the numerals, ordinal as well as cardinal, as a subclass under pronouns: a view with which he expressed sympathy in PhG (p.85), where he says:

> Numerals are often given as a separate part of speech; it would probably be better to treat them as a separate subclass under pronouns, with which they have some points in common. One, as well as being a numeral is, in English, as well as in some other languages an indefinite pronoun ("One never knows") cf. also the combination "oneself". Its weak form is the so-called indefinite article, and if its counterpart the definite article is justly recorded among pronouns, the same should be the case with "a", "an". To establish a separate "part of speech" for the two articles is irrational.

Jespersen uses the same argument to support the inclusion of many, etc. among the pronouns, though in PhG such words are called "indefinite numerals". He says (PhG, p.85):

> ... If we include numerals among pronouns, we might include also the indefinite numerals many, few: logically these stand in the same series as all, some and the negatives none, no, which are always regarded among indefinite pronouns, but then we must also include much, little, as in "much harm", "little gold" ...

It will be evident that a good deal of confusion existed in the 1920s and 30s as to the status of quantifiers in natural languages; a confusion of which Jespersen was well aware, as is seen by his comment in PhG (p.83) upon the so-called indefinite pronouns:

> With regard to this ... class, the boundaries between a few of them, such as some and such adjectives as many are rather vague; consequently, grammarians disagree as to what words they should include in this subclass. This, however, is not essentially different from what we find in any other grammatical classification: there will always be some borderline cases.

While it is....

While it is still very far from being the case that we have a fully adequate classification of quantifiers, it is clear that much of the confusion faced by Jespersen and his contemporaries resulted from their total preoccupation with surface structure, in which, certainly, the so-called indefinite pronouns, including the numerals, can obviously behave like nouns in being able to "stand alone" in the functions of subject, object, indirect object, etc. Today, it seems, strange that it should not have occurred to the earlier grammarians that, in a string like: many came, some head noun, e.g. girls, people, cats, ... was to be taken as having been deleted rather than merely as being "understood", where "understood" means something like "mentally added by the addressee". However, such an assumption could not be made without a theory of Grammar which specifically allowed for the notion of underlying as opposed to surface structure. I do not think that the traditional notion of Elipsis was sufficiently well formulated to play exactly the same role as such a theory, if only because it did not imply the existence of the two distinct levels, surface and underlying.

2.2 The meaning of quantifiers

2.2.0 General

Although Jespersen's classification of quantifiers in terms of word classes (he uses this term in EEG in place of the less satisfactory 'parts of speech' of PhG) is not entirely satisfactory, his semantic analysis of them shows, in breadth and profundity, a standard of scholarship which will probably never be surpassed and insights into English which few native speakers of the language could hope to attain. The most important expression of this analysis is to be found in EEG in chapters 16, 17 and 18, where he expounds upon his own classification of pronouns. This classification is set out on p.153, as follows (omitting reference numbers):

Pronouns are divided into the following classes:

A) Pronouns of definite indication:
   (1) pronouns of contextual indication. (Personal pronouns,)
   (2) pronouns of pointing. (This, that, yonder, thus, so)

(3) the definite....

(3) the definite article. (The)

(4) the pronoun of identity. (Same)

(5) the pronoun of similarity. (Such)

(6) pronouns of connection. (Relative pronouns)

B) Pronouns of indefinite indication:

(1) the pronoun of indefinite unity. (One)

(2) the indefinite article. (An, a)

(3) the pronoun of difference. (Other)

(4) the pronoun of discretion. (Certain)

(5) the pronoun of unspecified quantity. (Some)

(6) the pronouns of indifference. (Any, either)

(7) indefinite pronouns requesting a solution. (Interrogative pronouns)

C) Pronouns of totality:

(1) positive. (All, both, every, each)

(2) negative. (No, none, neither)

The rationale behind this tripartition is, I think, well enough summarised by the titles of the subclasses and becomes very clear by a consideration of the many pages of detailed analysis which follow. I shall not, therefore, attempt to expound upon it in this essay. I shall, moreover, be selective in my discussion of Jespersen's analysis and shall reserve comment upon (2) of (C) for the section on his treatment of Negation. At this stage, I only wish to draw the reader's attention to the fact that Jespersen, in this new classification, still includes the and a/an among the pronouns: this at least partially supports my treatment of these items, in some of their uses, as quantificational.

2.2.1 The definite article "the"

This item, which Jespersen would prefer to call "the defining, or determining article" (EEG, p.161) was, to his mind, associated with pronouns partly on the etymological assumption of its derivation from the word that:

> The may be considered a weakened that. A remnant of the t is seen in the dialectal form of the t'other (originally that-other).

In fact,...

In fact, the etymology of the is dubious. The most common view of which I am aware is that it is partially derived from the oblique cases - þone, þaes and þām, of the Old English determiner sē.

The first really important observation which Jespersen makes in EEG (p.161) concerning the is:

> It has really two distinct functions, that of determining itself and that of determining in connection with a following word or words containing the essential specification. We therefore speak of the article of complete and the article of incomplete determination.

What Jespersen meant by complete and incomplete determination was, of course, that it may appear in combination with an otherwise unmodified head, e.g. the trawler, or with a head additionally modified with premodifying adjectives, numerals, etc., or post modifying clauses, e.g. the best trawler; the two trawlers; the trawler which .... Jespersen was perfectly well aware of the's function of introducing old as opposed to new information (though he did not use these terms) and of the fact that a/an performs the opposite role. He says (p.162):

> The chief use of the article is to indicate the person or thing that at the moment is uppermost in the mind of the speaker and presumably in that of the hearer too. Thus it recalls what has just been mentioned: Once upon a time there lived an old tailor in a small village. The tailor was known all over the village as "old Harry". Or else the whole situation is sufficient to show what is meant: Shut the door, please ....

That Jespersen should have been aware of this important function of the is not surprising since it is specifically referred to in OED under the entry for a/an:

> It (a/an) is especially used in first introducing an object to notice, which object, after being introduced by a, is kept in view by the; as "I plucked a flower; this is the flower" ...

What is significant is that, by setting up the distinction between complete and incomplete determination, Jespersen is clearly not very far from the analysis of the which Zeno Vendler (1971) sets out with great clarity. All that was required was the assumption that, in the case of complete determination, a restrictive relative clause, i.e. incomplete determination, is implicit. (See further Ch.6).

That he was, indeed, close to such a formulation is suggested by his observation concerning incomplete determination (p.169):

> The clearest instances are ... found when the supplementary determination follows after the substantive, thus with a prepositional group and with a relative clause: the man in the moon. ... the boy who showed us the way. ...

From the massive detail of Jespersen's analysis of the, all of which is of great interest, I shall draw upon two more points only: emphasis and absence of the article (though I shall later discuss his treatment of the generic use of the).

2.2.1.0 Emphatic "the"

On page 162 of EEG, Jespersen comments briefly upon the emphatic use of the:

> The article has the emphatic form (ði) in cases like this: He was one of the first, if not the first, to use a typewriter. This emphatic the has often the meaning "the best", "the proper", "the real": ... Though the has virtually the same meaning in the familiar saying: that's the thing. You wanted one particular key: is this the one? - there is no necessity to mark this by emphatic pronunciation.

As I shall indicate in my own treatment of the (Ch.6), the question of emphasis is often central to our use and understanding of this and other items. Jespersen's contention that emphatic the means something like "proper", "real" is patently correct (although it could be more clearly formulated). However, I am not sure that he is right in his suggestion that the emphatic use is entirely optional (presuming that that is what he meant by "there is no

necessity..."

necessity..."). Whether or not a speaker opts to use special emphasis must, I think, depend upon a number of possible factors in the context of situation in which an utterance occurs. Among such factors, I would include preambles which establish common ground between speaker and addressee, as in Jespersen's example: "you wanted one particular key: ...". In such a case, emphatic the would probably be regarded as bizarre by most native speakers. (I may, of course, be misinterpreting Jespersen's "there is no necessity" and thus doing him an injustice.)

2.2.1.1 Absence of article

Jespersen's scattered observations concerning sentences in which no article is present are particularly interesting to me because such cases represent instances of what would, by most modern linguists, now be called 'zero' (Ø) determiner. In my own discussion of the so-called logical quantifiers, like Klima, I have set up this Ø morpheme as a distinct determiner in English. The cases which I find most interesting in Jespersen's discussion concern proper names, place and time.

2.2.1.2 Proper names

Jespersen (EEG, p.163) makes a general observation of crucial importance to the subject of proper names:

> The article is used more sparingly in English than in many other languages; it is used chiefly when the word without it would not be easily understood as sufficiently specialised. There is therefore a strong tendency to do without it in many cases where the individualisation is self-evident ...

Of all word types, proper names, by definition, should have the narrowest extension, i.e. they should, ideally, have unique reference. In EEG (p.164), Jespersen remarks:

> As a rule, proper names need no article as they are definite enough in themselves, but it is impossible to draw a hard and fast line of demarkation between proper names and common names ...

As examples....

As examples of difficult cases, he refers to uses such as mother, father, etc., where no article is needed, their referents being sufficiently specific to do without. In such cases, he suggests:

> It might be said that [such words] ... are treated in this way because they stand as a kind of proper name.

(Compare Kuno's treatment of 'nouns of unique reference' (Kuno, 1972, p.39).)

Jespersen's views concerning exactly what is a proper name and how proper names function are clearly set out in PhG, pp. 64-71. I shall not attempt to summarise his arguments here, but two sentences in the cited pages seem crucial:

> What in my view is of prime importance is the way in which names are actually employed by speakers and understood by hearers. Now, every time a proper name is used in actual speech its value to both speaker and hearer is that of denoting one individual only, and being restricted to that one definite being. (p.65)

Returning to EEG, Jespersen states (p.164):

> The more the composite name of a locality is felt to be chosen quite arbitrarily, the more undoubted is its right to be treated as a proper name; hence we have no article in names like Gower Street, Gloucester Square, Shaftesbury Avenue etc. Nor is there any article in Newcastle, New York, New South Wales ....

Naturally, since proper names ought, in an ideal language, to be applicable to one individual only, whenever, as is usual in real, i.e. natural language, the same name is borne by more than one individual, this name's status as proper is doubtful and it then becomes possible to use an article. Even in those cases where unique reference does seem to be an actuality, it may be possible to conceptualise the individual referent in terms of a number of distinct entities rendered discrete by such factors as change wrought by the

passage of...

passage of time. Thus, Jespersen notes (EEG, p.171), such cases as: the new turkey. ... Paris now is very different from the dirty Paris of the middle ages.

More common, however, are the cases of simple plurality, noted by Jespersen (p.165). He says:

> When a plural is formed of a proper name, the article is required because it ceases to be a proper name in the fullest sense. the Plantagenets, the Stewarts ... in accordance with this rule, we have the article with geographical names with plural form: the West Indies, the Netherlands, the Alps ...

Clearly, we can assume the same reason for the article when a proper name is preceded by an adjective, as the younger Pitt, treated by Jespersen on page 170 under the general heading of Incomplete determination.

Finally, Jespersen provides examples of proper names which take an article presumably as a result of:

> ... the ellipsis of a common name which was formerly always added: the Sahara (desert) ... The names of oceans have the article because they are still felt as adjectives to which the word sea or ocean may be added: the Baltic, the Atlantic, the Pacific ... (p.165)

2.2.1.3 Time

In EEG, Jespersen makes a number of interesting observations regarding the and nouns indicating time (p.166, section 16.6_1). The question of time and language is notoriously complex and Jespersen makes no attempt to deal with it in great detail. We may split his observations in the section referred to into two:

(a) those concerning stretches of time; e.g. years, months, including relatively short periods of fixed duration and following each other in a fixed series, e.g. days of the week, sub-parts of a day; and

(b) those....

(b) those which indicate time periods of varying, but conceptually restricted duration, e.g. night, day, dawn, etc.

There are, of course, many other ways of looking at time and the classification I have suggested is not intended to serve as a model for my own references to time. (Ch. 6). It is intended simply as one way of organising Jespersen's observations.

He first remarks that:

> Names of periods of time and dates are often used without the definite article: March was a cold month: He was married in June 1920; ... If winter comes, can Spring be far behind ... He will be here before Christmas. (EEG, p.166).

A key word in this observation is "often" and Jespersen includes in his list the counter-example: He was married in the June of 1920. He makes no attempt to explain why the should be optional in such cases and I do not wish to anticipate my own treatment in detail at this stage. However, taking just one example, it seems to me that if we say: the March was a cold month, there is a presupposition that the month in question occurred within a given time period which has already been under discussion and the function of the, therefore, is to relate the month in question to that discussion - in other words, it is playing its common role of signalling old information, though in the somewhat odd way of relating a new detail - the name of the month in question - to an old context - the year or series of months under discussion.

In his discussion of days of the week, Jespersen is more explicit. He says (p.166):

> On Sunday generally means next Sunday or last Sunday and like these expressions has relation to the present time, but when a more remote period is referred to, the article is used: he arrived on the Thursday, and already on the Saturday, he could report that everything had been settled.

While I would....

While I would not wish to argue that Jespersen was wrong about phrases like on Sunday, I am not sure that he is justified in claiming that the use of the article indicates "a more remote period". The difficulty is, of course, compounded by the fact that Jespersen is not consistent with respect to his choice of examples, using sometimes a phrase, at others whole sentences. I do not see why we should not explain the cases Jespersen provides in terms of new and old information, just as in the case of: the March was ... That "remote" is not the key to the problem is, I think, proven by the simple fact that, upon a given Monday, I may, in the context of a discussion concerning the previous week, say that on the Friday, I did so and so. However, speaking upon the same day, I may still refer to a coming event as due to occur on Sunday and, clearly, the Friday to which I refer is closer to me in time than is the Sunday. Against this, however, it may reasonably be argued that when we refer to the day upon which an event is due to take place and do not use the article, the presupposition is that the day in question is part of the larger time unit in which we are presently speaking, i.e. the whole week. On this view the time being presupposed is not new but an element of 'given' information presupposed by the temporal context.

A similar explanation may also, I think, lie behind such cases as: night came and day broke, which Jespersen suggests may be regarded as "mass words".

Finally, I must comment upon two sentences which Jespersen contrasts under 16.8_2 (EEG, p.170), namely:

(a) About that time he was starting business.
(b) About the time he was starting business, he became engaged.

Jespersen claims that:

> While "about that time" is a complete indication of time, the definite article in the latter sentence is only the article of incomplete determination which has to be supplemented by the clause "he was starting business" to form a complete indication of the time of his engagement. In other words "about that time" corresponds to "then", "about the time" to "when".

To begin with....

To begin with a minor point, I do not believe that the correspondences which Jespersen claims to hold between these *about* ... phrases and *then* and *when* do, in fact, exist. If one substitutes the single-word time adverbs for the phrases in question, the meaning of the sentences is quite substantially affected - if *when he started business, he became engaged*, is true, it does not follow that *about the time* ... is also true. *About* quite obviously has the semantic function of rendering the time-reference imprecise, while *when* and *then* usually indicate points in time which are, at least conceptually, precisely located.

The difference between *that time* and *the time* + relative clause seems to me to reflect a basic difference in the form of connected discourse. If this fact is left out of consideration, the comparison is of very little value. Presumably, when a speaker uses the phrase *about that time*, he is locating the event in question, through the deictic operator *that*, in some time which has already been identified by himself and the addressee. On the other hand, when he uses *the time* with a restrictive relative clause, the speaker is either providing a time location *de novo*, as it were, or is emphasising the approximate identity of the point in time with which he is concerned and another previously mentioned. In other words, *about that time* ... is multiply ambiguous when the sentence is seen in isolation and one reference point for *that* is the time at which the person concerned became engaged. On the other hand, *about the time* + relative clause is not ambiguous even with respect to the time reference, even when the sentence is seen in isolation.

My purpose in introducing this last example is to demonstrate - if demonstration is needed - that the linguist cannot rely upon the analysis of single sentences in isolation - the total discourse must be taken into account, especially when items like *the* are in question. I shall return to this point when I discuss Vendler's treatment of *the* (Ch.6).

2.2.2 *The indefinite article "a/an"*

2.2.2.0 *"One" and "a/an"*.

Jespersen's main treatment of *a/an* in EEG is contained in chapter 27 (p. 174 ff) under the general title "Indefinite pronouns". He opens this chapter with a few examples of....

examples of the use of one which he calls "the pronoun of indefinite unity". The fact that a/an is etymologically related to one is, obviously, important to our understanding of its use and among the examples Jespersen provides in this first section, there are several in which, as he says:

> ... One approaches the function of the indefinite article.

Among the instances to which he refers are:

> At last, one fine morning, we started for home. One day you are sure to repent of this.

If one can have the same function as a/an, it is only to be expected that the reverse should also hold and Jespersen gives a number of examples which clearly illustrate this fact, e.g.:

> In a word; at a blow; Rome wasn't built in a day.

I presume that it is this use of a/an = one which lies behind the practice of employing a single article with multiple heads only when reference is made to two objects felt to belong naturally to one another, e.g. a knife and fork, a cup and saucer, a husband and wife, etc., referred to by Jespersen on page 179. In such cases, the objects concerned may well be conceptualised as a unity. When the two objects are not felt to belong naturally together, of course, the article is used with each, as in: a cat and a lawn mower.

This sense of oneness also lies, I imagine, behind the set phrases like birds of a feather flock together, three at a time, ... in which Jespersen suggests that a/an means something like "one and the same". (EEG, p.175)

2.2.2.1 "A/an" and the introduction of new information.

It has already been noted (2.2.1) that Jespersen was fully aware of the fact that a/an is frequently used to introduce new information. On page 175, he suggests:

> The indefinite article is used not only in introductory remarks ..., where we expect further information, but also in a great many other cases where the singular of a noun

is required , while no identification is possible or important, though the matter is not sufficiently indifferent to warrant the use of any:

He wanted to sit quietly in an easy-chair with a good book.
Let us go to a restaurant and have a good dinner.
He had on a blue shirt and a green tie.
He spent a week in a small village.
A small group of scientists admired him greatly.

I have included all of Jespersen's examples, as well as the general observation, because they obviously are intended to illustrate a very frequent and therefore important use of a/an in English and yet, to my mind, present a number of difficulties some of which should be examined immediately, while others can await my own treatment of a/an

At first sight, Jespersen's use of the formula not only ... but also suggests that he is trying to establish a use of a/an which differs from that of introducing new material. An examination of the example sentences, on the other hand, is sufficient to show that in each, the relevant NP must represent new information in at least so far that it could not have received prior mention (if it had, e.g. the small village ..., the or some alternative, e.g. that, would be obligatory). It would seem, therefore, that the key clause in the general comment is: "where we expect further information" and the most important word in this clause is, I believe, "expect". In the example which Jespersen provided of a/an used primarily to introduce new information (2.2.1). Once upon a time there lived an old tailor in a small village ... the reader/hearer obviously expects more information concerning the tailor and possibly, though not necessarily, the village, to follow and it is clearly the writer/speaker's intention to provide such information. In modern terms, we would say that a tailor is the "topic" of the discourse while what follows is the "comment".

In the examples listed from EEG, p.175 however it is clear that in each case the a/an phrases are part of the comment and not of the topic. It will be seen that Jespersen was careful to use illustrations which contain pronouns as subjects, (he and us). This alone is sufficient (except in the second case: "let us ...") to prove that

the topics concerned have received prior mention. In the first example, for instance, he suggests that the identity of the subject has already been established and the speaker is simply providing additional information about him. Both speaker and addressee do, of course, have the option of providing or demanding more information concerning the comment, e.g. what book?, but such information would often, if not usually, be considered a side issue. This is not, I believe, a point of trivial detail. I suggest that the semantist should, on the basis of Jespersen's observation, set up at least two types of "new information" - new information requiring elucidation and new information not necessarily requiring elucidation. (Jespersen's observation that the provision of further information may be "impossible" is clearly very relevant, but can, I think, be accommodated in the second type of new information.)

Another important part of Jespersen's general comment is that represented by:

> ...though the matter is not sufficiently indifferent to warrant the use of any: ...

I shall discuss Jespersen's treatment of any below (2.2.6). For the moment, it suffices to say that if, in the examples he provided, we could substitute any without altering the sense, we would be dealing with instances of a/an in what he called their "generic" use, i.e. their universal application, which I shall later indicate with the subscript "$_1$". Only, I think, in the first of the cited examples is there room for doubt. It is not clear without knowing the full context, whether the phrase a good book refers to any good book, no matter which, or whether the subject represented by he had in mind a certain volume, or perhaps a limited set of volumes any one of which would suit his purpose - say, the books in his library. This ambiguity in Jespersen's first example arises because we do not know whether the sentence is to be taken de re, or de dicto. (For a discussion of this distinction seen from a linguistic viewpoint, see McCawley, 1970.) If the sentence is to be taken de re, then the subject to whom the speaker refers may have said: "I want to sit in an easy-chair and read The Caine Mutiny." (not very

likely....

likely perhaps, though certainly possible) or: "I want to sit in an easy-chair and read the good book you gave me" (more likely, though not necessary). If, on the other hand, it is to be taken de dicto, then it is a precise representation of what was said, namely: "I want to sit in an easy-chair and read a good book" and, in this case, the article a can be taken either as universal or particular. If as the former, then it must be equivalent to any.

Consideration of the last of Jespersen's examples:

> A small group of scientists admired him greatly.

suggests that the status of a is here not as indefinite as in some of the other cases. The speaker's use of the adjective small and the past tense of the verb suggests that he, the speaker, is acquainted with an identifiable group of scientists who admire somebody and that that group is sufficiently distinct to be called small. I shall return to this question in my own discussion of a/an (Ch.6). For the moment, I shall say only that a, in such cases, seems best interpreted as "a certain", i.e. "a definite, but unspecified".

2.2.2.2 "A/an": Composite Verbs and Idioms

Under 17.2_3 (p.175), Jespersen lists a number of expressions which he called "idiomatic" in which the indefinite article is normally employed, e.g. take a fancy to; take an interest in; take a pride in; ... be in a fever; be in a (great) hurry ... be under an obligation. ...

Jespersen attributes the use of a/an in such cases to:

> ... the English disinclination to bare (naked) substantives with concrete meaning.

An examination of the list he provides shows that, in most cases, the expression concerned is, in fact, a composite verb made up of a verb-form, e.g. take plus a specifying NP, e.g. a fancy (what Chafe calls idiomaticisation). This is easily seen by the failure of T-pass. to apply, e.g. a fancy was taken to her by him is not acceptable, so that take a fancy simply equals fancy. Although it is not impossible to use the in such expressions, particularly when the verb-form is be, e.g. she was in the fever

for five....

for five days, the mere fact that they function as verbs rather than as verbs plus NPs seem sufficient reason for the normal use of the indefinite article since it allows for minimal restriction, i.e. no particular fancy, etc. needs to be involved. I am not sure that the notion of new information is relevant here. The following exchange seems perfectly natural to me: he took a fancy to her and she took a fancy to him. In fact, they both took a fancy/fancied each other.

Certain of Jespersen's examples, however, cannot be treated in this way, e.g. on an average, with a view to ... In such cases, there seems to be no logical explanation - sometimes the is used rather than a/an, as in he did it with the intention ... sometimes a/an rather than the, e.g. with a view to ... and at others we seem to have an option, as in: on an average/on the average. I shall, therefore, treat such cases as idioms and leave them out of account in what follows along with the composite verbs already referred to.

2.2.2.3 "A/an" with positive function

On page 177, under 17.4_2, Jespersen makes the following very interesting observation:

> While little and few are negative terms, a little and a few are positive; compare thus: From him we expect little more than a pun. From him we expect a little more than a pun. There are few mistakes in his papers (praise). There are a few mistakes in his papers (blame).

Unfortunately, Jespersen does not offer any explanation of this phenomenon, nor do I wish to anticipate my own treatment too precisely at this point. However, as my own thinking is entirely thanks to Jespersen's remarkable insight, it seems appropriate to say here that, in my view, the explanation is to be found in the lexical entries for little and few. These items are, I believe, polysemous, one reading including not, as few = not many (Jespersen's 'praise') and another reading few = a small number (Jespersen's 'blame')

2.2.3 The Generic number

Although, in EEG, Jespersen comments in various sections upon the use of the articles, and absence of article, (Ø) with generic function, his views are most conveniently summarised in chapter 21 (pp.212 ff) under the sub-title The Generic Number. He says:

> An assertion about a whole species or class, equally applicable to each member of the class can ... be made by means of every ... any ..., or all with the plural ... Very often, however, the generic character is not thus expressly indicated, but implied and curiously enough language uses for that purpose now the singular now the plural, now definite and now an indefinite form ...

He then proceeds to list the possible formulae under five types as follows (p.213):

1) The singular without any article: Man is mortal;
2) The singular with the indefinite article: A cat has nine lives;
3) The singular with the definite article: The dog is vigilant;
4) The plural without any article: Dogs are vigilant;
5) The plural with the definite article: The English are fond of out-of-door sports.

In the opening statement quoted, it will be noticed that Jespersen used the word "implied" which suggests that the articles themselves or their absence (Ø) do not actually contribute to the generic interpretation. In my own treatment of quantifiers, I treat determiners as reflecting implicit logical quantification and, furthermore, I suggest that they have two functions, one corresponding to the particular quantifier (indicated by the subscript "$_{11}$") and one to the universal quantifier (indicated by "$_{1}$"). Although Jespersen uses "implied" in his opening observation, I believe that he may, in fact, have seen the items concerned as actually having a quantifying function (or rather the and a/an as having such a function; Jespersen does not, of course, conceive of Ø as a morpheme). This is suggested in

several places...

several places in the discussion subsequent to the synopsis cited above, e.g.:

> When the indefinite article is used generically with a substantive in the singular, it may be considered a weaker any: An owl cannot see well in the daytime. ...
> When the definite article is used with the singular in this generic signification, it may be said to denote the typical representative of the class:
> The owl cannot see well in the day time. ...
> This form is very frequent, though it may in many cases be ambiguous for "the origin of the ballad" may refer either to ballads in general or to the special ballad we are just discussing. (EEG, pp.213-214).

In Jespersen's statement:

> ... curiously enough Language for the purpose uses now the singular now the plural ...

"for the purpose" clearly refers to the word "implied" of the preceding clause. I do not think that Jespersen's formulation here provides good ground for arguing that the cases I have cited above as evidence that he vacillated between the views that the articles were involved in overt as well as implicit quantification reveal a serious contradiction in his thinking. I would prefer to say that they merely reflect the sort of inconsistency which, from time to time, is inescapable in the work of one whose writings cover so vast an area of linguistic inquiry as do those of Jespersen - an inconsistency especially understandable in the case of a/an, that item being so strongly associated with one.

Among Jespersen's other observations regarding the use of the, a/an and Ø to mark universal reference, the most important, to my mind, is his statement that:

> The singular without any article is used with mass words, material and immaterial, see:
> Lead is heavier than iron.
> Blood is thicker than water. ...

> Art is long, life is short. ...
> But with names of living beings, this way of implying the generic character is found with two words only, man and woman (EEG, p.213).

This is obviously of basic importance to the study of quantification in English and has been, as far as I know, universally accepted. The only difficulty which I find with Jespersen's formulation is his reference to "names of living beings" since he presumably means something like: the only exceptions to this rule are man and woman; since all non-animate count nouns, e.g. castle, conform to the rule he has stated, in that they are not used in the singular generically.

2.2.4 Certain

Jespersen refers briefly to the item certain, which he calls The Pronoun of Discretion. He says:

> Certain as a pronoun refers to some one or something that is really definite and might be mentioned, though I do not choose for the moment to say expressly who or what:
> A certain man went down from Hierusalem to Jerico. A.V.
> Certain of his friends had already began to suspect him.
> (EEG, p.180).

This observation, with the two examples which are all that Jespersen provides, supports, I believe, a view which I shall later advance, that a/an under heavy stress can have a meaning approaching definiteness (Ch.6). My reason for taking Jespersen's comment on certain as support for this view lies in the examples which he provides. It happens to be a fact that we cannot use certain with a count noun in the singular unless we also use the indefinite article and I would argue that in the case of mass nouns where omission of the article is possible, e.g. certain water is poisonous (such cases are, to my mind, only marginally acceptable) the article plus a count noun, e.g. type of has been deleted, so that the underlying phrase would be something like: a certain type of water. In the case of plural nouns, both count and non-count, Ø is obligatory. Jespersen's example using the prepositional phrase certain of ... is not entirely satisfactory since it introduces an unnecessary

complication in....

complication in the form of the preposition of. He might have done better to choose some example like: certain people had already ...

Unless we are prepared to take the view that certain is an adjective (all the normal tests for adjective status are against such a view), we must conclude that the presence of the morphemes a/an and Ø is significant. While I will not, at this stage, anticipate my own treatment in too much detail, I will say that, in my opinion, a certain is equivalent to a (a with heavy stress) and that certain followed by singular mass noun or plural noun, is equivalent to some (some with heavy stress), some, in this usage, being the plural of a/an as suggested by such writers as Roberts (1967) and Fowler (1971).

2.2.5 Some

Although I cannot claim that Jespersen's discussion of quantifiers supports my views concerning a/an and some, certain of his remarks in his analysis of some (pp.180-181) could, I believe, be taken as lending a little weight to them. He says, for instance:

> Some as used ... with a plural word [indicates] an unknown or unspecified number ...
> Some children are able to sing before they can talk.

This could be construed as support for the view that some can function as the plural of a/an.

Referring to the use of some with count nouns in the singular, Jespersen says:

> With a "countable" in the singular, it has the same meaning of the unknown or unspecified, it is often strengthened by the addition of or other.
> Someone (or other) must have touched my papers since I went out.
> Some old philosopher once said that you should know something of everything and everything of something. (p.180)

Jespersen's use....

Jespersen's use of the phrase "the same meaning of the unknown or unspecified", as well as the two examples which he offers, point fairly clearly to the fact that he equated some with a/an when the latter is combined with certain. This equation can be taken as support for the theory that a/an, in some contexts, can be used to mean "specific", or "definite" supported, e.g. by Jackendoff (1968). It cannot be argued that a thing's identity being unknown, or unspecified, is equivalent to its being indefinite.

2.2.6 Any

It is probably true to say that the most frequently quoted remark made by Jespersen with respect to quantifiers is his claim that:

> Any indicates one or more, no matter which, ...

To this antecedent, a most important conclusion is added, namely:

> ... therefore, any is frequent in sentences implying negation or doubt (question, condition). (EGG, p.181).

Exactly what is meant by the phrase "no matter which" is not easy to decide and I do not think that it is really satisfactory simply to substitute some arbitrary primitive, e.g. arbitrary, as does Seuren (1969). (For my own view, see (Ch. 6)). We may, however, for the present accept Jespersen's phrase as a reflection of his general classification under which any appears among "pronouns of indifference". On this view, any is used when, in the speaker's opinion, selection of one member of a set rather than any other makes no difference to the validity of the proposition involved. Thus, taking one of Jespersen's examples at random:

> Any doctor will say something to please his patient.

we may, loosely, say that any is used because the speaker feels that the proposition will be found to be true of each and every member of the universal set of doctors no matter which individual(s) it is applied to.

Even more...

Even more difficult, in my opinion, is Jespersen's use of the connective therefore combining his conclusion with its antecedent. Why should the concept of indifference necessarily be linked with those of negation and doubt? Clearly, Jespersen's parenthetical "(question, condition)" is intended as an indication of the sentence modalities in which doubt plays a significant role.

As I said at the beginning of my discussion of Jespersen's work, I intend to handle his treatment of negation separately. I shall, therefore, not attempt here to answer the first part of the question stated above, although it is, I think, appropriate to set out some of Jespersen's examples which show that he did not regard negation as limited to sentences containing an explicit negative like not, never, or no, e.g.:

> We had ceased to pay any particular attention to the sun.
> There is hardly anything left in the bottle.
> They sat there without anyone to wait on them. (p.181)

As far as doubt is concerned, while it cannot be argued that it is equivalent to negation, it is certainly true that negation is included within the notion of doubt, although it is, of course, equally true that, in moments of doubt, positiveness, e.g. in the form of optimism may also be present - in which case, some, often preceded by perhaps, is frequently employed. Jespersen's examples illustrate this point, although they are not accompanied by any exposition:

> Has anything happened? You look scared, all of you.
> I wonder if there are any walnuts on that tree. Can you see any? (p.181)

Presumably, a negative response to both of these examples would be perfectly possible, hence the use of any. I shall later argue, following the general thinking of many modern linguists, that any is used in such cases when the speaker presupposes a negative response

In his treatment of any, Jespersen allows for the fact that the item can be used universally or with particular reference. This is particularly important in the examples listed under 17.9_2 (p.181),

where he....

where he observes:

> If there is a negative in a sentence containing <u>any</u>, the meaning of the whole is generally negative: I can't do anything = 'I can do nothing'. But if <u>anything</u> is pronounced emphatically and with compound (falling-rising) intonation, the meaning is positive: I can't do anything = 'there are some things which I can't do'.

In the first of these two examples, we have the particular quantifier, the whole being paraphrasable as:

It is false that there exists at least one thing such that I can do that one thing, i.e. $\sim(\exists x)$ (X is a thing . I can do X).

In the second, we have the universal quantifier, the sentence being paraphrasable as:

It is false that for all things, I can do all things, i.e. (X) $\sim$ (X is a thing $\supset$ I can do X).

Thus, we have the implications which Jespersen appended to his examples as equivalents. The first implies a universal negative (a sentence of the logician's E type) and the second implies a particular negative (a sentence of the O type). (For <u>any</u> as a universal quantifier in EEG, see further my discussion under 2.2.9.2)

Under 17.9_3 (p.182), Jespersen seeks, by listing many examples, to "bring out" the difference between <u>some</u> and <u>any</u>. However, as he relies entirely upon his readers' ability to interpret the sentences and does not offer any reasoned explanation for the difference, we can only suppose that he saw it as consisting in the difference between the notion of <u>indifference</u>, applicable to <u>any</u> and <u>unspecificity</u>, applicable to <u>some</u> (I have adapted the latter notion from Jespersen's name for <u>some</u>, "the pronoun of unspecified quantity") (p.181).

2.2.7 <u>Ever</u>

Jespersen (p.182) under 17.9_6 equates <u>ever</u> with <u>any</u>, saying:

The temporal....

> The temporal adverb ever generally corresponds to any (= at any time).

Once again, he makes no attempt to justify this claim, simply relying upon his readers' knowledge of English. However, the examples which he provides are interesting, if only because they show that, like any, ever can act as a universal or a particular quantifier. Taking two of Jespersen's illustrations, viz:

> Are you ever sea-sick? No, hardly ever.
> The greatest genius that ever lived.

It is apparent that the first may be paraphrased:

> Is it the case that there exist(s) a time or times at which it is true to say that you are sea-sick? ...

and the second as:

> For all times, his genius exceeded the genius of every other individual at those times.

(These paraphrases are of the very roughest. My intention, at present, is merely to show the particular/universal distinction, not to attempt a reasonably rigorous account of the quantification of time. It will be noticed, inter alia, that I have ignored the contradictory response in the first example which provides a typical example of the illogicality of the use of quantifiers in "natural language".)

We see again that ever is formally similar to any in its propensity to occur in negative sentences and those expressing doubt (questions and conditionals) of which Jespersen includes two examples:

> Are you ever sea-sick?
> Napoleon was a military genius, if ever there was one.

(It may, however, be argued that the last cited example is not apt since the set formula - if ever there was one - does not express a true conditional. On the other hand, it is easy enough to think of better examples, e.g.:

> If ever you are in Madrid, call on my aunt.)

2.2.8 Either

On page 183 Jespersen says of either:

> While any is the pronoun of complete indifference, either indicates indifference with respect to two: It seemed impossible for either of us to remain. (= Neither of us... could remain).

Especially in comparative constructions, however, the number of referents involved need not be confined to two, although it is probably nearly always the case that the notion of pairs is maintained. Jespersen gives an interesting example of a comparison involving three members, two of which are conceived of as a pair, thus allowing for the usual use of either:

> He was more inclined to eating than to sleeping, and more to drinking than to either.

The example which Jespersen gives from Ruskin showing the use of either with more than two, where no pairing is apparent, is not, I imagine, typical and I shall not treat such cases in my own discussion of quantifiers. The example is:

> Nor does it appear in any way desirable that either of the three classes should extend itself.

2.2.9 Pronouns of Totality

2.2.9.0 General

From page 184 ff of EEG, Jespersen discusses the universal quantifiers all, any, every, both and each under the title Pronouns of Totality and the subheading Positive (thus distinguishing them from their negative equivalents like no, none,...). Although he tries to keep the discussion of each quantifier separate, he is, by the nature of the case in many areas, forced to indulge in a great deal of cross-reference. I shall, therefore, try to summarise the main points of this section without introducing all of the quantifiers separately - the importance of Jespersen's analysis of these quantifiers is, after all, as far as I am concerned, in the nicety of his observation of points of difference and similarity.

2.2.9.1....

2.2.9.1 Distributive "all"

Before taking up the main points, it will be as well to note that Jespersen was fully aware of the ambiguity of all, an awareness which is evident in PhG where he comments upon its distributive and non-distributive uses. The example which he used in PhG and repeats in EEG (with other instances) is:

> All the angles of a triangle are 180° (i.e. together).
> All the angles of a triangle are less than 180° degrees (better: each of ... is ...). (EEG, p.185).

(This distinction is, of course, perfectly well known to philosophers and Jespersen made no claim to originality in making it. I have referred to it already, Ch1).

It seems to be this distinction which lies behind such cases as:

> All England is changed or changing

in which Jespersen says:

> All is used with words in the singular, meaning 'the whole of' (p.184)

This non-distributive use of all is very important in the quantification of time, where, in my opinion, it is employed with items or phrases denoting a specific time-span and is, as Jespersen notes, "distinct from every" (p.185). He gives the examples:

> He spent all summer in France.
> The wind was East all yesterday.

2.2.9.2 Universal Quantifiers: "all, every, any"

Jespersen opens his discussion of the universal quantifiers by stating that, in the sentences:

> All boys know that.
> Every boy knows that.

the boys are, in the first "lumped together" (what Chafe might call "aggregate" (1970)), while, in the second, they are:

> considered separately, though one point is mentioned in which they agree. (p.184)

To him....

To him:

> all women and every woman mean practically the same thing, only looked upon in different ways.

On the other hand, if we say:

> Any boy knows that.

Jespersen, rightly, claims the meaning is:

> no matter what boy you take, he will know it. (p.184).

Thus, the implication is that any differs from all and every in its connotation of this notion expressed by Jespersen in the phrase "no matter which" (commented on above (2.2.6)). This difference is, in my opinion, crucial and I do not think, therefore, that one should accept his claim (p.184) made with reference to the examples just cited:

> Here any is a synonym of every.

He does not, of course, suggest that the two items are synonymous in all cases, in fact he explicitly says that they are not interchangeable in sentences like:

> He may turn up any day.

Unfortunately, he does not offer any suggestions as to why any and every are not interchangeable in such cases, merely noting that they also fail to interchange in the cases he gave under Pronouns of Indifference (EEG, p.181). However, I suggest that the reason may be that any, in such expressions, is a particular quantifier (as are those on page 181 of EEG) while every is obviously a universal quantifier.

Noting the fact that all is no longer common in sentences like:

> All were happy.

the modern tendency being to use everybody, Jespersen includes among his exceptions one which is, to my mind, of such interest that I cannot pass it over. The sentence in question (to which innumerable parallels could be added) is:

> All that he could do was to run away. (p.184).

Here, we have....

Here, we have a beautiful example of a universal quantifier all whose scope is a set containing only one member - the act of running away - and which, at the same time, excludes the possibility of any other set existing. (All, in such cases, is, in fact, semantically equivalent to the only thing or the one and only thing.) A straightforward way of representing the meaning of Jespersen's sentence would be:

$$(x) \quad (\text{He could do } x) \supset (x \text{ is the act of running away})$$

i.e. for everything, if he could do it, that thing was to run away. In such a paraphrase, however, the conditional "$\supset$" if does not seem fully to capture the sense of the original where the implication is that the person concerned definitely could run away. Accordingly, it might be preferable to paraphrase the sentence along the lines of the following:

$$(\exists x) \quad (x \text{ is the act of running away} \cdot \text{He could do } x \cdot \sim \exists y. \text{ He could do } y \cdot x \neq y).$$

i.e. there existed an x such that he could do X and there existed no y such that he could do y and $x \neq y$. I do not, for one moment, claim that this paraphrase is unassailable from a strictly logical point of view. It does, however, serve to show up a difference between the operators of Logic, including quantifiers like "x" and those of natural language, including quantifiers like all, namely that they do not invariably correspond. This difference has, of course, been known of and commented upon by many logicians and linguists. To speakers of English, all and everything are associated with plurality. In Logic, as the first paraphrase is intended to suggest, this is not necessarily so. Another case of this basic difference is, of course, the use of the item some which, in Logic means one or more, but which in English usually means two or more.

Another fascinating and commonly employed expression which Jespersen examines is:

Everything is all right.

His explanation is that, in such cases, all was originally the subject of a sentence with the predicate pattern: ... is right, but

that, since....

that, since all is not, in modern English, usually employed without support, it is now regarded as:

> a tertiary qualifying right. (p.184)

I shall not treat such uses of all in my own account of quantifiers, presuming them to be adverbial in character. Similar instances are:

> He was all skin and bones.
>
> She was all attention.

which Jespersen gathers together as examples of all "used in apposition to the subject" (p.185). That Jespersen recognised the ability of all to function adverbially is suggested by his paraphrase of all in:

> That makes all the difference (= 'A great deal of difference'). (p.186).

2.2.9.3 Both

While the scope of all is not numerically restricted, that of both is, as Jespersen points out:

> Both means the same thing as all, only applied to two ...

He lists several examples of the use of both, e.g.:

> He had both hands full.

and then proceeds to make the important observation:

> When used as a conjunction, both may be applied to more than two objects:
>
> The God that made both Skie, Air, Earth and Heav'n (Milton). (EEG, p.186).

At first sight, one is tempted to think that the custom of deleting

and between all pairs of items but the last imposes a kind of binary character on such sentences as that of Milton. However, I would not care to insist upon this at this stage in view of the example from Coleridge which Jespersen also provides:

> Both man and bird and beast.

although this may be a simple case of "poetic licence". On the other hand, the explanation based upon the deletion of and may be a trivial, surface consideration since the ands presumably exist at some level below the surface along with both.

2.2.9.4 Each

Jespersen (p.187) observes that each is like all and every, but its scope is limited:

> each (like the interrogative which) refers to a limited number: Each of his children ...

While this general observation is plainly correct, there is a good deal more to the analysis of each and I shall return to it in my own treatment of quantifiers (Ch. 6).

2.3 Number

2.3.0 General

In discussing Jespersen's treatment of number, I shall be very brief and shall confine myself to the relevant parts of PhG, where the subject is handled with perfect clarity.

We note first, that Jespersen regards numbers as a special subclass of pronouns (p.85):

> Numerals are often given a separate part of speech; it would probably be better to treat them as a separate subclass under the pronouns, with which they have some points in common....

Among such points, upon which I have already commented, are the ability of a/an to function as the numeral one; their ability to "stand alone without articles", etc.

Jespersen's most useful comments upon the phenomena of number are to be found in chapter XIV (pp.188 ff). In this chapter, he

points out....

points out that number is not a simple matter either from a logical or a linguistic standpoint.

> From a logical point of view the obvious distinction is between one and more than one, the latter class being subdivided into 2, 3, 4, etc.; as a separate class may be recognised 'all'; while beyond all these there is a class of 'things' to which words like one, two are inapplicable; we may call them uncountables. ... The corresponding syntactic distinctions are singular and plural, which are found in most languages, while some, besides the ordinary plural have a dual, and very few a trial. Thus we have the following two systems.

	Notional:		Syntactic:
A.	Countables		
	one	.. ..	singular
	two	.. ..	(dual)
	three	.. ..	(trial)
	..	more than one ..	plural
	..		
	..		
B.	Uncountables.		

A point of crucial importance which Jespersen makes with regard to plurality (one which, in a slightly different formulation, provides the foundation of R. Lakoff's treatment of conjoining (1972) is that, in normal usage, we concatenate nouns whose referents have something in common and avoid combinations where there is no common ground. He says (p.188):

> We can only speak of "more than one" in regard to things which without being identical belong to the same kind. Plurality thus presupposes difference, but ... if the difference is too great, it is impossible to use words like two or three.

The modern linguist would, almost certainly, object to Jespersen's use of the word "impossible" in the above quotation, but it

is obvious....

is obvious enough that he, as well as any other, could think up bizarre contexts at will, and that he simply meant "not usual", or something similar. The instances which he provides (p.189) are sufficiently convincing to establish his point:

> A pear and an apple are two fruits; a brick and a castle can barely be called two things; a brick and a musical sound are not two, a man and a truth and the taste of an apple do not make three and so on.

On page 191ff, Jespersen comments upon a phenomenon which he described as plural of approximation

> ... where several objects or individuals are comprised in the same form though not belonging exactly to the same kind.

The example which he offers is not, to my mind, entirely convincing. He observes that:

> A man in the sixties; means not (one) sixty + (another) sixty ..., but sixty + sixty-one + sixty-two and so forth till sixty-nine.

Jespersen's account of what the phrase in question actually means is, of course, correct, but I do not feel that the term approximate and the definition which he gives to it are necessarily applicable. When we use such phrases, we are, I suggest, adopting the expedient of conceptualising the time-span of a man's life in terms of decades rather than of years. We are certainly not suggesting that the individual concerned is approximately sixty years old, since he may well be much closer to seventy than to sixty, nor, in my view, is it true to say that the years in question are not "of the same kind", though I suppose Jespersen's careful use of "exactly" absolves him from criticism on this head. Many parallel cases may be found, all of which seem to support my view that the reason for the plural use is that a block of time-units, scores, etc. is conceptualised as a unity, e.g. one decade, although the formal requirement of plurality continues to operate. Thus, we may say that a person has entered his teens, pushed his score into the thirties and so on.

While, however,...

While, however, I have reservations as to the aptness of Jespersen's "plural of approximation", he does, under this head, comment upon a very important aspect of English usage, as follows (p.192):

> The most important instance of the plural of approximation is we, which means I + one or more, not I's. It follows from the definition of the first person that it is only thinkable in the singular, as it means the speaker in this particular instance.

The importance of this observation is the fact that Jespersen is able to make use of it in order to explain the very common use of we in which the speaker includes others only upon the grounds of presupposition. The example which he gives is remarkably clear:

> ... when a body of men, in response to "Who will join me?" answers: "We all will," it means in the mouth of each speaker nothing but "I will and all the others will (I presume)." ...

2.3.1 Mass versus count quantifiers

Although Jespersen did not try to develop Sweet's notion of continuous and discrete quantity, it is clear that he was perfectly well aware of the importance of mass-count as a linguistic notion, not only because he has a great deal to say about mass and countables generally, but also because he notes (PhG, p.198) that:

> While countables are "quantified" by means of such words as one, two, many, few, mass-words are quantified by means of such words as much, little, less ...

The importance of this observation for the analysis of individual quantifying items is self-evident and it will obviously come up again in the course of this essay.

2.3.2 Kind/Type ... + mass-words

Before leaving Jespersen's treatment of number, I would like to refer briefly to a statement made on page 200, namely:

> ... we must....

> ... we must mention the use of a mass-word to denote one kind of the mass:
> this tea is better than the one we had last week; ...
> the best Italian wines come from Tuscany.

I shall return to this point when I present my own analysis of quantifiers. For the moment, I shall simply say that Jespersen's approach enables one to explain certain difficult problems connected with quantifiers like all as well as others like much.

2.4 Rank

A study of Jespersen's writings shows that among the notions which he developed, he regarded rank as one of the most important and interesting and that, although it was formulated early in his linguistic studies, he made no fundamental changes to it as time passed. Thus, in AS (p.109) he writes:

> Since I first started my theory of Rank (1913) I have had occasion several times to revert to it, and ... I hope I have gradually clarified this fascinating theme ... though the main features of the theory have remained exactly as they were from the beginning.

AS, to my mind, is not the most satisfactory of Jespersen's works, if only because in it he sacrifices clarity of presentation for the sake of brevity in the form of a somewhat opaque and irritating symbolisation. Since from the viewpoint of quantifiers, AS makes no really significant advance upon PhG and EEG in the matter of rank, I shall confine myself to a discussion of the notion as set out in PhG and EEG.

In PhG (p.96) Jespersen sets out his notion of rank thus:

> We have now to consider combinations of words, and here we shall find that though a substantive always remains a substantive and an adjective an adjective, there is a certain scheme of subordination in connected speech which is analogous to the distribution of words into 'parts of speech', without being entirely dependent on it.

In any....

> In any composite denomination of a thing or person, we always find that there is one word of supreme importance to which the others are joined as subordinates. This chief word is defined (qualified, modified) by another word, which in its turn may be defined (qualified, modified) by a third word, etc. We are thus led to establish different "ranks" of words according to their mutual relations as defined or defining. ...

The example which Jespersen gives in PhG (p.96) is:

> extremely hot weather.

In this combination, he claims that weather is "the chief idea", and may be called primary; hot, since it modifies weather, he calls secondary, and extremely, being the modifier of hot, he terms tertiary. He then proceeds to the observation that we may have combinations of sufficient complexity to require the use of names like quaternary, quinary, etc. These need not, however, figure in this discussion since Jespersen clearly regarded them as of marginal importance.

> ... in the phrase a certainly not very cleverly worded remark no one of these words, certainly, not and very, though defining the following word, is in any way grammatically different from what it would be as a tertiary word... (PhG, p.96).
>
> [In AS (p.110) this example is adjusted to: a not particularly well constructed plot on grounds which he discussed in footnote 1 (p.111)] .

I have certain reservations about Jespersen's account of rank, the most important being that he does not lay sufficient emphasis on the all-important concept "connected speech". Clearly, whether a given item, e.g. weather in Jespersen's example, is "the chief idea", depends upon the total context in which the remark is uttered. I feel nevertheless that the notion of rank is important to the study of quantifiers not only because Jespersen (especially in EEG) makes some use of it for the analysis of given examples, but, more important, because it suggests, by implication, that the linear ordering

of items in surface structure somehow reflects a system of semantic subordination. This notion, not, of course, explicitly investigated by Jespersen, is crucial to much modern thinking concerning quantification and negation. (I shall discuss the whole issue in detail in Chs. 3 and 4.)

On the whole, although rank was such an important part of Jespersen's linguistic thinking, his use of it in the direct analysis of quantifiers is sparing. Most of his remarks, in EEG rely purely upon the linear ordering of items without any attempt to explain why this ordering is significant to our understanding of the examples in question. For instance, he says (p.82):

> Some and any are used as primaries, chiefly before of or referring to a substantive just mentioned, but also in the plural in speaking of persons

In this observation, the phrase "referring to a substantive just mentioned" could obviously have been developed into an interesting and useful discussion of discourse analysis, but Jespersen is content merely to list a few isolated sentences, e.g.:

> Did any of his crew survive?
> Some are wise and some are otherwise.

leaving it to the reader to draw what conclusions he is able as to the accuracy of the observation.

Jespersen does, however, make the important point that certain quantifiers (pronouns as he continues to call them) can normally be made primaries:

> ... by the addition of one or body (speaking of persons) and thing (neuter). No one, nobody, ... some one, somebody, something, any one ... everything, ...

Jespersen is, here, referring to what philosophers call "restriction" (see Ch.6) by which is meant the restriction of the scope of a quantifier to a particular member(s) of a given set. He does not expound upon the examples which he lists, but it will

be obvious....

be obvious that restriction of this kind - where, in Jespersen's terms, pronouns which are usually secondaries can be made primaries - represents the broadest possible type of restriction. As the scope of the quantifier is narrowed, so it becomes impossible to join the quantifier physically, i.e. fuse the quantifier, with the restricting element. Thus, we say some intellectuals, not someintellectuals. (see further Ch.6).

In EEG (p.89) Jespersen offers, but unfortunately, does not discuss, some extremely interesting examples of quantifiers used as tertiaries, e.g.:

> He was never wounded any more than I was.
> [It is any, not never, which was the focus of his interest in this sentence, hence my underlining.]
> You will be all the better for a drop of whisky.

In the cited examples, the precise semantic function of any and all is extremely complex and I shall return to it later. It will, however, with no discussion whatever, be obvious that in neither example does the quantifier have a literal meaning and that, the role of presupposition in their interpretation must be central.

2.5 Junction and Nexus

The distinction to which Jespersen gave the names junction and nexus is really nothing more than the distinction between a complex NP and a simple sentence in which some part of the complex NP other than the head or determiner, e.g. an adjective or participle, appears in the predicate phrase. To take a typical example, from PhG (p.97), Jespersen writes:

> If we now compare the combination a furiously barking dog ... with the dog barks furiously, it is evident that the same subordination [that represented by rank] obtains in the latter as in the former combination. Yet there is a fundamental difference between them, which calls for separate terms for the two kinds of combination ...

The fundamental....

The fundamental difference to which Jespersen refers is explained in PhG, p.87:

> [In] the two combinations the dog barks and the barking dog, ... it is only the former combination which is rounded off as a complete piece of communication, while the barking dog lacks that peculiar finish and makes us ask: What about that dog? ...

The distinction between junction and nexus is important to Jespersen's treatment of quantifiers for two reasons. In the first place, according to him (as I have previously shown (2.1)) quantifiers like many, some, etc., do not qualify as predicative elements for 'nexus', but can only occur as parts of a junction. Thus he would accept many dogs (junction) but not ?the dogs were many (nexus). Secondly (and perhaps more important), Jespersen made use of the distinction in his discussion of Negation, showing with perfect clarity his awareness of the difference between junctional negation (Jackendoff's phrasal negation) and nexus negation (Jackendoff's verbal negation), a difference which, in many cases is central to our understanding of sentences.

2.6 Negation

2.6.0 General

As far as the operation of negation and quantification is concerned, Jespersen's most illuminating treatment, in my opinion, is that set out in PhG (pp.322 ff) (of which the analysis in EEG (pp.297 ff) is little more than a re-statement) and I shall, therefore, concentrate exclusively on this chapter. All page references therefore are to PhG.

2.6.1 Tripartition

Basic to Jespersen's treatment of negation is his tripartition based upon the two logical extremes and the intermediate state lying between them. He sets out this tripartition as follows (p.324):

> Next we have to consider some terms of paramount importance to the logician as well as to the linguist, namely

> the two absolute extremes all and nothing with the intermediate something. Let us call the two extremes A and C and the intermediate B. They are most naturally represented in a descending scale.
>
> A. everything, all, everybody (all girls, all the money)
> B. something, some, somebody (some girls, a girl, some money)
> C. nothing, none, nobody (no girl(s), no money)
>
> Thus also the adverbs:
>
> A. always, everywhere
> B. sometimes, somewhere
> C. never, nowhere.

One of the most important features of this tripartition is that it allows, through the intermediate stage, for the distinction between logical and proportional quantification since all proportional quantifiers naturally fall between the two extremes. Jespersen writes:

> The intermediate stage B of course admits many subdivisions, of which we may mention some of special linguistic interest.
>
B1:	many (girls)	much (money)	very sorry
B2:	a few (girls)	a little (money)	a little sorry
B3:	few (girls)	little (money)	little sorry.

I have commented already (2.2.2.3) upon Jespersen's brilliant observation regarding the semi-negative status of expressions like few as opposed to a few. In his discussion of the above, he notes that (p.324):

> ... in many cases [examples under B3] may be considered negative rather than positive; this is especially true of the adverb little, e.g. in "they little think what mischief is in hand" (Byron).

Since Jespersen's time it has, of course, been firmly established that adverbs like little are, in fact, negative, as can be seen if we apply Klima's tests for negative sentence-hood (e.g. Tag-question) to the line from Byron which Jespersen cites - the tag must be in the positive rather than the negative mode, which is sufficient to demonstrate the negative status of the main clause.

Equally interesting....

Equally interesting, though not so demonstrably correct, is Jespersen's claim that examples of the type B1, e.g. many girls, much money, very sorry, approach the upper of the two logical extremes: (A) e.g. all. Clearly, the phenomenon with which we are here confronted is that which Sapir called grading (discussed with great clarity by Lyons (1968)). That Jespersen himself was aware of this phenomenon with respect to adjectives as well as quantifiers is suggested by his analysis of the phrase not good which, he suggests, (p.325):

> means 'inferior', but does not comprise 'excellent'.

Perhaps clearer is his suggestion:

> not lukewarm indicates a lower temperature than lukewarm, something between lukewarm and icy, not something between lukewarm and hot.

These formulations do not, of course, have the simple clarity of Lyons' treatment of graded antonymy (actually, Lyons uses the term antonym exclusively for gradable items), and the point which Jespersen is trying to establish is not that good and lukewarm are gradable, but rather that their denial does not imply their opposites - not good≠ bad. But it is clear enough that he was well aware of the phenomenon of gradation.

As Jespersen shows, his tripartition is applicable to areas of language, other than mere words. He sets up the following equations (p.325):

> A. Necessity, B. Possibility, C. Impossibility. [This] is really nothing but a special case of the tripartition mentioned above, for necessity means that all possibilities are comprised, just as impossibility means the exclusion of all possibilities. The verbal expressions of these three categories are A must (or, need) B can (or, may), C cannot. If to these three categories we add an element of volition with respect to another, being, the result is: A. Command, B. Permission, C. Prohibition. ...

Although it....

Although it would be foolish to say that this analysis clearly foreshadows concept of speech acts explicitly formulated by Austin (1962) it seems to me that the germ of that concept may be detected in the passage cited. If this is correct, it is a point of some historical significance in view of the importance in current approaches to language (e.g. that of Seuren, 1969) of the concept speech act.

2.6.2 Negation and the tripartition

2.6.2.0 General

It will be most economical to treat the remainder of Jespersen's material on negation by separating his remarks on negation and its relation to the tripartition referred to above from the other observations made in the relevant chapter of PhG. One important point should, however, be made at the outset; as far as part C of the tripartition is concerned - nothing, etc., Jespersen seems to have regarded the negative element already implicit - indeed often to be seen in the surface structure, as in the case of nothing itself - as primitive to the sub-classification in question. Thus when sentences of the subcategory are negated, they are not regarded as straight forward examples of double negation. This, I believe, was Jespersen's main reason for including, among the negatives of C, a large proportion of examples which only belong to the group by virtue either of implicit negation, e.g. fail = not succeed, or the appearance of a negative affix, e.g. impossible = not possible.

It is also important to note that, as far as Jespersen was concerned, the notions of negation in Mathematics and that of negation in Language (i.e. natural languages) are not identical. Thus, he writes:

> ... the first point of importance is to emphasize the difference between a linguistic negative and a mathematical negative: -4, means not everything different from +4, but a point as much below 0 as 4 is above 0. A linguistic negative, on the contrary, changes a term into the contradictory term, at any rate theoretically, for on closer inspection we shall find that in practice this rule requires some very important qualifications ... (PhG, p.325).

The importance of this observation is that it provides Jespersen with good grounds for rejecting the view that in natural languages, neg neg = affirmative on the analogy that in Mathematics, "--" = "+". (PhG, p.331).

Finally, it is vital that one should be aware of the fact that Jespersen does not take every possible ambiguity into account. Thus, for instance, he might claim that negation of a sentence of the A category, implies a sentence of the B category, e.g. not all men fish implies some men fish. It is, of course, perfectly possible to interpret such a case as implying the additional reading: no men fish. I do not think, for one moment, that Jespersen was unaware of this additional interpretation, but I presume that writing in an age when the aims of scholarship among readers as well as writers were more general (some might say more superficial) than those of today, he thought it sufficiently obvious and insufficiently interesting to require deep consideration.

2.6.2.1 Negation and the B category

As Jespersen included in his B category the proportional quantifiers, e.g. many, few, ..., and as these items are highly dependent upon context for their interpretation, it is only to be expected that his treatment of negation and the B category should be the most complex, extensive and, at the same time, most open to dispute upon points of detail. I shall try simply to present the main conclusions at which he arrived.

On page 325, Jespersen observes:

> Here [category B] the general rule ... is that not means 'less than', or in other words, 'between the term qualified and nothing'.

He goes on to discuss the meaning of not followed by gradable adjectives, a discussion mentioned above (2.6.1) and continues:

> This is especially obvious if we consider the ordinary meaning of negatived numerals:
> He does not read three books in a year. ...
> His income is not £200 a year.
>
> He does not....

> He does not see her once in a week. ...
> all these expressions mean less than three, etc. (p.236)

Jespersen is clearly justified in putting such cases in the B category since numerals, being members of an infinite set, must, with the exclusion of "0", fall between the two extremes represented by A, e.g. all and C, e.g. nothing.

Among his examples, Jespersen includes one containing a word-fraction, namely:

> The bottle is not half full.

Presumably, such items as half, fifth, etc. qualify as B category items because they function as proportional quantifiers denoting specific degrees between all and nothing. There are a number of interesting problems surrounding the use of such words in English, for example, the ability of half to function without A and the collocation of limited subsets of numerals with specific word-fractions, e.g. two thirds, but not (in ordinary usage when the fractions are taken as referring to parts of a single object) three thirds. However, I shall not investigate these questions in this essay simply for reasons of economy.

Jespersen's claim that, in the examples cited, not means "less than" was not intended to be categorical. He is careful to note that:

> ... the same expressions may also exceptionally mean 'more than', only the word following not then has to be strongly stressed (with the peculiar intonation indicative of contradiction) and then the whole combination has generally to be followed by a more exact indication ... His income is not two hundred a year, but at least three hundred.

Jespersen notes, but unfortunately does not discuss in detail, some negative combinations which, though in common use, are extra-ordinarily difficult to analyse satisfactorily, namely not followed by above and not or no followed by more or less. He says:

> not above....

> not above 30 means either 30, or less than 30. Not more than generally means 'as little as', and no less than 'as much as', ... note the distinction between no and not in these combinations: no more than three 'three only'; not more than three 'three at the most'.
> He paid no less than twenty pounds implies astonishment at the greatness of the amount, which was exactly £20; he paid not less than twenty pounds implies uncertainty with regard to the exact amount, which at the very least was £20. (p.326).

The semantic distinctions to which Jespersen refers are extremely fine and some of his terms, e.g. "astonishment" represent rather weak concepts - weak in that they elude rigorous definition. However, his observations in general do seem to hold. To see exactly why they should hold and how the distinctions are represented in speech is a matter of considerable difficulty and I shall only sketch a train of thought along which further investigation might proceed.

Concerning first the question of why the distinction should exist, I think it highly probable that the answer is to be found in the analysis of the total discourse, including the speaker's presuppositions with respect to the addressee's beliefs about the topic under discussion. I have no wish to claim that, if we say:

> He paid not less than 20 pounds

we must always presuppose a doubt, either expressed, implied, or inferred by the speaker to exist with respect to the amount involved, but I do believe that it is quite likely to be the case that such doubt frequently prompts the use of not less rather than no less. A typical speech context would be:

> A: He can't have paid as much as 20 pounds.
> B: He paid not less than 20 pounds (though I am not prepared to go further than that).

We see a similar phenomenon with pairs like:

> The dog is no bigger than a hare.
> The dog is not bigger than a hare.

In the first,...

In the first, I suggest, the speaker is simply making an assertion which is presented independently, perhaps even innocently, of the addressee's views upon the size of the dog in question. In the second case, on the other hand, the speaker, in many contexts of situation, may believe that the addressee believes the dog to be bigger than a hare and is setting out to contradict that belief.

Turning to the question of how, in actual speech, the distinctions concerned are conveyed, it may be sufficient, for my limited purpose here, to point out that no always carries primary stress (throughout this essay I use the terms primary stress and strong stress very crudely to indicate the principal stress-point in a sentence or clause without making any assumptions about its phonological make-up as volume, length, pitch, etc.), while not may carry such stress or the stress may be carried by another item, e.g. the word to its right. If, therefore, in such a combination as: not less than ..., the primary stress is upon less rather than not, a disjuncture (perhaps quite marked) tends to arise with the result that the semantic focus falls upon less, thus achieving the contradictory effect which the speaker sought. I must re-emphasise that these thoughts are very tentative. They are, moreover, partly the result of a discussion of the whole issue with L.W. Lanham, but he is in no way responsible for their presentation and therefore shares no blame if the reader finds them unconvincing. I shall treat cases like: No man knows God's name. and: Men do not know God's name. in my own handling of Negation and Logical Quantifiers.

As far as the negation of proportional quantifiers like many, much, little and few are concerned, Jespersen's most interesting observation is that while not combined with many and much (sub-classified by him as B1) tends to reduce their scope (he does not employ this terminology), so that, for example, not many = few, but not combined with quantifier plus article a few (subclassified by him as B2) tends to increase the scope, so that not a few = many. The second part of this assertion clearly follows from his claim (already noted, 2.2.2.3) that combinations like a few are positive in that they emphasise the existence of a number of objects, e.g. mistakes, and carry special connotations, e.g. blame, while the

undetermined....

undetermined few tends to emphasise the smallness of the number of objects, e.g. mistakes, which exist and, consequently, carry special connotations, e.g. praise.

2.6.2.2 Negation and the two extremes A and C

Jespersen begins his discussion of the negation of the two extremes with the crucial observation (p.326):

> ... Here we have the general rule that if the negative word is placed first, it discards the absolute element, and the result is the intermediate term: Not A = B; not C also = B. If, on the other hand, the absolute term is mentioned first, the absolute element prevails, and the result is the contrary notion: A ... not = C; C ... not = A.

Among the examples which he offers are the following:

> They are not all of them fools [not A = B];
> He was not the eldest son of his father for nothing [e.g. not C = B];
> The one (uncle) I was always going to write to. And always didn't [A not = C];
> Nobody was unkind [C neg = A]. (PhG, pp.326-328).

Jespersen saw, of course, that in the last two types, the negative element usually consists of an affix, as in unkind, or else is implied, e.g. failed. The reason for this tendency in the case of the lower extreme, C, e.g. nothing, is I imagine connected with the tendency in "standard" English to avoid double negatives in simple clauses as the affixes, e.g. un- and -less are not felt to be so obviously negative as elements like no and not. (By "standard" here I simply mean something like "educated in accordance with the grammatical tradition built up in English teaching from the eighteenth century onwards.)

To my mind, the most important thing about Jespersen's handling of the negation of the two extremes, as summarised above, is that it demonstrates clearly that he was aware of the relation between linear ordering, e.g. not + all against all + not and semantic interpretation

(an awareness....

(an awareness explicitly stated under special and nexal Negation (p.329) and not really surprising in one who was as well acquainted with Logic as he). This is of special historical importance, since it is this relationship which lies at the root of almost all modern thinking regarding quantifiers and negation (see, for example, Lakoff (1971)). Strawson (1959, p.10), writing about metaphysics, states:

> ... the task of descriptive metaphysics ... has constantly to be done over again. If there are no new truths to be discovered, there are old truths to be rediscovered. For though the central subject-matter ... does not change, the critical and analytical idiom ... changes constantly.

While this observation makes very good sense if applied to linguistics, one cannot help wondering how much further advanced our knowledge of language would be if the study of the work(s) of earlier scholars played a more central role in our investigation of language than it does at present. It certainly seems that many modern linguists, among whom I may well be one, spend an unnecessary proportion of their time on "the critical and analytical idiom", rediscovering the wheel; time which could be spent more profitably in investigating new ways in which it might be employed.

2.6.2.3 Special and Nexal Negation

On page 329, Jespersen writes:

> ... the meaning of a sentence sometimes depends on the place of a negative element ... we may say that the negative notion may belong logically either to one single idea (special negation or to the combination of the two parts of a nexus (nexal negation) ...

He clarifies the concept special negation as follows:

> ... [special negation] we have either a negative prefix (as in never, unhappy, disorder), or the adverb not put before the word (not happy); in some cases a single word without any negative prefix may be regarded as containing a negative idea, e.g. lack (= have not) ... When a nexus is negatived, the negative adverb is generally attracted to the verb ... in MnE we have the do-

> combinations (does not come, doesn't come, etc.) except with the well-known group of verbs(is not, isn't, cannot, etc.).

Two sentences are used to represent the difference between the two types of negation, namely:

> Many of us didn't want the war [nexal negation].
> Not many of us wanted the war [special negation].

To readers of Jackendoff and his commentators, e.g. G. Lakoff, Chomsky, etc., these sentences bear a startling similarity to the currently famous:

> Many arrows didn't hit the target.
> Not many arrows hit the target.

I do not, of course, suggest that Jackendoff merely repeats Jespersen's observation, or that he was even aware that it had been made. I have not had access to Jackendoff's thesis, only to his articles. Jackendoff does, moreover, continue the argument by examining the passive:

> The target was not hit by many arrows.

However, allowing for differences in terminology, it is extremely interesting to note that Jespersen came to precisely the same conclusion with respect to his two sentences as Jackendoff did roughly forty-five years later. Jespersen put it as follows:

> [In the former] ... the nexus is negatived, but in [the latter] not belongs exclusively to many, which it turns into 'few'.(p.329).

Even though both types of negation are open to speakers, Jespersen observes that the normal tendency is to "attract" the negative element to the verb. However, as he remarks (p.330):

> [This tendency] is not the only one found in actual language: we often find the opposite tendency to attract the negative notion to any word that can easily be made negative.

This may,...

This may, of course, be a matter of style only. He continues:

> In literary English: "we met nobody" is thought more elegant than the colloquial "we didn't meet anybody".

In other cases, the choice between Special and Nexal Negation seems to be a matter of idiom and may very well run counter to the laws of Logic. Jespersen provides a number of examples of this phenomenon, e.g.;

> She loves you so well that she has the heart to thwart you in nothing. (Gilbert) ... "You and I will go to the smoking-room and talk about nothing at all subtle." (p.330).

In yet other cases, there seem to be formal constraints upon the surface position of the negative element. Jespersen says:

> Wherever it might seem possible to attract the negative element to either of two words, it is nearly always put with the first. We may say "no one ever saw him angry" or "never did anyone see him angry", but not "any one never saw him angry" or "ever did no one see him angry". (p.330).

2.7 Natural language and its relation to formal languages

Jespersen's view of natural language and its relation to formal languages is summed up in PhG in an observation made within the context of a discussion of double negation, when he writes:

> Language is not mathematics ... Language has a logic of its own. (pp.331, 332).

While the validity of this view may seem obvious, it is a view which, in my opinion, needs to be emphasised from time to time. As the following account of the treatment of quantifiers by various modern linguists will demonstrate, there has been a tendency, especially over the last ten years, to analyse language in all its aspects including Semantics very much as though it were amenable to strict rules of a quasi-logical nature. Especially when meaning is in question, this approach may well be counter-productive. While purely syntactic

rules are frequently easy to formulate, the same seldom goes for semantics and, in the field of quantification, where the temptation to draw up strict rules in symbolic form is particularly strong if only by analogy with the predicate calculus, the illogicality of natural language, though it may not be as strong as in other areas, is nevertheless sufficient to make Haas's notion of Semantic tendency (see Ch.5) within which "illogicality" can be accommodated, a far more attractive notion than Semantic rule modelled exclusively upon the apparatus of symbolic logic or mathematics.

Chapter 3

Quantifiers within the Framework of Transformational-Generative Linguistic Description: Some Formal Questions

3.0 General

In this chapter and the next, I shall devote my attention to the study of quantifiers as carried out by some of the best known Transformational-Generative linguists and, in doing so, shall, *ipso facto*, be concerned with a number of basic developments within the Transformational-Generative approach to linguistic description as a whole.

In constructing this synthesis, two alternative lines of approach seemed open to me. I could have divided my material according to what many see as a basic schism within the Transformational-Generative school. This involves on the one hand those who see Grammar as including a level of *deep structure* and a purely interpretive semantic component with the deep-structure level as input, represented, for example, by Chomsky, Hall and Jackendoff, and on the other the so-called Generative Semantists who reject the notion of *deep structure* and who see Semantics as central to the Grammar, e.g. Lakoff, McCawley and Ross. The second alternative was to organise my discussion in terms of linguistic questions with which both groups are concerned as basic objects of study, e.g.

(a) What are the surface manifestations of quantifiers?

(b) How do various quantifiers interact within sentences?

I have adopted the latter alternative for two basic reasons. As much of the published work is polemical in character, for instance, Jackendoff's writings contain many references to and attacks upon those of Lakoff and vice versa, to handle them separately would at best be repetitious and at worst confusing. Secondly, the present state of the discipline is such that it is not always perfectly clear to which side a given writer adheres. This difficulty is frequently increased by the fact that a great many relevant discussions are in the form of

relatively short....

relatively short articles which do not permit their authors to give a careful statement of their view of Grammar as a whole, e.g. Lee (1971). Writers in other cases, deliberately or otherwise, avoid the precise formulation of proposed rules, for instance, Partee's interpretive rule (Partee, 1972) which is severely criticised by Lakoff (1972) for this very reason.

By centering my discussion around points of common concern, I hope to be able to introduce a semblance of order into the synthesis independent of the Transformationalist/Generativist debate as such. This independence will enable me to maintain neutrality with respect to many issues where these do not seem materially to affect the question of quantification. I should, however, make it plain at the outset that, in my opinion, Chomsky was substantially correct when he wrote, concerning the various models of Grammar proposed:

> Given alternative variations of a theory of grammar, one must first seek to determine how they differ in empirical consequences, and then try to find ways to compare them in the area of difference. It is easy to be misled into assuming that differently formulated theories actually do differ in empirical consequences, when in fact they are intertranslatable - in a sense, mere notational variants. (1970a, p.187)

The fact, however, that the schism does exist and that quantifiers have played a central role in its development cannot be ignored altogether. This being so, I shall begin by offering a bare outline of the two main streams of thought presently operating in the Transformational-Generative framework. I have taken the diagrams from Maclay's very lucid Overview (1971), although there have, of course, been a number of significant developments since Maclay's paper was published. The numbering of these diagrams is Maclay's.

3.0.1 The Two Main Streams within the Transformational-Generative Framework

As a result of the work of Katz and Fodor (1963) Katz and Postal (1964) no doubt influenced also by the investigations of others,

e.g. Lakoff (1965)....

e.g. Lakoff (1965) Chomsky drastically revised his grammatical model as presented in 1957 so as to accommodate the indisputable fact that any adequate grammar must possess a semantic component as well as the traditional phonological and syntactic components. The model which he offered in its place - the so-called Aspects Model (Maclay's GT-2) - is represented by Maclay as follows:

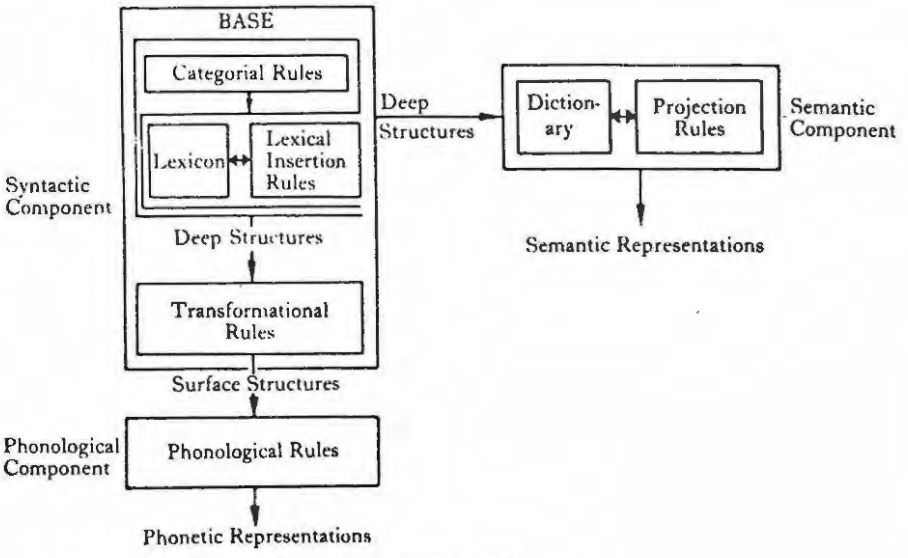


FIGURE 3. *GT-2*

The important feature of this model is, as I have said, that it makes explicit allowance for the role of the semantic component in linguistic description. However, it is far from clear exactly how the model is to operate. For example, it might be asked whether it is really necessary to have both a lexicon (part of the categorical component) and a dictionary (part of the semantic component), since all of the information provided by the former must be duplicated in the individual dictionary entries contained in the latter. Weinreich (1970) is highly critical of such redundancy. The answer to this question must ultimately depend upon one's position regarding the conflicting hypotheses known as the Transformational and Lexicalist which are basically concerned with the origin of items in surface structure. I shall return to this question later (3.1). Another difficulty which the Aspects theory presents is that it is not apparent

whether directionality....

whether directionality is implied in the generation of sentences. Is the generation supposed to begin with the surface structure and its semantic representation and work backwards to the deep structure with its categorial input, or the reverse? Chomsky (1971, pp.187-8) says of this question:

> It is meaningless to ask whether it [the grammar] does so 'first' generating d, and then mapping it onto S (on one side) and onto s and then P (on the other), or whether it 'first' generates S (selecting however one wishes from the universal set of semantic representations), and then maps it onto d, then s, then P; or for that matter, whether it 'first' selects the pair (P,d), which is then mapped onto the pair (s,S); etc.... [d = deep structure, S = semantic representation, P = phonetic representation and s = surface structure].

However, as Maclay (p.175) points out:

> Nonetheless it cannot be entirely accidental that all known formulations of GT-2 grammars present S ... as the output of a dependent component whose operation depends on having d as input. The term interpretive applied to the semantic component suggests its secondary status. Thus, whatever the ultimate logical status of the relationships between the components of a grammar may be, it seems evident that for grammars of the GT-2 type, syntax is not only independent of meaning, but prior to it both psychologically and operationally.

This question of directionality is not trivial. Chomsky's rejection of it as 'meaningless' can, in the final analysis, only be taken as an admission that different grammatical models may work equally well - an admission implicit in his general argument. It may, moreover, be taken to imply the necessity of compartmentalising the various aspects of Language, syntax, semantics, phonology, rather than allowing them to flow one into another. As the work of many linguists has shown, including some which caused Chomsky himself to revise the Aspects model, e.g. Jackendoff (1969) and Kuroda (1969) even if one views a level of deep structure as a necessary part of the grammar,

one cannot....

one cannot avoid the conclusion that various surface phenomena, for example, the placement of not in:

(1) Not many of the arrows hit the target.

(2) many of the arrows didn't hit the target.

play a significant role in the interpretation of sentences as do nonsyntactic notions such as focus and presupposition. For this reason, Chomsky, is forced to conclude:

> ... there is no reason at all why properties of surface structure should not play a role in determining semantic interpretation... (1971, p.214)

Such an admission leads naturally to a modification of the Aspects model, shown by Maclay as:

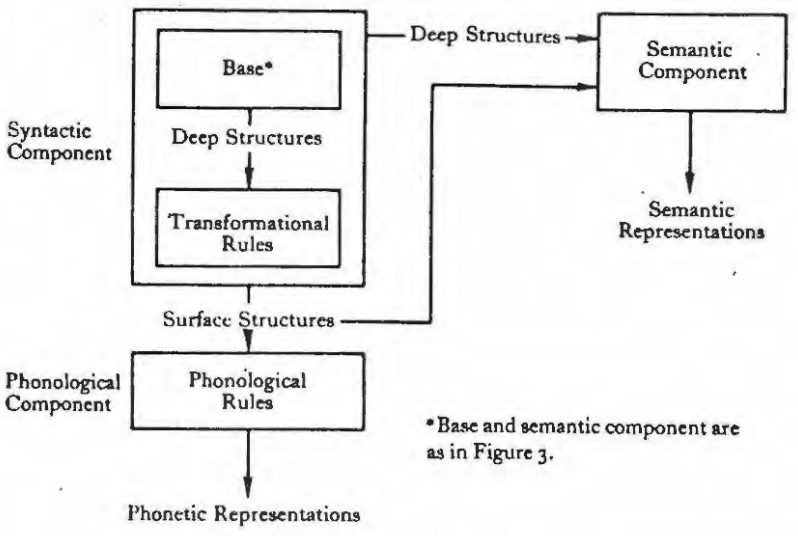


FIGURE 4. *GT-3A*

I should stress that Maclay does not claim that this diagrammatic presentation of the revised Aspects model would be completely acceptable to all those transformationalists who still see a need for deep structure. It is, for example, not clear from Jackendoff's paper (1969) what level of syntax he regards as a suitable input to his Scope rule as will be seen in the next chapter. Moreover, Partee (1970) requires that her interpretive rule should have surface structure as its input - a requirement which suggests, given a level of deep structure as an integral part of the model, that the interpretive semantic rule in

question has...

question has the same status vis-a-vis the syntactic component as the phonological component, namely, maximal remoteness.

From the revised model of Aspects, it is a very short step to a theory which places semantic considerations in a position at least equal to, if not superior to syntax. Indeed, it could be argued that if one considers Chomsky's grounds (1957) for claiming that the famous:

3) Colourless green ideas sleep furiously.

is 'grammatical', namely that the ordering of words with respect to word-class membership is correct, i.e.:

4) adj. + adj. + N + V + adv.

one cannot avoid the conclusion that, even at that period, Meaning provided the basis for judgements concerning grammaticality since, ultimately, the whole notion of word classes must surely depend upon how a given item operates in sentences. In other words, an item is likely to have a particular status if it denotes a substance, an attribute, an action and so forth. The fact that, in English, different word-types exhibit particular morphological and formal features, e.g. nouns can be marked for plurality, take determiners, etc., verbs can display tense distinctions, ... may, in my opinion, be viewed as consequential to their semantic function rather than as prior to it. It will be seen below (3.2), when considering the status of quantifiers, that even today there remains considerable dispute among linguists regarding the membership of various word classes.

Whether the foregoing remarks are valid or not, the fact remains that, independently of Chomsky's revised model, a theory was developed by, among others, Lakoff, McCawley and Ross, which, though it preserved the transformational apparatus in one form or another, placed semantics on an equal footing with syntax and dispenses with the notion of deep structure. Maclay illustrates this model (called by him GT-3b) as follows:

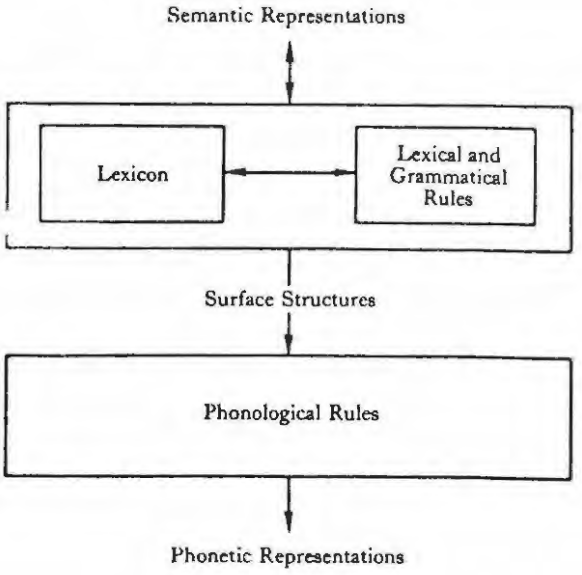


FIGURE 5. *GT-3B*

As in the case of (figure 4) this diagram is not wholly satisfactory in the light of developments which have taken place since 1971. Lakoff, for instance, suggested in 1973 that the grammar should allow for, among other things, contexts of situation and conveyed meanings (Grice's implicatures), while Fillmore, at the same conference, discussed the need for a pragmatic theory of semantics.

It is not my intention, in this essay, to attempt a full evaluation of the two main streams of Transformational-Generative linguistics. I shall therefore turn my attention from this point to the study of specific questions relating to the role of quantifiers generally within the framework sketched above. Regarding the debate itself, Maclay seems to me to be perfectly correct when he writes:

> The battle between Chomsky and his critics is being fought according to rules which Chomsky himself developed [i. e. the requirements of descriptive adequacy, simplicity, etc.] and is essentially a sectarian war among scholars who share a common understanding as to the general goals of linguistic analysis. All agree that the aim of a linguistic description is to explain the relationships between two independently specifiable entities: sound and meaning. (p.178)

3.1 The Transformationalist Versus the Lexicalist Hypotheses

As a preliminary to any meaningful discussion of a given class of formatives, e.g. quantifiers, the student must face the question of the origin(s) of the class, where by origin(s) is meant, not etymology, but the source within the grammatical framework by which sentences are generated and described.

Lees (1960) accounted for certain types of nominal construction, e.g. gerundives, as in:

1) John's criticising the book ...

by transformations from underlying sentences - in the case of (1) something like:

2) John tense criticise the book.

and extended this approach to include the so-called derived nominals such as:

3) John's criticism of the book ...

Lees's primary motive in constructing this transformational approach to such nominals seems to have been methodological - the re-writing rules of the phrase structure did not at the time, allow for the expansion of NP in ways which would accommodate the structures concerned and so their origin was assumed to reside in appropriate underlying sentences which could be converted via transformations into the observed surface structures.

The introduction of features into the grammar by Katz and Fodor (1963) and Katz and Postal (1964) and the subsequent revision of the Transformational-Generative model by Chomsky (1965) not only allowed for, but necessitated investigation of alternative methods of deriving such nominals. Three solutions presented themselves:

(1) the re-writing rules of the base could be made more complex by elaborating on the re-write of NP so that, for instance, John's criticism of the book could be handled by a simple process of lexical insertion, taking criticism as an ordinary lexical item, thus dispensing with the need for a special nominalising transformation;

(2) alternatively....

(2) alternatively, it seemed possible to derive criticism via a transformation from the lexical item criticise, so that, while the transformational component continued to carry the extra complexity, the lexicon was made simpler since it need contain only the one basic formative criticise;

(3) it might be possible to combine both approaches within a single system, using transformation for gerundives, e.g. John's criticising and separate lexical items for the so-called derived nominals, like criticism.

The whole question of such nominals is discussed at length and with great clarity by Chomsky (1970 , p.215) who concludes:

> ... three types of nominals have been considered in this discussion: the gerundive nominals such as (60), the derived nominals such as (61), and the "mixed" forms (62),...:
>
> 60) John's refusing the offer.
>
> 61) John's refusal of the offer.
>
> 62) John's refusing of the offer.
>
> ... It seems that the transformationalist hypothesis is correct for the gerundive nominals and the lexicalist hypothesis for the derived nominals and perhaps, though much less clearly, for the mixed forms. This conclusion has a variety of consequences for general linguistic theory and for the analysis of English structure. Such material provides a case study of the complex problems that arise when linguistic theory is elaborated so as to incorporate both grammatical transformations and lexical features.

A principal ground for Chomsky's uncertainty with respect to the so-called "mixed" forms is that, while resembling gerundives in their use of the morphemes - 's and -ing, they behave like the derived nominals in permitting the substitution of an article for the possessive, as in: the refusing of ...

Among the 'variety of consequences' and 'complex of problems' to which Chomsky refers will be the elaboration of the transformational component on the one hand and of the lexicon on the other: the relation

of surface configurations to underlying representations and the question of whether lexical insertion rules apply in a block, filling in each "dummy" symbol of the output of the base rules in a single operation, or whether they operate in stages making use of specific transformations. For example, Lakoff (1971, pp.248-9) would derive items like dissuade in stages from the root -suade + neg.

As Jackendoff (1969) points out, the alternative approaches offered by the transformational and lexical hypotheses are particularly relevant to the study of quantifiers since it is an open question whether certain surface manifestations of quantifiers, e.g. nothing, nobody, ... are to be analysed as deriving transformationally from underlying configurations such as neg + anything, or whether they should be inserted directly from the lexicon, their selection being predetermined by the presence of an appropriate morpheme, e.g. neg in the prelexical string. I shall not discuss Jackendoff's reasons for choosing the latter alternative in this chapter since it is basically a question of interpretive rather than purely formal considerations in so far, of course, as the two may be kept apart.

As far as my own attitude to this question is concerned, I have already stated (Intro.) that my primary concern in my personal account of quantifiers is 'data-oriented'. I am, for the purposes of this essay, interested in relating surface structures to so-called deep structures simply for explanatory convenience and, in consequence, it will not be encumbent upon me to formulate transformational machinery by which such relations may be effected. I propose to give a linguistic account of quantifying items, especially those which quantify objects conceptualised as things. Although I do believe that a semi symbolico-logical notation can offer one of the clearest ways of exhibiting the semantic structure of sentences, rather in the manner of McCawley (1970) or Seuren (1969) I would not, for one moment, wish to treat such notations as the output or input of some level, e.g. surface structure, or component of the grammar, e.g. the semantic component, in any mechanistic sense. In fact,

I am sceptical....

I am sceptical, except in a few isolated cases, about the whole notion of semantic rules, preferring Haas's concept of semantic tendency. As I see it, this preference alone requires the abandonment of mechanical procedures to forward the semantic interpretation of sentences.

However, as my intention is to explore the relationships between actual words and their uses, I shall be forced into a position which gives at least the appearance of a lexicalist stance. Thus, for example, I shall want to examine the uses of the item any rather than confining myself to an analysis of neg and some and then taking the semantics of any as a mere complex of the meanings of neg and some produced by syntactic or semantic rules, including the incorporation of the feature [indefinite].

I must stress that this apparently lexicalist position is a matter of simple expedience and nothing more. It seems to me that Chomsky's conclusion - that a grammar should employ both approaches - is very plausible, even if, at first sight, it looks like an attempt to have the best of both worlds. I see no inherent virtue in dogmatism unless the dogma is based upon irrefutable empirical evidence. As far as quantifiers are concerned, such evidence could, I am certain, be obtained through a detailed study of, for example, the emergence of explicit quantifying items in the course of first-language acquisition. Such an investigation would, however, represent a major digression from my main intentions in writing this essay and could not, in any case, be effected save as a full-scale undertaking in its own right. I should point out, however, that some evidence is available which supports the transformationalist hypothesis with respect to the relation between some, neg and any. In a paper on first language acquisition, Klima and Bellugi-Klima (1969, p.459) report that at period 3 of the study, "in which the mean utterance length approached 3.5 morphemes for each of the three children" (p.450)...:

> Indeterminates now start appearing in the children's speech, in affirmative utterances as I want some supper... The children's negative sentences have the form I don't want some supper... The negative versions are clearly not imitations of adult sentences, and indicate that the complex relationship of negative and indefinite has not
>
> yet been....

yet been established. Examples of indefinite coloring are rare, and do not appear with any regularity until subsequent stages.

As this study was carried out with Roger Brown and his associates, its scientific credibility is obviously high and it is quite possible that its findings with regard to some, neq and any have received, or are receiving further attention. Since, however, Klima and Bellugi-Klima's findings are based upon observation of only three children they must be regarded as tentative.

3.2 The Status of Quantifiers within the Grammar

3.2.0 General

A basic subpart of the metalanguage in terms of which a linguist describes a given language is the set of terms used as labels for the so-called word classes. As I have shown in my discussion of Jespersen's treatment of quantifiers, considerable confusion existed in the first part of this century as to the precise status of quantifiers, which were variously classified as nouns, pronouns, or adjectives. In this section, I shall review some of the main discussions of this topic which have taken place within the Transformational-Generative school and, in doing so, shall show, I hope, that much of the argument has been either unnecessary, or misdirected - unnecessary because suggested alternatives frequently amount to the same thing viewed in different ways and misdirected because individual linguists have often accepted or dismissed a given classification as 'correct', or 'incorrect', when the question at issue is not really one of 'correctness', in any empirical sense, but simply one of descriptive and explanatory adequacy. If a scholar, e.g. Lakoff, describes all as a verb, he may rightly be said to be out of step with tradition, but he cannot be said to be at variance with the facts of language since language is prior to its description.

3.2.1 Quantifiers as determiners

In Syntactic Structures, Chomsky, working as he was within a very limited corpus - limited by choice - does not touch upon the question of the status of quantifiers. It is, however, to be supposed, from subsequent writings including his own, that at the time of

writing....

writing Syntactic Structures he would have regarded them as a subset of determiners. This is evident from his re-write of Det in Aspects of the Theory of Syntax (1965, p.107):

xvii) Det→(pre-Article ^ of) Article (post-Article)

Although he does not deal with quantifiers in this volume [apart from an important note (p.224) to which I shall return in the next chapter] his inclusion of pre-Article in the cited rule necessarily presupposes that quantifiers in his system are part of Det since only quantifiers (including numerals and quantifying NPs like waggon load) qualify for the status of pre-Article.

The notion of pre-Article, according to Jackendoff (1968) was first formally stated by Hall (1962). However, before discussing the merits of this classification, we may note that Lees (1960, p.22), whose work represented the first major attempt to put Chomsky's theory of Grammar, as proposed in 1957, into practice, included quantifiers in his re-write for T (the symbol used by Chomsky for Det). His rule reads:

T → a, some, the, ...

The inadequacy of this rule is obvious enough in view of the fact that it does not take cognizance of the fact that quantifiers like many, all and even some frequently appear in surface structure in the configuration: quant + of + Det + N, e.g. many of the men. It should, however, be acknowledged that, in 1960, this inadequacy may not have been evident since Chomsky (1957, pp.35-36) did allow for the optional incorporation of a prepositional phrase into the expansion of NP, when discussing such phrases as the scene of the movie.

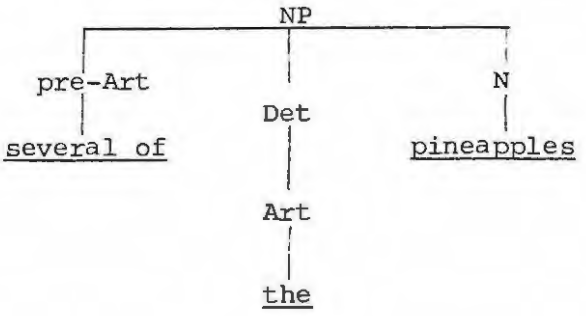
Basically, Hall's proposal to classify quantifiers as pre-Articles represents an attempt to accommodate the facts of surface structure. Under it, pre-Articles consist of the quantifying item itself, e.g. many, all and the preposition of and may appear as optional elements in the re-write of NP. Thus, for example, the underlying representation of:

1) several of the pineapples

would look something like:

2)....

2)



There are a number of obvious drawbacks to this treatment of quantifiers. First, since there is considerable variety in surface configurations according to what quantifier is present. All, for instance, need not be followed by of and its head noun may be modified by the definite article, all the pineapples. Any, similarly, need not be followed by of, but its head noun may not be modified by the or a/an, and so forth [* any the/a pineapple]. This scheme for quantifiers forces the linguist to make many ad hoc distinctions, proliferating the re-writing rules and creating an unnatural and inelegant system.

A classic example of such an attempt is to be found in Thomas (1965, pp.79 ff) where, in what looks like a desperate attempt to accommodate of as part of the determiner system attached to quantifiers, a highly confused and confusing account of Det is presented. Thomas begins by subdividing determiners into three groups: Regular Determiners, Postdeterminers and Predeterminers. Under Regular Determiners, he lists:

> Articles (Art) a(an) Ø the any every each some...
>
> Regular determiners occur before nouns: a boy, an ostrich, the girl, any house, every man ...

Still discussing Regular Determiners, Thomas continues (p.81):

> Before leaving the discussion of regular determiners, we should note that there is a very small class of words, called prearticles, ... The most important of these prearticles are: all, only, both, just.
>
> all the boys, only that boy, both those girls
> just my speed, all Ø boys

Thomas's list....

Thomas's list is confusing for a number of reasons. The items are similar in that they do not require an intermediate *of* in surface structure; this *of* is optional in the cases of *all* and *both*, but cannot follow *only* and *just*. *All* and *both* are quite obviously quantifiers; *just* is ambiguous, being on the one hand more or less synonymous with *only*, as in:

3) Just the crow escaped.

and on the other hand meaning something like *exactly*, as in:

4) A sea-voyage is just what I need.

Finally, *only* itself, as well as the interpretation of *just* with which it agrees, can appear in many surface positions which are not open to either *all*, or *both*, e.g.:

5) The corporal only/just swore at me.

Presumably, if Thomas had not included *only* and *just* among his pre-articles, it would not have been necessary for him to separate that group from his so-called predeterminers, discussed (p.84) as follows:

> ... our analysis of the determiner system of English is still not complete. ... there is another class of items in the determiner system: the predeterminers. ... the predeterminers have a unique feature: they are invariably separated from the regular determiners by the word *of*. Since no other word is ever used to separate predeterminers from regular determiners, we can consider *of* - in this case - to be a special morpheme: the predeterminer morpheme.
>
> As a class, the predeterminers include most of the regular determiners and postdeterminers as well as certain nouns of quantity. That is, if we have a regular determiner such as *some* or *any*, or a postdeterminer such as *one* or *most*, and if such words are separated from a following determiner by *of*, then they are said to be predeterminers. ...
>
> *all of* the emperors
> *some of* those owls
> *most of* my freckles

each of....

each of my ships
the first of those three bubbles
just the last two of my first five children.

In my opinion, if just and only had not been included, Thomas need only have said that of may optionally be deleted after all and both for his prearticles and predeterminers to have formed one common group along with many of his so-called regular determiners. It is in any case questionable whether it is satisfactory to treat of simply as a 'special morpheme' indicating the predeterminer status of the preceding word.

Thomas's other subclass of determiners, the so-called postdeterminers, consists of quantifying words such as numerals which differ from other quantifiers in (among other ways) their ability to appear to the right of the and all, e.g. the first, all three. While this fact is obviously important, it is arguable, in spite of Carden (1970) (whose semantic arguments I shall discuss in the next chapter) that such words are derivable from some sort of underlying configuration in which they occupy positions similar to those of all other quantifiers.

I have presented Thomas's account of Det at some length in order to illustrate the generally unsatisfactory results which may arise from the adoption of the notion of pre-Article.

Jackendoff (1968, p.430 ff) suggests three more general grounds for rejecting such an analysis, the first of which is, in my opinion, entirely valid, namely that the pre-Article approach completely ignores the fact that of, in the relevant cases, is part of a prepositional phrase, as can be seen by the fact that it is not moved along with the quantifier in such variations of (6) and (7)

6) Many of the men who fought escaped.

7) Of the men who fought, many escaped.

A second difficulty which Jackendoff sees in the pre-Article analysis is that it fails to account for the very many cases in which the quantifying item seems to have the status of a noun (he would say: clearly has the status of a noun, but this is something about which

I would....

I would prefer not to be categorical), e.g. a waggon load of fish, a box of cigars, etc. In Jackendoff's opinion, it would be unreasonable to class such words along with all, each, etc. as pre-Articles, since they behave just like ordinary count nouns, allowing plural number as well as being subject to modification by determiners, e.g. the boxes of cigars. I shall return to this difficulty when I discuss the analysis of quantifiers as nouns (3.2.4).

Jackendoff's final objection, namely, that the pre-Article analysis makes number agreement difficult does not seem to me to be valid since this is merely a question of methodology and, while it is obviously desirable to aim at maximal simplicity in a grammatical description, the adequacy of the description is what is at stake and, if the subject is complex, simplicity may have to be forfeited.

3.2.2 Det and Deixis

After the appearance of Chomsky's Aspects Model (1965), in which the Categorial component produced first terminal symbols through the base and complex symbols-complexes of lexical and syntactic features, the role played by Det in the total meaning of given sentences was given increasing attention. Further, since in the post-Aspects era, the physical manifestations of Det, e.g. the, a/an, were no longer thought of as direct outputs of the base rules, but as the result of transformational rules mapping given 'phonetic spellings' onto given complexes of features, the derivation of Det became an increasingly complicated operation. For the purposes of exemplification, I shall discuss Fowler (1971) who, though writing an introductory text, nevertheless attempted to incorporate those developments in syntactic study which were, at the time of writing, basic.

In Chapter Six, Deixis: Det and Aux, (pp. 61 ff), Fowler argues that the primary functions of Det and Aux are deictic. He sums up his view of the function of Det and Aux - a view which may easily have been taken from Seuren (1969) - as follows (p.61):

> Det and Aux serve to relate these topics [topics of discourse] to the universe of possible ways of looking at these topics: they provide a kind of 'perspective' on the propositional content of sentences ... The
>
> deictic qualities....

> deictic qualities of a sentence point to its location in relation to a spatio-temporal-personal context.

Among the examples of typical deictic formators which I re-produce from Fowler (using his numbering), it is noteworthy that a high proportion contain explicit or implicit quantifiers, namely:

(81) Man is mortal.
(82) The boys were mischievous.
(83) The three houses were almost demolished.
(84) Some of my friends live in flats.
(85) Nearly all the children were from unprivileged families.

Dismissing the traditional practice of splitting up Det and Aux into subcategories of lexical items, e.g. the = 'definite article', Fowler continues with the observation (p.63):

> ... there is no simple relationship between underlying meanings and their superficial representations - this is because Det and Aux are not caregories to be split up into sub-categories, but complexes of features, some obligatory and some optional, which can be put together in various combinations which are then associated in rather idiosyncratic ways with surface structure representations.

This basically transformationalist approach leads quite naturally to the hypothesis that the surface structure of sentences is frequently at variance with, or at least is an inadequate representation of the meaning of sentences (where by 'inadequate' is meant something like 'not fully explicit'). Thus, Fowler is able very plausibly within the terms of the model he has chosen, to argue (p.63):

> ... So Det is present in, for example, (81) [man is mortal]; even though there is no article, the NP has deictic meaning: it carries an implication of universality, and the Predicate comments on all men. Contrast:
> (91) The man was guilty
> where the presence of the specifies man as definite, a particular man.

While I find...

While I find this analysis perfectly acceptable, provided one is prepared to operate within the particular Aspects model which Fowler uses, I find his proposals with respect to some less convincing. On page 63, he writes:

> ... As a final example ... consider this pair:
>
> (92) Some boys are mischievous.
>
> (93) Some boys were seen near the station.
>
> (92) means 'of the class of phenomena "boys", it is true that a certain small proportion are mischievous'; (93) 'an indeterminate number of boys were seen near the station'. The Det of (92) contains the feature 'universality': the statement is made about boys as a general truth. Additionally, 'quantification' is assigned to the statement: it is not all boys but some boys, where some belongs to a system of proportional quanitification including also all, few, many, etc. By contrast, the Det of (93) is non-universal and indefinite: here, some is not contrasted with all, etc., but it is a regular plural form for the indefinite article - a boy, some boys. On the other hand, in a sentence like a boy is often more aggressive than a girl, the morpheme a is universalized and not simply indefinite.

I would not wish to quarrel with Fowler's assertion regarding his (93) (the view that some may act as the plural form of a/an is, after all, part of the common wisdom of English language studies (see, for instance, Roberts, 1968, p.25)) and I can accept, within the restrictions of the Aspects model, his remarks about a. I feel, however, that his claims with respect to his (92) are both counter-intuitive and illogical. They are counter-intuitive because some boys are mischievous seems, to me, to refer to a subset of the class of boys (not necessarily a small proportion even) and illogical because, if we accept that (92) is universal as well as proportionally quantified, where the proportion is less than the entire set, we must surely say that all statements are universal since of any given statement it will be the case that we can formulate a paraphrase beginning with: of the class so and so. Thus, of a sentence like:

1) Those horses are black.

we would....

we would presumably be forced to paraphrase the quantificational element as: of the class of horses, it is true to say that...

There is, however, an element of truth in Fowler's assertion that (92) and universal quantification are connected. While it is plain that he was wrong in ascribing universal quantification to the sentence (92) itself, one has only to consider the possible types of discourse in which (92) would be likely to be uttered to see that it would most probably arise within the context of a discussion of the class of boys considered as a whole. Typical would be an exchange in which one speaker asserts: boys are not mischievous (for all boys, it is false to say that ...) and the other speaker replies with: some boys are mischievous (there exist certain boys of whom it is true to say that ...). Support is given to this view of the matter if we consider that in (92) some carries principal accent, hence its phonological form [sʌm]. (93) on the other hand, need not form part of a discussion about the class of boys as a whole and, therefore, it is patently particular and not universal. In fact, (93) might well appear as the opening sentence of a given discourse, thus setting up the quantificational range of the discourse as a whole. This would partly account for the fact that in (93) some may not bear primary accent, hence its phonetic form [səm].

These remarks, if valid, only prove once more that it is not enough for the linguist to consider sentences in isolation - as Fowler and so many others do. We must be prepared to take the total discourse into account, not only when considering semantic questions, but also, as in the case of principal accent, when other areas such as phonology are involved.

Fowler's apparently confused analysis of (92) is, of course, based upon certain prior assumptions regarding quantification and the nature of Det. These assumptions are:

(a) that the Det of every NP is marked either as [+] or [-Universal]

and

(b) that Det may optionally be marked for numerosity - cardinal or ordinal - and proportional quantification.

Thus, on....

Thus, on pages 64-66 he writes:

> There are two mandatory features of Det in respect of which every NP must be specified: Number and Universality...
>
> The system 'Universality' ... accounts for sentences like Man is mortal, All men are equal, Some boys are mischievous, all of which have [+ Universal] NPs. However, names and pronouns are, virtually by definition, [-Universal], since they identify specific people and things ... Count and non-count nouns, on the other hand, may be either [+Univ] or [-Univ] ... The systems [Number] and [Universality...] are obligatory ... In addition, there are a number of optional transformations which may be applied to add further dimensions ... Prominent among them are the rules for ... adding ... numerals and also a ... system which quantifies NPs proportionally ...

Even here, it will be noticed that Fowler's treatment of quantification is not entirely satisfactory. Clearly, while it may be true that names are, by definition, [-Universal], the same does not go for all pronouns. It is perfectly easy to think of cases in which pronouns like: they, we and even you have a universal signification, as in the following discourse:

2) The Dodos are extinct. They lived upon fish.

Fowler continues his discussion of the obligatory feature [Universality] by attempting to relate occurrences of [-Univ] with [+/-Definite] as follows (p.65):

> ... [-Univ] is not, as it were, 'self-sufficient'; by itself it is not an adequate characterisation of ordinary nouns. If a count or a non-count noun is given a Det containing [-Univ], the string in which it occurs is subjected to an obligatory transformation which replaces [-Univ] by either [+Definite] or [-Definite] ...

Of the examples which are offered to demonstrate this obligatory replacement, those involving non-count nouns are particularly interesting. The relevant examples are (again using Fowler's numbering):

(103) The water...

(103) The water was cool.

(104) Some water splashed on my face.

One cannot help wondering what Fowler would make of such common sentences as:

3) Water covered the floor.

or even:

4) Sheep were in the meadow.

in both of which the subject NP is obviously [-Univ]. Presumably, the argument would be advanced that some may be optionally deleted in such cases. In my opinion, it would be a great deal simpler to take Ø, the, a/an and some as distinct determiners, each having its own lexical entry, than to follow this basically transformationalist approach which clearly involves a proliferation of the transformational component, introducing rules which only interchange or delete morphemes. This question aside, however, the important point arising from this treatment of the feature [Universality] is that it clearly establishes that a relation exists between quantification and the two articles the and a/an, a fact which lends further support to my own view that these items are central in implicit quantification (Ch.6).

Apart from this treatment of [+/-Univ], Fowler treats other quantificational problems cursorily and, apart from pointing out that certain selectional restrictions are necessary in some cases, e.g. one may only modify a noun marked [-plural], he contents himself with the general claim (p.67) that:

> ... in general, these optional features of counting and quantification mix freely with the basic deictic features, and so the rules for introducing them are relatively simple.
>
> [Quant] is expressed in surface structure by means of a variety of morphemes and arrangements of morphemes; among them: many apples, a few of the apples, a few apples, all these apples, many of the forty-seven apples, etc.

Although....

Although Fowler's handling of quantification is unsatisfactory principally because of the attempt to treat [Quant] as an optional feature of Det while, at the same time, taking [Universality] as an obligatory feature (clearly an attempt to reflect the distinction between logical and proportional quantifiers), it represents a significant advance upon the work of earlier scholars such as Lees, or Hall. By the claim that [Universality] is an obligatory feature of Det and that Det along with Aux relate a sentence to its spatio-temporal-personal context, Det and Aux, and thus quantifiers, are given a semantic priority of a new kind. They are raised from the status of mere constituent modifiers, e.g. quantifiers modify head nouns, to that of sentence modifiers. This elevation represents an extremely important advance because, in my opinion, it is equivalent to saying that quantifiers fulfill a semantic role in natural language precisely analogous to that which they play in the Predicate Calculus - they provide a matrix within which the propositional content of a sentence is set. This position is one towards which, I believe, the majority of linguists, whether or not they treat quantifiers as determiners, or as some other type of word, have been moving during the last ten years or so. It finds its most explicit formulation in Seuren (1969), where quantifiers are treated as operators having propositional nuclei in their scope.

3.2.3 Dean's proposal

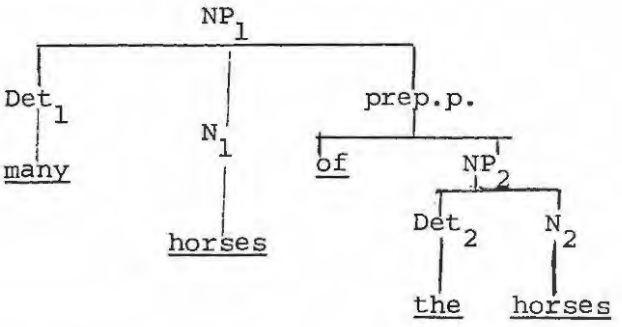
In spite of this fundamental advance, the question still remains - for those who insist upon a grammatical model of the Aspects type in which meaning is largely confined to a level of deep structure - as to how the surface configurations of quantifiers are arrived at, especially those involving of. Since Jackendoff's criticism (1968), the notion pre-Article seems to have been dropped from grammars. However, the physical fact of the Quant + of + Det + noun pattern ('many of the men') continues to be a puzzle. One very interesting attempt to solve it within the framework of quantifiers as determiners, is that first proposed by Dean (1966) and criticised by Jackendoff (1968). Under this proposal, a string like:

1) Many of the horses.

would be derived from an underlying configuration:

2)....

2)



N_1 is deleted provided it is identical with N_2. If N_1 and N_2 are not identical, the derivation blocks.

According to Jackendoff (1968, p.431) the motivation behind Dean's analysis, as well as the original proposal for pre-Articles, arises from a problem involving selectional restrictions. If selectional restrictions hold between verbs and the head nouns of their subjects and objects (as suggested in Aspects), rather than between the verbs and the readings of the subject and object noun-phrases as a whole, including determiners, then, in the absence of a proposal like Dean's which puts the relevant noun in a Quant + of + Det + noun configuration into head position, ungrammatical sequences will result. The relevant examples are provided by Jackendoff (1968, pp.431-432) as follows (the numbering is his):

(70) I proved { the theorem / *the boy }

(71) I socked { *the theorem / the boy }

(72) I proved { some of the theorems / *some of the boys }

(73) I socked { *some of the theorems / some of the boys }

Strings (70) and (71) are intended to suggest what sort of selectional restriction needs to be placed upon prove and sock, i.e. that their direct objects must be [-concrete] and [+concrete] respectively. (72) and (73) show that if selectional restrictions apply only to head nouns, then, they must operate on theorem(s) and boy(s) which,

according to....

according to Jackendoff, are not in head position in (72) and (73), so that the restrictions cannot apply, hence the ungrammaticality. What Dean's proposal does, in effect, is to get the relevant nouns (theorems/boys) into head position, thus preventing the generation of the ungrammatical alternatives in (72) and (73).

Jackendoff's proposal that selectional restrictions should apply to the total reading of the relevant NPs rather than just to their nouns, seems to me so obvious as scarcely to require stating. In fact, I am tempted to think that the difficulty would never have arisen had not Aspects and studies based upon it, been so mechanical in its approach. Natural Languages, especially where meaning is concerned, cannot be handled by means of mechanistic rules as though they were problems in engineering.

It may, then, be accepted that the motivation for Dean's analysis was based upon an incorrect assumption. However, motivation aside, Jackendoff still finds fault with it. Most important, he regards its adoption as undesirable because it would postulate an ungrammatical source for (3), namely (4) :

3) John and Bill, each of whom...

4) John and Bill, each John and Bill of $John_{wh}$ and $Bill_{wh}$...

This difficulty, to which Jackendoff was alerted by Chomsky, certainly looks like a serious objection to Dean's proposal as she formulated it. However, it is a difficulty which I think, may be removed by a reformulation, and a more careful analysis of the string concerned.

As far as the formulation is concerned, it is well known that the term 'identical NP' is not appropriate if, by 'identical' is meant 'containing the same word'. Thus, for example, if 'identical' is used in this sense, the reflexive transformation could not operate to form such parallel pairs as:

5) Sir Walter Scott wrote about the author of Waverley.

6) Sir Walter Scott wrote about himself.

Thus, it has become common practice to use some such term as

'co-referential'...

'co-referential' or 'equi' in place of 'identical' so that such transformations may apply freely provided only that the relevant NPs have the same referent. I do not, at this stage, intend to enter upon a discussion of each, but it will be evident enough that the suggested change in the formulation of Dean's proposal invalidates Chomsky's claim, via Jackendoff that (4) is the only possible underlying structure for (3) under Dean's analysis.

Another reason for not accepting the implausible (4) as the underlying structure of (3) is that it assumes, without anything in the way of demonstration, that the conjunction and occurring in the main clause is also to be found in the relative clause. Although this may be true in general where conjoined NPs are relativised, as the work of Dougherty (1970, pp.868 ff) and Stockwell et al (1973, pp.409 ff) suggest, when each is involved, such an assumption may well be erroneous.

At this stage I may say that I intend to use an analysis somewhat like that of Dean when I offer my own account of quantifiers and that, for the reasons given, I do not think that Jackendoff's dismissal of her approach is sufficiently well founded to make this analysis's adoption, in a modified form, unacceptable. This does not, however, mean that I believe quantifiers form a subset of determiners. As I suggested at the end of the last subsection, what one chooses to call them depends upon how one wishes to set up one's grammar and, as far as I can see, the alternatives so far investigated by linguists all tend to the same conclusion, namely, that they function very much like the quantifiers of the Predicate Calculus - as operators upon propositional nuclei.

3.2.4 Quantifiers as deep structure noun-complement configurations

Jackendoff's paper (1968) represents an important mile-stone in the study of quantifiers within the Transformational-Generative framework. It is important not so much as a basis for subsequent studies, although Lee (1971) and (1972) relies heavily upon it, but because it constitutes one of the most clearly formulated attempts to describe the relations between the so-called nouns of quantity, e.g. waggonload, pound, ... and the overt quantifiers, such as many, each,

few, one,...

few, one, ... and, through transformations to establish that they share a common deep structure configuration.

The basic thesis which Jackendoff wishes to test is that the structures concerned have the deep structure form of a noun plus a prepositional phrase acting as its complement. Many other scholars, e.g. Jespersen, had noted the fact that the nouns of quantity have a function similar to that of ordinary quantifiers and Klima (1963) included such phrases as a lot of among his quantifiers. However, by attempting to show that the nouns concerned have the same deep structure status as the quantifiers, Jackendoff's work represents a considerable advance, though not necessarily in the right, or best direction. This is not to say, of course, that other linguists, e.g. Lakoff, who treat quantifiers as predicates (3.2.5), or Seuren who analyses them as operators (1969) would not also be prepared to assign the same status to the nouns as to the quantifiers. Indeed, it is to be expected that they would do so. However, as these scholars confine themselves to the ordinary quantifiers, e.g. all, many, ... , they are not obliged to account for the obvious similarities and discrepancies which exist between constructions employing these items and the nouns of quantity in question.

Jackendoff splits his types of NP-constructions involving quantification into three classes as follows (pp.422-423):

Group I: a group, a herd, a waggonload, a score, ...
Group II : some, each, few, which, all, both, ...
Group III: a few, many, one, three, ...

These three groups share certain characteristics, including their ability to be followed by a prepositional phrase of the form -of-. They differ with respect to others, e.g. groups II and III may appear without a following of; groups I and III may be preceded by the and so on. It is Jackendoff's aim to establish that they have the same deep structure status on the basis of the characteristics which they share and to explain those in which they differ by means of transformations operating on the postulated deep structures.

Jackendoff discusses the properties which are common to all three groups in his section two (pp.423 ff). For convenience, I shall

follow....

follow Jackendoff's numbering when referring to his examples, but start from (1) when using my own. The most important of the shared characteristics are: their propensity to be followed by a prepositional phrase; their inability to take singular count nouns - Jackendoff illustrates this with:

(17) * a group of the man (Group I)
(18) * each of the garbage can (Group II)
(19) * three of the book (Group III)

and the fact that none of them admit certain quantifiers in their complements. Jackendoff's examples are:

(27) * a group of some men.
(28) * a pound of all of meat.
(29) * some of all of the men.
(30) * each of some of the men.
(31) * one of few of the beetles.
(32) * many of all of the lakes.

With respect to relationships holding between the three groups, while (I) differs from the others in that -<u>of</u>- is obligatory, Jackendoff tries to show that this group and group (III) are similar in some important respects. For example, doublets exist, e.g. <u>couple</u> and <u>dozen</u>, which can figure in either. Thus, we have:

(49) A couple of (the) theorems (I)
/ a couple (of the) theorems (III) [the second alternative under (49) is not within my own dialect, but I suppose it is not exceptional in Jackendoff's and American English generally]
(50) a dozen of (the) eggs (I)
/ a dozen (of the) eggs (III)

Groups I and III are also similar, according to Jackendoff, in permitting the use of articles before the quantifying word. Thus, we have structures like:

1) the waggonload of hay.
2) the three men.

However, as....

However, as Jackendoff puts it (p.425):

> There is a very interesting restriction holding between the article of the main noun phrase and the article of the complement: both cannot be definite at the same time unless there is a relative clause present. Thus we have
> (33) a group of the men
> (34) three of the men
> as well as
> (35) the group of men
> (36) the three men
> but not
> (37) * the group of the men
> (38) * the three of the men

In cases where a relative clause is present, the sequence the... the is acceptable, as in:

> (39) the group of the men that had already left.
> (40) the three of the men that you met yesterday.

The relative clause is restrictive and is associated with the quantifying phrase rather than with the complement. This is proven by the fact that it does not remain with the complement prepositional phrase when preposing is applied. Jackendoff's examples are:

> (45) Of the men, the group that had already left were disgusted with the proceedings.
> (46) Of the men, the three that you met yesterday have not left yet.

I do not, in fact, find this restriction at all surprising since the presence of the, with a few possible exceptions such as the Thames, implies old information which is either explicit in the form of a restrictive relative clause as in Jackendoff's examples, or is implicit. In the cited examples, therefore, the speaker is clearly referring to a set of individuals whose membership is established, in these cases by the restrictive relative, and is then making claims with respect to a subset of this known set. Such cases, in other words, represent the embedding of new information - disgusted with the proceedings, etc.,

in old....

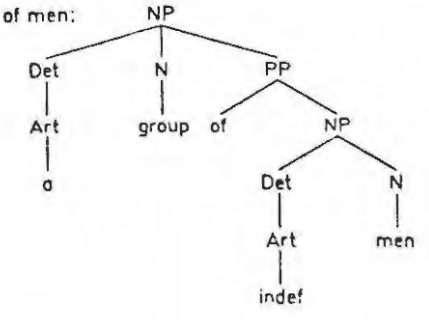
in old information - you met the men yesterday, etc.

In general, however, I do not find Jackendoff's observation regarding the permissibility of articles a convincing demonstration of the similarity between groups (I) and (III). While it is true, as he says, that each group allows for articles, only group (I) words will permit the use of indefinite articles expressed by the morpheme a/an: a group of, a waggonload of, etc., but not: * a three of, * a many of, etc. Moreover, a few which Jackendoff lists under group (III) cannot take any article at all, presuming, as he implicitly does, that a is here an integral part of the expression and not a separate modifier. Jackendoff's answer to this objection might, of course, be that in expressions like: three men, three is marked indefinite by the morpheme Ø and a/an are simply surface variants of Ø. However, his paper is not explicit on this point in spite of the fact that surface structure differences are central to the discussion.

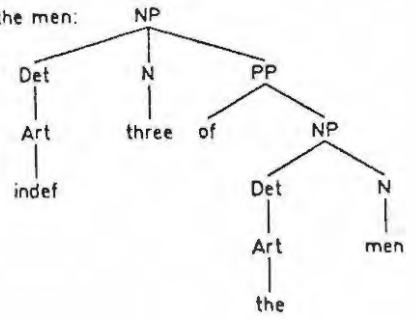
This objection is not, I think, entirely trivial. Jackendoff uses the fact that the complements of groups (II) and (III) cannot be indefinite, e.g. * some of men, *three of men, as an illustration of one feature which they share and which distinguishes them from group (I) words. Group (I) words, in contrast, can have either definite or indefinite complements, e.g. the waggonload of hay (indefinite complement); the waggonload of the hay (definite complement).

However, as Jackendoff sees it, groups (I) and (III) are, for the reasons given, sufficiently similar to be classified alike, i.e. as nouns taking complements, and to them he assigns the structures:

(52) a group of men:

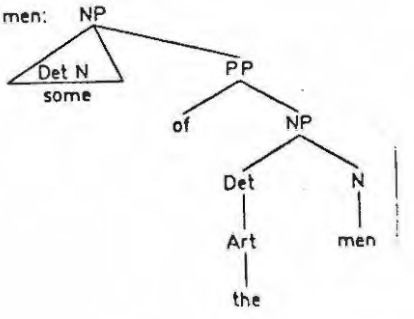


(53) three of the men:



Group (II) words, on the other hand, sharing, as they seem to, some characteristics with groups (I) and (III) and being, in other ways, dissimilar, cannot, in Jackendoff's view, be so categorically afforded the status of nouns and he therefore gives them the ambiguous structure:

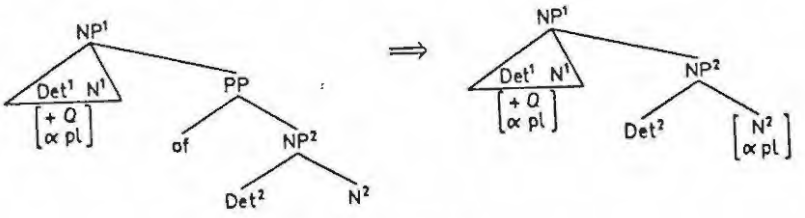
(54) some of the men:



In fact, although he returns to the discussion of group (II) items in his final section, he is unable to his own satisfaction to decide whether they are determiners, nouns, or a combination of both, so that (54), to my mind a rather unsatisfactory structure, is left to stand as the representation of their underlying configuration.

In order to account for the fact that group (II) and group (III) words may appear in surface structure without a following <u>of</u>, Jackendoff proposes the following transformation. The feature [+/-Q] determines the applicability of the rule, group (I) words being marked [-Q] and group (II) and (III) words being [+Q]:

(63) *of*-dropping:



Obligatory if Det^2 is [−definite]
Optional if Det^2 is [+definite] and *Q* is *all* or *both*

The allowance which Jackendoff makes in (63) for its optional application in the case of all and both, is forced upon him by such common variations as:

3) All (of) the priests were defrocked.
4) Both (of) the priests applauded.

The structures (52) and (53) and the transformation (63) account, says Jackendoff, for three things. They establish the similarity between group (I) and groups (II) and (III) words; they account for the fact that of need not appear in surface structure in the case of group (II) and (III) words and, finally, the incorporation into (63) of [α pl] makes automatic the achievement of number agreement. This last point may be illustrated by the following alternations in which it will be seen that each, while requiring a singular verb under all conditions and a singular form of the reflexive pronouns, has a plural noun as its complement when of is present in surface structure and a singular noun when of has been deleted by (63).

5) Each of the bishops feels pleased with himself.
6) Each bishop feels pleased with himself.

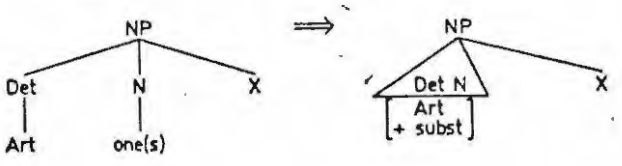
Jackendoff's rule (63) looks very impressive. When viewed dispassionately, however, it becomes evident that, depending as it does upon the validity of (52) and (53), it says little about quantifiers as such except that they function in a way similar to the nouns of quantity save that they allow for the retention of of in certain

cases (e.g. ...

cases (e.g. all and both) and necessitate its deletion in others, e.g. when each is followed by a noun marked indefinite. I do not intend this assessment to be tantamount to a dismissal of these proposals as mere manoeuvres to reconcile superficial differences. First, the differences themselves, particularly those surrounding the use of the the and Ø do not seem to me to be superficial - they may well have quite far-reaching semantic implications. Secondly, the analysis which Jackendoff (1968) proposes does represent a serious attempt to bring together some of the facts about quantifiers in English within a fairly rigorous system.

Before leaving Jackendoff's analysis, it is worth noting that, although he rejected Dean's approach (3.2.3), in his own discussion of the group (II) items, particularly every and each (p.439ff), his desire to assign to them the status of determiners leads him to postulate a transformation which is strongly reminiscent of Dean's proposal. The transformation is presented thus:

(103) *Ones*-absorption:



As far as I can see, this rule clashes with Dean's analysis only in that it presupposes a noun with maximal extension, namely, one, in place of her nouns which may be very restricted in their referential application, e.g. horses, or even kings of England; and that in place of Dean's notion of deletion, it proposes the principle of absorption (presumably modelled on Klima (1963) as in negative absorption). It is particularly interesting that when discussing what he considers notational variants of this hypothesis, he says (p.440):

> ... all always undergoes the transformation.

Although Jackendoff....

Although Jackendoff does not pursue this point and, in fact, seems to be uncertain about the value of rule (103) altogether, the implication would seem to be that he does not totally disagree with Dean's analysis.

3.2.5 Quantifiers as higher predicates

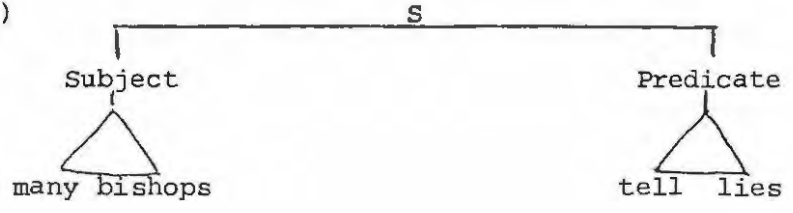
Among many linguists of the Transformational-Generative school, especially those known as the Generativists, e.g. Ross, Lakoff, McCawley, the notion of describing certain levels of sentence analysis, whether deep-level, or semantic representations, in terms of higher clauses or sentences dominating lower clauses or sentences have in recent years become increasingly popular.

In fact, soberly considered, this notion is a natural extension of the traditional approach which describes sentences in terms of main and subordinate clauses, where the main clause represents, as it were, the matrix sentence into which all others are embedded. It is, however, important to stress that the new analysis is a development of the traditional approach, not a simple restatement, since, under it, higher sentences, i.e. main clauses, are often postulated for apparently simple sentences which in the traditional analysis would be deemed to consist of one clause only. This point can be illustrated by the following pair, the second of which takes many as a constituent of a higher clause.

1) Many bishops tell lies = simple Sentence
2) The bishops who tell lies are many = main clause + subordinate clause

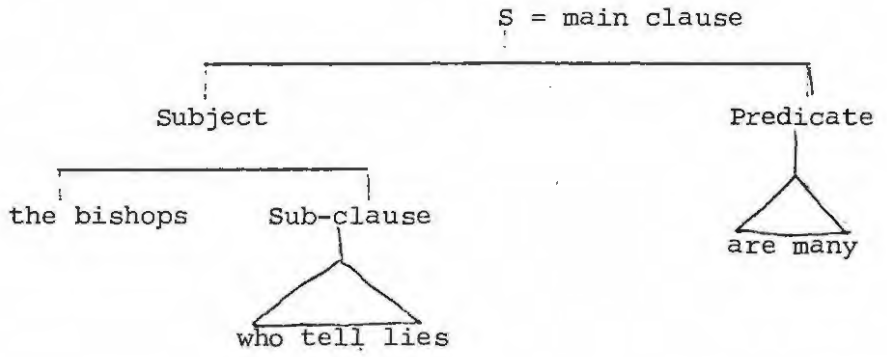
By a combination of traditional terminology with informal tree-diagrams, these examples might be mapped as follows:

3)



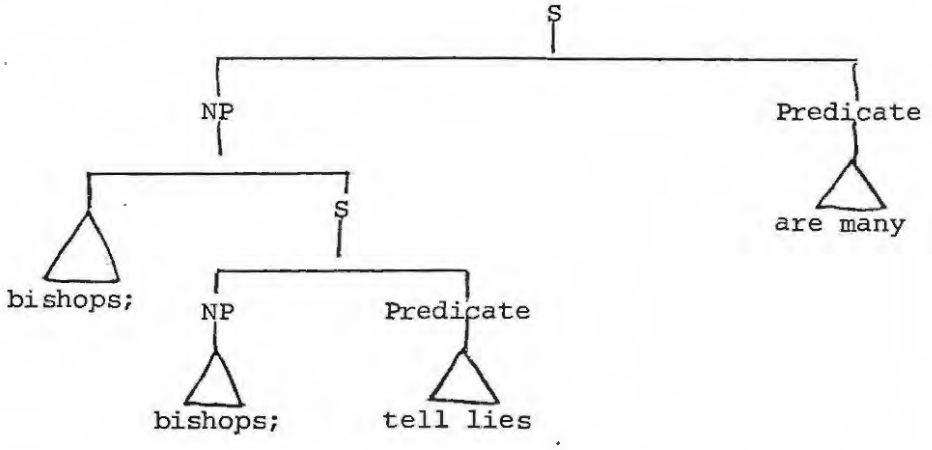
4)....

4)



Within the framework now applied, however, both (1) and (2) would be diagrammed roughly as follows (ignoring the origin of the in (2)):

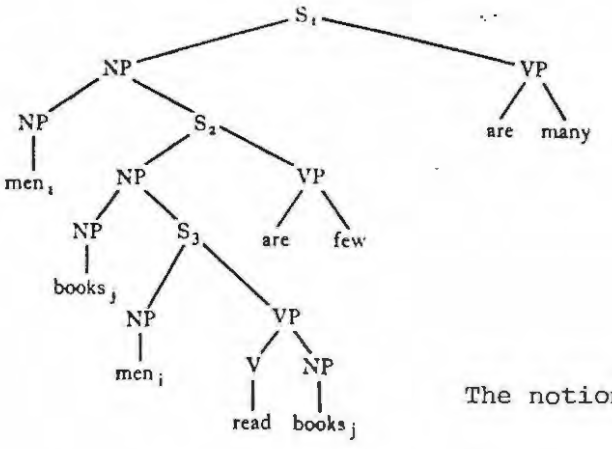
5)



Diagrams like (5) are playing an increasingly important role in the description of sentences containing quantifiers and a principal reason for this is that they enable the student to display configurations in which one quantifier can be seen to command another, that is, function as predicate of a higher clause than another. Thus, for example, Lakoff (1971, p.239) gives as a configuration for (6), the tree (7):

6) Many men read few books.

7)

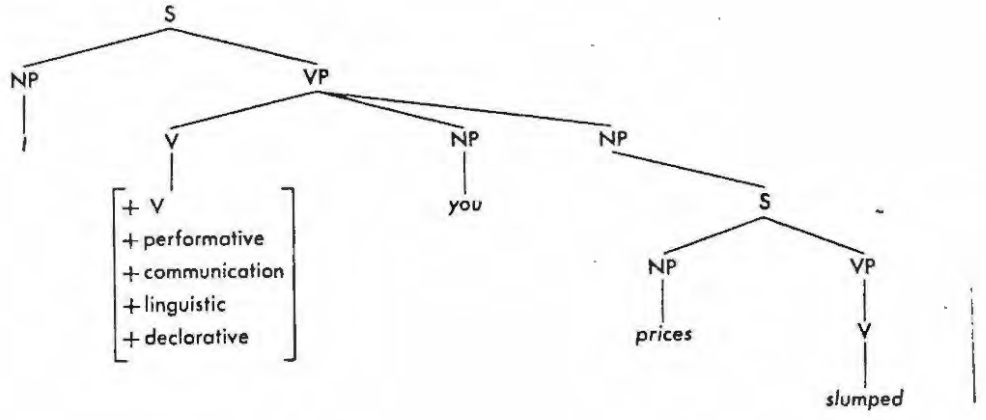


The notion....

The notion of command is not restricted in significance to the study of quantifiers. Langacker (1969), developed what he called the chain of command in the middle sixties in order to describe restrictions upon pronominalisation in English. The notion is, moreover, fundamental to Ross's analysis of declarative sentences (1970), also developed in the middle of the decade, in which he takes certain declarative sentences as consisting of a main clause, or higher sentence, in which a verb of saying acts as a performative and the speaker as subject, with a subordinate clause, or lower sentence, which forms the substance of what is actually said. Thus, Ross (p.224) gives (9) as an underlying structure for (8):

8) Prices slumped

9)



I mention Ross's analysis in particular because, if, as he contends, all declaratives, save a special subgroup including newspaper headlines, have an underlying structure like (9), it follows that Lakoff's diagrams for quantified sentences in which the clause containing the quantifier is highest in the tree, are not strictly accurate (where 'accurate' means 'in line with the descriptive model in question'), because the clause containing the quantifier must, itself, be dominated by another containing a performative verb of saying. Ross's discussion of an alternative approach, which he calls 'pragmatic', in which the source of the pronoun acting as subject of the highest clause is, as he puts it, "'in the air'", i.e. given by the context of situation, reaches no firm conclusion. I shall, therefore, assume from this point onward that when a linguist like Lakoff

proposes a....

proposes a structure containing a quantifier as its highest predicate, he may be taking for granted the existence of a yet higher clause of the sort Ross describes.

It will be obvious that the notion of command, exhibited in Lakoff's diagram (7) has an important bearing upon the question of how sentences containing multiple quantification, e.g. (6), are understood. I shall not, however, discuss this aspect of the matter until the next chapter.

Another linguist whose name is particularly associated with the idea of affording quantifiers the status of predicates in higher sentences is Carden, whose thesis (1967) is conveniently reproduced, in part at least, in his paper (1970). Although Carden's name is often linked with Lakoff's (especially by Jackendoff (1968), (1969) and (1971)), I do not think it would be correct, at the time when he wrote, to identify him too closely with Lakoff's views. Most important is the fact that he still believed, in 1970, that deep structure determined meaning. Thus he writes (p.415):

> The arguments in this paper are based on a system where meaning is fully determined by deep structure.

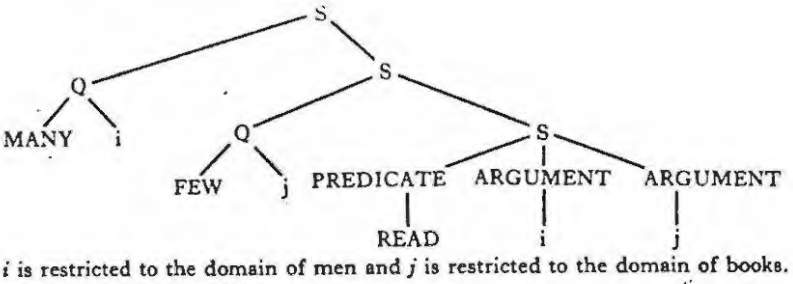
Lakoff, on the other hand, explicitly rejected the notion of deep structure (1970, p.389) even going so far as to dismiss the semantic component as well - at least in its usual form (p.406):

> In our present theory of grammar, ... there is no semantic component (outside of logical equivalences and rules of inference)...

Even in his paper (1971 (which reflects work done in the middle sixties)), Lakoff expressed his dissatisfaction with the notion of deep structure which, he seems to have felt, imposed upon him the obligation of representing the structure of sentences like (6) in too literal a fashion, that is, a representation in which lexical items, e.g. many, few, etc. are definitively labelled and constituents, e.g. VPs, have to be given the physical characteristics of their surface structure equivalents. This, I imagine, is the reason why he offered (p.238 fn.b) the alternative structure plus its justification:

> [Structures like....

[Structures like (7)] are not meant to be taken seriously in all details. They are based on a 1965 analysis which mistakenly followed Chomsky in assuming a level of deep structure containing all lexical items and having nodes such as VP ... representations of the following sort (which are somewhat closer to reality) can be used in the place of representations like [7]:



where: *i* is restricted to the domain of men and *j* is restricted to the domain of books.

At first glance, it may appear that I am dwelling upon a triviality. It is, however, important to take cognizance of this move towards an increasingly abstract and quasi-logical view of semantic constructs which Lakoff and many other linguists are adopting. It appears to invalidate Jackendoff's criticisms of the analysis of quantifiers as predicates; criticisms which are, for the most part, based upon the facts that predicates as usually thought of (i.e. verbs or adjectives) do not impose number agreement, take determiners, etc., while nouns of quantity, e.g. waggonload cannot be thought of as verbs at all. (Some of Partee's objections (1970), e.g. that certain quantifiers such as all never occur as overt predicates seem similarly misplaced. However, I shall return to her discussion in the next chapter since it is particularly relevant to general semantic issues beyond those of mere word class status), it is also important because it demonstrates the increasing tendency among certain linguists to analyse semantic structure in terms of symbolico-logical devices, especially the operators of the predicate calculus. Thus, in my opinion, there is little to choose, ignoring the speech act operator IMP, between Lakoff's representation offered in the cited foot note and Seuren's formulation (1969, p.127), of quantified strings, e.g. that for:

(10) bring me a letter of his

namely:

(11) IMP E (letter of his): you Pres bring the letter to me

As far as I can see, Lakoff's tree and Seuren's linear array amount to an expression of the same thesis, namely, that quantifiers function, as do the quantifiers of the predicate calculus, as matrices with propositions in their scope. The Lakoff and Seuren presentations are, as Chomsky would indubitably assert, notational variants only. This view of quantifiers is, moreover, as I have already suggested (3.2.2) not at variance with the more conventional analysis of quantifiers as determiners, where determiners have deictic function, although it is undoubtedly a more abstract realisation of that view.

If it is accepted that these approaches to quantifiers are variants, the only questions which can arise are:

(a) Does the adoption of any given approach provide a clearer formulation of semantic structure than that of another?

(b) If one alternative is selected, e.g. quantifiers are predicates of higher sentences, does this selection necessarily involve the linguist in some adjustment(s) to his descriptive model and, if so, what do these adjustments imply for the nature of linguistic description generally?

To my mind, the first of these questions is the more important, provided only that clarity of description entails fullness as well as mere transparency. It does not seem to me that, unless we make an explicit claim that the descriptive model we have selected corresponds more closely than do others to the actual, physical processes of encoding, it is of fundamental importance whether the model itself be relatively complex or relatively simple. As all scholars have recognised from the dawn of language studies, natural language is a complex phenomenon and, this being so, it may well be that a pre-occupation with methodological simplicity and elegance hampers the task of describing language rather than aiding it. Thus, if as Lakoff believes, the notion of deep structure is counterproductive and forces the linguist to devise complex transformations in order to arrive at the observed surface structure, without adding to the depth of the description, then it is better to dismiss the notion and the necessity of the transformations along with it.

If, on the....

If, on the other hand, one believes, as does Jackendoff (1971) that deep structure is an essential part of the descriptive model, then it is necessary to construct the transformational machinery in such a way that such evaluative criteria as simplicity, generality and elegancy are met. In this latter case, it is not, I believe, proper for the linguist concerned to assert (as does Jackendoff (1971)) that given transformations, e.g. quantifier-lowering (a process by which quantifiers are lowered from higher into lower clauses after which vestigal nodes are removed) do not exist. Such a view is absurd since for a given transformation to exist, it is only necessary that it form part of somebody's descriptive model. Its existence can only be questioned if the linguist concerned claims that the transformation in question reflects the psychological processes of encoding.

I believe that the proposals discussed in this section on the whole come down to the same thing, namely, that quantifiers act in a way similar to the operators of the predicate calculus. They do not, of course, perfectly mirror those operators, for example, nothing does not necessarily mean the same thing as "$\sim\exists x$" - "it is false that there exists at least one x". Accordingly, for the remainder of this essay I shall ignore the question of their word-class status (e.g. as determiners, verbs or nouns) and, following what I believe to be the simplest approach, namely Seuren's, assume that they may be discussed as operators and, where necessary, be displayed in a linear array.

Chapter 4

The Role played by Quantifiers in the Confluence of Formal and Semantic Issues within the Framework of Transformational, Generative Grammar

4.0 General

As shown in the previous chapter, the attempt to exclude semantic considerations from the formal description of English was not seriously maintained for long. Its abandonment did not, however, result in the admission that linguistic description must include both formal components, e.g. Syntax and Phonology, and informal parts such as Semantics, but rather in the attempt to demonstrate that semantic questions are essentially formal in character, where 'formal' may be interpreted roughly as: able to be treated within a system of rules, rigorously formulated, maximally general in application and independently motivated.

Chomsky's revised model of 1965 represents an attempt to accommodate Semantics, in its new and formal guise into the seemingly rigorous descriptive system which the Transformationalists had developed. One very important consequence of this accommodation was the fact that linguists found themselves appealing to questions of meaning to an ever increasing extent in their attempts to formulate the descriptive model itself, so that, from the middle of the sixties, the student finds it more and more difficult to disentangle semantic and syntactic issues.

In this chapter, I shall attempt a brief sketch of some of the more important contributions which the study of quantifiers has made in this intermingling of Syntax and Semantics. The state of the discipline is, however, at the time of writing, so fluid and so many claims have been made about the shape of things to come which have yet to be substantiated, that I have been unable to present as neat and conclusive an account as I would wish. As I shall try to show in the next chapter, the time has perhaps come when Semantists should seriously consider to what extent their studies actually benefit from the attempt to formalise Semantics

and to ask....

and to ask themselves whether it would not be better to return, at least partially, to the pre-Aspects position in which rules are formulated for Syntax, but not for Semantics.

4.1 Transformations and Meaning

4.1.0 General

Ultimately, what role, if any, transformations play within given linguistic descriptions depends upon the structure of the descriptive system concerned. As I have previously mentioned, unless the proponent of a given model is prepared to make the claim that his model actually reflects the psychological realities of encoding, it cannot properly be said of any transformation that it is 'correct' outside the context of the model of which it is a part. In this section, it will be seen that transformations mean different things to different scholars and that their role vis-à-vis other components of the grammar is not always the same.

4.1.1 Transformations and the conversion of deep to Surface Structure

Within what has come to be known as "The Standard Theory" (Chomsky (1971)), the chief role of transformations is to convert deep structures into surface structures - they may be said primarily to have the function of resolving an essentially abstract construct, a deep structure, into a less abstract construct of the form described by Chomsky and Halle (1968, p.7) which is then interpreted as the physical reality of actual speech, spoken or written.

In the course of the development of the standard model, one very important question has been at the centre of arguments about the Transformational component, namely: Do transformations change meaning? (There are other questions, of course, such as the generality and elegance of a given transformation, but these will not be the focus of my attention here.)

In Syntactic Structures, Chomsky set up a system involving two different types of transformations, those which apply obligatorily and those which are optional. Obligatory transformations, e.g. tense-attachment (Chomsky, 1957, p.39), apply to a basic core of simple, declarative sentences which he called 'Kernel sentences'. To these 'kernels', optional transformations could then apply, e.g.

the question....

the question transformations, or the negative transformation. Among these optional transformations, some, e.g. the question, obviously did more than merely rearrange morphemes, delete morphemes, etc.; they also brought about a change in meaning, since, in actual speech, different modalities, e.g. questions and assertions, clearly cannot be said to have the same meaning. Other optional transformations, on the other hand, were held not to affect the meaning of the 'kernel' to which they applied. Extremely important among the latter is the passive transformation. It was generally held that an active sentence, e.g.

(1) The lieutenant read the message.

and its passive counterpart, e.g.

(2) The message was read by the lieutenant.

meant precisely the same, although, presumably, this view did not entail that no stylistic difference, e.g. shift of emphasis, resulted from the application of the transformation concerned.

Chomsky remarked, however, in Syntactic Structures (pp.100 ff):

> In contradiction to (117 vi) [117 vi An active sentence and the corresponding passive are synonymous] we can describe circumstances in which a 'quantificational' sentence such as "everyone in the room knows at least two languages" may be true, while the corresponding passive "at least two languages are known by everyone in the room" is false, under the normal interpretation of these sentences - e.g., if one person in the room knows only French and German, and another only Spanish and Italian. This indicates that not even the weakest semantic relation (factual equivalence) holds in general between active and passive.

Presumably, Chomsky only intended the last sentence of the cited remark to apply in the case of 'quantificational' sentences of the sort he displayed. Such sentences represented, to him, exceptions to (117 vi) rather than demonstrations of its general falsehood. However, he is not explicit on this crucial point.

When Katz and Postal attempted to produce an integrated theory of linguistic descriptions - integrated in that it embraced the semantic component as well as the so-called 'formal' syntactic component - they included in their apparatus a type of rule known

as a....

as a 'projection rule' - this name being taken from the famous paper of Katz and Fodor (1963). Katz and Postal (1964) explain projection rules as follows:

> The projection rules of the semantic component assign a semantic interpretation to each string of formatives generated by the syntactic component....To obtain such semantic interpretations, each lexical item in a string of formatives must receive a meaning on the basis of the semantic information in the dictionary. The projection rules then combine these meanings... (p.12)

A central question with which Katz and Postal were concerned, was whether or not it was necessary to construct two distinct types of projection rules, P_I and P_{II}: where P_I operates upon underlying P-markers in which only obligatory transformations are involved, e.g. tense-attachment, while P_{II} operate upon underlying P-markers upon which optional transformations have applied, e.g. passive, negative, and so on. As underlying P-markers of the first sort cannot be said to involve any change of meaning since the output of the transformation is fully determined by its input, the operation of P_I does not have to take meaning change into account. If simplicity is a basic concern of the grammar - where among the criteria of simplicity is generality of rule-application - it would obviously be advantageous to eliminate the need for P_{II} if possible.

The solution to this "projection problem" which Katz and Postal adopted was to make the so-called optional transformations, including passive, obligatory. This they achieved by incorporating into the underlying P-markers concerned, a 'dummy' morpheme, e.g. in the case of passive, a passive morpheme dummy plus by dominated by adverb manner. Thus, they felt able to claim (p.72) that:

> ...even if the meanings of examples like (1) and (2)
> [(1) everyone in the room knows two languages
> (2) two languages are known by everyone in the room]
> are different, the argument that some transformations affect meaning does not hold. This argument [that some transformations change meaning] must also assume that such examples are transformationally related, i.e., that the passives are derived from the application of
>
> a transformation....

> a transformation to the P-marker underlying the corresponding active form.

As I have already suggested, whether or not the underlying P-markers of active and passive counterparts are identical or differ in that the second contains a dummy passive morpheme, while the former does not, is a question simply of how the linguist chooses to construct his grammar and this choice will, presumably, depend upon his descriptive priorities - he may, for example, decide that generality of rule-application is fundamental, or he may consider descriptive breadth and depth to be more important than mere simplicity. It certainly does not seem to me that to refer for example to Klima's and Lees's use of the morpheme neg, as do Katz and Postal (p.74) so that the negative transformation is reduced to a simple ordering of morphemes in a linear sequence, can be taken as constituting anything in the way of proof - it simply shows a consistency of approach without proving tnat the approach is either correct or the most efficient.

The assertion that 'transformations do not change meaning' does not, of course, dispose of the problem of pairs like Katz and Postal's (1) and (2). Katz and Postal attempt to show that these do not constitute counter-examples to their proposal by arguing (p.72):

> These examples are, however, unconvincing. Although the facts are far from clear, the active (1) seems to be open to the same interpretation attributed to the passive (2), and conversely, the passive is open to the same interpretation attributed to the active. Both (1) and (2) can mean either 'everyone in the room knows the same two particular languages, Persian and Hottentot' or 'everyone in the room knows two languages, different for different people'. Thus it seems that both actives and passives containing quantifiers and pronouns are ambiguous in the same way and so are full paraphrases of each other. If this is correct, there is no evidence based on quantifiers and pronouns that the passive transformation in any way alters the meaning of the underlying P-markers on which it operates, even if passives are derived by a transformation that applies to the underlying P-marker of the corresponding active.

While it...

While it cannot be argued that the sentences in question are not ambiguous in the way Katz and Postal suggest, to my mind, each definitely has what we might call a 'preferred meaning' and while the notion of preference may not, theoretically, enter into the question of whether two sentences are 'full paraphrases of each other', in practice, it can scarcely be ignored. It is worth noting, in this connection, that Chomsky (1965), even though he agreed with Katz and Postal's general approach to transformations and the shape of the grammar, still expressed uncertainty with respect to active/passive pairs of the sort concerned. He writes (p.224 fn.9):

> ...it seems clear that the order of "quantifiers" in surface structures sometimes plays a role in semantic interpretation. Thus for many speakers - in particular, for me - the sentences "everyone in the room knows at least two languages" and "at least two languages are known by everyone in the room" are not synonymous. Still, we might maintain that in such examples both interpretations are latent (as would be indicated by the identity of the deep structures of the two sentences in all respects relevant to semantic interpretation), and that the reason for the opposing interpretations is an extraneous factor - an overriding consideration involving order of quantifiers in surface structures - that filters out certain latent interpretations provided by the deep structures. ...relevant in this connection is the notion of Topic-Comment...

While it would not be correct to identify the work of Leech (1969) precisely with that of the Transformational-Generativist school, I think it appropriate, at this point, to refer to his discussion (p.52) of the particular problem at issue, if only because at first sight his argument appears to lend extra-linguistic weight to the thesis that the passive does not change meaning - extra-linguistic in that it depends upon a pragmatic consideration. He writes:

> Certainly, two distinct interpretations are involved in the examples above [Leech's version of the pair, namely: Everybody in the room speaks (some) two languages/ (some) two languages....

> two languages are spoken by everybody in the room.] ... However, it is not true (at least according to the intuitions of myself and those I have consulted) that these two readings are each restricted to either active or passive: on the contrary, both of them are possible for both the active and the passive sentences.

Two alternative sentences which Leech takes as proof of the theory that actives and passives are synonymous even when quantifiers are involved, are: Everybody in the room has drunk some water / Some water has been drunk by everybody in the room. He claims, rightly, (p.52) that:

> ... it would be ludicrous to suppose that the very same mass of water has been consumed by a number of different people. Therefore we interpret [the passive given above]... in a way which makes it synonymous with the active sentence.

In my opinion, if the active and the passive which Leech offers are fully synonymous because they can only have one reading, this is because of the nature of the predicate drink .. water. Thus it does not seem to me that such apparent counterexamples to the theory that quantified sentences of the relevant sort have different readings in their active and passive forms, have anything to do with the quantifiers themselves.

4.1.2 Interpretive Rules

4.1.2.0 General

In the post-Aspects era, a number of linguists, while accepting the distinction between deep and surface structure, have worked upon the assumption that the semantic component of the grammar need not, especially when quantifiers and negatives are concerned, have the level of deep structure as its input. Their position is not always entirely clear since they do not in every case state categorically what form such an input should take. Jackendoff (1969) for example, leaves it open as to whether his interpretive rules operate on a level of derived structure fairly near the surface or the actual surface structure itself. On the other hand, while Partee (1970) is explicit in her claim that surface structure provides the material upon which interpretive rules operate, she deliberately eschews the formulation

of such....

of such rules so that it is not clear exactly how they would function.

One basic fact about the so-called Interpretive approach is that, since it does not involve the claim that the notions of deep structure and transformation should be abandoned; it necessarily entails the rejection of the theory that transformations do not change meaning. This entailment is a necessary consequence of the hypothesis that interpretive rules operate upon a level which has been derived from deep structure via transformations since the input to such rules must of necessity be determined by the transformations.

In this subsection, I shall concentrate on the work of Jackendoff (1969) and Klima (1963), though I shall refer to a number of important questions raised by Partee (1970) in (4.2) when I discuss Lakoff's treatment of quantifiers and negation.

4.1.2.1 Klima's rules of indefinite incorporation and negative placement.

A necessary preliminary to a discussion of Jackendoff's treatment of negatives and quantifiers is an explanation of Klima's rules of indefinite incorporation and negative placement. This preliminary is necessary because Jackendoff's declared intention was (p.218):

> an attempt to extend his [Klima's] principles so as to handle VP negation and multiple negation within a single sentence.

In his paper, Klima, trying, as Seuren points out (1969), to account for what he saw as surface irregularities, included two transformational rules which account for such alternations as some/any, sometime/ever/never. The first of these, indefinite incorporation, was set out as follows (p.280):

Indef-incorporation
(obligatory in certain environments)

(110a) S: $[\underline{\text{neg}}]_{PvP}$ X - Quant $\Rightarrow$ neg - X - Indef + Quant

(110b) S: $-\underline{\text{Quant}}$ - Y $[\underline{\text{neg}}]_{PvP}$ $\Rightarrow$ Indef + Quant - Y - neg

In his summary of his rules (p.319), Klima points out that the rule given above mentions two types of morpheme, affectives - morphemes which affect the phonological representation of a string, e.g.

wh and neg....

wh and neg - and indeterminates - morphemes like somebody which have no specific reference. The rule says that when indeterminates are in construction with affectives, they undergo a phonological change which Klima chose to describe as the incorporation of the feature [indefinite]. Thus, for example, when some is in construction with neg, or wh, by the above rule, it changes its phonological spelling to any. Typical instances would be:

1) I don't want any marmalade (some in construction with neg)
2) Do you want any marmalade? (some in construction with wh)
3) He never tells the truth (sometimes in construction with neg)
4) Does he ever tell the truth? (sometimes in construction with wh)

Klima's rule of negative-incorporation which is designed to handle sentences like:

5) Nobody said anything.

is set out thus (p.280):

neg-incorporation ...

(112a)	(optional) $[neg]_{PvP}\ X[Indef+Y]_{Quant} \Rightarrow X\text{-}neg + [Indef+Y]_{Quant}$
(112b)	(obligatory) $[Indef+Y]_{Quant}\ Z[neg]_{PvP} \Rightarrow neg + [Indef+Y]_{Quant}\ Z$

The important feature of this rule is that neg is obligatorily incorporated into the first of any indefinites (themselves the output of Klima's (110)) which precede it in a sentence. If no indefinite precedes neg, then it is optionally incorporated into the first of any indefinites which follow it. Thus, (6) is anomalous because neg-incorporation has not been applied in a situation where it was obligatory, while (7) and (8) are grammatical, one showing the optional incorporation of neg into a following indefinite, the other ignoring this option.

6) *Anyone didn't come.
7) Cromwell didn't fear anyone.
8) Cromwell feared no one.

With respect to the rule of indefinite-incorporation, much discussion has centred around the stipulation that the morphemes concerned should be 'in construction', that is, both should be

dominated by....

dominated by the same node, for example, S will dominate both neg (as a 'daughter') and an indefinite in its subject NP. Jackendoff is at pains to justify this stipulation, while Ross (1967), argues that command is the correct relation involved.

I do not intend to go into this discussion here. However, I think it worth referring to Ross's example, cited by Jackendoff in which anyone is commanded by surprise, but is not in construction with surprise, namely:

9) That anyone at all came surprised Bill.

This, in my view, provides no proof for the contention that command is the 'correct' relation. It is not, as Ross asserted, that anyone is derived from someone, by Klima's indefinite-incorporation because surprise is an affective, like reject, defy, etc., but rather because at all is the affective morpheme which triggers the transformation. This is easily seen by the fact that, apart from those cases in which at all is part of a prepositional phrase, as in:

10) The watchman knocked at all the houses in the street.

at all is associated with negation: typical cases are:

11) He didn't say anything at all.
12) He won't help me at all.

but not:

13) *He helped me at all.

4.1.2.2 Sentence, VP and Constituent Negation

Klima's paper is concerned only with Sentence Negation - that is the negation of an entire sentence by a negative like not, or an implicit negative adverb like seldom, but not by a negative affix like un- or -less. As is well known, in order to establish that a given string is a true instance of sentence negation, Klima set up various tests, probably the most famous of which is the tag-question test. Examples of sentence negation only allow for positive tags, affirmative sentences and sentences containing word negation allow only for negative tags. Relevant examples are:

1) He didn't come, did he?
2) He seldom comes, does he?
3) He came, didn't he?
4) It is unfair, isn't it?

As Jackendoff....

As Jackendoff points out, however, there are two other important types of negation in English, namely, constituent negation and VP negation, the first of which Klima noted but did not discuss in detail, the second of which he ignored. An example from Klima of constituent negation is:

5) They're fighting about nothing.

This sentence is supposed to be ambiguous between the readings:

6) It is not so that they're fighting.

7) They are fighting, but it is not so that there is anything about which they are fighting.

In fact, I do not believe the second reading of (5) is correct. To my mind, the alternative reading simply constitutes an assertion that, as far as the speaker is concerned, there exists insufficient reason for the parties concerned to be fighting - it is an example of the extremely common hyperbolic use of quantifiers, especially those at the two logical extremes, such as all and nothing and is not intended, in this reading, to be taken literally.

Another instance of constituent negation which Klima provides is seen in one of the alternative readings of:

8) I will force you to marry no one.

Interpreted as sentence negation, (8) is synonymous with:

9) It is not the case that I will force you to marry anyone.

When the negation is regarded as applying to the complement, however, the reading is synonymous with:

10) I will force you not to marry anyone.

The importance of constituent as opposed to sentence negation will be seen below when I discuss Jackendoff's interpretive rule of scope. On p.223, Jackendoff writes:

> A more interesting case of constituent negation is illustrated by the contrast of (29) and (30)
> (29) Not many of the arrows hit the target.
> (30) Many of the arrows didn't hit the target.

Regarding Jackendoff's (29), since not has been attached to many by Klima's obligatory rule of negative placement, we may conclude that it represents a case of true sentence negation and

is synonymous....

is synonymous with:

11) It is not so that many of the arrows hit the target.

In the case of his (30), on the other hand, since not has not been obligatorily attached to the indefinite many, we may conclude that this sentence is not a case of true sentence negation, but that the negative is associated with the auxiliary. Jackendoff demonstrates, convincingly, in my view, that there is an important semantic difference between the two, by contrasting the following in which additional clauses have been conjoined to the originals (the numbering is his):

(36) *Not many of the arrows hit the target, but many of them did hit it.

(37) Many of the arrows didn't hit the target, but many of them did hit it.

Jackendoff comments (p.224):

> (36) expresses a contradiction since it asserts both a sentence and its negation. (37) is not a contradiction because (30), being an instance of VP negation, does not conflict with many of them did hit it.

Having thus established that a genuine semantic difference exists between (29) and (30), we can consider Jackendoff's interesting observation concerning the passive sentence:

(35) The target wasn't hit by many of the arrows.

According to him, (35) can only have a reading synonymous with (29) and not with (30). This claim is substantiated by the unacceptability of:

(38) *The target wasn't hit by many of the arrows, but it was hit by many of them.

One important inference which Jackendoff draws from these semantic facts is that transformations must be regarded as capable of changing meaning. Thus he writes (p.225):

> Under the assumption that transformations do not change meaning, these facts will be very difficult to account for....In order for the some-any rule [Klima's indefinite-incorporation] to operate correctly, the neg must be in the VP....

> the VP at the time of this rule. If we add a transformation to move neg into the VP before the some-any rule, this transformation will change meaning just in case there is a quantifier in the subject, as in (29) and (30). If this transformation is ordered before the passive, then the passive will change meaning just in case it moves a quantifier into or out of the subject.

It is important to notice that the difference in meaning between sentence and VP negation to which Jackendoff refers depends upon the presence or absence of a quantifier. Thus he writes (p.230):

> If there is no quantifier in the subject of a sentence, the VP negation of the sentence will be logically synonymous with the S negation, but it will be understood as different in its topic-comment relations. For example, in (55)
> (55) The arrow didn't hit the target.
> the sense of the S negation is denying that the arrow hit the target, while the VP negation asserts of the arrow that it failed to hit the target. The truth values of these readings are equivalent; the only difference is in emphasis. However, as we have seen, the presence of a quantifier in the subject does lead to a difference in truth value between the S and VP negations.

4.1.2.3 The rule of Scope and the Some-any rule

On the assumption that transformations may change meaning and that the input to the semantic component is not, in all cases the level of deep structure, but may even be that of surface structure, Jackendoff attempts to formulate two interpretive rules. The first of these operates on the lexical items whose distribution is predetermined by the so-called affectives, e.g. any and some. The second rule interprets the scope of negation in given strings.

Jackendoff's discussion of scope (p.228 ff), though conforming with common sense, is not sufficiently rigorous for the careful formulation of a scope rule. The fact that he qualified the title of the relevant section with the phrase: an intuitive discussion suggests that he was perfectly well aware of this. In fact, it seems to me that scope can never be rigorously defined since the

linguist must always depend upon his own intuition, or that of his informants, in considering individual examples. While, in a formal system like Logic, it is perfectly permissible to say, as does Copi (1961, p.210) that brackets indicate that a quantifier outside them 'applies to or has within its scope' all the material they contain, this is of little help where English is concerned. I, therefore, do not feel that Seuren's definition of scope (1969, p.118) is intrinsically more valuable than an 'intuitive discussion', since, in every case discussed, the scope will only be correctly displayed if the linguist has correctly identified it. Seuren's account is as follows:

> ...scope assigns a semantic property to operators, and the scope of an operator O is precisely that part of the deep structure which follows O. The scope may thus embrace one or more operators apart from the nucleus, which comes within the scope of any operator. This way of defining scope coincides essentially with the device of bracketing...in logical formulae.

In his own account of scope, Jackendoff writes (p. 228 ff):

> Given a sentence containing a negation, let us define the scope of the negation (intuitively) as that part of the sentence which is interpreted as being denied. Thus in cases of sentence negation, the scope of the negation is the whole sentence; this accounts for the paraphrase with it is not so that. In cases of constituent negation we have discussed, this paraphrase is not possible, since not the whole sentence is being denied.

The cited claim concerning paraphrases seems, to me, to be very dubious. I see no reason why a sentence containing VP negation, or even NP negation (as in the second reading of nothing, where that item is used hyperbolically) should not be so paraphrased. Jackendoff's contention is, moreover, at variance with the fact, known for centuries, that a sentence containing not is ambiguous in proportion to the number of its terms, including its verb. Thus,

1) Milton did not write Paradise Lost.

is three ways ambiguous: it may be that the speaker is denying

Milton's authorship....

Milton's authorship; he may be denying that he physically wrote the poem, perhaps implying that he dictated it; or the negation may be centred upon Paradise Lost, implying that some other work, e.g. Paradise Regained was written by Milton.

It is, perhaps, worth noting that the variety of possible scopes of neg within a simple sentence is, in some languages, e.g. Russian, explicitly reflected in surface structure, the negative immediately preceding that which is denied. Thus (He = not):

2) Не Я ГАВОРИЛ (It was not I who spoke.)

3) Я Не ГАВОРИЛ (I did not speak.)

Jackendoff makes use of the notion of scope to formulate an interpretive version of Klima's transformational rule of indefinite-incorporation and as a basis for an interpretive rule of scope which he claims corresponds to Klima's transformational rule of negative placement.

The proposed scope rule is not formulated (Jackendoff confesses (p.236) to being unable at the time of writing to do so). Its operation, moreover, is discussed in a rather vague way in terms of moving the scope of neg from lower to higher positions in a tree. For example: I didn't see anything is an example of VP negation if the scope is left in the VP, but of sentence negation if it is raised to the S-node, etc. Jackendoff's proposal does not, therefore, in my view, constitute a viable alternative to Klima's transformational rule of negative placement even though, as he says (p.235):

> Klima's rule...requires unsystematic and sometimes drastic changes in 'spelling' [e.g. neg + any → no].

The only grounds upon which Jackendoff's proposal could be preferred are that it conforms with the lexicalist hypothesis.

Conformity with the lexicalist hypothesis seems also to be the only positive reason for Jackendoff's interpretive some-any rule which takes the place of Klima's indefinite-incorporation. The rule is formulated as follows (p.232):

$$(58)\quad [\ +\ \text{indeterminate}\ ] \rightarrow \begin{cases} [\ -\ X\ ] \text{ in construction with Affective} \\ [\ +\ X\ ] \text{ elsewhere.} \end{cases}$$

He explains....

He explains the convention for the application of this rule as:

> (59) If an indeterminate is unspecified with respect to X, the rule fills in the feature according to the environment. If the indeterminate is already marked with respect to X, the sentence is marked semantically anomalous if the inherent feature and the feature assigned by the rule disagree.

Thus, the rule will mark the following example as anomalous because, in it, any is already marked [-X], but the rule assigns to it the feature [+X]:

4) *Anything didn't happen.

To my mind, the most important consequence which would flow from the adoption of this rule is that it would make the application of certain transformations, including especially passive, obligatory in cases where the left-to-right order of quantifiers in the base-string would be unacceptable in derived structure. Thus, Jackendoff shows (p.233) that while Klima's rule would give one underlying string (67) for both the active and passives (65) and (66), his rule would give (68) for the first and (69) for the second (the numbering is his).

(67) Some of the men neg did some jobs.
(65) Some of the men didn't do any jobs.
(66) Some jobs weren't done by any of the men.
(68) Some of the men neg did any jobs.
(69) Any of the men neg did some jobs.

I have no personal objection to the principle of compulsory application of the passive transformations as a means of ordering quantifiers in surface structure. As I have already noted (Ch. 1), Frege himself saw this as a primary role of the passive construction and Lakoff resorts to the same device in his treatment of multiple quantification. I am not certain, however, what implications this view has for Jackendoff's basic thesis, namely that transformations, including the passive, change meaning. However, as he does not discuss any potential difficulties I presume that he sees none and, as the question is, for my part, purely academic, I shall not pursue it further.

4.2....

4.2 Transformations as Local Derivational Constraints

As I have already noted, Lakoff's view of grammar is at the time of writing, different to those of scholars like Chomsky and Jackendoff in a number of respects, including the rejection of the notion of deep structure and the simplification of the semantic component to a set of inference rules and equivalence relations. Lakoff's paper (1971) is of central importance to my field of study since in it, he makes some proposals regarding quantifiers and negatives which have deep implications both for the study of these phenomena themselves and for the development of grammatical theory in general. Before discussing these proposals, it will be necessary to explain Lakoff's approach to transformations generally.

Lakoff prefaces his paper with a thumbnail sketch of the view of grammar which he holds and which is known as Generative Semantics. In this account, he writes (p.232, fn):

> Generative Semantics is an outgrowth of transformational grammar as developed by Harris, Chomsky [and others],... I think it is fair to say that there has developed in recent years a general consensus in this group [the Generative Semantists] that semantics plays a central role in syntax. The generative semantics position is, in essence, that syntax and semantics cannot be separated and that the role of transformations, and of derivational constraints in general, is to relate semantic representations and surface structures.

In his first section: The Basic Theory, Lakoff discusses the role of transformations, using a meta-language modelled upon that of Symbolic Logic. Leaving the precise formulations aside, his views are as follows (p.232 ff):

> ...a grammar of a language is a system of rules that relates sounds in the language to their corresponding meanings, and...both phonetic and semantic representations are provided in some language-independent way. I assume that the notion 'possible surface structure' in a possible natural language is defined in terms of 'trees' or 'phrase-markers' with the root S, whose node-labels are taken from a finite set of node-labels: S, NP, V, ...Thus a grammar

will define....

> will define an infinite class of surface structures. In addition I assume that a grammar will contain a system of grammatical transformations mapping phrase-markers onto phrase-markers. Each transformation defines a class of well-formed pairs of successive phrase-markers, P_i and P_{i+1}. These transformations, or well-formedness constraints on successive phrase-markers, P_i and P_{i+1}, define an infinite class K of finite sequences of phrase-markers...

Among these well-formedness constraints, Lakoff includes the so-called lexical transformations, whose function he describes as (p.233):

> a lexical transformation associated with a lexical item [included in the lexicon] I maps the phrase-marker P containing a substructure Q which contains no lexical item into a phrase-marker P' formed by superimposing I over Q ... Various versions of this framework will differ as to where in the grammar lexical transformations apply, whether they apply in a block, etc.

It will be noticed that this account of lexical transformations, rigorous though it appears to be, says very little beyond the fact that the lexical rules in question are transformational rules, i.e. they transform some configuration into another configuration. However, it is to be assumed that they meet the usual strict-sub-categorisational and selectional constraints as described in Chomsky (1965) and we may infer from Lakoff's semantic representation of <u>many men read few books</u> (displayed p.239, fn) that the configuration which acts as their input has some sort of symbolico-logical form, at least in those cases where quantifiers and, presumably, negatives are concerned.

Lakoff continues (p.233):

> In this sense [the mapping function just described], transformations, or well-formedness conditions on successive phrase-markers, may be said to perform a 'filtering function', in that they 'filter out' derivations containing successive phrase-marker pairs...which do not meet some well-formedness condition on such pairs. A system of transformations is essentially a filtering device...

We may....

We may illustrate this filtering function of transformations by the fact that the passive cannot apply to strings containing non-passivisable verbs. Thus, the passive filter will not map the deviant surface structure (1) onto the underlying structure (2)

1) *The runway was taxied down by the aeroplane.

2) The aeroplane past taxie down the runway.

As far as quantifiers are concerned, this filtering function is apparent in the fact that items like anybody do not appear, except when carrying heavy stress, as the subjects of negative sentences, e.g.:

3) *Anybody won't believe you.

It is also operative, as will be seen in the next subsection, in ensuring that surface structures correctly reflect the hierarchical ordering of quantifiers in semantic representation. Because transformations have this filtering function, Lakoff refers to them as 'Local Derivational Constraints', which may be either optional or obligatory.

4.3 Global Derivational Constraints

On page 234, Lakoff writes:

> In addition to transformations, or local derivational constraints, a grammar will contain certain 'global derivational constraints'. Rule orderings, for example, are given by global derivational constraints, since they specify where in a given derivation two local derivational constraints can hold relative to one another...

It is not my purpose to discuss the distinction between local and global derivational constraints in detail. However, I feel that I should point out that, in terms of Lakoff's own description of the grammar, it would appear that local constraints intermingle with global constraints and vice versa. This follows from the fact that, if rule-ordering, for example, is a global derivational constraint, and it is required that passive apply before other transformations, then the input to transformations applying after the passive must be determined by the global constraint in question. This is clear from Lakoff's own definition of a local derivational constraint (p.233), namely:

A local....

> A local derivational constraint can be defined as follows. Let 'P_i/C_1' mean phrase-marker P_i meets tree-condition C_1. A transformation, or local derivational constraint, is a conjunction of the form P_i/C_1 and P_{i+1}/C_2, as where C_1 and C_2 are tree-conditions defining the class of input trees and class of output trees, respectively.

By way of illustration, if passive - a local derivational constraint - is applied to (1) below, then it will be part of the tree-condition for the input to the tense-attachment transformation - also a local derivational constraint. The plural noun to the right of the verb in (1) must appear to the left in (2), i.e. tense attachment must take place after passive, and this requirement constitutes a global derivational constraint. If this global constraint is not observed, then the filtering function of the tense-attachment transformation will "throw out" the unacceptable string (3) because the transformation's C_1 is not met.

1) The priest past harangue the demonstrators.
2) The demonstrators were harangued by the priest.
3) *The demonstrators was harangued by the priest.

The above is not intended to be a criticism of Lakoff's distinction, but merely an attempt to show that the two kinds of constraint are interdependent, a fact which is central in his treatment of multiple quantification.

4.4 A Global Derivational Constraint involving Quantifiers

In section (2) of his paper (1971), Lakoff formulates two global constraints which in their final, elaborated forms account for the semantic fact that the left-to-right ordering of quantifiers and quantifier+negative in surface strings reflect their semantic representations. In these representations, as in the predicate calculus, one symbol, quantifier or negative, is interpreted as dominating others, or having the others in its scope.

As I have already stated (Ch. 1) Frege in the nineteenth century had seen the passive construction chiefly as a device employed by natural languages to position quantifiers according to their logical relationships one to another. The sentences with which Lakoff begins are parallel to those of Chomsky (1957) and (1965)

in that....

in that they exhibit mixed quantification. They are:

1) Many men read few books.

2) Few books are read by many men.

Chomsky's original contention, as we have seen, was that sentences like (1) and (2) prove that the passive transformation can change meaning. If one were to present them in symbolic notation, however, they would differ in the left-to-right ordering of the quantifiers many and few. The following provides a rough illustration, rough since many and few, being proportional quantifiers less than the universal yet more than the universal negative, would in a purely formal system, reduce to the existential quantifier.

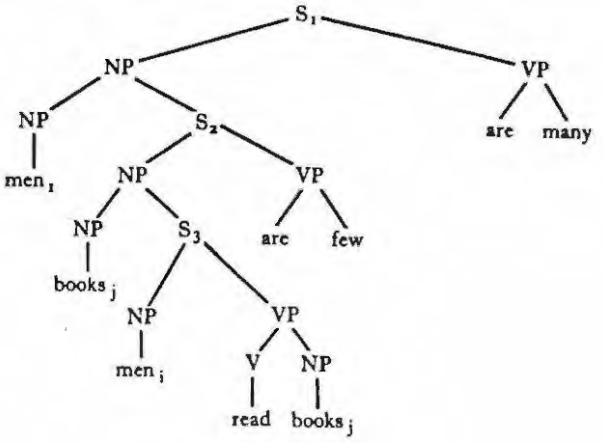
1') $\underline{\text{many}}_x \quad \underline{\text{few}}_y \quad Rxy.$

2') $\underline{\text{few}}_y \quad \underline{\text{many}}_x \quad Rxy.$

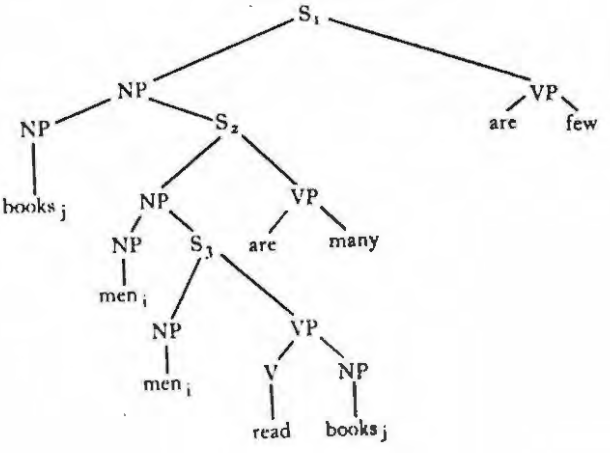
where R = read; x = men; y = books.

In apparent recognition of this fact, Lakoff assigns to (1) and (2) different underlying, or semantic representations, namely:

3)



4)



From these....

From these structures, the surface realisations are achieved by lowering the quantifiers into their respective NPs, this process being preceded in the case of (4) by the application of passive to the lowest S, so that the NP books is moved to the left-most position, in response to the command relation of its quantifier few in the tree.

In this analysis, the semantic representations (3) and (4) clearly consist of a number of clauses, main and subordinate, the uppermost S representing the main clause and it may, therefore, be said that one quantifier commands, i.e. is in a higher clause than another. In the surface strings (1) and (2), on the other hand, there being, according to the traditional view of sentence-structure, only one clause, each quantifier technically commands the other. In these structures, therefore, the relationship of command becomes irrelevant and is replaced by that of precede.

In English, however, it is not always the case that a quantifier which commands another in semantic representation necessarily precedes it in surface structure. Lakoff provides the following by way of illustration:

5) The books that many men read are few.

In (5), although few is to the right of many, it can still be said to command many since it occurs in the main as opposed to the subordinate clause. In other words, in cases like (5), the quantifier (few) which commands the other (many) continues to command it in surface structure.

In so far as the linear ordering and command relationships are concerned, negatives obviously behave like quantifiers and it is therefore desirable, in formulating constraints on derivations, to treat negatives as though they were parallel to quantifiers. Lakoff adapts Jackendoff's examples as follows (it will be noted that he omits the troublesome words of and the) (the numbering is his):

(21) Not many arrows hit the target.

(22) Many arrows didn't hit the target.

(23) The target wasn't hit by many arrows.

Lakoff provides (21) and (22) with underlying structures (24) and (25):

(24)....

⟨24⟩ [$_S$ not [$_S$ arrows$_i$ [$_S$ arrows$_i$ hit the target] were many]]
⟨24′⟩ The arrows that hit the target were not many.
⟨25⟩ [$_S$arrows$_i$ [$_S$ not [$_S$arrows$_i$ hit the target]] were many]
⟨25′⟩ The arrows that didn't hit the target were many.

Using the term 'Logical predicate' to cover both quantifiers and negative, Lakoff formulates a constraint accounting for the facts of (1), (2), (21), (22) and (23), with their respective underlying structures as follows (p.244):

⟨26⟩ Let C_1 = L^1 commands L^2
C_2 = L^2 commands L^1
C_3 = L^1 precedes L^2 (L = Q or NEG)
Constraint 1′: $P_1/C_1 \supset (P_n/C_2 \supset P_n/C_3)$

The operation of this constraint may be illustrated by referring to (1) and (21). In the underlying structures of these sentences (P_1 in the constraint), many and neg act as predicates of the top-most clauses and so have the status of L^1 and few and many, being in lower clauses have the status L^2. As it is the case that in both sentences (1) and (21), L_1 and L_2 command each other in surface structure, P_n, then P_n meets the condition C_3 - L_1 precedes L_2. In the case of (5) where L^1 few appears in P_n to the right of L_2 rather than to the left, C_2 fails, since L_1 occurs in the main clause and the constraint is not violated.

The "′" following the number of the constraint in (26) indicates merely that (26) is a development of an earlier formulation which handled quantifiers only and ignored negatives. In fact, Lakoff continues his analysis to handle cases of so-called y-movement e.g.:

(31) Fond of many boys, Sarah Weinstein isn't.

However, such sentences do not occur in my English dialect and, as Lakoff notes, are not grammatical in all American dialects. I shall, therefore, ignore them.

A more important adjustment to the formulation (26) is the replacement of P_n by P_i, where P_i is any level of derivation which precedes late transformations which do not affect meaning, but which change the surface structure. For example, in complex sentences

where deletion....

where deletion has taken place, as in Lakoff's (28):

(28) Jane isn't liked by many men and Sally isn't either.

which is derived from (27) by the deletion of many men.

(27) Jane isn't liked by many men and Sally isn't liked by many men either.

As Lakoff observes (p.245):

> ... the sentence fragment Sally isn't either does not contain many in surface structure, but it receives the same interpretation as the full Sally isn't liked by many men either, and does not have the reading of There are many men who Sally isn't liked by. Constraint 1' [namely (26)]...will not do the job, in that it mentions surface structure P_n rather than some earlier stage of the derivation prior to the deletion of liked by many men.

The reformulation of (26) is given by Lakoff as (29), but I shall not reproduce it here as the point that surface structure cannot always fully represent the semantic structure is clear enough.

One important feature of Lakoff's constraint (26) is that it allows for the fact that in many peoples' dialects, passives like (23) have a reading corresponding to (21) but not to (22). This is so because in (23), not precedes many in a simple clause just as it does in (21) and therefore, according to the constraint, must command many in underlying structure, while in the active (22) many precedes not and must, in consequence, command not in underlying structure. Thus, it will be seen that Lakoff's constraint (26) provides an alternative to Jackendoff's scope rule, discussed in (4.1.2.3). It is, in my opinion, a preferable alternative since it is formulated in something like a rigorous manner and while I am not convinced that semantic rules should be so formulated, it seems best to aim at rigour if they are. In justice to Lakoff, it is important to note that he takes considerable pains to emphasise that (26) and other constraints do not operate in all dialects and under all conditions and that many factors, including emphasis, may render them inapplicable.

In addition to (26), Lakoff formulates a constraint which requires that if a logical predicate commands another in underlying

structure, it must continue to do so in derived structure. I shall not reproduce this constraint in this essay since it is exceedingly simple and does not add significantly to the exposition of Lakoff's views. The necessity for the constraintin question is, however, seen by a consideration of his example sentence:

(13) Many reporters claimed that John dated few girls.

As Lakoff notes, (13) has the reading:

(14) Many were the reporters who claimed that the girls who John dated were few (in number).

It does not have the reading:

(12') Few were the girls who many reporters claimed John dated.

As few is in the complement of (13) and is, therefore, commanded by many in the main clause and as (13) cannot be interpreted as (12'), but only (14), it follows that we cannot postulate an underlying structure for (13) in which few commands many as the reading (12') would require. Thus, we conclude that if a quantifier is commanded by another in derived structure, then it must also be commanded by the other in underlying structure.

4.5 The Treatment of Quantifiers in terms of Sets

4.5.0 General

In much recent discussion of problems surrounding quantification in English, it is fairly obvious that notions relating to Set-theory are basic. Few linguists, e.g. Lee (1971) and (1972) actually make this assumption explicit and in the cases of many, e.g. Partee (1970), it is not apparent that the problems are conceived of in terms of sets at all. However, as I hope to show in this sub-section, such considerations as class membership, containing and included sets are at the root of these discussions and provide a reasonably clear way of drawing them together.

4.5.1 The Definite Article and Singular Terms

As a necessary preliminary to the chief considerations of this section, I shall briefly discuss the role played by the in the creation of 'singular', as opposed to 'general' terms, where singular may be paraphrased as: having unique reference. Although a number of linguists, e.g. Chafe (1970), Heny (1971/72), and

Quirk and Greenbaum (1973) have discussed the use of the definite article, particularly as a marker of old information, I shall confine myself, at this point, to a few of the observations made by Zeno Vendler (1967-71).

Vendler (p.115) begins with the observation:

> Perhaps the most important use of language is the stating of facts, and in order to understand this role one has to know how proper names function and what constitutes a definite description, one has to be clear about what we do when we refer to something...

On page 121, he offers the following quotation from Strawson (1959, p.146) which, with the clarity typical of its author, describes the role of grammatical description in the process of understanding referred to above.

> 'A grammar book of a language is, in part, a treatise on the different styles of introduction of terms into remarks by means of expressions of that language.'

The classic paradigm of a <u>singular term</u> is, of course, the proper name, although as is well known, even these can be used with a general signification, as in: <u>he is a real Napoleon</u>. However, as Vendler points out (p.117):

> The linguistic considerations relevant to the solution of this problem [the recognition of singular terms] are by no means restricted to the morphology of the term in question.

It is, as he says, a mere accident of orthography that proper names are written with an initial capital and this practice is, in any case, of no assistance in the spoken situation. He continues (pp.117/118):

> ...often the whole sentence, together with its transforms, or even its textual and pragmatic environment must also be considered...
>
> ...[consideration of proper names] casts little light in general on the nature of singular terms most of which are not proper names.

If nouns....

If nouns other than proper names are considered, it is immediately apparent that in order for them to function as singular terms, their possible reference within a given context must be restricted either to a single individual or to a single set of individuals. Vendler (p.121) writes:

> ...the main categories of singular terms formed out of common nouns...begin with a demonstrative pronoun, possessive pronoun, or the definite article - for instance, this table, your house, the dog. The first two kinds may be identifying by themselves, but not the third. This can be shown in a simple example. Someone says:
> A house has burned down.
> We ask,
> Which house?
> The answers
> That house
> Your house
> may be sufficient in a given situation. The simple answer,
> The house
> is not. The alone is not enough.
> We have to add an adjunct that lends identifying force - for instance:
> The house you sold yesterday...

In those cases which Vendler takes as identifying by themselves, e.g. that house, or your house, the identifying force is, of course, either supplied by the context of situation - perhaps the speaker points to a given ruin - or the general context of the discourse - that house may refer to a specific house previously identified in the conversation - or by a knowledge which the speaker presumes himself and the hearer to share - your house is frequently felt to be an adequate identification. Vendler's claim regarding these two types of singular terms are not, therefore, strictly accurate. However, the important point is that the usually, though not invariably, requires identifying support in the form of additional linguistic information. This information may be supplied by a previous reference to the term within the total discourse -

Vendler gives....

Vendler gives (p.121):

> I saw a man. The man wore a hat.

- or is supplied by a restrictive relative clause which may or may not have undergone the adjective transformation, e.g. the house you bought; the white house...

Thus, Vendler is led to conclude (p.121):

> This...suggests...a hypothesis of fundamental importance: the definite article in front of a noun is always and infallibly the sign of a restrictive adjunct, present or recoverable, attached to the noun.

These observations are not, of course, new. I have already shown that they form part of the common wisdom regarding the nature of English, even though terms like old and new information, may be of comparatively recent currency. What is important about them is that they establish the fact that, when the definite article is employed - with a few possible exceptions, e.g. the London you knew, it necessarily implies that the range of the term in question is established between addressor and addressee. In other words, the use of the usually implies a common knowledge regarding the identity of the object(s) to which reference is being made and, if this object is a set consisting of more than one member, knowledge of its identity is assumed to include, in theory at least, a knowledge of the membership of the set.

4.5.2 Quantifiers, conjunction reduction and negation

Within the context of a debate concerning such issues as whether transformations change meaning and whether surface structure or some other level should provide the input to the semantic component, several linguists have recently been concerned with sentences containing quantifiers and or quantifiers and negatives which appear to be instances of conjunction reduction. Prominent among such scholars have been Partee and Lakoff (1970) who hold diametrically opposed views. I shall briefly discuss some aspects of their work in this section and, in the course of doing so, shall make passing reference to Carden (1970).

Partee and....

Partee and Lakoff consider the following sentences, among others, (the numbering is Partee's)

(1) Few rules are both explicit and easy to read.

(2) Few rules are explicit and few rules are easy to read.

(6) The few rules are both explicit and easy to read.

(7) The few rules are explicit and the few rules are easy to read.

(17) (a) Three rules on this page are both explicit and easy to read.

(b) The three rules on this page are both explicit and easy to read.

(c) Only the three rules on this page are both explicit and easy to read.

(18) (a) Three rules on this page are explicit and three rules on this page are easy to read.

(b) The three rules on this page are explicit and the three rules on this page are easy to read.

(c) Only the three rules on this page are explicit and only the three rules on this page are easy to read.

Concerning (1) and (2), Partee observes (p.153):

> Sentences (1) and (2)...would appear to be syntactically closely related to (6) and (7)...But whereas (6) and (7) are synonymous, (1) and (2) are certainly not.

In the light of Vendler's observations regarding the use of <u>the</u>, it is, in my opinion, doubtful that a close syntactic relationship holds between the members of the pairs in question. In (6) and (7), we must presume, if Vendler is correct, that a restrictive relative clause has either been deleted or that some such clause is recoverable. No such presupposition exists with respect to (1) and (2). If we take it that <u>the</u> indicates that the membership of a given set is known to both addressor and addressee, the synonymity of (6) and (7) follows as a natural consequence. In the case of (1) and (2), on the other hand, it is not asserted that the single set of rules which are both explicit and easy to read in the former is identical to the set or sets of rules referred to in the latter. Apart from the similar predications,

we are....

we are told only that the sets in both cases (1) and (2) contain few members. This commonsense argument also applies to the (a) and (b) pairs of (17) and (18) where the only additional information is that the rules, or sets of rules are located on a given page.

In the (c) cases of (17) and (18), on the other hand, only, as Lakoff suggests (p.393) implies that the predicates in question are applicable to the rules identified and to no other rules, at least in the book or paper. Thus only, as he claims, may be thought of as the negation of an existential quantifier. Therefore its use in these cases may be paraphrased: it is false that at least one other rule exists such that... so that its appearance in the (c) sentences does not influence their synonymity.

Since like (1) and (2), the (a) and (b) sentences of (17) and (18) are not synonymous, Partee concludes (p.156) that:

> Conjoined sentences containing formally identical noun phrases may not be collapsed if that noun phrase contains a quantifier unless it also contains a definite article, and not even then if there is an only.

Given the function of the just described, the first part of this observation is not surprising. As Lakoff observes (p.392):

> ...two noun phrases can be collapsed by conjunction reduction only if they have the same derived structure, the same meaning, and if they refer to the same individual or individuals [He shows, in a note that this applies only to subject NPs and not to VPs in: John and Max both saw an explosion
> it need not be the same explosion for both John and Max.]

In the (b) cases, the indicates that the same three rules are being referred to, so that conjunction reduction can apply to (18b) to give (17b), but this option is obviously not open to the (a) pairs.

As far as the second part of Partee's observation is concerned, it is a natural consequence of the meaning of only that it should inhibit conjunction reduction since while it may be true to assert (18c) it need not be true to assert (17c) - in the case of the latter, some rule(s) on some other page may have one, but not both,

of the....

of the predicated properties.

Carden (1970) is basically concerned with the derivation of quantifiers in surface configurations - predeterminer, e.g. all the...; postdeterminer, e.g. the many; overt predicates, e.g. the boys were many. He finds that the postdeterminer quantifiers are, like the overt predicates, derived, as Partee had originally suggested (1968) from nonrestrictive relative clauses, but, for a number of reasons, is unable to explain the derivational history of the predeterminers.

As one of many illustrations of the fact that predeterminers do not behave like postdeterminers, Carden discusses (p.421 ff) the generation of comparative structures. He writes:

> ...an essential feature...[is] that the deep or intermediate structure...mean the same as the surface structure.

He cites two interesting cases of predeterminer quantifying constructions in which surface stuctures fail to match up semantically with what would appear to be their most plausible deep structures, namely:

(26) a. Many (of the) cities$_i$ are more far from New York than many (of the) cities$_i$ are far from Chicago. $\neq$
b. Many (of the) cities$_i$ are farther from New York than from Chicago.

(27) a. Every city$_i$ is more far from New York than every city$_i$ is far from Chicago. $\neq$
b. Every city$_i$ is farther from New York than from Chicago.

In the case of postdeterminers, on the other hand, no problem arises since the derived surface structures and their apparent deep structure configurations are synonymous. Carden gives:

(28) a. The many cities$_i$ are more far from New York than the many cities$_i$ are far from Chicago. obligatory rule X →
b. The many cities are farther from New York than from Chicago.

The semantic facts are not, in my opinion, difficult to ascertain. In the case of the postdeterminers, as in Carden's

example (28),...

example (28), the left-most position of the establishes that, in theory at least, the fact that the set of cities concerned has a large membership - is many is shared knowledge between addressor and addressee, the new information is the comparative distances involved. In the case of the predeterminers, on the other hand, since the occurs to the right of the quantifiers, the quantifier itself represents new information. In (26), the speaker is saying that out of a set of cities, whose membership is already known (hence the...), many are farther from New York than from Chicago, but it is not known whether the subset referred to by many of (26a) corresponds exactly to the subset referred to by many of (26b).

In the cases under (27), a slightly different problem arises. It will be noted that Carden does not allow here for the optional inclusion of of the, presumably because of the unacceptability of every of the. If he had wished to include such an option, he would have been forced to expand it to one of the and, had he done so, I think that the structures containing this option would have been semantically synonymous as between deep and surface configurations, being equivalent to:

> all the cities are farther from New York than from Chicago.

As Carden's example stands, however, it appears to express a contradiction. In the case of (27a), the every in the first conjunct must logically include Chicago, while in the second conjunct, every must logically include New York, so that the implication is that New York and Chicago are farther from each other than they are far from each other. In the case of (27b), on the other hand, while this contradiction is not literally ruled out, the mere collapsing of the two predictions of (27a) suggests that the every is not to be taken literally since it does not include New York and Chicago.

A question which arises both in Carden's work and that of Partee is: Why cannot the so-called predeterminers such as all, every and some occur in overt predicate position? The following are equally unacceptable:

* The cities....

* The cities are all.

* The cities are every.

* The cities are some.

The reason, I suggest, is that these cases express tautologies and have, therefore, never been employed not even archaically as overt predication. While it makes good sense to say of a given set that its membership is large:

The cities are many

it is totally noninformative to say that a given set contains all of its members, or, as in the case of some to say of a given set whose existence is presupposed by the use of the, that it contains at least one member, that is, does exist or is not null. This explanation also accounts, I believe, for the fact that such quantifiers do not appear in postdeterminer position: * the all, the every, the some - the quantifier in such constructions would say nothing that is not already said by the. The all cities simply means the cities. On the other hand, the many cities means: that set of cities whose membership is numerous.

Considerations of tautology also account, I believe, for the difference in meaning between Lakoff's sentences (1970, p.405):

(I) Fathers of many children read few books.

(II) Fathers with many children read few books.

Lakoff introduces these sentences in order to prove that surface structure cannot provide an adequate basis for semantic interpretation since the left-to-right order of quantifiers in surface structure does not always correspond to the command relation holding between quantifiers in semantic representation. Allowing for the fact that, in the speech of some people, (I) is ambiguous, Lakoff says of the pair:

> In (I), the 'highest' quantifier is many; in (II), the 'highest' quantifier is few. (I) has the reading There are many children whose fathers read few books. (II) cannot have such a reading; (II) can only have the reading The books that fathers with many children read are few in number. (I) and (II) have the same surface

structure....

> structure... The only difference in surface structure is that (I) contains <u>of</u> where (II) has <u>with</u>.

If one removes the quantifier <u>many</u> from Lakoff's sentence (I), one is left with the tautologous expression <u>fathers of children</u> - tautologous because to be a father is to have a child. On the other hand, removing <u>many</u> from (II) does not produce a tautology since <u>fathers with children</u> is a meaningful assertion, namely that given fathers still have their children.

4.5.3 <u>Quantifiers, possessives and set inclusion</u>

The attempt to analyse natural linguistic structures involving quantifiers in terms of set theory, finds explicit expression in the work of Lee (1971) and the discussion between himself and Hogg which resulted (1972). The type of structure with which Lee is concerned is typified by the following (all examples will be numbered as in the originals):

(1) { All / Many / Some / A few / Few / None } of the boys who left school early arrived home late.

and, as he puts it (pp. 1-2) the problems in which he is interested are:

> ...whether the string immediately underlying the sentences of (1) contains a noun after the quantifier, this noun being deleted by an obligatory transformation [and what] ...is the source of <u>of</u>.

Briefly, Lee's thesis is that there are, in fact, at least three separate underlying sentences involved and that one of them has the form: NP_1 HAVE NP_2, where HAVE (Lee employs capitals to suggest the abstract nature of the verb) indicates set inclusion rather than possession and NP_1 and NP_2 are either identical, or NP_2 is a hyponym of NP_1. If a quantifier is present, a transformation substitutes <u>of</u> for the underlying HAVE and, if the NPs are identical, the first is deleted. Lee describes the process of derivation as follows (p.7):

I shall...

> I shall take the deep structure configuration of a possessive sentence, and transfer the lexical items of the sentence containing the quantifier onto it algorithmically...It will in fact be desirable for the quantifier and possessive sentences to have identical deep structures if they are both to be subject to the transformation deriving <u>of</u> from HAVE...

As far as surface structure is concerned, it is not difficult to find quantified and possessive strings which are parallel, allowing for certain restrictions listed by Hogg (1972, p.229), e.g. NP_2 must be definite in the quantified constructions, but need not be so in possessives: *<u>five of boys</u>, but <u>five cows of a farmer who</u>. Lee gives (1971, p.8) an example displaying both quantification and possession, namely:

(19) Five cows of the farmer who lives over there are sick.

He argues, moreover, that the notions of possession and set inclusion are in many respects parallel. He does not, however, explain clearly how the semantic component is to determine which structures are possessive and which signify set inclusion, though he does refer briefly to the possibility of having two versions of HAVE, $HAVE_1$ and $HAVE_2$. In other languages e.g. Japanese number-patterns form an interesting parallel:

sambiki no kuma
3 animals of bears

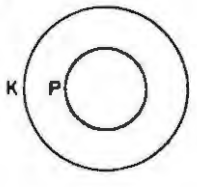
(I owe this example to Professor W.R.G. Branford.)

An interesting illustration of Lee's analysis is his treatment of the pair:

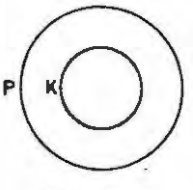
(26) Many of the girls I know came to the party.
(27) I know many of the girls who came to the party.

He diagrams the set relationships involved in these two sentences as follows, where K = the set of girls I know and P = the set who came to the party:

(26)[1]



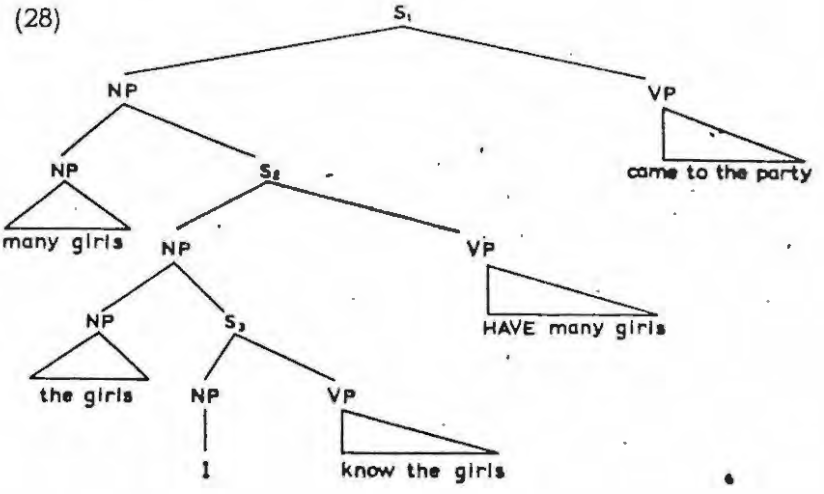
(27)[1]



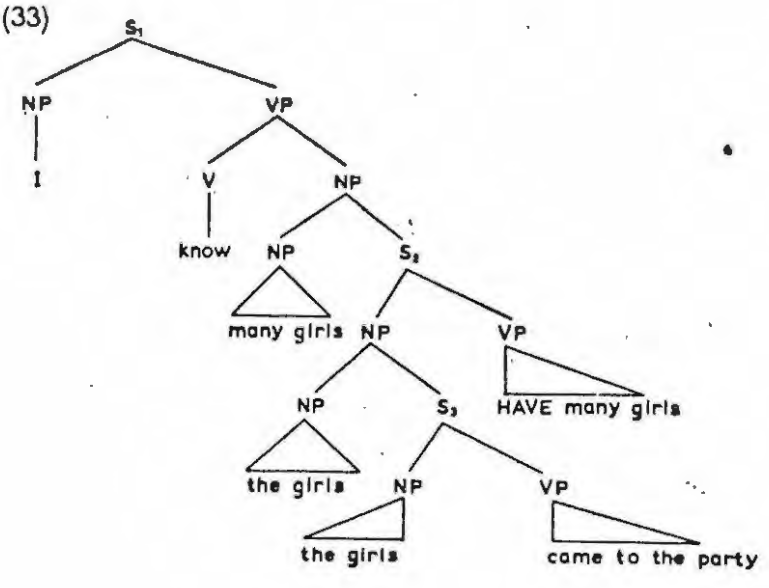
As deep....

As deep structures for (26)[1] and (27)[1], Lee provides (28) and (33) respectively, both of which, soberly considered, the question of HAVE aside, represent no real advance upon the diagrams of scholars concerned with multiple quantification, e.g. Lakoff:

(28)



(33)



He explains....

He explains the significance of these structures as follows (pp.11-13):

> [In (28)] S_3 and S_2 [define] K as the containing set and S_2 and S_1 [define] K as the contained set.... [In (33)] It will be seen that S_3 and S_2 here establish P as the containing set and S_2 and S_1 make K the contained set.

When NP_1 and NP_2 in the underlying structure are not identical, but are hyponyms (as defined by Lyons (1968)), deletion of NP_1 is not posited by Lee. We may have:

(34 ii) Of the scientists who were at the lecture, two chemists left early.

A surface structure of this form, where the quantified NP has been postponed along with the relevant predicate, are, as Lee observes, preferable to structures like: Two chemists of the scientists who... His explanation for this preference is, to my mind, very plausible:

> As far as word order goes, these [cases like (34 ii)] are rather curious examples in that declarative sentence types naturally beginning with of must be not all that common. We can now see this as a preference on the part of the speaker - given the two non-identical but related nouns - for establishing the reference of the containing set before making his statement about the contained set.

In fact, Hogg, in his discussion of Lee's paper, suggests that the postponing transformation is probably obligatory in such cases, a suggestion with which Lee agrees in his response (1972).

There are a number of issues arising from Lee's discussion and from Hogg's reply to it which I must pass over in the interests of reasonable brevity, notably the question of entailment versus compatability. However, one important point must I think be made, namely that, while it may be useful to discuss semantic phenomena in terms of set theory and to employ Venn diagrams in order to illustrate conclusions, it makes little sense to rely upon the laws of set theory in order to justify posited derivations for English sentences. A case in point, is Lee's account of the sentence:

(39) All of the boys who left school early arrived home late.

In the....

In the deep structure for this sentence (Lee's figure 41), S_2 has the form: the boys HAVE all boys. Of this very implausible structure, he says (p.15):

> The position as far as set relationships are concerned is that we have here two equal or identical sets - the set of boys who left school early and the set who arrived home late. Yet the presence of the verb HAVE...expresses the relationship between a containing set and a subset. Now in this context it is of particular interest to note that one of the possibilities in set theory is that when set X is a subset of set Y, then set X may equal set Y. In other words, every set is a subset of itself. Thus set inclusion and set identity are not mutually exclusive concepts. In this light, S_2 seems less unsatisfactory. What we need is for the semantic component...to assign to the sentence on the basis of the presence of the quantifier all...the reading that not only is NP_y a subset of NP_x but also that $NP_y = NP_x$.

I do not, for one moment, suggest that the average English speaker finds any difficulty in assigning such an interpretation to strings of the type under discussion. What I do maintain is that such strings are foreign to natural language, just as I did with respect to strings like The boys are all (4.5.2). For the linguist who is concerned with natural language, it is, in my opinion, of doubtful value to shore up questionable derivations with unnatural sentences like Lee's S_2, even if their interpretation may easily be arrived at by appealing to the prestigious, but formal apparatus of mathematical analysis.

Chapter 5

Quantifiers in Context: Variable Rules and Semantic Tendencies

5.0 General

Perhaps because most linguists who become interested in quantifiers do so during the course of studying one or both of the formal languages of Logic and Mathematics, they tend, as the preceding chapters suggest, to approach quantification in natural languages as though they were dealing with clearly defined, stable phenomena, behaving according to strict rules and in the context of explicitly formulated principles.

This predisposition towards a formal view of the subject is, moreover, strengthened by several factors. Firstly, the cardinal numerals, especially those with fairly low values, e.g. four, and those involving a value which only just exceeds a large, 'round' number, e.g. 101, 1 000 006, do tend to be used precisely. Secondly, there are certain rules involving quantifiers which seem to operate with considerable regularity and which suggest a pleasing precision, easy to describe and amenable to apparently rigorous formulation, e.g. the alternation between some and any in affective contexts, the incorporation of neg into a preceding any to form no, and so forth. Thirdly, quantifiers themselves have the status of empty, or grammatical words, unlike nouns, or true adjectives, and tend, in consequence, to be treated, as are the conjunctions, if, and, etc., as though they are maximally constant from a semantic viewpoint.

While this attitude towards quantifiers in natural languages is not wholly misplaced - much of the material of chapters three and four has shown this - the practical linguist cannot afford to adopt it wholeheartedly. He must face the fact that, in natural languages, quantifiers tend to be used in an illogical, sometimes wildly unsystematic fashion, not only in the cases of the two logical extremes, represented, e.g. by all and nothing, but also with the so-called proportional quantifiers like many and few.

In the....

In the cases of the two extremes, it is easy to show that they are frequently employed in a non-literal sense. For example, speakers frequently say things like:

1) Everybody knows that.

when they mean simply that a reasonably large number of people are aware of the fact in question. They would certainly not regard themselves in such cases as having uttered a falsehood should it be proved that at least one human being existed who was ignorant of the matter. Similarly, the universal negative is used for a wide variety of purposes often having more to do with social considerations than regard for the truth. A lady who feels herself superior to a given group may choose, for example, to express this superiority by saying of a particular party:

2) There was nobody there.

when, in fact, many people were present - she might even go further by adding the modifier <u>literally</u> and still not regard herself as having contradicted the facts.

In the cases of the proportional quantifiers, the scope for imprecision seems to be virtually boundless. In any given discourse, the participants appear to adjust their frames of reference to suit the topic, add power to their arguments, detract from the force of other people's. This perpetual manoeuvering and manipulating of language for ends which go beyond the mere communication of facts is a matter of common observation and the freedom with which proportional quantifiers are employed is quite remarkable. For example, speakers wishing to lend force to the plausibility of a rumour may say:

3) Many, many people are saying...

when, in fact, they know of only one or two, perhaps even nobody else at all, contributing to the report. Likewise, when attempting to play down the significance of a general opinion, a speaker may well claim that it is held by only a few when he knows it to be believed by thousands. Quantifiers in short, may in fact, be among the most vigorous of hyperbolic devices which natural languages possess and the linguist who ignores this fact and treats them as though their meanings were stable and clearly circumscribed

is not really describing natural language at all. It may, of course, be claimed that the hyperbolic use of quantifiers is a matter of Performance and that linguists can safely ignore it, concerning themselves with Competence only. However, as Maclay foresaw (1971), this ostrich-like approach to the facts of language is rapidly losing favour. As Lakoff in a lecture (1973) remarked:

> It is simply inappropriate to sweep everything which is of interest under the carpet of performance.

As these prefatory remarks are intended to suggest, quantifiers, in my opinion, must be studied in terms of context - both the individual speech acts themselves and the more general contexts of situation within which they occur. The question arises: Is it possible to accommodate this variability within the framework of a system of rules, or should the linguist return to a position in which Semantics is regarded as an informal discipline whereby 'informal' is meant 'not wholly reducible to a system of rigorous rules'. In the following sections, I shall discuss two recent proposals, the second of which, in my view, is to be preferred in the present state of our knowledge concerning semantic issues surrounding quantifiers.

5.1 Variable Rules

5.1.0 The Nature of Variable rules

The notion of variable rule was first put forward by Labov (1969). Cedergren (1973, p.13) succinctly summarises the general principles involved as follows:

> Quantative studies of language use in the speech community have demonstrated regular cooccurrence patterns between language variables and features of both linguistic and extralinguistic dimensions such as style, status, age, and regional origin. To describe this phenomenon, Labov...introduced variable rules, thus replacing optional rules, in order to account for the regular patterns of covariation between the frequency of rule execution and contextual elements. For each variable rule in every environment there exists a quantity p which represents the probability of rule execution.

There are...

There are a number of basic, theoretical questions involved in the adoption of the principle of variable rules into the grammar. Three important premises upon which this adoption rests are discussed by Wolfram (1973) and the whole approach is strongly opposed in Bickerton (1973) on several grounds, including (p.26) that:

> Such rules, for all their novelty, [are]...simple data-displaying devices which mask rather than reveal the real rules involved in the generation of variable data.

As my concern is primarily semantic, and most evidence for and against variable rules so far rests upon Phonological and Morphological studies, I shall not enter into the basic dispute regarding the nature of the linguistic paradigm as a whole, although I shall, of course, be forced into making some sort of evaluative judgement when I discuss the extension of the notion into Semantics itself.

5.1.0.1 Labov's rule for Copula Contraction

As an example of a typical variable rule, I shall here give Labov's original formulation of the copula contraction rule along with a refined version of it proposed by Cedergren and Sankoff (1974) (the numbering is theirs). The motivation for their refinement is based upon an arithmetical consideration, namely the need to calculate probabilities by multiplication rather than addition and is discussed in detail in Cedergren and Sankoff (1974, p.336ff). The formulations are as follows.

$$(25)\quad \begin{bmatrix} +\text{voc} \\ -\text{str} \\ +\text{cen} \end{bmatrix} \rightarrow (0) \,/\, \begin{bmatrix} *\text{pro} \\ \alpha\text{V} \end{bmatrix} \#\# \begin{bmatrix} \overline{\quad} \\ +\text{T} \end{bmatrix} \begin{matrix} \text{C}_0^1 \\ [*\text{nas}] \end{matrix} \#\# \begin{bmatrix} \alpha\text{Vb} \\ \beta\text{gn} \\ -\gamma\text{NP} \end{bmatrix}$$

$$(27)\quad \begin{bmatrix} +\text{voc} \\ -\text{str} \\ +\text{cen} \end{bmatrix} \longrightarrow \langle 0 \rangle \,/\, \begin{matrix} \langle \text{Pro} \rangle \\ \langle [-\text{cns}] \rangle \end{matrix} \#\# \begin{bmatrix} \overline{\quad} \\ +\text{T} \end{bmatrix} \begin{matrix} \text{C}_0^1 \\ [*+\text{nas}] \end{matrix} \#\# \left\langle \begin{matrix} \text{Vb} \\ \text{gn} \\ \text{NP} \\ \text{PA-Loc} \end{matrix} \right\rangle$$

The information....

The information represented by these rules is based upon tables which display the probability of rule-application in the stated environments. The rule itself has a probability input P_o, where P_o is an input probability independent of context (Cedergren 1973, p.14). It is important to stress that the general input quantity p is calculated in terms of extralinguistic as well as linguistic factors. Cedergren (1973, pp. 13-14) proposes:

> As a working hypothesis, it has been proposed...that it is a universal tendency for p to be in the form of:
>
> $$p = 1 - (1 - P_o)(1 - \alpha)(1 - \beta)...(1 - \omega)$$
>
> ...Note, that we incorporate social and stylistic constraints into this hypothesis in the same way as linguistic factors, thereby permitting the comparison of linguistic and nonlinguistic constraints.

Given this definition of P_o, the summary of information reflected in the given rule (25) which Cedergren and Sankoff provide (1974, p.351) is self-explanatory:

Input probability $p_o = 0.25$.

Preceding NP:	Pro___	Other NP___		
Effect:	0.86	0		
Preceding segment:	[+cns]__	[-cns]__		
Effect:	0	0.65		
Following environment:	__NP	__PA-Loc	__Vb	__gn
Effect:	0.16	0	0.49	0.89

5.1.1 Variable rules in Semantics

As Cedergren observes (1973, p.13):

> Phonology has provided the first testing ground for theories of linguistic variability partly due to the possibility of constructing data sets large enough for simultaneous analysis along many dimensions of variation.

In his paper (1973), Labov attempts to employ the same approach to the analysis of a semantic problem, namely, the denotation of the item cup and certain other items referring to containers: mug, bowl and vase. On page 342, Labov observes, concerning the

traditional....

traditional method of definition:

> ...behind all of the theories of linguistic structure that have been presented in the twentieth century there is a common set of assumptions about the nature of structural units [including words].

Among the members of this set, Labov includes the assumption that items are 'conjunctively defined' (p.342):

> By 'conjunctively defined' [is meant] that there is a set of properties associated with the unit which are in some way criterial or necessary, essential as opposed to other properties which are unnecessary, accidental, or redundant, and that all of these essential properties must be present for the category [referent] to be recognised.

Labov does not, in fact, reject the categorical view of language, but rather wishes to pass beyond it to the study of areas of linguistic activity which are not clearly discrete (p.343):

> ...Instead of taking as problematic the existence of categories, we can turn to the nature of boundaries between them. As linguistics then becomes a form of boundary theory rather than a category theory, we discover that not all linguistic material fits the categorical view: there is greater or lesser success in imposing categories upon the continuous substratum of reality...

To formalise the degree of inherent variability in denotation, Labov (p.347) asserts:

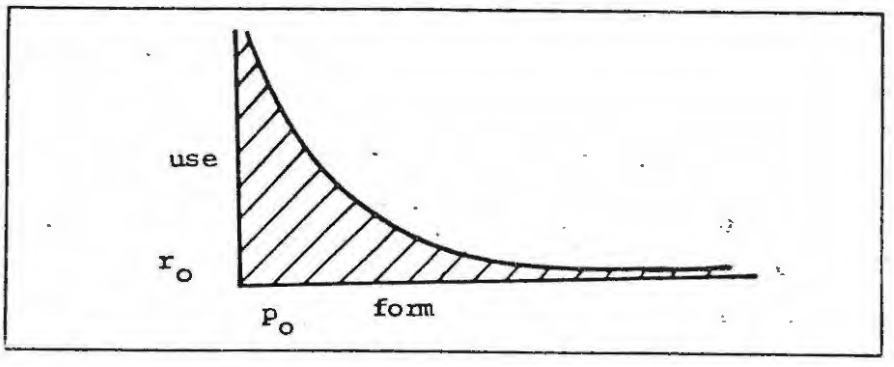
> ...we will have to reject in particular...the notion that categories are to be defined conjunctively through their distinctive features. These distinctive features or essential attributes are the working apparatus of the scholastic tradition which has dominated almost every school of linguistic thought until recently, and our pursuit of a secular mode of inquiry will inevitably bring us into conflict with that tradition...

Labov's....

Labov's conflict with 'the Scholastic tradition' is, in the event, a matter of degree rather than total rejection. He does not wish to assert that there are literally no essential conditions governing the applicability of items like cup, but rather that the same set of essential conditions apply to various items, while with respect to others, there is a uniform relation between their significance in the process of denotation and the situational context involved. Thus, for example, concavity is an essential condition for the application of cup as well as mug, bowl and vase. Labov writes (p.361):

> ...if there is no outer limit of shape or function which limits the use of cup, then we would have a hyperbolic model such as figure (14). Here there are no outer limits. [P_o = form, r_o = function]

FIGURE 14. Hyperbolic model for relations between two conditions for denotation.



Clearly, a model like Labov's figure (14) is of no value whatever in the representation of denotation. Even in the case of the so-called empty words like and, there are limitations on usages.

In the course of his argument, Labov presents an impressive array of data showing that speakers select the item cup in preference to, for example, vase, within the framework of four contextual situations: neutral (the speakers were asked simply to identify drawings); coffee; foodstuff and flower (in the last three, objects were named according to their contents). These show that, in the case of many cup-like objects, there is a more-or-less regular variability in lexical selection which can be predicted according to such parameters as form, i.e. ratio of width over depth, and function.

In spite....

In spite of the evidence provided by his tables, however, Labov does not attempt to formulate a specific variable rule of the sort proposed for the phonological/morphological problems discussed in his original work. I presume that this omission was deliberate, the question of inherent variability being the central concern of his paper. However, such rules could, presumably, be formulated if the symbol to the left of the arrow consisted of a construct of the categorical features and the relevant environments were displayed in a sequence corresponding to their selectional significance, e.g. containing flowers might take precedence over containing liquid. Such a rule would have the usual probability input p_o calculated on the basis of the data available.

While I find Labov's contention that the lexical items he considers are selected according to the general principle of variability wholly convincing and his statistical evidence to the effect that this variability is 'quantifiable' extremely plausible, I feel that the whole theory would have been better tested had he concentrated his attention upon items which are not so easily identified as cups and vases. It would, for instance, have been very interesting to see whether variable rules could be formulated for tree and bush (Labov provides an interesting, but preliminary discussion of some relevant hyponyms, white pine and yellow pine), or for such abstract nouns as honour, courage and truth. One cannot help suspecting that had such items been investigated, the extralinguistic factors entering into the quantification of the probability of denotation would have proved too numerous and ill-defined to be handled. I owe this observation in part to detailed private discussion of the issue with Professor L.W. Lanham, though he is not, of course, responsible for its formulation.

As far as the study of quantifiers is concerned, the only attempt with which I am familiar to apply the notion of variability as developed by Labov are those of Carden (1973) and Labov (1970). They are concerned, however, with the problem of the relation between quantifier and negative in strings like:

1) All the boys didn't arrive.
2) All the circles don't have dots in them.

The particular difficulty which arises in respect of such

sentences is....

sentences is whether the quantifier has not in its scope or vice versa. Carden found, using 40 informants, with respect to (1) that (p.171):

> ...we find a continuum of informant reactions: starting with informants for whom (1) has two equally strong readings [some of the boys didn't arrive/all of the boys failed to arrive], we find informants for whom one reading is progressively stronger until at last we find informants for whom only one reading [all the boys failed to arrive] is possible.

The importance of this observation for semantic theory in general is that it suggests the necessity of departing from the view that all possible readings of a given string are equally strong. As Carden says (p.172):

> The continuum of favored readings seems to require a model [for Semantics] in which the probability of a given reading can vary continuously;...While it will clearly be a major job to develop an appropriate mechanism, it seems reasonable to hope that Labov's notion of variable rule could be applied in semantics to handle the favored-reading data...

In addition to this variable mechanism, Carden claims that the theory will need a number of categorical rules in order to handle what he calls 'switch dialects', that is, dialects in which (1) has a reading in context which is different from that which it has in isolation.

Proposals of this kind, interesting though they may be, are far too tentative, at the time of writing, to be taken very seriously, in my view. Inherent variability, as I have suggested, is one of the most striking features of natural language quantifiers, with the exception of certain cardinal numbers and the two extremes when the latter are used literally. However, Carden's concern is with the familiar, well worn problem of relations holding between logical elements in sentences, rather than with the meanings of the individual items concerned. Before we can reach any meaningful conclusion about such problems, I believe that we shall have to get down to the fundamental task of examining the meanings of the items - of the separate

quantifiers and I cannot, at this stage, see how this is to be done using Labov's apparatus in its statistical entirety, a doubt with which C-J Bailey, in personal discussion, has expressed full sympathy.

5.2 Semantic Tendencies

Since, at the time of writing, it does not look as though Labov's variable rules provide a satisfactory tool for analysing the semantics of quantifiers, I shall, for the remainder of this essay, assume that the semantist's findings are, for the most part, to be taken as reflections of 'semantic tendencies', rather than as expressions of categorical rules.

The notion of 'semantic tendency' is described and justified in several papers by W. Haas, e.g. (1975 and 1973a). He writes (1973a,p.140):

> The empirical test of rule-status seems fairly simple: any proposed grammatical rule ... is ultimately validated or invalidated by acceptability-judgments. The rule is valid if conforming utterances are acceptable, and non-conforming utterances are not; or at any rate, if any conforming utterance is more acceptable than any non-conforming one. 'Acceptable' is a primitive notion defined in terms of native speakers' responses to an utterance: we ask them whether they can think of appropriate contexts in which the utterance would make sense; if so, then the utterance is considered 'acceptable' ... otherwise 'unacceptable'.

He continues (pp.143-144):

> If we do not want our grammar to prohibit jokes, irony, metaphor, special emphasis, and, indeed, poetry and metaphysics: we shall have to allow it to generate such deviant sentences [as: "The toothache is mine"; "The sorrow is mine"].

Crucial to Haas's argument is the notion of 'degrees of normality'. Thus, he says (p.144):

> Acceptable....

> Acceptable sentences admit of varying degrees of normality; ... We shall say, then, that there are two kinds of deviant sentence: (i) those which are not curable by context alone [e.g. "John met"] ... and (ii) those which are so curable, i.e. capable of being made acceptable by mere contextualisation. Grammatical rules should exclude the first, but admit the second.

It is important to note that the grammar will describe many sentences as 'acceptable' which are extremely unlikely, while, at the same time, labelling others as 'unacceptable' which are quite likely. Haas writes (pp.145-146):

> Among the utterances generated by the rule, indefinitely many are less normal [e.g. The butterfly is eating up the horse] than utterances excluded by it [e.g. War is eating up the Vietnamese].

It might, of course, be argued that what is required is a finer specification of selectional restrictions. However, as Haas points out (1973a, p.146):

> But when such specification is attempted, we find that it would require us to refer to the specific meanings of all the words that the rule might apply to. These specifications we should accumulate in this way would amount to a description of the universe: so as to exclude "butterflies eating horses", but perhaps admit "horse-flies" eating them; ... such endless specification, even if it were feasible, could obviously not be part of a system of rules, grammatical or semantic, without destroying the very notion of rule.

Thus, when we say of a given verb, e.g. eat, that it has an animate subject, as Haas puts it (p.146):

> This is not to state a rule; it is to state what happens "as a rule": which implies that there is no rule about it. We are here concerned with something akin to probability-statements; though, since we have to rely on judgments of acceptability and of comparative normality rather than on statistical measures, we might refer to

habits and....

> habits and tendencies, rather than probabilities. That norm, then, which has been mis-stated as a rule, is in fact a tendency ...

It is not, I should stress, the case that either Haas or Labov suggest that total licence is permitted. Haas writes (1973a, p.148):

> It has often been said that meaning implies choice; and to interpret meanings in terms of tendencies is to make the same point. We should only add that the choice is not arbitrary: in operating upon interacting tendencies, our expression of meanings is subject to very definite structural 'restraints'.

Obviously, in order to be understood, a speaker must encode in such a way that the hearer will be able to decode - there must be a common agreement as to the possible applicability of a given item or sentence. Thus, for example, unless he wishes deliberately to deceive, or convey some such impression as sarcasm, the speaker will not use the quantifier all in:

1) All politicians are dishonest.

if he holds the view that:

2) There is no such thing as a dishonest politician.

The range of possible variability is, in other words, restricted. Labov (1973, p.351), describes the conditions for denotation as follows:

> ... We do find many ... cases of simple yes-no conditions, such as whether a tree has cones or not. But we more commonly encounter dimensions which require us to establish criterial values to complete our definition.

Applying this observation to the definition of quantifiers, we would say, for example, that many denotes only if the set which it qualifies contains some members (presumably the number of such members is conceptually fixed as above some minimum, e.g. three or four). This requirement is, in Labov's terminology, a 'yes-no condition'. On the other hand, given that many is meaningful in a given context, its interpretation will obviously depend upon a

host of conditions. For example, as McCawley (1967) observes, the word many has a different value when applied to spectators at a sports meeting than when it is used of the membership of a cocktail party (a parallel observation, though using a different example, was made by Sapir (1944-49)). The difficult question, in my opinion, is whether the upper limit upon the membership of the set concerned is set for such quantifiers. Clearly, in those registers, e.g. scientific, and situations when all is used literally, the upper limit is clearly defined, being identical with the lower - as a logician might say:

3) All_x is true if and only if it is not the case that there exists one y such that y = x and y is false.

In the case of items like many, on the other hand, I am not certain whether its use is appropriate if literally all members of the set are involved. In other words, if we say:

4) Many priests have shallow minds.

do we, thereby imply that some priests do not have shallow minds? I shall return to this question of absolute versus relative size, when I discuss proportional quantification in terms of Sapir's analysis of grading (Ch. 6). For the moment, I shall simply claim without further discussion, that (4) does, in fact, have the implication suggested and that, therefore, there is an upper limit to the membership of the set qualified by many in cases like (4), this limit being below the total potential membership of the set. To put it another way, many in sentences like (4) implies that the set which it qualifies is a subset. That an upper limit is necessary on other proportional quantifiers, e.g. few, seems to be fairly clear.

Taking, at least provisionally, the above argument to be correct, we can say that quantifiers denote according to the stipulations of Labov's formula (7) (p.351), namely:

7) L(x) if C^q_p and D^s_r and E^u_t ...
Where L does not denote if the value of C is less than p or greater than q, etc.

Labov does,...

Labov does, in fact, reject (7) in order to accommodate the statistical calculation of probability to which I have already referred. However, as I have said, I do not believe that precision is possible in the case of semantic questions. An important feature of (7) is that it acknowledges the fact that the range of variability is limited. If (7) were adopted as a working hypothesis, we could then say of a given quantifier, that it has the semantic tendency to fluctuate between p and q, that it tends more towards q than to p, and so forth. Although, as Sapir's paper on grading (1944-49) shows, when considering properties, in that area at least, a far more sophisticated analysis of tendencies is required than (7) allows for. The really important point to bear in mind is that, in English, apart from the subminimal conditions referred to, we can only say of quantifiers that they <u>tend</u> to be interpreted in such and such a way, this notion of semantic tendency or inherent variability being a necessary property of natural languages.

Chapter 6

The Quantification of Objects Conceptualised as Things

6.0 General

I have included the broad qualification "conceptualised as things" in the title of this chapter as an indication that I do not intend to enter upon the philosophical question of the nature of EXISTENCE. It is possible to regard such phenomena as places, times and even properties as objects of special kinds and it is certainly true that such phenomena are quantifiable and I shall occasionally touch upon the quantification of time and place here. I do not think, however, that it would materially add to the value of this essay were I to embark upon a discussion of the fundamental problem of ontology - presuming that I felt capable of saying anything about the matter which was worth while.

I should, nevertheless, state at the outset that I include ⌊-concrete⌋ phenomena like ideas and rules within the category of things as well as ⌊+concrete⌋ objects such as chairs, men and books. This may, I realise, be metaphysically questionable. We may wish, for example, to say that it is an essential characteristic of a thing that it undergo change and it may be that in some ⌊-concrete⌋ objects, e.g. rules, this property is absent - a given rule does not, perhaps, change, but is rather replaced by another. However, my taxonomy is a matter of simple, linguistic expedience and I do not intend, by employing it, to make any claims of a philosophical nature.

Since I have, while discussing the work of other linguists, already advanced my own views on many issues surrounding quantification in English, I shall, as far as possible, avoid their repetition in this chapter. I shall, in consequence, treat items like no, nothing, etc. as lexical items in their own right without discussing their possible derivation from combinations of neg and some quantifier, e.g. any. Furthermore, my discussion of mixed quantification will be limited to those problems which necessarily

arise in....

arise in the analysis of the items the, a/an and ø.

My approach in this essay has been eclectic and while this chapter may have more claim to originality than those which have gone before, I shall continue to draw upon the work of established scholars as I proceed. I shall appeal, for example, to the work of Bolinger (1960) and Sapir (1944-49) in my discussion of logical and proportional quantifiers, in both of which fields their studies must be acknowledged as central.

6.1 Overt quantifiers and implicit quantification

Objects may be quantified either overtly with quantifying words, or implicitly by context, general or contained within the sentence concerned. By way of illustration, the following are all quantified with respect to the underlined NPs they contain, but only the first four are overtly so.

1) All horses are dangerous.
2) Every horse is dangerous.
3) I have read all Shakespeare's sonnets.
4) I have read every Shakespeare sonnet.
5) Horses are dangerous.
6) The horse is a dangerous animal.
7) A horse is a dangerous animal.
8) I like Shakespeare's sonnets.
9) I like the Shakespearian sonnets.
10) I like a Shakespearian sonnet.

It will be immediately apparent that in the above examples, those in which the underlined NP contains an article the or a, are, in fact, ambiguous between universal and particular readings. It may, thus appear, that the items the and a/an are, in fact, overt, ambiguous quantifiers. There is certainly no prima face reason why ambiguity should disqualify them from that status, as is demonstrated by the patent ambiguity of any - an undisputed overt quantifier - in:

11) Any book will suit me.
12) Are there any toffees in the tin?

However,...

However, in this essay, I shall not treat them as quantifiers in their own right. I have, in fact, attempted in previous drafts, to handle the, a/an and Ø as quantifiers proper and it is certainly true that a/an at least, by reason of its etymology (Old English ān = one) if nothing else, frequently functions as a quantifier equivalent to the cardinal one. However, the taxonymy which resulted was so cumbersome, requiring as it did, two separate entries for each item, one corresponding to the universal and another to the particular quantification, that I felt obliged to abandon it. There were, moreover, a number of other difficulties which arose and which could not readily be explained, for instance, the fact that all overt quantifiers can occur in the configuration quantifier+of+NP, e.g. many of the sheep. (In the cases of all and both, the preposition of is deletable when the following NP contains the: all/both the sheep, an option not open to the other quantifiers - I shall return to this later.) However, we cannot employ the, a/an or Ø in such configurations, as is seen by the unacceptability of: *the of the sheep, *a of the sheep and *Ø of the sheep. In spite of such difficulties, however, I remain convinced that the semantic function of the articles and 'zero article' is intimately related to that of quantifiers and I shall attempt to sketch the basic nature of this relationship later in this chapter.

6.2 Overt Quantifiers

It will be convenient to divide the overt quantifiers into two main classes, namely logical quantifiers and proportional quantifiers. This division, very well established in the literature, see for example, Fowler (1971, ch. 6), reflects a basic difference between the interests of formal Logic on the one hand and the needs of daily discourse couched in natural language on the other. Formal Logic, ignoring Mathematical Logic, is usually concerned with three instances of quantification only: the upper extreme, e.g. all, the lower extreme, represented, e.g. by nothing, and the existence of at least one member of any given set - when using English to illustrate this so-called 'existential' quantification, logicians usually employ some. In natural language, on the other hand, speakers find it necessary to make reference to judgments

of "more" and "less" (I have borrowed this terminology from Sapir (1944-9)). Thus, they need a system of proportional quantifiers like many, few, a large number, a little, etc., as well as the whole gamut of cardinal numbers, in order to encode these judgements.

In my discussion of the overt quantifiers, I shall for convenience, keep these two types apart, the only qualification being that certain items, e.g. whole, entire which might perhaps be thought of as belonging to either variety will be treated as logical.

6.3 Restriction

It will be evident that overt quantifiers, logical and proportional, may be used in either of two ways: in combination with thing (and rarely object or entity), where the head noun has maximal extension; e.g.:

1) Everything exists.
2) Something happened.
3) Many things are surprising.

or their scope may be 'restricted', as Quine puts it, by using a head noun with particular application, i.e. a noun whose extension is not maximal, as in:

4) Every octopus is a fish.
5) Some books bore me.
6) Many Russians are religious.

Restriction is not, of course, limited to heads denoting objects only. Time and place nouns are similarly treated quite regularly. The following examples are typical:

7) Every day, the dean prays to become a bishop.
8) On some afternoons, the admiral leaves the wardroom.
9) On many occasions, the troops were forced back.
10) The rabbits are everywhere.
11) Some parts of the country have experienced a drought.
12) Many areas are without water.

It is very important that, in considering the restriction of quantifiers, the historical accident by which certain combinations

with thing, body, where, etc. forming a single word should not be allowed to obscure the fact that these combinations nevertheless consist of two parts, a quantifier and a head, just as do those in which the quantifier and head are written as two separate items. Thus, it is incorrect to refer, as do many writers to items like something, somebody, everywhere, etc. as 'quantifiers' rather than as combinations of quantifier and head. This is not a matter of mere pedantry, as will become evident if one considers the fact that only certain quantifiers and heads may be fused in this way.

As far as the heads in question are concerned, they appear either to have a very general application, e.g. thing, time, where, or to be general terms referring to human beings, one and body.

According to modern orthographical practice, the distinction between fused and separated combinations is, of course, important from an interpretive point of view. Sometimes, for example, means occasionally, as in:

13) The bishop sometimes boils eggs.

and some times means something like at certain times, as in:

14) There were some times when I found her impossible.

The same distinction generally holds also for something and some thing(s). That this distinction is, however, of fairly recent origin is seen by an examination of the relevant entries in the OED and supported by the assertion there made under sometime that:

> Down to the 16th c. [sometime was] written either as one word or as two; even in later use the distinction between sometime and some time is not always clear.

A point of considerable importance and interest is that the plural form times may only occur fused with some, as in (15), while the plural things occurs only in separate combination with some, any, or the proportional quantifiers, e.g. many, as in:

15) She left some things in the bathroom.

16) Any things that are left will be confiscated.

17) Many things were left undone.

It is, incidentally, worth noting that while sentences like (16) are relatively rare, any occurs quite frequently with things when

that head is part of the configuration of the things, as in:

18) I didn't believe any of the things he said.

It should also be noted here that the general heads referring to humans, one and body cannot assume plural forms with quantifiers, either fused or written separately, without producing in the first case an ungrammatical string, e.g.:

19) *someones were at the party.

and in the second a string in which bodies refers to corpses, as in:

20) Some bodies were in the garden.

This does not, of course, mean that the plural form bodies can never be used to refer to human beings. Such use is common when body combines with such items as no and busy, as in:

21) The room was full of nobodies.

22) The village is full of busybodies.

In certain dialects, moreover, e.g. Scottish, body may occur in isolation with the required sense, as in:

23) Once a body met a body coming through the rye. (Burns)

As far as the universal quantifiers every, each and all are concerned, only the first may be fused with thing, as in:

24) Everything went wrong.

and, as in the case of some, the practice of writing every and thing separately narrows the application of thing to some particular objects, as in:

25) Every thing he owned was lost, but he kept his reputation.

It is important to note that every cannot be used with the plural thing, as is seen by:

26) *Every things are going wrong.

The significance of this restriction obviously lies in the meaning of every and I shall return to it below when I embark upon a detailed discussion of the meanings of the overt quantifiers individually. For the moment, it suffices to note that while things cannot occur with every, the plural form is obligatory with all

and both, as is seen by the grammaticality of (27-28) compared to (29-30).

27) All things have position in space.
28) Both things came together at once.
29) *All thing has position in space.
30) *Both thing came together at once.

Each, on the other hand, may be used with singular thing or its plural form, provided only that in the latter case, it be combined with of and the determiner the, or some other restricting item such as his. Thus, of the three strings below, only (33) is unacceptable.

31) Each thing I say sounds wrong.
32) Each of the things he bought was a waste of money.
33) *Each things he bought were a waste of money.

Again it is obvious that the question of plurality has to do with the meaning of the quantifier and I shall return to it below.

As far as the proportional quantifiers are concerned, it seems that the question of their combination with thing in the singular and plural form depends upon the presence of of and a definite determiner, e.g. the, as is seen by the following array of acceptable and odd strings.

34) Few things worry Amin.
35) *Few thing worry Amin.
36) Many things worry me.
37) Many of the things Amin says worry me.
38) Few of the things Amin says worry me.
39) *Many thing have happened.
40) *Much of the things he most wanted were beyond him.
41) *Much of the thing he most wanted was beyond him.
42) *Much thing went wrong.

Obviously, there is considerable semantic complexity behind these facts and I shall return to it later. One thing is clear enough to be stated at this early stage, however: no proportional quantifier may be fused with thing - the quantifier and head must always be written separately.

One very....

One very important fact about the restriction of quantifiers made by Quine (1941-66) is that the restriction may be implicit. Thus, in many of the examples so far given, it will be clear that the application of thing and thus the scope of the quantifier, is restricted by the general context both of the sentence and the situation in which it could be used. Quine's own example is:

43) Everything came by post.

where everything obviously is not to be taken literally.

The degree to which the speaker may rely upon the general context for interpreting implicit restriction of a quantifier obviously varies from case to case, the context of situation being frequently crucial. Thus, (44) is clearly ambiguous.

44) There was nothing in the newspaper.

This string could have either of the following interpretations and perhaps more besides.

45) The newspaper contained no interesting information.

46) The package, consisting of newspaper, was empty.

Although implicit restriction is most common when a quantifier is combined with the head thing, it is sometimes to be found when no head at all is present in the surface string, as in:

47) All has been lost.

Such headless restriction seems to be most frequent when the reference is to objects which can be more-or-less identified by the predication, e.g. speak, bark and grow, as in:

48) Some said ... (obviously only people in speech or writing).

49) Some barked (only barking creatures, e.g. dogs).

50) Some grew quickly (animals, people, plants, ...).

At this stage, I shall simply note the fact that every can never be used without a head, as can the other overt quantifiers. The following is not an English sentence:

51) *Every came by post.

In this brief discussion, I have confined my remarks concerning restriction by implication to the quantification of objects.

It is,...

It is, however, obvious enough that such restriction is also to be found in the quantification of time and place. Quine (1941-66) provides an excellent example of the implicit restriction of a time-quantifier, namely:

52) Thia always eats with chopsticks.

As Quine observes, this string cannot be symbolised as (53) (in both translations I shall, for convenience, give the familiar Peano Russell equivalent):

53) a) $\sim(\exists x)$ (x is a time. Thia eats with chopsticks at x).

b) (x) (Time x $\supset$ Thia eats with chopsticks at x).

verbalised as:

54) It is false that there exists any time at which it is untrue to say that Thia is eating with chopsticks at that time.

but must be translated into symbols as follows:

55) a) $\sim(\exists x)$ (x is a time $\cdot$ Thia eats at x $\cdot \sim$ Thia eats with chopsticks at x).

b) (x) ((Time x $\cdot$ Thia eat at x) $\supset$ Thia eat with chopsticks at x).

paraphrasable as:

56) Whenever Thia eats, he eats with chopsticks.

Presumably, however, although implicit restriction of time-quantification is very common, it applies to universal quantification only, not to the existential. Thus, (57) means literally what it says and the symbolisation (58) is correct.

57) Trevor sometimes wears a riding-cap.

58) $(\exists x)$ (x is a time $\cdot$ Trevors wears a riding-cap at x).

The only ambiguity arising from (57) is created by the impossibility of saying for certain whether the times falling within the scope of <u>sometimes</u> are restricted to occasions upon which Trevor is in the act of riding - i.e. there are some occasions upon which Trevor is riding and on those occasions he wears a riding-cap - or whether it means that at some of the times at which Trevor is

riding, he....

riding, he wears a riding-cap, at others, not (the possible interpretation in which neither the times of riding, nor those of wearing the cap coincide, e.g. when Trevor is in the bath, seems too obvious to require discussion).

It will be apparent that the ambiguity of (57) is heavily dependant upon the predication itself. It is a simple matter to find other predications which do not allow for such ambiguity, e.g.

59) Trevor sometimes has a haircut.

Here, there can be no question as to the scope of sometimes other than the uninteresting matter of frequency and the symbolisation (60) is basically correct.

60) $(\exists x)$ (Time x • Trevor has a haircut at x).

Just as the universal always is often restricted by implication, so too is its antonym never. This is clear from the following which can scarcely be interpreted literally.

61) Paul never makes a mistake.

Except under the most unusual circumstances, never in (61) is interpreted as applying to some field of activity the boundaries of which are fairly specific, e.g. playing the piano, drawing branching trees and so forth, or it is interpreted generally - in most things Paul does.

Place quantification is similarly restrictable by implication, especially when it is universal, in fact, universal place-quantification by, e.g. everywhere seems seldom to be literal. Thus, in (62) the scope of everywhere is obviously restricted by the predicate to a fairly narrow spatial area.

62) I have looked everywhere for my cigar case.

It is to be noted that implicit restriction of this kind is not necessarily the same thing as the hyperbolic use of quantifiers mentioned in the previous chapter. In uttering (62), the speaker may well not be exaggerating at all, he simply assumes that his hearer will supply the restriction through the context.

Finally, it should be noted that, while the quantification of properties is usually explicit, as in:

63) The....

63) The Martian was completely green.

it is possible, in this area too, to have restriction by implication, especially in face-to-face discourse, when the general context, either linguistic, or situational, or both is sufficient to make the restriction clear. Thus, the scope of something in (64) may be restricted to such matters as physical attraction, mental agility, etc.

64) Marlene Dietrich had something.

6.4 Implicit quantification

6.4.0 General

There are two important facts which must be stated as preliminaries to a discussion of implicit quantification. First, ignoring special cases, e.g. surprise-questions such as:

1) Did it RAIN? You can say that again.

it will be evident that quantification of this type cannot be proportional. Thus, (2-4) below are logically quantified:

2) Rats are rodents.

3) The rat is a rodent.

4) A rat is a rodent.

Secondly, it will be apparent that all three determiners, the, a/an and Ø may be involved in either universal or particular quantification. In many instances, the context makes it clear whether the reference is to a whole set, i.e. universal class, or to a particular subgroup. Thus, (2) above is clearly universal, as are:

5) The English are subjects of Elizabeth II.

6) An elephant is a pachyderm.

Similarly, the following are unambiguously particular:

7) Men came and spoke to my father.

8) The bottle was broken.

9) An apple struck Newton on the head.

However, cases may be found in which either the universal or the particular interpretation is possible, although there will usually be a tendency to favour one above the other. The following are typical:

10) Chariots drove through the streets.

11) The guitar has become popular.

12) A pine tree grows well on a mountain slope.

In what follows, I shall employ subscripts to distinguish between the two uses, whenever this is necessary, "$_1$" for universal quantification and "$_2$" for the particular variety.

6.4.1 Implied universal quantification: the$_1$, a/an$_1$ and $\emptyset_1$.

Among typical examples, I shall discuss the following:

1) A rat is a rodent.

2) The rat is a rodent.

3) Rats are rodents.

4) Water is life giving.

Considering (1), it is evident that the universality of a rat is entirely dependent upon the predication: is a rodent (I shall return to the predication of class membership below). Chafe (1970) describes certain verbs as "generic" (having reference to all the members of a class), e.g. like in:

5) An elephant likes peanuts.

In other cases, Chafe claims the verb is "non-generic" (not predicated of entire classes), as in:

6) An elephant stepped on my car.

If we compare the so-called "generic" cases with the following pair, two important facts emerge:

7) The rat was a rodent.

8) An elephant steps on cars.

First, it is plain that be may have generic status in both past and present tenses, although there is much more to the question than this. Secondly, we see that Chafe's assignment of "non-generic" status to stepped on is based upon an intricate relation between past tense and the patient NP my car. The mere physical impossibility of every elephant at a point in past time stepping onto the car of a single individual is, of course, enough to make stepped on my car impose a "non-generic" status upon the agent NP an elephant. To Chafe, the verb is "central" to the semantic structure of the sentence and other elements, e.g. agent and patient are, in some sense never really explained, secondary, with the

patient....

patient occupying a conceptual position closer to the verb than the agent.

I shall not go further into the question of the centrality of the verb here, because I am not fully convinced that it is basic to the problem in hand. However, I think it is obvious that whether the subject NP is afforded universal status or not depends upon the nature of Chafe's so-called 'patient' (when there is one), the tense of the verb and many other factors regarding the predication in question.

If we consider first the question of patients, it is obvious that the physical nature of many is such as to make it impossible for them to act in that role to the total membership of a class of potential agents, presuming that membership to be relatively large - my car is a typical example. However, other potential patients do not fall into this category, for instance, fish in:

9) A dodo eats fish.

Taking another example, from Jackendoff (1971), namely:

10) A beaver builds dams.

it is evident that one feature both patients share is plurality. However, this feature is not essential, as is seen by:

11) A beaver builds a dam.

or:

12) A vulture loves a chicken.

I shall return to the question of tense, so important in cases like (11) in a moment. From the examples so far considered, it appears that a patient in a universally quantified string is usually not specific, where by 'specific' I mean having reference to one single, unique individual. Thus, Chafe's my car, does not qualify, nor do proper nouns, as in:

13) A vulture loves Janus. (i.e. 'Any vulture loves Janus'.)

It must, however, be stressed that exceptions do occur, so that this claim must be taken to refer to a tendency and not a strict rule. Such an exception might be:

14) A mosquito loves Percival.

and, when....

and, when pronouns are involved, the exceptions seem to be more frequent, as in:

15) A mosquito loves me.

It is important that I should emphasise that by using the term 'specific', I do not exclude patients determined by the, since universal propositions like (16) are quite common.

16) A bat preys upon the mosquito.

Even so, it seems to be more usual to use the in the patient, when the also appears in the agent, as in:

17) The bat preys upon the mosquito.

It is also important to note that the patient in such sentences does not have to have universal reference in the literal sense. This is particularly clear in the case of (11) where a dam cannot possibly refer to all dams. Obviously, the total meaning of the sentence is involved. Although fish in (9) can be taken loosely to refer to any fish, that cannot be its literal reference since only certain kinds of fish would have been both available and palatable to the dodo. On the other hand, a chicken in:

18) A vulture loves a chicken.

can be taken literally to mean any chicken since vultures are, as far as I know, quite uninhibited with respect to what breed, age, sex, etc. of chicken they are prepared to devour.

We seem to reach firmer ground when we consider the tense of the verb. Generally speaking, the tense is simple present. Thus, while (19) is interpretable as a universal statement, (20) and (21) are not.

19) A beaver builds dams.

20) A beaver is building a dam.

21) A beaver built a dam.

There are at least two important situations in which the above claim does not hold. The first and most obvious is to be seen in cases like (22) where the entire membership of the class acting as agent no longer exists.

22) A dodo lived on fish.

Of such....

Of such a class, we cannot, in fact, use present tense at all, save in special circumstances, most of which involve the verb be as:

23) A dodo is no longer to be found.

The second case in which past tense may be employed is that in which, while potential agents continue to exist, circumstances are such that they are no longer capable of performing the action in question. Such an example is provided by:

24) A sailor was fond of a dodo's egg.

In those cases where the NPs do not fulfil the roles of agent and patient, but rather refer to class membership, as in:

25) A rat is a rodent.

the general semantic issues seem to be clearer, presumably because of the fact that class membership is assertable of any object whatsoever. There are, however, even here, one or two problem areas. For example, when the verb become is employed, indicating a change from one state or class into another state or class, we do not seem to interpret given examples as particular unless some qualification, usually referring to time, is added. Thus, (26) tends to be read as having particular reference, while (27) may be universal.

26) A legionary became a centurion.

27) A legionary became a centurion when ...

in such examples, the tense of the verb may have implications with respect to time quantification, especially if the subject is taken as having particular reference. Thus, becomes in (28) suggests that the subject enters the class of detectives from time to time, unless, of course, the string is taken as a stage direction or headline.

28) Walingham becomes a detective.

Another interesting problem connected with class membership is that, if different determiners are employed in the same string, then the first only may be definite. Thus, (29) is regular, but (30) is not.

29) The....

29) The dodo is a bird.

30) *A_1 dodo is the bird.

As far as I can tell, (30) is only interpretable as a case of particular quantification. For the moment it suffices to note that this is yet another tendency not a rule. The following is, perhaps, universal:

31) A_1 duck is the dish for me.

A typical example of <u>the</u> is seen in (2), repeated here as (32):

32) The rat is a rodent.

One of the first things arising from a comparison of (32) with the semantically equivalent string in which the indefinite article is used - <u>a rat is</u> ... is that the former is more obviously ambiguous than is the latter. Taking into account the normal function of <u>the</u> as marking given information, I imagine that part of the explanation behind the clear ambiguity as between universal and particular interpretations of sentences like (32) has to do with the types of context in which they may be used. Obviously, in many contexts of situation, the physical proximity of the object being referred to and the hearer's awareness of its presence through sight, hearing, etc., is sufficient to provide the identification required. Thus, it must frequently happen that situations favouring the particular interpretation of sentences like (32) will arise. The interlocutors may, for instance, be viewing a cage enclosing a variety of animals and (32) represents a comment upon one of them. The same situation is not likely as a setting for the string with <u>A_1 rat</u> ... because the implication would then be that there was more than one rat present and that not all of them, perhaps even one only, was a rodent.

Sentences with <u>a</u> which are ambiguous in this way seem to be more common when the predicate's applicability to any particular individual(s) of a given group is in doubt and, in such cases, the determiner usually carries extra stress in spoken English, as in:

33) <u>An</u> answer must be correct.

I shall return to cases like (33) below.

Turning now....

Turning now to the universal interpretation of (32), it is extremely difficult to state clearly what difference is made to its sense by substituting a for the in the subject NP. Chafe, relying, as far as I can see, upon intuition, says that we employ $\underline{the}_1$ when the class referred to is thought of as "an undifferentiated whole" (Chafe, 1970). On the other hand, he claims, when we use $\underline{a}_1$, we are thinking of the class as made up of distinct individuals. Chafe employs the term 'aggregate' to describe this use of $\underline{the}_1$ and leaves the question there. I shall return to this distinction later when I consider overt universal quantifiers and the notions of UNITY and DISTRIBUTION. I should add here that in his system, the in the universal interpretation of (32) is not the definite article, that item being incompatible, save for a special case later discussed, with generic verbs.

Whether Chafe's claim with respect to sentences like (32) is correct, is a matter which may well be beyond positive proof. I do, however, feel that it is very plausible, especially in view of the common use of a/an meaning one.

Even so, as Heny (1972) points out, there is much more to this question than Chafe's comment suggests. It is Heny's contention that the is only used universally when the class in question consists of living members, where 'living' means 'having life', not merely 'animate'. Thus, he would argue that while (34) and (35) are normal, (36) is not.

(34) The elephant likes peanuts.

(35) The tulip is a popular flower.

(36) ? The motorway is broad (i.e. every motorway...)

The problem here is obviously very complex and both Chafe and Heny seem to be on the point of making a correct observation. Chafe, again, in his chapter fourteen, discusses a semantic 'inflection' which he calls 'bounded'. When this inflection is present in a semantic structure, he suggests that there is an implication that the membership of a given class is conceptually limited in some way. Thus, he is able to explain the exception to his rule that generic is incompatible with definiteness. As an example of such exceptions, we may have:

37) The Incas are extinct.

38) The Indians like corn.

In these cases, according to Chafe, the class of Incas, or Indians, is, as it were, known to be limited and this conceptualisation - his [bounded] inflection - allows for the use of definiteness in the determiner.

As with his feature [aggregate], I can see no obvious way in which this claim can be disproved, though diligent search on the part of an agile iconoclast would doubtless furnish one, and, to my mind, it seems perfectly plausible to say that such classes are conceptually bounded in some way. However, Chafe extends the notion [bounded] to cover sentences like (39) which, to him, are acceptable when interpreted universally as well as particularly.

39) The computers have been over-rated.

He suggests that the class of computers is still, at his time of writing, sufficiently limited for the feature [bounded] and hence the definite article to be applicable. On the other hand, he visualises a day when there will be so many computers that [bounded] will no longer be applicable and hence (39) will be interpreted only as is (40) at the present time.

40) The typewriters have been over-rated.

Although I cannot think that when Chafe prepared his material (1970), the class of computers had not already burst out of its [bounded] straight-jacket, I feel reasonably certain that his general observation is along the right lines. It is difficult to think of suitable examples, but one such might be the device known as an Optacon (an instrument enabling blind people to read ink print). I can imagine that, in the early part of this decade, when there was no more than a handful of such devices in existence, one might have said:

41) The optacons have been over-rated.

Professor Branford has pointed out to me that a set of objects may often be bounded by virtue of situational context. So that, even if there were 5,000 optacons one might still say (41) when referring to a known set of the instruments, e.g. those purchased for a

given school for the blind.

However, a very significant fact about both of Chafe's examples (39) and (40) as well as my own (41) is that they all become perfectly acceptable when couched in the singular rather than in the plural - a fact which seems to have escaped Chafe's notice. Thus, there is nothing odd about the following, presuming that they are truly universal statements.

42) The computer has been over-rated.

43) The typewriter has been over-rated.

44) The optacon has been over-rated.

Although such sentences appear to be universally quantified in that they refer to an entire class, I shall assume that they are, in fact, particularly quantified, the quantification being on the class itself and not the members it contains. This can be seen quite clearly, if we consider (45) which is not, I think, paraphrasable with an overt universal quantifier as in (46).

45) The wheel is Man's greatest invention.

46) *Every wheel is Man's greatest invention.

What (45) says, in effect, is that, among the things which Man has invented, that which is referred to by the term <u>wheel</u> is the greatest - in other words, it is a statement about a particular concept, not about every instantiation of that concept. Thus, I believe that Chafe was perfectly correct in his rejection of sentences like:

47) The typewriters have been over-rated

but their unacceptability lies rather in the fact that the quantification is particular, not universal or generic, rather than in the fact that the class of typewriters is [non-bounded].

As far as particular statements like (43) are concerned, it is, of course, important to note the fact that, in normal usage, they imply a universal statement, e.g.:

48) Typewriters are all members of an over-rated class.

An even more difficult case is presented by:

49) The mountain is the result of volcanic activity.

Such....

Such sentences obviously can be paraphrased with an overt universal quantifier, as in:

50) Every mountain is the result of volcanic activity.

and, in this respect, are similar to:

51) The rose is a sweet-smelling flower.

which may be paraphrased as:

52) Every rose is a sweet-smelling flower.

In these cases, the objects referred to, mountains and flowers, have natural origins, but it is at least arguable that statements about some man-made devices are similarly paraphrasable, e.g.

53) The motor car is faster than the snail.

paraphrasable as:

54) All motor cars are faster than all snails.

Are we then to conclude that natural objects, e.g. roses and mountains as well as artifacts capable of performing - or, strictly speaking, being made to perform - given actions, e.g. locomotion in the case of motor cars, calculation in that of calculators, can be universally quantified with $\underline{\text{the}}_1$ provided that they are in the singular number? It may well be naive to take such a view and a full study of <u>the</u> - an item worthy of a monograph on its own as Russell and others have found - might well show this to be so. However, for my limited purposes, in which <u>the</u> is only one item of study among many, it seems reasonable to make such an assumption, especially when we consider that the ability to perform actions, particularly locomotion, is the defining characteristic of [+animate] objects and that [+animate] objects are necessarily natural in origin.

It certainly seems to be the case that natural [-animate] objects like mountains tend to be grouped in men's minds with [+animate] objects - a fact clearly shown by the innumerable metaphors, e.g. <u>foot of</u>, <u>face of</u>, which attach to them. It also appears to be the case that certain action-performing machines, e.g. motor cars, are often similarly classified, as is suggested by the common tendency to employ <u>she</u> rather than <u>it</u> in their

pronominalisation. No matter how anxious the student is to be "scientific", he cannot, as Chafe and innumerable other linguists have shown, entirely avoid the consideration of metaphor which seems to be all pervasive in the area of Semantics.

The problem now arises as to why certain objects, when implicitly quantified as universal, may be determined by the and couched in the plural, e.g. names of races, Incas, Indians, ..., and members of particularly small sets, e.g. Optacons.

If one follows Vendler's approach with respect to the derivation of the, one must assume an introductory sentence for the Indians in (55) which establishes their identity in the discourse. (Kuno's 'registry of the present discourse' (1972) offers a parallel approach.)

55) The Indians like corn.

Such a sequence might be:

56) There are people known as Indians. The Indians like corn.

If such a sequence is assumed, it would, presumably, be fairly rare for it to find actual, physical expression, since, in most cases, speakers tend to assume an identifying knowledge in such cases. However, it might be that the plural in (55) is a reflection of the plural in the identifying introduction. Similarly, the Optacons in:

57) The optacons have been over-rated.

may be supposed to owe its plural form to some introductory sentence such as:

58) There are instruments known as Optacons.

In the case of the singular forms, such as:

59) The Indian likes corn.

which, though ambiguous between universal and particular quantification, is probably no more so than (51), I presume that the understood, or explicitly formulated introductory sentence is something like:

60) There is a race known as Indian.

and something of the same sort must be presumed for the Optacon in:

61) The Optacon has been over-rated.

Far more important, in my view, than the creation of possible sources for the determiners of the NPs concerned, is the general question: What semantic difference exists between plural and singular forms? I have already referred to Chafe's notion of [aggregate] with respect to sentences like:

62) The elephant likes peanuts.

Although I can find no really convincing proof, I believe that the same conceptual processes may be at work in the cases under discussion. When we employ the plural, as in (55), we are conceptualising the race of Indians as made up of distinct individuals, but, when we use the singular, as in (59), we are thinking of the race as an undifferentiated whole, or regarding it as represented by a type. There certainly seems to be something of this sort at work in the common colloquial formula: your Indian in, for example:

63) Your Indian (i.e. all Indians) is a hard worker.

Slender support for this theory is, I think, provided by the perfect normality of (64) compared to the improbable (65).

64) The Indians, who are numerous, like corn.

65) ? The Indian, who is numerous, likes corn.

This evidence is, however, not a reed upon which I would care to rest too heavily, although the notions of SINGULARITY and PLURALITY will be basic to my own account of overt quantifiers.

As counter evidence to the above suggestion, one might point to the fact that there seem to be certain predications which naturally reflect the [non-aggregate] status of universal NPs with a, e.g. a dodo, but which do not clearly do so in the case of universal plural NPs like the Indians. Professor Chafe has been good enough to correspond with me upon this question and we have agreed that the predicate become extinct is bizarre in sentences like:

66) ? A dodo has become extinct.

(Heny independently arrived at the same conclusion), but not so in:

67) The dodo has become extinct.

I have....

I have suggested, and Chafe has agreed, tentatively, that the bizarreness of (66) is due, in part, to the fact that the subject NP a dodo appears to represent a class of objects conceptualised as individuals and we do not normally predicate extinction of an individual, but only of an entire class of individuals. Similar predicates are: be annihilated, be exterminated. Thus, the following seem unusual:

68) A dodo has been annihilated.

69) A dodo has been exterminated.

If we consider the plural cases, however, the same difficulty does not arise with such clarity. Thus, to my mind, the following are more or less ordinary.

70) The$_1$ Indians have become extinct.

71) The Indians have been annihilated.

Perhaps the best course would be to say that the tendency is to use either a/an, or the+N+plural in a universal statement when the class in question is thought of as made up of distinct individuals - i.e. [non-aggregate] - and the tendency is to employ the+N+singular when the class is conceptualised as an undifferentiated whole - i.e. [aggregate].

I noted, earlier in this subsection, that in sentences asserting class membership, if both the and a/an are used, then the attaches to the left-most NP (save for the somewhat unusual cases referred to) rather than to the right-most NP. Thus, while

72) An owl is the bird.

may be interpreted particularly, a universal reading is difficult, if not literally impossible. Compare

73) The owl is a bird.

This problem is, I think, fairly easily resolved if we translate (73) into logical symbols, as:

74) $(\exists\ x)\ (y)\ x_{\text{class of owls}} \cdot y_{\text{class of birds}}{}^{(mxy)}$

m = member.

In other words, statements like (73) exhibit mixed quantification. The first NP is existentially quantified and may be determined by

the, a/an,...

the, a/an, or Ø, but the second NP is universally quantified and is determined by a/an since the latter, probably because of its well known association with the numeral 1, being derived from Old English ān=one is felt, in such cases, as setting up a partitive relation. What (73) says, in fact, is that the owl is one of the types of birds.

Implicit, universal quantification with the Ø determiner is, of course, particularly common when the reference is to a noun which is [-count], as in:

75) Water is a fluid.

In such cases, it is, in fact, impossible to employ the or a/an without thereby narrowing the scope of the sentence to a particular body of the substance in question, as in:

76) The water was boiling.

77) A water proved efficacious.

With the exception of Man, Woman, and possibly compounds like Mankind, when a count noun is implicitly universal and the determiner is Ø, then the noun appears in the plural form, as in:

78) Birds have feathers.

In this example, it will be evident that only the subject NP, birds, is universally quantified. The object NP, feathers, obviously does not refer to the entire class of feathers, even though there is, so far as I know, no feathered creature which is not a bird. On a fairly trivial level, we can see that this is the case simply by taking into account the fact that many man-made objects, e.g. pillows, quilts and hats, may be said to have feathers, although have, in such cases, obviously refers to alienable rather than to inalienable possession as in the case of birds. Much more significant, however, is the fact that the necessity of interpreting feathers in (78) as particular rather than universal provides a clue to the semantic significance of the practice of using Ø determiner plus count nouns plus plural to refer to an entire class. To my mind, it suggests that, in using such a structure, we are, once more, conceptualising the class as made up of a number of distinct individuals. This seems to be so because, ignoring the trivial fact noted regarding

pillows,...

pillows, etc., if we take (78) to be symbolisable as:

79) $(x)\ (Bird_x \supset Feathered_x)\ .\ \sim (\exists x),\ (y)\ (Bird_x)\ (Feather_y)\ (H_{xy})$ H = have

i.e.: everything which is a bird has feathers and nothing which is a bird has everything which is a feather, then it follows that we must be predicating FEATHERINESS of each individual member of the class of objects called bird - the birds are, in other words, distributed (6.7).

There are, however, other combinations in which universality is clearly predicated of the object NP as well as the subject, as in:

80) Cats like mice.

Here, we must presume that the intended message is to the effect that it is true of any cat whatsoever, that it likes any mouse whatsoever. Clearly, the question of quantification is, here as elsewhere, intimately tied up with the sense of the whole sentence, including the verb and auxiliary, not with the NPs alone.

6.4.2 Summary

To summarise, we have the following surface manifestations of implicit universal quantification.

I) Definite article the plus singular count noun, e.g. The rat is a rodent. (I) suggests a class considered as an undifferentiated whole.

II) Definite the plus plural count noun, e.g. The Indians like corn. (II) suggests that the class is thought of as made up of distinct individuals.

III) Indefinite a/an plus count noun singular, e.g. A rat is a rodent. (III) reflects a conceptualisation of a class as made up of distinct individuals.

IV) Ø plus non-count noun, e.g. Water is a fluid. (IV) represents the common conceptualisation of a non-countable substance as having no individual members.

V) Ø plus count noun plural, e.g. Birds have feathers. (V) seems to represent the conceptualisation of a set as made up of distinct individuals.

6.5....

6.5 Implicit, Particular Quantification

6.5.0 General

Although the item some is generally regarded as the plural form of a/an when determining count nouns, as in:

1) Some men spoke to my father.

and might, therefore, figure in a discussion of implicitly particular quantification, just as the singular a/an does, I have decided to ignore it in this section and place it among the overt logical quantifiers. My reasons for doing so are: logicians have always regarded some as an overt quantifier, equivalent to the existential and meaning at least one; secondly, like overt quantifiers, it may appear in the configuration: quantifier+of+the, as in:

2) Some of the men wore spurs.

a construction which I shall discuss in the next section and which is not open to the articles (*the of the men is not English); thirdly, some is able to combine with items like thing, one, body in which combinations it is not clearly an implicit quantifier. In fact, it would probably be true to say that some is used in some cases where quantification is implicit and in others where it is explicit. My decision to exclude it from this section, therefore, is a matter of expedience and nothing else.

6.5.1 A/An$_2$, The$_2$ and Ø$_2$

Typical examples of implicitly particularly quantified sentences are:

1) A ship was launched.
2) The magpies left the tree.
3) Men arrived with machines.
4) Water flowed over the driveway.

As far as a/an$_2$ is concerned, one of the most important facts about its usage is that its interpretation is materially affected by stress. I shall reflect the difference by underlining the cases with heavy stress in object sentences. The contrast is seen in:

5) A man telephoned this morning.
6) A man telephoned this morning.

Generally....

Generally speaking, I do not think that the difference between these two strings would be of any interest to the logician and they would probably be symbolised indifferently as:

7) (∃ x) (x is a man . x telephoned this morning).

From the viewpoint of English as a natural language, however, the difference between them is considerable. In (5) the speaker is using a in a purely indefinite sense. In (6), on the other hand, the extra stress upon the article suggests that the speaker intends to convey the fact that a specific man telephoned. In fact, a in (6) is not unlike the use of the definite article, the only difference being that the speaker, perhaps only temporarily, is unable to supply the definite description which philosophers like Searle (1971) suggest a definite description, e.g. the man, demands.

The difference between (5) and (6) obviously has much to do with the notions THEME and FOCUS. According to Quirk and Greenbaum (1973 Ch. 14), the 'neutral', or 'unmarked' focus of a sentence is 'end-focus' that is to say, upon elements, usually members of open sets, e.g. nouns, adjectives, ... which appear to the right of a string and, in normal intonation, these elements receive the 'nuclear stress'. The point of communicative departure, usually the subject of a sentence, is 'given information' and is described as the theme. In (5) the theme is the subject a man and the focus falls on either of the right-hand elements, telephoned or this morning, or, perhaps more likely, upon the predicate telephoned this morning as a whole. In the case of (6), on the other hand, by placing nuclear stress upon a, the speaker departs from the usual pattern of 'end-focus' and, presumably, the predicate represents the theme or 'given information'. I shall return to the question of theme in the next section, where I intend to make use of Kuno's observations (1972).

Another important fact about (5) and (6) is that the predicate is such that only the particular interpretation of the strings is possible. In these cases, Chafe would label the predicate [non-generic]. In fact, as I have already suggested, it is not the verb alone which is non-generic, but rather the tense element [+past] in combination with other factors. In (5)

and (6)....

and (6) [+past] makes the non-generic interpretation imperative since the possibility of men continuing to make telephone calls into the unforeseeable future is clearly real and this possibility could be read into strings involving present tense, such as:

8) A man telephones his wife.

A well known fact about a/an is that the noun which it determines is normally [+count], as in (5). It is, however, equally well known that the indefinite article may appear in surface configurations with [-count] nouns, as in:

9) I'll have a beer.

Here, and in innumerable similar cases, we presume there to be an omission of a [+count] noun like glass plus the preposition of. (Professor Branford has suggested to me that an alternative view would be to say that beer is reclassified as [+count]).

A small, but interesting problem arises when a/an is used in its specific sense with [-count] nouns, as in:

10) A water will cure gout.

Presumably, in such cases, the speaker is asserting that there is one specific type of water, say that found in Bath, which will cure gout. If this is so, we must assume that a general, [+count] noun such as type with its accompanying preposition of is understood.

At this point, an extremely common use of a/an_2 must be noted, namely that represented by:

11) I said I wanted an apple, but you gave me two.

In cases like (11), true to its etymological derivation, a/an is nothing but the cardinal one. I shall not discuss cardinal numbers in detail in this essay. However, as far as the ordinals are concerned, it seems appropriate to note, here, an extremely interesting fact concerning their collocation with a/an as opposed to the. The following pair may be used by way of illustration:

12) A fifth mine exploded.

13) The fifth mine exploded.

In the....

In the case of (12), I and all those I have consulted find that the presupposition is that four mines exploded prior to the event described. In (13), on the other hand, there is no such presupposition. Presumably, the explanation behind this phenomenon lies partly within the nature of ordinal numbers and partly in the distinction between indefinite a/an and definite the. The basic function of an ordinal is to pin-point a position which an object occupies in a fixed series, fixed either spatially or temporally. If we remove the ordinal from (12), we are left with the assertion that an indefinite mine exploded, by adding fifth, we contribute the additional information that four other indefinite mines exploded previously. In the case of (13), removal of the ordinal leaves us with the assertion that a definite, identifiable mine exploded. Introduction of fifth in this sentence, locates the position of that mine in relation to four others, either spatially, say in a row, or temporally, e.g. in a sequence of attempted explosions. I should stress that I am not claiming that (13) necessarily presupposes that four other mines failed to explode, or that in (12) the presupposition inevitably is that four other mines had exploded, I simply draw the reader's attention to this phenomenon as an interesting tendency in English.

The most striking and best known fact concerning the_2 is its function of singling out, or delimiting the referrent of the head noun which it determines. This function, usually referred to as 'definite', is, as so many linguists have suggested, related to the distinction between new and old information. Once a theme has been introduced into 'the registry of present discourse' (in the sense of Kuno, 1972), then its limits are, in some sense, known and the definite article is employed in accordance with the etymology of its title definite.

In every-day discourse, the speaker's apprehension of the continuity which the implies by virtue of its anaphoric function, is frequently heavily dependent upon special factors, particularly context of situation, and a brief examination of a few typical cases may be illuminating.

Consider (14) below as an opening remark:

14) I've just returned from the dentist.

The question is: How does the addressee, presuming that there has been no previous mention, say the day before, of a dentist, or dental visit, supply the background information which the in (14) presupposes? The answer to this question is, I think, obvious enough if we consider the average speaker/hearer's knowledge of the world about him. Presumably, individuals are generally thought of as having access to only a limited set of dentists. The limitation of this set is, moreover, the result of fairly well defined factors, especially geographical - we do not normally think of the entire universe of dentists as being at the disposal of a particular person. When the speaker utters (14), therefore, the hearer relates the remark to a limited set, which, of course, he does not need to be able to identify precisely and, as it were, labels one arbitrary member of this finite set as the particular member in question and it is the presumption of the limited nature of the set which constitutes the background information supporting the use of the.

An interesting contrast to (14) is provided by (15), taken, again, as an opening remark unsupported by any previous discussion.

15) I wrote the letter this morning.

Such a sentence would, I am certain, provoke some response like:

16) I'm sorry, I don't understand. What letter?

The reason for such a reply is, I believe, that while certain aspects of letter-writing, e.g. the language employed, are generally presupposed with respect to given individuals, the set of possible letters which they might write is so indeterminate as to prevent the sort of quasi identification stimulated by the in (14). Rather than (15), we would normally expect:

17) I wrote a letter this morning.

An interesting problem showing, as it were, the reverse of (14) is provided by:

18) ? How did you get on at a dentist's this morning?

I am not at all sure that (18) is, in fact, an acceptable sentence. On the one hand, (18) presupposes that the speaker knew prior to its utterance that the addressee was to visit a dentist and that

the visit....

the visit had already taken place. On the other hand, the use of a suggests that the object of the visit, namely, the dentist in question, is not merely unidentified, but is even unidentifiable, at least to the speaker.

A fascinating contrast to the somewhat odd (18) is provided by the completely normal:

19) I must see a dentist this afternoon.

In cases like (19), there seems to be a complex of factors, including future time reference, the special use of see = consult, and the nature of the set of dentists concerned. Presumably, when uttering (19), the speaker has not decided which dentist to consult, thus he uses a. While this indecision is apparent to the hearer, both speaker and hearer, presumably take it that the set of possible dentists who may be consulted is limited.

Before leaving the anaphoric function of the, I must refer briefly to the fact that certain formulae in which it is used, have become so common that the feature cannot really be said to operate. One such is turned the corner in:

20) Amin turned the corner and ran into a lamp-post.

In (20) while it would be easy enough to analyse the in terms of limited sets, it seems simplest to take turned the corner as a verb meaning cornered (what Chafe would call an instance of 'idiomaticization'). It may be possible to treat many other collocations similarly, e.g. put NP on (to) the floor/table, etc., as in:

21) I'll put your rifle on the floor.

in which the speaker seems merely to be referring to the future location of the rifle, in space, rather than to a prementioned floor. I am not entirely sure, however, whether such a case is not essentially like that illustrated by the in (14), there being only a limited number of floors available at any one time. It is, moreover, worth noting that a can be used in much the same way, as in:

22) I'll put your rifle on a table.

However, the....

However, the oddity of the following suggests that there is a fairly strong element of the formulaic in (21).

23) ? I'll put your rifle on a floor.

From another viewpoint, it is arguable that in any normal human situation the floor or the ground are 'given', i.e. elements in Kuno's 'permanent registry' like 'the sun'.

In discussing $\underline{\text{the}}_2$, as in the case of $\underline{\text{a/an}}_2$, it is important to take into consideration differences in meaning which are signalled in speech by special emphasis. How to capture such a difference presents a difficult problem which, however, may, I believe, be at least partially solved if we think in terms of limited sets and what I shall call 'categoric exclusion' of all but one of their members. As a beginning, consider:

24) The poet worth studying is Pindar.

What the speaker is asserting in (24) seems plain enough, namely that out of all members of the limited set of poets, there is one, Pindar, who is worth studying. He is, in other words, categorically excluding from the class of poets worthy of study all poets save Pindar. That this is a plausible suggestion, is demonstrated by the common use of phrases like one and only used to stress the uniqueness of a given subject with respect to the applicability of a given predicate, as in:

25) The one and only poet worth studying is Pindar.

It is tempting, at first, to view this use of the as a marker of evaluative judgement only. However, that this is not its sole function is shown by sentences like:

26) The king of England is Charles II, the duke is an imposter.

In this case, I do not think an evaluative judgement is being made. The question seems to be which member of the set of persons claiming to be king of England is correct in his claim and, as there can only be one king of England at any one time, all but one member of the set must be categorically excluded.

It is probably true to say that the use of the as a marker of categoric exclusion necessarily implies that the speaker,

presuming that he is not deliberately trying to mislead, believes in the actual existence of the member of the set referred to. Thus, while (27) is normal, (28) is not.

27) The cure for headaches is soda water.

28) The cure for headaches, for which there is no cure, is soda water.

As well as asserting the speaker's belief in the efficacy, genuineness, etc. of a given member to the exclusion of all others in a given set, the can be used to single out a particular member which, unlike all other members is not genuine, efficacious, etc., as in:

29) The cure for headaches which does not work is soda water.

Although I do not intend, for reasons of economy, to go into the highly complex matter of the use of the articles with proper names, one interesting aspect of that subject seems to fit naturally into the present discussion. While it is possible to use a/an both neutrally and with nuclear stress in combination with a proper name, when the is employed, there seems to be a clear tendency to restrict it to the heavily stressed marker of mutual exclusion. The following are typical.

30) A Jones was caught out.

31) A Jones was caught out.

32) The Jones was caught out.

All of these examples have the effect of depriving the item Jones of its status as a proper name in the strictest sense of a label attaching to one, unique individual. Apart from this common factor, however, they are all different. The first, with neutral stress on the article, suggests that the speaker does not feel it necessary to identify the particular Jones in question. In the second case, the nuclear stress on a suggests that it was a specific Jones who was caught out, but the speaker is, for some reason, unable, perhaps temporarily, to identify him. In the third example, the implies an assumption of prior knowledge shared by speaker and hearer as to the identity of Jones, a knowledge which may be made explicit in the form of a restrictive relative clause, in which case, the often loses its heavy stress, e.g.:

33) The Jones who married Grishkin was caught out.

Apart from its connective, or anaphoric function, the most obvious way in which the differs from its indefinite counterpart is in its ability to determine plural [+count] nouns and [-count] nouns, as in:

34) The men chopped down my pine tree.

35) The water flowed over my drive.

While the etymological history of a/an is sufficient to explain its inability to determine plural nouns and the consequent employment of some, as in:

36) Some rooks flew from the coppice.

it is not so immediately obvious why the should so readily determine non-count nouns.

In discussing a/an, I suggested that when, in surface structure, it appears to determine [-count] nouns, we are probably to understand the deletion of some count noun like glass, type, etc. and the preposition of. When the determines a [-count] noun, as in (35), the question arises as to whether we are to understand a deletion similar to that proposed in the case of a/an for example, body of. If this is so, then we need not assume that the and a/an differ in their ability to determine [-count] nouns - neither would do so directly. I can see no a priori reason for rejecting such an assumption in the case of the and the symbolisation of (35), namely (37), suggests that, from a logical point of view, the presence of a [+count] noun somewhere in the semantic structure is assumed.

37) $(\exists x)$ (x is a body of water . x flowed over my drive).

Slightly more difficult cases are represented by:

38) The rain went on for hours.

39) The sea poured into their cockpit.

In the case of (38), we cannot postulate a deleted, or understood, count noun such as body, since it simply does not sound like English to say:

40) The body of rain went on for hours.

nor, do I think, is the item shower a suitable candidate for the

deleted noun,...

deleted noun, since, although shower of rain is perfectly normal, a shower is, by definition, of short duration and cannot be said to go on for hours.

The solution may be to take rain in such sentences as a [+count] noun. That this is possible is certainly suggested by the common practice of using the plural form to refer to separate instances of rain, as in:

41) The rains came.

The OED's general definition, moreover, seems to support such an interpretation:

> The condensed vapour of the atmosphere, falling in drops large enough to attain a sensible velocity; the fall of such drops.

In the case of (39), although pour is usually thought of as collocating with [-count] nouns (we can, of course, use it with [+count], as in: The coins poured out of the bag), I would, again, suggest that sea is, in fact, [+count], as is shown by such common expressions as: the seven seas. If the event referred to in (39) results in the sinking of the vessel, then, the craft is contained within the body of salt water upon which it was floating. If, on the other hand, it remains buoyant, then, presumably, the fluid within its cockpit still constitutes a part of the sea upon which it floats.

Finally, turning to $\emptyset_2$, consider the following:

42) Men came and chopped down my pine tree.

43) Water flowed over my drive.

With respect to (42), firstly, it is obvious that particular quantification and hence $\emptyset_2$ is involved, not the universal, since it would be physically impossible for every living man or all existing water to perform the acts in question (setting aside fantastic situations, e.g. those of fairy tales, which might make such an interpretation possible). Secondly, it is clear that the quantified noun in such cases, must be in the plural form - (44) is not a normal, English sentence:

44) *Tree grew fast.

The main....

The main exception to this rule is, of course, that of proper nouns, which, when used strictly as proper nouns, are, by definition, definite and so require no article. There are a few other exceptions, as, for example, nouns denoting means of transport preceded by the preposition by, as: by car, by train, but I do not think that these are of central interest in this essay.

Another feature of (42) is that, while it is by no means ungrammatical, it is not as acceptable as an equivalent sentence in which some is used. It is, however, more usual than another in which the object NP is also devoid of any apparent article, namely:

45) Men came and chopped down pine trees.

I imagine that part of the reason for this lies in the fact that Ø, like a/an has the feature [-definite], but, unlike a/an, it does not even carry connotations of possible specificity - it is the most neutral, or least informative, of the determiners - and thus, cases like (42) and even more so (45) tend against Grice's maxim of 'adequacy' - a given message must contain sufficient information to be fully understood. In other words, such cases are felt to be rather vague and the hearer would normally like some more information concerning the nouns in question. That something of this sort is at work is, I think, further demonstrated by the fact that sentences with $Ø_2$ plus count nouns become increasingly acceptable as the possible scope of the relevant noun is narrowed and become most natural when the noun involved is a proper noun - a noun of unique reference. This tendency is illustrated by:

46) Men from the Municipality came and chopped down my pine tree.

47) Idi Amin came and chopped down my pine tree.

6.5.2 Summary

In summary, the basic configurations reflecting implied, particular quantification are the following.

1) A/an with singular count noun: e.g. A man telephoned his wife. In (1) the quantified noun is indefinite.

2) A/an (carrying nuclear stress) with singular count noun: e.g. A man telephoned his wife. (2) though indefinite is specific.

3) A/an

3) A/an with non-count noun: e.g. I like a beer. (3) implies the deletion or understanding of a [+count] noun, e.g. glass and the proposition of or, alternatively, beer is re-classified.

4) The with count noun, singular or plural, e.g. The yacht foundered. The men come from Axminster. (4) implies previous mention, or reference by context of situation.

5) The (with nuclear stress) with count noun, plural or singular, e.g. The king of England is Charles II. (5) implies categorical exclusion.

6) Ø with plural count noun, e.g. Men came and chopped down my pine tree. (6) is indefinite and minimally informative.

7) Ø with non-count noun, e.g. Water flowed over my drive. (7) is minimally informative.

6.6 Overt Quantification within Limited Universes of Discourse

6.6.0 General

Before proceeding to the discussion of some of the overt quantifiers, I shall briefly examine a few of the major aspects of overt quantification within limited universes of discourse. Typical examples are:

1) All (of) the men come from Devon.
2) Both (of) the men come from Devon.
3) Half (of) the wall collapsed.
4) Nothing of the house remains.
5) Something of the sort happened.
6) Some of the men were drunk.
7) Many of the pigs looked ashamed.

It will be seen that in each of the above, the subject noun phrase consists of what Hall (1962) called a pre-article, the determiner the and a quantified head noun. I shall take it that the determiner the has the function of limiting the universe of discourse, i.e. in the case of (1) it limits the scope of men to a subset of all men, namely, a set whose membership has been previously identified (a somewhat similar approach is taken by Chafe (1970)). The membership of this limited universe to which

the predication is appropriate is then overtly quantified, e.g. by all, one, half, etc., the preposition of having a special semantic function linking the overt quantifier with the limited universe of discourse. Certain other items, e.g. my, those, may take the place of the, but I shall ignore them save for passing references to those/them.

6.6.1 Limiting the Universe of Discourse

It will be apparent that the nature of most overt quantifiers is such that they refer to sets having a membership greater than one. Among the proportional quantifiers, there are, of course, exceptions to this, much, for instance may refer to part of a single individual, as in:

1) Much of the banana had been eaten.

Generally, however, quantifiers like all, every, many, etc. have reference to more than one individual and it is, I think, for this reason that the most common means of limiting a possible universe of discourse is by the definite article the, that item being applicable to plural nouns. There are cases, however, especially those involving fractional quantifiers (which are, in a sense, proportional quantifiers) in which limitation is achievable by using the indefinite article a/an. Typical examples are:

2) Half of a chimney pot lay on the ground.

3) Two thirds of a pound note stuck out of his pocket.

One interesting consequence of this fact is that sentences involving overt quantification within limited universes of discourse presumably do not usually figure as opening remarks in a given discourse. Firstly, it will be necessary that the membership of the set be established and then its quantification may follow. A typical sequence might be:

4) There were some men here last night. All of the men drank brandy.

In fact, while (4) is possible, I imagine that the desire to avoid repetition would lead most speakers to pronominalise the second occurrence of the men, so that the second sentence would be:

5) All of them drank brandy.

There are, of course, special cases in which sentences involving overt quantification within limited universes of discourse may be used as opening gambits. One such would be a context of situation, e.g. visual or physical presence, in which the identifying information is supplied extra-linguistically. Rhetorical considerations may also be crucial. For example, an author may deliberately employ the to give his reader the impression of being previously acquainted with the subject of an opening sentence. Another obvious example is the type, already noted, which involves the indefinite article, as in:

6) Half of a machine-gun lay in the gutter. Percy saw it and ...

Finally, one might point to cases in which no overt article is involved, the limitation being achieved simply by a restrictive relative clause, as in:

7) Many men in green trousers were sitting in the café.

I shall not, however, discuss limitation of this kind in this essay.

6.6.2 The preposition 'of'

It will have been apparent, from previous chapters in this essay, that the status and function of the preposition of in quantifying structures has been a matter of considerable interest and dispute among linguists from Hall (1962) to Lee and Hogg (1972). In this subsection, I shall attempt an explanation based ultimately upon the historical development of the relevant construction in English - an approach which does not seem to have commended itself to others but which, I believe, is not inherently undesirable even though my basic interest in synchronic. I should, however, stress that the semantic function of of is extremely obscure (the OED gives 63 different uses), so much so that I am sometimes tempted to conclude that it does no more than establish the broadest possible relationship between items.

From the massive detail of the OED's entry, there seem to be two basic uses of of which might lie behind its use in quantifying expressions, namely the expression of possession and its use to represent the so-called partitive relation.

Considering the relation between of and the notion of POSSESSION, I think it very important to note that this use is not to be found in the earliest stages of the language, including Old English. Under main signification XIV, OED says:

> In the sense belonging or pertaining to; expressing possession and its converse; ... After the Norman Conquest the example of the French de, which had taken the place of the L. genitive, caused the gradual extension of of to all uses in which OE. had the genitive; the purely possessive sense was the last to be so affected ...

In view of this assertion, which seems to be very well supported by the evidence, it does not seem to me to be linguistically sound to take of, as does Lee (1971) by implication, in the constructions under discussion, as related to the idea of possession. I have said already that Old English did not use the item to indicate possession; indeed, in Old English it is never used with the genitive case, the primary function of which is to express possession, but only with the dative.

If one considers the various functions of the dative case, in Old English as in Latin, one sees that one of the most basic is to refer to'point(s) of departure.' It is, I presume, this function of the dative which lies behind the Old English use of of to mean something like origin or source. A typical example, provided by Bosworth and Toller (sense III) is:

1) Of Seaxum coman East-seaxan ... = From among the Saxons came the East Saxons ...

In my view, there is a natural link between the ideas of origin or source, and that of partition. When we claim that something is part of something else, we are, in a sense, saying that the something else is its source or origin. Speculative though this assertion is, it may partially explain the use of of in Old English 'partitively' (still with the dative case). Under sense IX, Bosworth and Toller give:

2) Heō genam of þǽs treowes wǽstme = She plucked from the tree's blossom.

(In this example, the genitive form þǽs treowes refers, of course,

to the....

to the fact that the tree possessed the blossom; it has nothing to do with the preposition of immediately preceding it.)

Although the main function of the genitive case was to indicate possession, it too, like of plus dative, was commonly used partitively, especially when quantifiers were used 'absolutely', as traditional grammarians would say. In fact, one quantifier, fela = many is only found with a partitive genitive, e.g. fela manna = many men. Two typical cases, drawn from Bosworth and Toller are:

3) Nis nū fela folca = There are not now many people.

4) Monige ðara brōðra sæ̃don = Many (of) the brothers said.

The literal translation I provide of (4) is particularly revealing since it requires the insertion of of before it is acceptable in modern English.

Since of could indicate the partitive relation as could the genitive case and since, through the influence of French, of took over almost all the uses of the genitive, it seems historically most probable that of in quantifying constructions should express the partitive concept. I shall, therefore, interpret the preposition as a partitive marker rather than as an indicator of possession. That this is a plausible interpretation is, moreover, suggested by the fact that what remains in modern English of the old possessive case, 's and s' is not found with quantifiers. We do not have, for example: *men's many (a sentence like: 'The crowd's number was great' does not, I think, provide a counter example), although this may be a consequence of rules governing left-to-right ordering and nothing more.

We now arrive at the difficult problem of the optional deletion of partitive of after the three quantifiers all, both and half. The following alternatives are equally acceptable:

5) All the men / All of the men.

6) Both the men / Both of the men.

7) Half the orange / Half of the orange.

This option is not open to other quantifiers. None of the following are normal:

8) *One....

8) *One the men; *many the men; *every the men; *none the men; *a third the man.

I cannot put forward a really firm solution to this problem. However, I suggest, tentatively, that it has something to do with Chafe's notion of an aggregate as oppossed to an individuated conceptualisation of a set. Perhaps, when we delete _of_, we are thinking of the set in question as an undifferentiated whole, whereas, if we retain it, we are conceptualising the set as made up of distinct individuals. My support for the hypothesis is slight but, I think, strong enough to make it worthy of serious consideration. First, it is noteworthy that _of_, in the cases under consideration, can never be deleted after numerals; numerals, by their very nature, signal individuality. Secondly, as I shall show in the next section, other quantifiers of very high frequency, _each_, _every_ and _any_ are, etymologically as well as semiotically, closely tied to the concept of ONENESS - in fact, _every_ must be fused with _one_ before it can occur before partitive _of_, as in: _every one of_. Thirdly, there is a web of semantic relations holding between _all_, _both_ and _half_: _both_, as Jespersen observed, means the same as _all_, but is applied to sets of two (I shall refine upon this below); _both_ is similar to _half_ in referring to a set of two; _half_ is like _all_ in applying to objects like cakes which may be described as monomorphic as well as to objects like crowds which are necessarily made up of discrete individuals, thus _all_, as I will show, has a unitary as well as distributive sense. I must stress, however, that this solution to the problem of the deletion of partitive _of_ is only tentative.

Before leaving _of_, it should be noted that there is a syntactic rule which prevents its deletion after _all_, _both_ and _half_. If the head noun phrase is pronominalised and this pronominalisation takes the so-called prepositional form, then _of_ may not be deleted. Thus, we cannot have: *_all them_, *_both them_, *_half them_, not at least in standard, British English. If, on the other hand, the pronoun is in the subject case, deletion is perfectly acceptable, as in: _all those_, _both those_ and _half those_. In a Transformational grammar, I presume that this fact would have some significance for rule-ordering, but I shall not pursue it further here.

6.6.3 ....

6.6.3 Both

Both is unlike other overt quantifiers in that it seems in almost all cases to be employed only when the identity of the set in question has already been established and thus restricted. The following examples are typical:

1) Both (of) the men wore green trousers.

2) The men both wore green trousers.

Even in cases where no definite determiner, possessive my, etc., is used, the implication still seems to be that the universe of discourse has already been established, as in:

3) Both men carried shotguns.

Sentence (3) would not, I think, be used, except under very special circumstances, e.g. the opening line of a novel, to introduce new information. I imagine that it would most naturally arise as part of some such sequence as:

4) Two men came today. Both men carried shotguns.

though from a stylistic point of view, a preferable formulation of (4) would probably be (5) where the repeated head the men as well as partitive of may be deleted or the head pronominalised.

5) Two men came today. Both (of them) carried shotguns.

As in the case of partitive of, I suggest that the source of this somewhat puzzling property is to be found in the history of the item. As reference to any etymological dictionary, or the OED, will show, the Old English equivalent of both, but not its source, was begen which continued to be used into the Middle Ages, in the form bo. The item both itself seems to have entered English from the Norse baðar. The Norse suffix ðar, reduced in the English form to th, probably represented the definite article which, according to the OED, coalesced with ba because of the high frequency with which it followed that item - OED cites the Gothic: ba tha skipa = both the ships. As the definite article, in Norse, as well as in English, is used to introduce, or refer to old information, the coalescence referred to presumably underlines the anaphoric status of the quantifier.

The ability of both to occur to the right of its head noun,

as in....

as in (2) is shared by the two quantifiers all and each, as in:

6) The men all carried shotguns.

7) The men each carried a shotgun.

Except that this post-positioning stresses the quantification of the set, it is very difficult to see why the items concerned should be subject to this option, open, I think, to no other quantifier. Certainly the following are all abnormal.

8) *The men any; *the men many; *the men two, ...

There is, however, a further option open to all, both and each which might offer some clue to this problem. These items, and marginally everyone, may appear to the right of a noun phrase denoting a restricted set in the form of an appositional clause consisting of quantifier, partitive of and the preposition case them, as in:

9) The men, all of them, carried shotguns.

10) The men, both of them, carried shotguns.

11) The men, each of them, carried shotguns.

12) The men, everyone of them, carried shotguns.

If we follow the normal approach towards such clauses, they will be derived from conjoined sentences, so that (9 - 12) would, at some stage, be roughly as follows:

13) The men carried shotguns and it was all of the men.

14) The men carried shotguns and it was both of the men.

15) The men carried shotguns and it was each of the men.

16) The men carried shotguns and it was everyone of the men.

What these conjoined structures and their transforms into appositional clauses are designed to do is, I presume, to emphasise the fact that the predication carried shotguns is distributed i.e. literally applies to the whole set of men, singly and without exception. It must surely be significant that the quantifiers concerned are all universal. If one tries to form similar constructions with proportional quantifiers, e.g. many, then one finds that the appositional clause makes a fundamental difference to the meaning of the sentence. Thus, (17) below clearly does not mean the same as (18).

17) Many....

17) Many of the men carried shotguns.

18) The men, there were many of them, carried shotguns.

Taking cardinal numbers as proportional quantifiers (there may well be good reasons for not doing so, but I wish only to make a general point) the only exception to this rule, as far as I can see, is the fairly common practice which combines all with a cardinal in an appositional clause. Thus, (19) and (20) seem to mean the same.

19) The four men carried shotguns.

20) The men, all four of them, carried shotguns.

Even here, however, it is to be noticed that the appositional option only exists if the cardinal, as in (19), occupies the position between the and its head. If it is the left-most item followed by partitive of, all four ... may not be used and synonymy is not maintained. Thus, (19) does not mean the same as (21).

21) Four of the men carried shotguns.

6.6.4 Both versus Either

A very interesting relationship holds between both and either, where the latter item is a quantifier rather than a conjunction. Like both, either applies to sets of two members, as in:

1) Leaves grew on either side of the plant.

Bolinger (1960, p.381) displays an interesting array of alternatives, namely:

> Do you want either (both)? I don't want either (both). I want either (both). If you want either (both), you can have them.

I presume that among the factors which dictate the choice between these items are presuppositions on the part of the speaker as to the probable attitude, or response of the addressee. Thus, in Bolinger's interrogative examples and their negative responses, either seems to have categorical implications: I don't want either clearly rejects the entire set; I don't want both, on the other hand, suggests that the speaker might be prepared to have one of the two objects offered. In the declarative examples, on

the other....

the other hand: I want either implies indifference on the part of the speaker and an expectation that one only will be received; I want both clearly refers to the entire set and would probably tend to counter a presupposition on the part of the addressee that one only would be required. Considering Bolinger's conditional example, either again implies indifference and probably presupposes that only one of the pair is wanted, while both presumably reflects a presupposition that each alternative is desired. I should add that in my speech, though not apparently in Bolinger's, the appropriate pronoun in the consequent of the conditional in question, is plural them only after both, the singular it being appropriate after either, but this is probably no more than a triviality.

There is obviously much more to the relationship between both and either than the above comments suggest. For example, in declaratives, time-reference seems often to be crucial, so that (2) is normal, but (3) seems odd.

2) Both men came yesterday.

3) *Either man came yesterday.

On the other hand, (4) and (5) which refer to future time seem to be equally acceptable, though some speakers might wish to rephrase (5) with partitive of and the.

4) Both men will come tomorrow.

5) Either man will come tomorrow.

In other cases, general sentence modality may be crucial, so that (6) tends to be interpreted differently to (7).

6) Take either path and you'll reach the church.

7) Take both paths and you'll reach the church.

I have, in fact, been led to understand, by C-J Bailey, that J. Edmondson of the Technische Universität, Berlin, is to publish an elaborate calculus for both and either, but I have not, as yet, been able to consult his work.

6.6.5 Summary

Universes of discourse may be limited to given subsets and then quantified overtly. The restriction, or limitation

of a particular discourse is commonly achieved by employing the definite determiner the. Among the reasons why the is more frequently used to limit the discourse than indefinite a/an may be the fact that the majority of overt quantifiers apply to sets containing more than one member.

One interesting consequence of limitation by the is that, save for a number of exceptional cases, overt quantification within limited universes of discourse will not usually figure in the opening sentence of a discourse, since the implies given information.

As well as an overt quantifier and the, quantification of the type discussed also involves of, which is probably to be interpreted partitively rather than as a marker of possession. This preposition may be deleted after all, both and half without also deleting the. In the case of other quantifiers, if of is deleted, then the is also deleted.

The quantifier both seems, usually to be employed in contexts in which old rather than new information is involved. One consequence of this is that it tends to be used to quantify limited universes of discourse rather than unlimited universes. There is a special relationship holding between both and either which appears to be based upon such factors as presuppositions, time-reference and sentence modality.

6.7 Overt, Universal Quantifiers and the Notions of Unity and Distribution

6.7.0 General

In previous sections of this essay, I have found it necessary to appeal to the manner in which classes of objects are conceptualised. I have especially made frequent use of Chafe's notion of [aggregate], by which he meant the conceptualisation of a class 'as an undifferentiated whole'. In this section, I shall look at some problems concerning overt, universal quantifiers like: all, each, every, ..., in terms of two modes of conceptualisation known as 'unity' and 'distribution'. By 'unity' I mean very much what Chafe does by 'aggregate'; I prefer the former term,

however,...

however, since, to my mind, it more closely reflects the notion of ONENESS involved when we say that we are thinking of a class as 'an undifferentiated whole'. By 'distribution' is meant: 'the application of a term', in this case a quantifier, 'singly and without exception to the members of a class'. In short, 'unity' stresses the existence of the set as a set, while 'distribution' lays emphasis upon the membership of the set. Two clear examples of the distinction are:

1) The whole crowd became restive.
2) Every member of the crowd became restive.

We might convey the distinction between 'distribution' and 'unity' thus:

3) UNITY → ○ / DISTRIBUTION → N^N

(I owe this idea in part to private discussion with C-J Bailey.)

I should admit that the adoption of this distinction as a basis for discussion creates certain difficulties, especially with the item <u>all.</u> However, the disadvantage of such difficulties is, in my opinion, outweighed by the advantage of the generality of the distinction. I have attempted to analyse the quantifiers concerned according to many different criteria, none of which has proved entirely satisfactory and have been forced to the conclusion that, in spite of their quasi logical status, these items, like any others in natural language, just cannot be made to fit without exception into a neat and simple system. As Labov (1973, p.340) says regarding the study of words:

> ... The reason for [its] ... neglect is certainly not a lack of interest, since linguists like any other speakers of a language cannot help focusing their attention on the word, which is the most central element in the social system of communication. It is the difficulty of the problem, and its inaccessibility to the most popular methods of inquiry, which is responsible for this neglect.

6.7.1....

6.7.1 The problem of 'nothing'

It will have been evident, from my reference to predications concerning sets, that I am presuming a basically Platonic approach to quantifiers in that I assume that one may think of a set as distinct from its members. One consequence of this assumption is that I wish to regard the item nothing as having reference to a thing, namely, a set which has no members. As I said at the beginning of this chapter, I make no claims of a metaphysical nature what-so-ever. I shall, therefore, simply take it that if nothing refers to an empty set, then it is conceptualised as a unity and is not distributed. This assumption, which ignores many philosophical problems such as the classification of non-existing things, e.g. unicorns, is based purely upon my own intuition and the linguistic fact that, in English at least, the word for NOTHING, i.e. nothing is always followed by a singular verb, as in:

1) Nothing is wrong.

and it seems to be the case that those quantifiers, e.g. whole, which are basically unitary, also take singular verbs - I shall return to this matter below.

On the other hand, when we assert of a full set, e.g. men, that it has no members in another set, e.g. things which know God's name, we seem to be able to encode in terms of either singularity or plurality and it may be that this option has something to do with the distinction between unity and distribution. This is seen by the following trio, the first two of which are evidently plural, the third singular.

2) Men do not know God's name.

3) No men know God's name.

4) No man knows God's name.

The semantic differences between (2) and (3) are, to my mind, subtle and I am not certain that I am able adequately to describe them. However, if we take no as an overt quantifier, we can say that (2) is implicitly quantified and (3) overtly so. Apart from this, I suspect that the difference between the pair has something to do with their likely occurrence within a connected discourse. While either might act as an opening gambit, I think

that (2) is more probable within the context of a discussion of facts about God, while (3) may well occur within a discussion of men and their knowledge of God. In other words, the focus in (2) is likely to be on the predicate, while in (3) it seems to be upon the subject.

In the case of (4) it seems to me that the speaker has encoded his message in such a way as to unite the class of all men into one, single representative, hence the singularity of man and knows. If we use the Peano-Russell notation to symbolise (2) and (3) and Quine's for (4), the point I am trying to establish is perhaps clearer, though, of course, I am not trying to claim that the two notations do, ipso facto, represent different conceptualisations - such a question clearly belongs to the province of a philosopher rather than to that of a linguist. My symbolisations are, in any case, very rough.

5) $(x)\ (man_x \supset \sim$ x know God's name) = (2 and 3).

6) $\sim (\exists\ x)$ (man x . x know God's name) = (4).

6.7.2 Distributive 'each'

There is a marked tendency, in modern English, to use the quantifier each distributively. In its general comment upon this item, OED says:

> In modern usage each has assumed the sense of the L. quisque and implies the distribution of the predicate or object parallel with the distribution of the subject (or conversely) ...

One instance in which this distributive property of each is particularly clear is its ability to quantify sets consisting of two members only, an ability not shared by every (which is a derivative of each plus ever), or all. Thus, (1) is normal, but not so (2) and (3).

1) The girl held a book in each hand.
2) *The girl held a book in every hand.
3) *The girl held a book in all her hands.

I am not certain whether both could normally be substituted for each in (1), but I think the tendency would be to refrain from

so using....

so using it unless the message was to the effect that there was one book only involved:

4) The girl held a book in both hands.

Another typical use in which the distributive nature of each is very clear, is its appearance in reciprocal constructions, where it may alternate with one, as in one another, e.g.:

5) They saw each other.

In the case of (5), the pronoun subject does, of course, introduce an ambiguity since we do not know whether they refers to two individuals, or to two distinct groups of individuals. However, this ambiguity does not, I think, affect the point at issue, although I can foresee certain difficulties in reducing the second alternative to a water-tight formulation. The chief problem would, I think, arise from the fact that if the distinct members of the bipartite set, say two armies, were said to see each other, it would not be possible to say with conviction whether all members of each set saw all members of the other, or whether all members of one side saw some members on the other, in such a way that the some extended, reciprocally to the whole. As this may be peripheral to my main concern, I shall resist the temptation to follow the point further beyond noting that it represents yet another instance of the agility with which the human mind copes daily with the most complex quantificational problems.

Another case in which the distributive property of each is transparent is in its geometrical use, (OED 4) in which it distributes a plural subject or object and for which the clear example (6) is cited.

6) 1840 Lardner The component plates ... being equal ... each to each in magnitude.

In this example, the construction each to each obviously reflects a conceptualisation analogous to the reciprocal use already noted since it could be replaced without, I think, any substantial change in meaning by the expression to each other.

In modern English, it has become the established practice to employ the singular form of a noun or verb after each, never

the plural....

the plural. Thus, (7) is normal, while (8) is not.

7) Each castle was in ruins.

8) *Each castles were in ruins.

In fact, this rule did not apply strictly in Old English, where the form from which each is descended, namely aelc could be used in the plural, as in:

9) c1000 Sax. Leechd ælce wunde hyt ȝehæleþ (OED 1)
= It cures all wounds.

As singly appears in the definition of the notion DISTRIBUTION, it seems most probable that the modern rule referred to is an overt reflection of that part of the concept. I would not, however, wish to say that distributive quantification always takes singularity in the head and verb. I shall, in fact, interpret some uses of all as distributive even though the plural is employed. This is, from a mathematical as well as semantic point of view, not unreasonable. The notion DISTRIBUTION is secondary to that of PLURALITY. We cannot apply a quantifier 'singly and without exception' to the members of a class unless we are able, in some sense, to separate the members one from another and if separation of the members is possible, it follows that there must be a plurality of members (I am not interested, for the purposes of this essay, in classes with one member only). I shall refer to linguistic evidence for this assertion later. Even so, although all may be used distributively, with a plural head and verb, I think it is probably true to say that there is a tendency to use an item like each which always requires a singular head and verb, if the speaker wishes his hearer to be made sharply aware of the distributive nature of the utterance.

The question of why each should act as a distributive universal quantifier is probably beyond positive solution, but what ever answer is to be found lies, presumably, in its etymological history. I do not, for one instant, suggest that the modern speaker is aware of such a history and that this awareness governs his lexical choice, but, as I stated in my introduction, I do believe that the language of today bears the imprint of the past and, although etymological explanation may often be speculative,

it is....

it is not necessarily worthless. A glance at any reputable study, such as Onions (1966) or the OED, is sufficient to demonstrate that the etymology of modern each is comparatively complex. However, two main semantic notions seem to be involved in the Old English form aelc; continuous time, represented by ae=Ever and sameness, indicated by lc=like. If applied to a single object, e.g. the sun, these two notions will, presumably, combine to produce the sense represented by unchanging, or constant. If, on the other hand, they are used to relate several individuals one to another, then the semantic result would be something like unfailing correspondence. I do not wish to indulge in further speculation, but it does not seem unreasonable, given the validity of the proposal so far, that the notion of DISTRIBUTION has something to do with the experience of finding that successive encounters with discrete objects prove to be encounters with objects which are essentially alike.

6.7.3 Each versus Every

The semantic importance of the time element in Old English aelc is amply demonstrated by the fact that, as OED, under every, puts it:

> ... [when] the etymological force of the word [aelc] had become obscured ... aefre [=ever] was prefixed in order to express more distinctly the original sense.

Thus, modern every is, in fact, derived from the two distinct items aefre=ever and aelc=each, a combination which seems to have been fairly well established as a single word from the tenth century onwards.

This intimate relationship between each and every is reflected in their semantic history and current employment. Every, like each, is basically a distributive, universal quantifier and, in modern English, always takes a singular head (save after cardinal numbers discussed below), so that (1) is normal, but not (2).

1) Every duke is mortal.
2) *Every dukes are mortal.

In fact,...

In fact, OED shows that every was capable of co-occurring with a plural noun until comparatively recent times, giving, under sense 2:

3) 1671 H.M. Every several troupes have their ensignes.

Even here, however, the presence of several is significant, still stressing, as it appears, the distributive nature of the quantification.

The shades of semantic difference between every and each can be distinguished with reasonable clarity if we begin by observing that, unlike each, every cannot quantify a set having only two members. Thus (4) is not, I think, acceptable.

4) *Cromwell held a bible in every hand.

It seems, in fact, to be a definite tendency to select each in preference to every when the number of the set is well known and especially so when that number is small. Thus, I have found consistent agreement among speakers that (5) is 'more likely' than (6), although, of course, the latter is certainly not impossible.

5) Each side of the triangle was badly askew.
6) Every side of the triangle was badly askew.

At the opposite end of the scale, it seems to be the tendency to employ every in preference to each, when the membership of a given set is so large as to be beyond counting. This, I think, accounts for the fact that, while (7) is ordinary, (8) is likely to occur only in a handbook on Logic or Mathematics.

7) Every bird has feathers.
8) Each bird has feathers.

This view that every is used with large sets and each with comparatively small ones is, of course, not original to me. It is certainly implicit in OED's remark, under every sense 1, namely:

> It may ... be observed that each usually refers to a numerically definite group; in contrast to the indefinite universality expressed by every.

From the observation contained in the preceding paragraph, OED's further contention that:

Every directs....

> Every directs attention chiefly to the totality; each chiefly to the individuals comprising it.

seems to follow quite naturally. If this is so, it suggests, to my mind at least, that while every is a distributive quantifier, it is not as markedly so as each and I suspect, although I have not attempted empirically to test my suspicion, that part of the reason for this weakened distributive force is the obvious relation between every and ever, the latter carrying strong connotations of unbroken, or continuous time, i.e. time viewed as a unity.

It may be, although I am not entirely convinced, that every is, as OED claims under sense 3, sometimes used with no distributive connotation as in:

9) There is every prospect of success.
10) They paid him every respect.

It is, I think, significant that only one actual citation for this use is given, a citation which does not clearly support the contention, in my view, namely:

11) 1783 Percy Every domestic ease ... that a mortal could enjoy.

An extremely interesting and common use of every is represented by:

12) Every three weeks, he visits Spain.

In (12), every seems to be quantifying a plural head and its sense is defined by the OED, under sense 1(e) as:

> to indicate successive groups of objects.

In fact, I think it fairly clear that the reference is not always to objects. In (12), it is to spans of time as in (13), cited by OED:

13) 1848 Macaulay A parliament should be held every three years.

In this example, as in my own, the implication seems to be that an event, e.g. a visit to Spain or the holding of a parliament, does or should take place at regular intervals of time.

This is not to say, of course, that the quantification cannot apply to objects conceptualised as things, the following is typical:

14) He....

14) He receives commission upon every three cars he sells.

A parallel citation from the OED is:

15) 1606 Shakespeare In euery tenne ⌊women⌋ they make ⌊the gods⌋ the divels maare. (OED 1e (b)).

We also find the same use with measurements of spatial distance, as in:

16) Every ten miles we stopped for a rest.

reflected by the OED, though still under the same definition referring to objects, by, e.g.

17) 1716 Montague Every twenty paces gives you the prospect of some villa and every four hours a large town. (OED 1e (b)).

The interesting question which arises from a consideration of such cases is: do they represent true instances of a multiple head quantified by every, thus going against the general tendency, or is the combination, cardinal+plural noun, conceptually singular, the plurality of the noun being the result merely of its combination with a cardinal greater than one ?

From a strictly syntactic viewpoint, it appears that the head noun is a true plural. First, we cannot have the combination cardinal+singular noun, as in (18), secondly, the plural form of the verb in the restrictive clause of (19), presuming that the relative pronoun stands for the NP, cardinal+noun, clearly signals plurality.

18) *Every ten car I sell ...

19) I get commission on every ten cars which are sold.

On the other hand, it is possible to construct sentences in such a way that native speakers are not unanimous in their judgements concerning plurality, when every as well as a cardinal+noun, is involved. One such case is:

20) Every ten minutes gained represent(s) a profit to the company.

In such cases, as far as I have been able to establish, most speakers seem to prefer the singular to the plural alternative, although this preference appears not to be maintained if the relative

clause....

clause is left intact, as in:

21) Every ten minutes which are gained ....

Once again, we seem to be speaking of a tendency rather than of a strict rule, but it seems at least possible that in the cases discussed the plural nouns, with their cardinals, at least conceptually represent single sets - sets of ten cars, weeks, hours, etc. and their quantification by every does not represent a radical departure from the general rule that that quantifier governs a singular noun.

If the above discussion is accepted, it does, of course, raise yet another problem, namely: why is each not generally acceptable before cardinal plus plural nouns, as in (22) ?

22) ? Each ten weeks, he visits Spain.

There are, doubtless, a number of different ways in which this question could be approached. As specimens, we might say that since, as the OED suggests, every is sometimes used non-distributively, it has a greater propensity to occur in such configurations than does each which is markedly distributive: secondly, it might be argued that every still retains, if only tenuously, some of its ancient associations with time which are not attached to each, and that in the cases discussed, we are speaking fundamentally, of objects, events, etc., conceptualised as having successive position in a given time-span. As a third alternative, we might simply appeal to the fact that, as the OED shows, every could be combined with plural nouns for many centuries after this option was lost to each and the cases in question merely represent a special continuation of that situation. I must confess that, to my mind, the third alternative is the most attractive of those proposed, but there may well be more plausible ones which I have not considered.

While collocation with a cardinal plus plural noun seems only to be open to every, both that item and each freely combine with an ordinal plus a singular noun, as in:

23) Every third year, he goes to Russia.

24) Each third year, he goes to Russia.

Even in....

Even in these constructions, however, there seems to be a tendency for native speakers to prefer every to each. Clearly, there is no question of a clash between singular and plural here, since ordinals denote position in a numbered series rather than numerosity. The reason for the preference may, I think, have something to do with the tense of the verb. If the tense is past, then either every or each seems equally acceptable, as in:

25) Every tenth year, he went to Russia.

26) Each tenth year, he went to Russia.

In the case of (26), I think that each owes its general acceptability to the fact that the number of sets of ten years involved is implied by the past tense went to be limited - as already noted, each is particularly common with limited, or well defined sets.

The semantic differences which result from the choice of cardinal or ordinal after every are extremely difficult to pin down. However, the contrast between the following pair is, I think, fairly clear.

27) Every four miles, he had a fall.

28) Every fourth mile, he had a fall.

To my mind, what (27) says is that, during the course of every four mile journey, the rider in question had a fall (I am not, of course, excluding the possibility of only one journey involving more than one four mile stretch being the subject of discourse). What (27) does not say is at what point in the journey the fall occurred, perhaps in the first mile, the second, third or fourth. In the case of (28), on the other hand, the assertion is definitely to the effect that the falls in question occurred during the distance represented by the fourth mile, not in the third, second, or first, although, of course, the possibility of other falls occurring outside that distance is not necessarily excluded. There seem to be innumerable other cases in which some distinction, however subtle, can be made, but I shall not discuss them here as they do not materially add to the generality of the commentary.

Before leaving each and every, I should note that they can occur in surface structure with [-count] nouns, as in:

29) He....

29) He drank each beer quickly.

30) He drank every beer quickly.

In these and similar cases, I presume that a count noun, e.g. glass, has been deleted, or is to be understood. Whether the deletion also involves partitive of and the, as well as the plural marker depends, I presume, upon several factors, including the tense of the verb. If the tense is past and the reference is not to the whole course of a beer-drinker's life, then the additional deletions may be postulated. If, on the other hand, the tense is present and the reference is to habitual aspect, then it may be that a different sense of of is involved and no the need be understood.

6.7.4 Any

6.7.4.0 General

The quantifier any is ambiguous between universal and particular application. Disregarding, for the moment, the matter of stress, it will be seen from the following examples, with their rough symbolisations, that this ambiguity is intimately connected with sentence modality. If any occurs in an interrogative, or conditional, it tends to be interpreted particularly: when in a definite, negative, or imperative statement, it is universal.

1) Is anyone there?

1') $(\exists\ x_{?})$ (x is a person . x is there).

2) If anybody comes, I shall go.

2') $(\exists x)$ ((x is a person . x comes) $\supset$ I go).

3) Anyone will tell you where the king lives.

3') (x) (x is a person $\supset$ x will tell you ...).

4) I don't want to see anybody.

4') (x) (x is a person $\supset \sim$ (I want to see x)).

5) Do anything you like.

5') (x_{imp}) (x is a thing you like to do $\supset$ you will do x).

This clear picture is, unfortunately, distorted when we take stress and intonation into account. For example, a rise-fall pitch accent on anyone in a question may imply universal rather than particular application (a fact noted by Bolinger (1960, p.379 fn.6)). Thus,

in (6),...

in (6), it is not clear whether the speaker is questioning the universality of a prediction, or simply stressing his desire to find someone capable of performing the act in question.

6) Will anyone tell me where the king lives?

There seem to be several complicating factors which contribute to such ambiguity. For instance, the reference to future time borne by will in (6) probably assists in the universal interpretation. If only be is involved, as in (7) the special accent seems to convey a sense of specific as opposed to indefinite, rather than universal contrasted with particular.

7) Is anyone there?

On the other hand, if the reference is specifically to past time, then the universal/particular contrast seems to depend upon the predicate. Thus, it seems to me that (8) may be interpreted universally, but scarcely (9).

8) Did anything please Charles, even horse-riding?

9) Did anything go wrong?

Conditionals containing any can also be interpreted as universal when the quantifier bears rise-fall accent, as in:

10) If anything will do, then have a beer.

I am not certain whether there is one, single factor, which could be isolated, behind these fluctuations, but I suspect that it may be a matter of connected discourse and the well known phenomenon of 'copying'. If speaker A says:

11) Anyone will tell you where the king lives.

then, I imagine, his hearer, speaker B, may respond, perhaps in surprise with:

12) Will anyone tell me ...?

Again, in the case of conditions, a typical sequence might be:

13) A: Anything will suit me.

B: If anything suits you, then have a beer.

That something of this sort is at work is, I believe, suggested by

the fact already observed, that questions with be are not readily universally interpretable - a fact which presumably follows from the extreme unlikeliness of a sequence such as:

14) ? A: Anybody is here.
B: Is anybody there?

The force of this argument may, however, be weakened if the predication is changed, as in:

15) A: Anything (you care to mention) is available.
B: Is (literally) anything available?

Probably, if the question in (14B) were to act as a response to a statement, that statement, should it contain a quantifier, would have to contain somebody, not anybody, e.g.:

16) Somebody is here.

Before leaving this question, I should note that the universal any which appears in positive and negative statements and imperatives, is not changed to a particular when under special accent. Thus, anything in (17) seems to be accented simply to underline the speaker's conviction, or sincerity:

17) Anything is worth a try.

There is clearly a great deal more to the question of accent upon any than these remarks suggest, but, in the interests of economy, I shall assume for the remainder of this sub-section, that the quantifier is under neutral, or unmarked accent, though in the light of Bolinger's remarks (1960), I shall return to it when I discuss existential some and any.

6.7.4.1 Distributive any

Probably the best known and, at the same time, most confusing fact about any is that there is a strong tendency for it to appear in negative contexts in preference to some. Thus, while (1) is not ungrammatical, it is not as probable an utterance as (2).

1) We didn't eat something.
2) We didn't eat anything.

So strong,...

So strong, in fact, is the semantic connection between any and neq, that it provides a useful test for establishing the negative status of given items, e.g. few as opposed to the positive status of a few, as can be seen by:

3) Few of them felt any remorse.

4) A few of them felt some remorse.

This negative connection is, moreover, carried over into situational contexts in which questions of reward (i.e. positive) are involved as against punishment (i.e. negative). The validity of this observation, again by no means novel, is demonstrated by:

5) Read some of those books and I'll reward you.

6) Touch any of those books and I'll strike you.

As usual, it must be stressed that this is a tendency, not a rule, especially in the case of any, as is shown by:

7) Follow any of those people and you will get home.

In my opinion, the most satisfying explanation for this negative-any relation is that proposed by Bolinger (1960, p.387ff) which, in turn, is based upon an observation made by Quine (1941-66, p.82). Quine writes:

> When a statement involves 'some' ... attachment of 'not' to its main verb does not in general produce a denial of the statement. ...'Something does not bore George'. is not the denial of: 'Something bores George'.

According to Quine, the normal negation of his declarative sentence would be:

8) Nothing bores George.

Using his symbolisation, the three sentences involved would come out as follows:

9) Something bores George.
$(\exists\ x)$ (x bores George).

10) There is something which doesn't bore George.
$(\exists\ x)\ \sim$ (x bores George).

11) It is false that there is anything which bores George.
$\sim\ (\exists\ x)$ (x bores George).

According to Bolinger, the reason why (8) and its symbolisation in (11) is the more common is that it represents 'categorical denial', i.e. total negation, or out-right rejection of the proposition:

12) Something bores George.

If we now apply this notion of 'categorical denial' to the any-neg relation, we see, according to Bolinger, that it relies, in great measure, on the distributive nature of any. Bolinger's example is:

13) I don't have any friends.

meaning, as he suggests (p.388):

14) I don't have friend A + I don't have friend B + I don't have friend C + ...∞
I don't have whatever friend may be indicated.

The strength of this observation does, of course, depend upon the assumption that 'categorical denial' is more common than what we might call 'particular denial'. Presuming, for argument's sake that this is the case, then the force of Bolinger's assertion is apparent, as is its qualification (p.388):

> Any ... is extremely USEFUL to negation and hence highly frequent IN negation but it is not in a one-to-one mechanical relationship with negation ... The relationship is one of semantic compatibility, of ontological, not grammatical, sense.

If, as Bolinger's paper suggests, any is favoured in negative contexts because it is distributive (the etymological history of the item, especially its ultimate derivation from Old English ān=one, strongly supports this distributive interpretation), then, as it is interpreted as having universal reference in negative statements, it seems reasonable to say that any is distributive in other universal cases, i.e. declaratives and imperatives.

Bolinger's claim with respect to any-neg and the extrapolation to any in declaratives and imperative, certainly seems to be supported by the OED (any sense (1_b) and (1_c)) where it is equated with every (clearly distributive). The relevant claims are:

B. With a....

B. With a preceding negative (explicit or implicit) it denies of a person or thing, without limitation as to which, and thus constructively, of every ... and:

C. In affirmative sentences it asserts concerning a being or thing of the sort named, without limitation as to which, and thus constructively of every one of them, since every one may in turn be taken as a representative.

The OED does not, in fact, mention imperatives, but, as members of that modality are generally held to be derived from a corresponding, or underlying declarative, or negative, it seems reasonable to extend the cited remarks to them.

Although I find Bolinger's discussion of distributive any plus neg quite convincing, I cannot agree when he says (p.388):

> The relationship [of any and some] to questions is similar ... The sequence: You know something? - Joe got married is nonsense with anything. An any opens the entire field to inquiry.

The actual example cited by Bolinger is, obviously correct, but, in my opinion, the reason for the unacceptability of anything in that example has to do with the kind of question it is. Just as there are different types of negative, e.g. conducive, formal, categorical, ..., so there are different types of question. In Bolinger's example, the question seems, to me, to be a gambit question in that it serves merely to introduce a piece of news, e.g. Joe got married, rather than actually asking for information. In effect, the speaker is saying:

15) There is something which I do not think you know: Joe got married.

Thus, the oddity resulting from the substitution of anything seems, to my mind, to arise from the semantic differences between existential any_2 and some, not from the difference between existential some and distributive any_1, as Bolinger's remark:

> an any opens the entire field to inquiry

suggests.

Although,...

Although, like each and every, any_1 is distributive, there seems to be no doubt that it does bear a certain shade of meaning which is absent in those items. Bolinger himself admits (p.388) that it is hard to improve upon the well known definition provided by Jespersen:

> Any indicates one or more, no matter which ...

and his paraphrase (p.388): whatsoever no matter which, clearly represents little more than a variant, as he would indubitably agree. Seuren's assignment (1969) of the feature [arbitrary], is, to my mind, scarcely an advance either. All that it seems to do is to focus upon the no matter part of Jespersen's definition. Where Bolinger and Seuren have failed to make progress, I am not ashamed to admit defeat - it may, after all, be the case that Jespersen was correct and thus put his formulation, which is very close to that given in the OED, beyond improvement. I shall offer a suggestion as to why any developed this sense when I comment upon its existential use.

Before leaving universal any, it should be noted that, while it most commonly collocates with singular, count nouns, it may also be employed with plural count and singular mass nouns, though the latter usage is unusual, as in:

16) Any mistakes are my own.

17) Any water is life-giving.

In the case of (17) I presume that unless there has been recategorisation of the mass noun that we understand a singular count noun of some sort, e.g. type.

6.7.5 Whole

Of the universal quantifiers, it is probably true to say that none lays such emphasis upon the unity of a set as whole. In fact, whole may be felt to imply unity so strongly that some may claim it is not a universal quantifier at all. This certainly seems to be the case as far as some logicians are concerned. In correspondence with me, Professor Quine has been good enough, in the context of a discussion relating to one use of all, to explain that, from his point of view, (1) below is not in fact

quantified at all, since it simply equals (2).

1) Smith can outplay the whole team.

2) Smith can outplay the team.

As far as I understand his position, the key issue is the conflict between the nominalist and Platonist views of sets - the one view claiming that sets have no existence independently of their members, the other that we may think of sets apart from their members, including an empty set. This may, however, be an over-simplification of Quine's position.

However, as far as English is concerned, when we use whole to modify a collective noun, the use does not seem to be redundant. In (3), contrasted with (4), the speaker is clearly laying stress upon his contention that each and every member of the crowd was involved.

3) The whole crowd was restive.

4) The crowd was restive.

Considered in the light of its derivation from Old English hāl=healthy, sound, ..., whole has a number of uses which could scarcely be called quantificational in the traditional sense, e.g.:

5) 1855 Browning. The evil thing out-breaking all at once
Left the man whole and sound ... (OED 1)

However, the OED lists several senses, both of its so-called attributive use and its employment as a substantive, in which the notion of quantity is dominant. In most instances, the quantifier whole modifies a singular count noun denoting an object which may be conceptualised either as a unity composed of discrete individuals, e.g. a football team, or an entity which is normally thought of as monomorphic, or indivisible in a loose sense, e.g. a cake, or an adventure. Thus, for example:

6) 1849 Macaulay. The whole Anglican priesthood, the whole Cavalier gentry were against him. (OED 7)

7) 1850 Arabian Nts. He related his whole adventure from beginning to end. (OED 7)

These may be supplemented by:

(8) Oliver devoured the whole cake in one sitting.

In each....

In each of these examples, it is evident that the intention is to emphasise that no member, e.g. of the Anglican priesthood, detail of the adventure, or particle of the cake, is to be excluded from the predication.

Probably one of the most familiar combinations in which the unifying force of whole is apparent is the mathematical term whole number. The OED gives, for example:

> 9) 1608 R. Norton. A whole number is either a vnitie, or a compounded multitude of vnities. (OED 8b)

Although, as a glance at any dictionary will show, many more uses of whole may be distinguished than those to which I have referred, I shall here mention one only - a particularly interesting case since it appears, at first sight, to contradict the claim that whole is always unitary rather than distributive. I refer to the practice of using whole with a plural noun head, as in the following:

> 10) 1911 Smith. Whole shelves of libraries are filled with the records of this quest. (OED 7c)

The OED explains this use as follows:

> With rhetorical emphasis, where there is an implication of an unusually large quantity or number.

The implication to which the OED refers is, obviously, present in such cases. When a speaker says:

> 11) There were whole acres of pineapples.

he is saying, in effect, that there were a great number of pineapples, many more, in fact, than would normally be expected in one area or at one time. However, it seems to me important to note that in such cases, whole is followed by a prepositional phrase in which the noun, e.g. shelves, acres, rows, ..., seems to refer to some object which is, at least conceptually, regarded as containing other objects, e.g. books, pineapples, cucumbers, ... In such cases, therefore, it may be that we use whole to express the conviction that each container, shelf, acre, etc., is full. In other words, the individual containers represent complete subsets - universes within larger universes, as it were.

Probably....

Probably because of its unitary force, whole cannot be used with mass nouns, except in the special sense paraphraseable as unmodified, pure. Thus:

12) *He gave her a glass of whole water.

is odd because, although there may be many different types of water, e.g. fresh water, river water, etc., and although water may be added to, or contain other substances, e.g. effluence, sugar, ..., we cannot extract any part of the compound itself and still call the remainder water. On the other hand, (13) is normal because we can remove ingredients of the liquid, e.g. fat, and still describe the remainder as milk.

13) He gave her a glass of whole milk.

Before leaving whole, I should comment briefly on its similarity to entire. Apart from the fact that entire cannot function as a noun so that it cannot be substituted for whole in such examples as:

14) 1725 Watts. All parts have a reference to some whole. (OED B2)

15) 1732 Pope. All are but parts of one stupendous whole. (OED B2)

and cannot be followed by the preposition of, as can whole, e.g. in:

16) He spent the whole of his life in China.

I find it extremely difficult to see exactly what differences exist between the two items. There certainly seem to be tendencies at work favouring one over the other in given circumstances, for example, whole is generally regarded as more natural than entire in such questions as:

17) Do you want the whole apple?

18) ? Do you want the entire apple?

Such tendencies are, however, slight and I shall not discuss them here.

6.7.6 All: the universal quantifier of unity and distribution

6.7.6.0 General

It seems almost inevitable that, in a language which has universal quantifiers which are distributive, e.g. each and others which are unitary, e.g. whole, there should

be at least one which may be used in either way. While it is true that every seems sometimes to come close to losing its distributive sense, the best candidate for the dual citizenship in question seems to be all. This is beautifully illustrated by the following:

1) 1860 Thomson. The word All in its proper logical sense means 'each and every'; but it stands sometimes for all taken together. (OED 2)

The following trio is typical:

2) All the angles of a triangle equal two right angles.
3) All England was at war.
4) All men must die.

Very often, it is possible to establish which use of all is in question by substituting each or whole and observing any change of meaning or level of acceptability which results. Thus, using a circumlocution, we may say, in place of (2):

5) Taken as a whole, the angles of a triangle ...

or, in the case of (3):

6) The whole of England was at war.

We do not, however, substitute each in these cases, as can be seen by:

7) *Each angle of a triangle ....
8) *Each England was at war.

In the case of (4), on the other hand, we may substitute each, provided we employ the singular form of the noun:

9) Each man must die.

I should note, here, that the necessity of changing plural to singular in (9) is not, in my view, central since, as I have already maintained, the notion of plurality is prior to that of distribution - an assertion which may receive support from the interesting fact that, when a distributive pronoun, e.g. everybody is used in a statement, tag questions are usually couched in the plural, as in:

10) Everybody went home, didn't they.

(This fact....

(This fact is demonstrated in Langendoen (1970), though his sample of forty six informants may be too small for the tendency noted to be regarded as conclusive support for the claim.)

While, according to this view, plurality and singularity may both reflect distribution, it seems reasonable to assume that plurality is not compatible with unity, in so far, at least, as our conceptualisations are reflected morphologically. Thus, I will take it that all followed by a singular, or plural head may be distributive, but cannot be unitary when followed by a plural head. In the following two subsections, I shall display a number of illustrative examples, followed by a few typical cases in which the distinction is not, to my mind, clear.

6.7.6.1 Distributive all

1) 1782 Cowper. The dogs did bark, the children screamed, up flew the windows all. (OED 2)
2) 1593 Shakespeare. Yea, all of them at Bristow lost their heads. (OED 2)
3) All the doors slammed.
4) All of us are fallible.

In these cases, the mere fact of plurality either marked on the nouns, or pronouns, or verbs, is sufficient to demonstrate that all is distributive. Each of the cited examples may, I think, be paraphrased with a sentence containing each, although such a paraphrase would obviously destroy the poetic effect in (1).

Where all is used 'absolutely' it again seems to be distributive, especially when the reference is to human beings, as in:

5) 1611 Bible. That thy profiting may appeare to all. (OED 7)
6) The bishop spoke to all in turn.

For some reason sentences like (6) appear, in modern English, to be somewhat archaic. Furthermore, their acceptability is diminished fairly sharply if all occupies subject position, as in:

7) All were waiting to hear the news.

or that of indirect object without a preposition, as in:

8) The bishop gave all his blessing.

while, as direct object, all, in this sense, seems to me and those I have consulted, to be barely acceptable at all, e.g.:

9) ? The troops massacred all.

It is not, of course, necessary that all used 'absolutely' should refer only to human beings. Thus, it seems that, in spite of the OED's citation of the following under sense 7: as pl. = all people, the humour of the observation lies, in part, in the ambiguous reference of all to things as well as people (the use alls is clearly not acceptable in modern English).

10) 1878 Birm. Weekly Post. An inn in Marlborough has the sign 'the five alls' They are: a king, with the motto, 'I govern all'; a bishop, with 'I pray for all'; a lawyer, 'I plead for all'; a soldier, 'I fight for all'; a labourer, 'I pay for all'. (OED 7)

As a final illustration, we may note the practice, represented by the OED (sense 12) of re-enforcing the distributive sense of all by such formulae as: one and all and all and sundry (many of the formulae cited by the OED are now archaic, e.g. all and some). Examples are:

11) 1782 Cowper. all and each that passed that way did join in the pursuit. (OED 12)
12) They praised him one and all.
13) He spoke to all and sundry.

6.7.6.2 Unitary all

All is quite obviously used in its unitary sense in the following cases, in each of which, it could be replaced by the whole of without, as far as I can judge, affecting the meaning.

1) 1849 Macaulay. At Exeter all Devonshire had been gathered together to welcome him. (OED 1)
2) 1800 Montgomery. 'Tis not the whole of life to live, nor all of death to die. (OED 6)
3) All England was at war.
4) All of the work was done by one man.

In other cases, the difficulty, if not impossibility of substituting each for all seems to support a unitary interpretation, as in:

5) 1611 Bible....

5) 1611 Bible. All flesh is as grass. (OED 1)

6) All suffering is the result of Man's agency.

7) 1855 Macaulay. He disclaimed all intention of attacking the memory of Lord Russell. (OED 4)

8) The bishop refused all help.

In such cases as these, there seems to be a number of factors contributing to the unitary force of all. In (5), for example, the mass noun flesh seems, almost by definition, to refer to an undifferentiated whole, that is, to a unitary concept. In examples like (7), on the other hand, the unitary sense of all may well be due, in part, to the fact that the verb has negative implication as well as the fact that intention has an abstract referent. That the whole predicate phrase is involved, is strongly suggested by (8) in which all becomes distributive once a plural, count noun, e.g. petitions is substituted for help.

6.7.6.3 Distributive or unitary all

As is the case with most taxonomies, the attempt to distinguish between distributive and unitary all founders upon a number of borderline cases. The following are typical examples which are not, to my mind, clear.

1) 1849 Macaulay. Above all, he had been long in exile. (OED 9)

2) 1763 Brown. Horace ... hath set him above the old philosophers, as a teacher of all virtue. (OED 1(a))

While the possibility of interpreting above all in (1) as meaning above all things seems to favour a distributive reading, it may be argued that the stylistic point of deleting, or refraining from using things was to give the sense of unity (I do not insist that Macaulay was actually conscious of this effect). On the other hand in (2), Brown's use of virtue in the singular fairly strongly suggests unity. It may, however, be argued, here, that the reference is not so much to the over-all concept VIRTUE, but rather to each and every type of virtue, e.g. honesty, sobriety, industry, etc. in which case, all could be regarded as distributive.

Borderline cases such as these, and there must be innumerable examples similarly difficult to classify, are, of course, disturbing and a cause of some disappointment. One would like all

cases to....

cases to be clear cut. However, as countless students of Language have been forced to admit, the object of their research is not a well behaved, geometric animal, neatly classifiable and amenable to compartmentalisation. No matter how hard one tries, it seems that natural languages will always either break out of a given taxonomy, or else will, in part, elude it altogether, especially when Semantics is in question. Perhaps it would be appropriate to end this subsection with a quotation from Milton which typifies the uncertain use of the quantifier under consideration:

3) What though the field be lost, all is not lost.

6.7.7 Summary

We may think of universal sets in terms either of unity, shown in:

1) 

or distribution, diagrammed:

2) 

It seems that the notion of plurality is logically prior to that of distribution and there is some evidence of a linguistic nature, namely, the behaviour of tag questions which supports this assumption. Thus, while distribution and plurality are not mutually exclusive, from a linguistic viewpoint, unity and plurality do seem to be so.

Among the overt, universal quantifiers, each seems to be unambiguously distributive, while every, which is historically related to each, is usually distributive. Any_1, derived from an=one, appears to be a distributive quantifier operating within the sentence modalities of declarative, negative statements and imperatives, although it may be interpreted as universal in questions and conditionals also, provided it bears a special rise-fall pitch accent.

The item whole, if it is taken to be a quantifier, is unambiguously unitary, so much so that it is not used with mass nouns, except in the special sense unmodified, pure.

The quantifier all is ambiguous between the distributive

and unitary

and unitary senses and, while the relevant interpretation is apparent in many cases, there exist others in which it is difficult, if not impossible, to detect the distinction clearly.

6.8 Existential any_2 and some

6.8.0 General

I have already referred to the masterly study of the relationship holding between the two existential quantifiers any_2 and some made by Bolinger (1960), and to his conclusion that the main reason for the privileged distribution of any over some in negative contexts is the distributive nature of that item which allows for categorical as opposed to partial denial. As this seems to me to be a reasonable hypothesis and one which I can see no way of, or reason for disproving, I shall not repeat that part of his work in this section.

Nevertheless, as a preliminary to my own discussion of these two quantifiers, I think it appropriate to refer to Bolinger's claim (p.379 ff) that:

> ... any does not have to be under "contrastive primary stress" ...
> ... the some-any distinction is maintained regardless of accent ... We can say that any is accented as any other word is accented - to focus on its meaning; and where any is accented, some is accented ...

Bolinger lists a wide variety of sentences demonstrating the validity of this observation, e.g.:

1) Was there any (some) [s ∧ m] attempt at escape? There wasn't any attempt at escape. There was some [s ∧ m] attempt at escape.

I shall, in what follows, take it that special stress upon either quantifier is for the sake of emphasising their meanings, without, of course, thereby asserting that they may not, under any circumstances, carry 'contrastive, primary accent'. I shall also assume, as do others including Bolinger, that special stress placed upon some indicates a difference in meaning. The unstressed form [sm] functions in a manner similar to that of the indefinite article

when that item is similarly unaccented, but applies either to plural, count nouns, as in:

2) Some [sm̩] boys were seen near the station.

or to mass nouns, where an indefinite amount is indicated, as in:

3) I'll have some [sm̩] bread, please.

Accented some, on the other hand, namely [s∧ m] carries overtones of specificity, as in:

4) Some, i.e. [s∧ m] people must like Amin.
5) I would advise you to eat some [s∧ m] food, or you'll be unable to concentrate.

I shall return briefly to this contrast in the next subsection.

6.8.1 Any_2 versus some and the centrality of the notion of EXISTENCE

When one considers the nature of the well known and much discussed relationship which holds between any_2 and some, it is tempting to fall back upon a solution like that which Alexander adopted when confronted by the Gordian knot. Although native speakers seem to have no particular difficulty in selecting either item as the most appropriate in a given encoding situation, the semantic complexity of their relation is so intricate that one cannot help agreeing with Seuren (1969) when he described it as "baffling". The approach which I offer below should be seen as tentative only. I have attempted to find many solutions along different lines, none of which I put forward here, but I am confident that other analyses are possible and it may very well be that there are some among them which are more apt and insightful than my own.

In my view, the relationship between any_2 and some depends upon their common assertion of EXISTENCE (hence their philosophical label 'existential') and they are to be distinguished in terms of the supplementary notions of INDIFFERENCE, DEFINITENESS and INDETERMINACY, the first of which attaches to any_2, the latter pair to some. I do not, of course, suggest that other positive quantifiers, e.g. all do not also assert EXISTENCE of given objects.

To do so....

To do so would clearly be nonsensical, but, in such cases, the quantifier seems to focus upon some other notion, e.g. the relational notion of UNIVERSALITY and, as it were, to take that of EXISTENCE for granted.

That the notion of EXISTENCE is dominant in these two quantifiers is, I think, suggested by questions like the following which seem to be concerned purely with EXISTENCE in space or time apart from marginal restrictions:

1) Is there anything in the bottle?
2) Is there something in the bottle?
3) Did anything happen yesterday?
4) Did something happen yesterday?

If some other quantifier, e.g. <u>everything</u> is substituted for those in (1-4), not only must we delete existential <u>there</u> in the first pair, but we also make assumptions of a relational kind, i.e. the objects of events referred to belong to a single class and combine to make up its total membership.

Assuming, however, that EXISTENCE is central to the meanings of both <u>any</u>$_2$ and <u>some</u>, it remains a fact that they often operate as semantically distinct items. Thus, <u>any</u> in the following implies, as the OED puts it <u>indifference as to the particular one or ones that may be selected</u>.

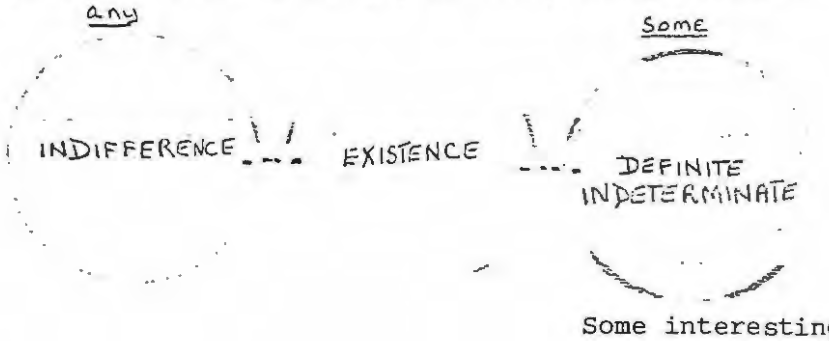
5) 1590 Shakespeare. If any Siracusian borne come to the bay of Ephesus. (OED ⊥)

<u>Some</u> in (6), on the other hand, implies of its head that it is definite, in the sense of being specific, but is, at the same time, indeterminate:

6) 1855 Kingsley. Some ran, some did not run. (OED 7)

This analysis of the <u>any</u>$_2$-<u>some</u> relation may be diagrammed as follows, where the broken lines are intended to indicate that the supplementary notions are not always, in every case, essential.

7)



Some interesting....

Some interesting questions now arise. First, we may ask how, or why does $\underline{any}_2$ (as well as $\underline{any}_1$) have the supplementary notion of INDIFFERENCE in many, if not most, of its uses. The history of the word lies so deeply buried in that of English itself that in my opinion, one can only speculate. It does, however, seem plausible to suggest that as any is a derivative of ān=one it would naturally tend towards INDIFFERENCE when there is a possibility of the predicate in question applying to many objects. Thus, if one says:

8) If any/one man arrives, I will leave,

where the generality of man is such that a vast multitude of men are capable of performing the act of arriving, then it seems logical, i.e. conforming to common sense, that the speaker should be indifferent as to the identity of the man in question. Likewise in questions, e.g.:

9) Did any/one prisoner escape?

I presume, though I cannot prove it, that any would not have been employed to quantify plural heads, e.g. any gentlemen, or mass nouns, e.g. any water until its relation to ONENESS had, again quoting the OED: [become] subordinated to that of indifference. It may be that a full scale study of the Old English corpus might throw some light on this question, although, as the following genitive plurals demonstrate, even in that period of the language's history, ǣniq could have plural association.

10) ānra gehwilc:- Gefultuma mē ānegra (Bosworth and Toller supplement).

Secondly, one must consider the Janus-like status of some. At first sight, it seems as though the supplementary notions of DEFINITENESS and INDETERMINACY are compatible. However, it is apparent that, in innumerable speech situations, it must be the case that the speaker desires to indicate that a given predication applies only to a limited set of objects, events, etc., but, for various reasons, not necessarily always having to do with his own knowledge, does not attempt to identify them precisely. In this view, I presume that the notion of DEFINITENESS is prior to that

of....

of INDETERMINACY when the phonetic realisation [s ∧ m] is involved, but that the contrary situation holds when the realisation is [s̩m̩]. This, I take it, is partly what lies behind Bolinger's claim (1960, p.379):

> ... [s̩m̩] is the plural and mass equivalent of the indefinite article, and ... [s ∧ m] with a singular countable is the emphatic equivalent of the indefinite article.

Bolinger's claim should, I think, be extended somewhat in view of the fact that [s ∧ m] is probably as common with plural count nouns as with singular. Its general tenor, however, is not, I think, dramatically at variance with my own approach, although I am not entirely convinced that emphatic a/an and [s ∧ m] are, in all respects, equivalent. An interesting pair of sentences which might throw some light on this last, tentative reservation has been suggested to me by Professor L.W. Lanham, namely:

11) Some [s ∧ m] inventor must have invented a talking machine by now.

12) An inventor must have invented a talking machine by now.

In its emphatic use [s ∧ m], some seems often to imply a contrast between those with respect to whom the predication is apt and others for whom it is inapplicable. A typical example seems to be:

13) 1816 Wilson. Some, my son, would bid thee trust in time. (OED 5)

Often this contrast is underlined by using the formula some ... others, as in:

14) 1852 Miss Yonge. The burghers hurried out, some with the straight cross of France others with the saltire of Burgundy. (OED 7(b))

The notion of DEFINITENESS appears to have been prominent from the earliest times in the use of some. Thus, we find, in Old English, such examples as:

15) Sum swithe gelaerned munuc (Aelfric) = A certain very learned monk.

The OED gives, under sense 1 (adjective), the following example:

16) 1382 Wycliff. Ther was sum prest, Zacharie by name in the dayes of Erodue.

This usage, it suggests is 'obsolete', but I am not entirely convinced that it is not still to be seen, though perhaps somewhat weakened, in, e.g.:

17) There was some fellow, called Michael, who fought for the Tzar.

An extremely interesting extension, if so it may be called, of this use of some in which the definite notion is uppermost, is found in sentences like:

18) 1800 Law Times. There is some variation in the mode in which the custom is stated. (OED 4B)

In such cases, the OED suggests some indicates:

> A certain (unspecified) amount, part, degree, or extent of (something), freq. implying 'not little, considerable'.

This suggestion of "not little, considerable" seems very much to be in evidence when some is used to quantify distance or length, as in:

19) 1891 Peacock. Basil hesitated for some time. (OED 4B)

20) 1820 Miller. These authors answered the challenge, each of them in a work of some length. (OED 4B)

Certainly, it is easy to find countless parallels from contemporary usage, as in:

21) You can't expect us to look fresh, we've walked some way, I can tell you.

Although, as far as I know, the use of some to suggest that an object or event is noteworthy for brilliance, size, etc. is more common in American than in British English, I presume that this is a development from the usage just noted above. A typical example would be:

22) Well, that was some party!

These observations should not be taken as tantamount to a

suggestion that the notion of DEFINITENESS tends to be stronger than that of INDETERMINACY, in all cases. In for example,

23) 1876 'Ouida'. A triptych of some old fogey painter. (OED 2B)

the OED suggests that the quantifier is used to indicate:

One or other; an undetermined or unspecified.

This tendency is, I think, fairly well demonstrated in the common employment of the formula some ... or other, as in:

24) Some man or other called this evening.

I imagine that it is this option of focusing upon the notion of INDETERMINACY, which lies behind the otherwise perplexing practice of employing some with cardinal numerals, when the implication seems to be one of APPROXIMATION, as in:

25) 1892 Photograph. Ann. The club consists of some 40 members. (OED 9B)

6.8.2 Summary

The two quantifiers any_2 and some are related in a special manner. Any seems to be strongly associated with negative contexts and some with positive. This is, however, a tendency only, since, as Bolinger points out, we may use some in negative sentences. A very plausible explanation for the tendency, put forward by Bolinger, is that any, being distributive, allows for 'categorical denial'.

Although the notion of EXISTENCE must be present as part of the meaning of any positive quantifier, it seems to be central to the interpretation of any and some. These items, however, also indicate supplementary notions, INDIFFERENCE, in the case of any and DEFINITENESS and INDETERMINACY in that of some.

As far as the double-faced nature of some is concerned, it seems sometimes to be more prominent with respect to DEFINITENESS and at others with regard to INDETERMINACY and this tendency may be reflected in its two phonetic realisations [s∧ m] and [sm].

6.9 Proportional Quantification

6.9.0 General

There are innumerable proportional quantifiers in English and the complexities surrounding their individual uses are extremely intricate. In this account, therefore, I shall treat only a few items and, not wishing to present a series of scattered observations shall not discuss each and every problem they present.

As indicated by Lakoff (1970), reflecting such earlier authorities as Frege and Russell, proportional quantification may be thought of as operating in two ways. It may express the size of a given set, or it may refer to the proportional relationship holding between the members of a subset or sets and the total membership of the set in question. Thus, in (1) it is the size of the set as a whole which seems to be quantified, while in (2) the reference appears to be to the size of a subset relative to the whole.

1) There are many peacocks in Africa.

2) Many of the leopards were sleeping.

It may, in fact, be argued that it is inappropriate to describe the first use as 'proportional' since, in uttering a sentence like (1), the speaker is probably not thinking in terms of proportion at all, but is simply stating a fact about the absolute size of the set of birds in question. Such an assertion certainly seems to hold when cardinal numbers are involved, as Sapir demonstrates (1944, p.124). As, however, I can see no clear way in which such an assertion could be verified, when cardinals are not concerned, and as the possibility that such sentences do reflect a proportional conceptualisation must exist - the speaker may be thinking about the class of all possible peacocks, or of the relative size of the class of African peacocks, compared with other African objects such as hyenas - I shall ignore this objection for the purposes of this essay. I should add that, even if the cited objection is fundamental, it is clear from the fact that the same item, many appears in both (1) and (2) that the distinction between absolute and relative size cannot serve as a basis for classification of the quantifiers in question.

Although there are, doubtless, several ways of looking at

proportional....

proportional quantifiers, I shall handle them within a tripartite system like that developed by Sapir (1944-49) which rests upon the notions more than, less than and a norm. In his essay, Sapir devotes most of his attention to what he called 'grading judgments', reflected, for example, in the contrast between near-far, good-bad, ... and has relatively little to say concerning overt, proportional quantifiers as such. However, as the following demonstrates, he saw the tripartition referred to as being central to this type of quantification. He wrote (p.122):

> Such contrasts as ... little and much, few and many, give us a deceptive feeling of absolute values within the field of quantity comparable to such qualitative differences as red and green ... This feeling is an illusion, ... many, to take but one example, embodies no class of judgments clustering about a given quantity norm which is applicable to every type of experience, ... but is, properly speaking, a purely relative term which loses all significance when deprived of its connotation of "more than" and "less than". Many merely means any number, definite or indefinite, which is more than some other number taken as a point of departure.

This view is, of course, based upon a premise of a basically psychological nature, set out by Sapir as follows (p.122):

> The first thing to realise about grading as a psychological process is that it precedes measurement and counting.

As far as I have been able to ascertain, this premise is still maintained by many and I shall not, therefore, discuss it here.

I should, however, qualify my acceptance of Sapir's analysis of proportional quantifiers like many by saying that I feel that he underestimates the role played in their meaning by the general concepts of size, BIGNESS and SMALLNESS. While it may well be true that the size of a given crowd at a football match is judged as big or small and quantified as many or few according to the speaker's experience of crowds, I cannot help thinking that many tends to suggest a large number and that few usually carries

connotations of SMALLNESS. Thus, in (3), the speaker may be focusing largely upon the fact that the number of persons present was considerable:

3) Many people were in the bull-ring.

It is, moreover, rather more than a mere quibble to point out that if Sapir's definition of many were taken literally, then a figure like 2 would represent many relative to 1, as would 3 to 2 and I find it difficult, if not impossible, to conceive of a situation in which a set consisting of two members would be described as many, save for such idiomatic uses as:

4) A: I only made two errors.
B: Well, that was two too many.

6.9.1 Reference to A NORM

Perhaps the most basic fact concerning reference to a norm, as McCawley, Lakoff and others have indicated, is that the norm in question depends upon the context. Thus, Sapir says (p.123):

> This point of departure [i.e. the norm] obviously varies enormously according to context. For one observing the stars on a clear night thirty may be but "few", for a proof-reader correcting mistakes on a page of galley the same number may be not "many" but "very many".

There seem to be at least two basic ways in which a speaker may establish reference to a given norm. He may employ certain adjectives, e.g. average, usual, normal, ... plus a noun denoting quantity such as number, or amount, as in:

1) The usual number of mistakes in one performance is ...
2) The average amount of energy wasted in worrying is ...

In such structures, I presume of is to be taken partitively and, doubtless, an investigation of the adjectives concerned would reveal many semantic differences, some of which would be fundamental. For example, while usual and normal in (3) and (4), acting as direct modifiers of man may, in one sense, refer to identity, average in (5) probably still refers to the norm.

3) The usual man came this morning.

4) The....

4) The normal man came this morning.

5) The average man is under six feet.

It seems, ignoring special stress, a little strange to say (6):

6) ?The average man came this morning.

I presume that average in (6) identifies the man in question by singling him out from certain others, e.g. the clever man, ...

A second alternative is to employ an overt quantifier, e.g. many and attach a comparative adjunct to the string, such as as usual. Thus, we have:

7) Many people were in the saloon, as usual.

When the particle as is used before the quantifier as well as in the adjunct in the construction as many as ... the quantifier has, in the OED's words:

> ... a weakened sense, expressing the notion of number in the abstract.

A typical example is:

8) 1807 Crabbe. As many words as make an even line; as many lines as fill a row complete; as many rows as furnish up a sheet. (OED 5)

We may, of course, use certain gradable adjectives in place of the quantifier and achieve the same result, e.g. big in:

9) The crowd was as big as usual.

6.9.2 Proportional quantification by comparative structures

Before entering upon a discussion of some of the overt proportional quantifiers, I should refer briefly to the extremely common practice of indicating proportional judgments by means of comparative constructions which, in the case of objects, employ the phrases more than, less than, or fewer than. Two typical cases are:

1) There are more people in the drawing-room than ...

2) There is less whisky in the bottle than I thought.

3) There are fewer outbreaks of swine-fever now than formerly.

In these structures, the best known tendency is that according to

which less is used with mass nouns, e.g. whisky, sand, ... while fewer collocates with count nouns, e.g. leopards, people, ... This is, however, in the case of less, a tendency only and, in spite of school-grammars, cannot be elevated to the status of a rule. Many speakers, for example, find (4) perfectly acceptable:

4) There are less accidents now than formerly.

although (5) would be judged 'incorrect' by the overwhelming majority:

5) *There is fewer sand flying about than formerly.

Familiar though the tendency noted may be, it is not so important as the fact that proportional quantification of this type reflects the proportional relation with minimal overtones as to abundance or exiguity. More than does not imply a large number, quantity, etc., nor does less than necessarily imply a small number, quantity, etc. Interestingly enough, as Sapir says (p.131):

> Certain other terms, of originally specialised and normated application, such as greater, larger, and smaller have taken on abstract significance (e.g. a greater amount of = more ... than, a larger number of = more ... than, a smaller number of = less, fewer) ...

and these formulae too seem equally neutral with respect to size.

6.9.3 Upward and Downward Tending Quantifiers

6.9.3.0 General

In this subsection, I shall limit myself to a discussion of the following quantifiers only:

a) many, much, plenty, lots;
b) few, several, little.

Those listed under (a) I shall take to be upward tending - that is, to denote quantities conceptualised as above a given norm - those under (b) I take to be downward tending - referring to quantities regarded as below a given norm. I shall assume throughout that of is to be interpreted as partitive and not as possessive.

6.9.3.1 Many....

6.9.3.1 Many versus Much

Of the upward tending quantifiers listed above, many and much seem naturally to lend themselves to a comparative discussion. They are like each other in that they may be followed by of, or immediately precede the noun they govern, as in:

1) 1839 Thirlwall. The translation which I made many years back. (OED 2)
2) 1871 Morley. Many of his ideas ... did not belong to him peculiarly. (OED 3)
3) 1875 Jowett. There is much truth in that remark of yours. (OED 2)
4) I don't want much of your time.

This is an option which does not seem to be open to plenty, or lots, except when they are used as 'quasi pronouns' or 'adverbially', as can be seen by the unacceptability of:

5) *Plenty men arrived last night.
6) *Lots people arrived last night.

On the other hand, many and much contrast very strongly with respect to the type of noun with which they collocate. Many seems only to govern [+count] nouns in their plural form, while much appears to collocate only with [-count] nouns. The examples so far given, in conjunction with the following trio of odd sentences suffice to demonstrate this fact:

7) *Many donkey likes hay.
8) *Many water flows through Oxford.
9) *Much people sit in the laboratory.

The semantics of many and much is, however, rather more complex than this. For example, although (7) is unacceptable because many is followed directly by a singular, count noun, it is a common practice to employ that quantifier in the configuration: many a/an, as in:

10) 1853 Arnold. When many a scythe in sunshine flashes. (OED 1)

or, to give a more prosaic example:

11) Many a man has been ruined by over-indulgence.

In these constructions, many seems to be used distributively

and, I presume, it is the equation between a/an and the numeral one which makes this distribution possible. In cases, such as (12), where the head is one, I take it that one is the indefinite pronoun, not the numeral, otherwise such examples would be nonsensical.

12) Many a one will meet his fate before dawn.

Much, obviously because it governs [-count] nouns, cannot be distributed in this manner. Thus, (13) is bizarre:

13) *Much a water was spilled last night.

The contrast between [+count] and [-count] heads also lies, as far as I can see, behind the different ways in which the quantifications represented by many and much are generally emphasised (I am not thinking of special stress). In the case of many, the quantification can be emphasised by repetition, as in:

14) Many, many Persians drink sherbet-water.

or by what I take to be a pseudo conjunction, as in:

15) 1889 Browning. In its hope that for many and many a year ... . (OED 1)

Finally, emphasis may be achieved by using the modifiers a great, or very (in colloquial speech everso provides a third alternative) as in:

16) He drank a great many gins.

17) He drank very many gins.

I assume that the semantic purpose of a in cases like (16) is to convey a sense of unity with respect to the multitudinous membership of the set of gins involved. Lowth, as I have shown in chapter one, made a similar assumption.

If we encounter possible ways of emphasising the quantification represented by much, it becomes apparent that, apart from colloquial everso, the practice is to use very and, optionally, indeed, as in:

18) She likes him very much (indeed).

Repetition is certainly unusual, if not entirely unacceptable, as in:

19) ?My horse eats much, much hay.

(much, much can, of course, be used to intensify comparative constructions such as: much, much more than was necessary). Pseudo conjunction and modification by a great, seem equally strange, as in:

20) *She drank much and much water.

21) *They ate a great much sponge-cake.

In cases like (21), the common usage is: a great deal of.

Finally, there is a tendency, in Modern English, to avoid the use of much in simple, affirmatives, although, in questions and negatives, it remains perfectly common. Thus, I find sentences like (22) archaic:

22) His horse drank much water.

but (23) and (24) are perfectly normal:

23) His horse didn't drink much water.

24) Did you spend much time in Poland?

This tendency clearly does not apply to many, which is perfectly common in simple declaratives. I can see no clear reason why, in fact, the tendency should exist at all - it cannot be a matter of [-count] as opposed to [+count]. I can only suggest that it might foreshadow the gradual disappearance of much from the core of the quantifier vocabulary of English. I base this suggestion on the fact that many speakers while confessing that (26) is more likely than (25), also assert that the former is 'better English' and such assertions commonly reflect comparative reverence for a more conservative mode of address.

25) I have much to do.

26) I have lots to do.

Strangely enough, the tendency does not apply to much in complex declaratives, especially when comparison is involved, as in:

27) He has too much to do.

6.9.3.2 Plenty and Lots

Unlike many and much, the quantifiers plenty and lots may be used either with [+count] or [-count] nouns, as can be seen by the following.

1) His horse drank plenty/lots of water.

2) Plenty/lots of people dislike flying.

Taking into account the fact that both items may act as ordinary nouns, in which case they do not appear to have a strictly quantifying function, it seems that they are interchangeable in all but a few contexts. The most important exception to this generalisation arises in the case of the optional formula a lot. While a lot, or lots could equally well replace plenty in:

3) 1857 Maurice. A treatise containing plenty of errors. (OED 2)

only lots is a suitable alternative in (4), and even then, it is considered by some to be somewhat informal.

4) 1885 Fargus. We were in plenty of time. (OED 2)

In the following, neither a lot, nor yet lots provides an acceptable alternative to plenty.

5) 1852 Miss Yonge. Compliments passed in plenty. (OED 1)

I presume that the explanation behind these facts is to be sought in the etymological histories of the words in question. Lots probably developed its quantificational use by extension of the sense in which it meant a collection of objects, as in:

6) He sold his furniture as one lot.

Plenty, on the other hand, coming into English from Old French plentet, itself derived from Latin plenitat-em = fullness, abundance, seems always to have had strong quantificational connotations. Perhaps, we do not employ a lot, or lots in such sentences as:

7) *Compliments passed in a lot - lots.

because lot is still associated with the notion of a collection of concrete objects and this association is felt more strongly in the prepositional phrase. The presence of in is clearly significant, since we can say (8), with perfect ease.

8) He said a lot / lots of things.

In the case of (4), I presume that the unacceptability of a lot, and the normality of lots has something to do with our general conceptualisation of time combined with the semantic function of the preposition in. If the preposition is not present, then

a lot is....

a lot is as acceptable as lots, or plenty, as can be seen by considering the following.

9) He spent a lot of time on his studies.
10) He spent lots of time on his studies.
11) He spent plenty of time on his studies.

Although, even here, I am not sure that plenty is precisely synonymous with a lot, or lots - plenty seems to imply that the time spent was sufficient, while a lot, or lots suggest that it was more than the expected amount. That our conceptualisation of TIME has something to do with the unacceptability of: in a lot of time, as well as the semantic force of in is suggested by the following which is normal.

12) She was lying in a lot of water.

Before leaving the quantifiers under discussion, I should note the common use of a/an+adjective+lot to refer to an entire class, as in:

13) 1896 Kingsley. He said the natives were an exceedingly bad lot. (OED 8)

In such cases, neither plenty, nor lots may take the place of a/an... lot. I imagine that the explanation for this is, again, to be found in the semantic history of lot, especially its employment to refer to a collection of objects from which the quantificational sense probably developed.

6.9.3.3 Few, Several and Little

The quantifiers listed in the title above, contrast with those discussed in the previous two subsections in that they are downward tending from a given norm. On the one hand, however, few and several are like many in being employed only with [+count] plural heads, while little generally corresponds to much in being typically used with singular [-count] nouns (hence, I presume, the tendency to use its comparative less with [-count] nouns). The following cases are typical.

1) Few people like hunting.
2) Several people like hunting.
3) Little water remained in the bottle.

On the....

On the other hand, like many and much, few, several and little may all appear in partitive constructions, e.g.:

4) Few/several of the fish were edible.

5) Little of the water was left.

Apart from these general considerations, however, there are a number of important differences to be noted in the use of these quantifiers.

6.9.3.4 Few versus Several

A fundamental difference between few and several is that the former has negative implications unless it is preceded by the indefinite determiner a. Several, as far as I can tell, never carries such connotations. The following are illustrative.

1) Few people said anything.

2) A few people said something.

3) Several people said something.

4) *?Several people said anything (i.e. $anything_2$).

It should be emphasised that the negative import of few as opposed to the positive import of a few is nothing more than a connotation. Strictly speaking, a sentence like (1) asserts that a certain, unspecified but small number of people said something - from a logical point of view, it is positive - it would be strange to utter such a remark if the speaker knew perfectly well that literally nobody said anything.

Why this negative/positive contrast should have developed is, as so often in semantic studies, a matter of specualtion. However, I take it that it must have something to do with the fact, already noted, that a/an can be used to indicate specificity. Probably, when a speaker says: a few ... he uses the article because he is convinced that the predication applies to a small number, although he is not able, for some reason, to identify the referents in question. On the other hand, when the indefinite article is not employed, the speaker may be concerned with transmitting the message that the predicate does not apply to many, without being concerned to emphasise the fact that specific individuals are involved. That something of this sort is behind the distinction is

suggested by the somewhat strange practice of using the formula quite a few to suggest a large number, as in:

5) Idi Amin has quite a few enemies.

where quite presumably acts as an amplifying adjunct.

Further support for this line of speculation is supplied by the fact that a few can be used to suggest an indefinite, not necessarily small number, as in:

6) 1801 Southey. A faithful few prest through the throng to join him. (OED 2(b))

Turning to several, according to the OED, its chief current usage is to refer to an indeterminate number, which, though generally thought of as exceeding two or three, is not felt to be large. A typical example is:

7) 1883 Stevenson. Some of the men ... remembered to have seen several strangers on the road. (OED 4)

While I am not in fundamental disagreement with this view, I and many I have consulted, feel that several is very frequently used to suggest that, although the number of objects involved is not literally great, it is not small either. Thus, in (8) the speaker may be implying that quite a large number of people felt satisfied, this is especially apparent if several receives extra stress.

8) Several people were very pleased with the result.

While several is like a few in that it can refer to an indefinite number, it is unlike few in that it may be used in the sense of different, as in:

9) 1823 Badcock. Two or three lenses may be kept, of several different lengths. (OED 2(c))

Clearly, this use of several is attributable to its original sense: existing apart, seen in its Latin source separ and found until recent times, as in:

10) 1707 Mortimer. Then grind or beat them, keeping the fruit several ... . (OED 1)

6.9.3.5 Little....

6.9.3.5 Little

As I have noted already, the most important difference between little and the two other downward tending quantifiers discussed is that, like much among the upward tending quantifiers, it normally collocates, when quantifying objects conceptualised as things, with [-count] nouns, as in:

1) 1709 Pope. A little learning is a dangerous thing. (OED 11)

Little, however, is not entirely parallel to much in its behaviour. For example, it is frequently preceded by the indefinite article a, as in (2), an option which is not open to much.

2) 1901 Black. It takes a great deal of life to make a little art. (OED 11)

As in the case of a few and few, the use of the article seems to carry connotations of positive as opposed to negative import. This is strongly suggested by the following in which the tags clearly mark the status of the statements.

3) A little was said, wasn't it?

4) Little was said, was it?

While, in the case of (3), I do not think a positive tag is possible, unless the intention is to convey sarcasm, disbelief, etc., it is not as difficult to attach a negative tag to (4), so that, as usual, the general claim must be taken as referring to a tendency, not a strict rule.

Another very important respect in which little, qua quantifier, differs from much is in its ability to modify nouns referring to 'collective unities' - objects made up of discrete individuals, as in:

5) 1871 Morley. In the realm of mere letters, Voltaire is one of the little band of great monarchs. (OED 4)

Clearly, little may be used in this manner because it is strongly associated with the notion of physical dimension, as in:

6) The admiral was a little man.

and, in this usage, its antithesis is not much, but large, or big, as in:

7) The duke had a large following.

Probably....

Probably much cannot be used of 'collective unities' because in modern English it governs [-count] nouns only and 'collective unities' necessarily imply plurality, - a notion alien to that of [-count].

6.9.3.6 Summary

Proportional quantification may be thought of as operating in two ways: to refer to absolute, or relative size. It is possible that, in the first usage, the term proportional is inappropriate.

The system of proportional quantifiers may be viewed in terms of a tripartite scheme consisting of the notions MORE THAN; LESS THAN and A NORM.

The norm, in any given case, depends upon the context. What may be many in one context may be few in another.

When the norm itself is referred to, the general practice is to employ circumlocutions such as: an average number of, or, the usual amount of, etc. ... In certain cases, e.g. many, the norm may be indicated by using the quantifier plus a comparative adjunct, as in: as many ... as usual.

Although, in general, Sapir is correct in saying that words like many and few mean "more" or "less" than a given number, there is a tendency for such quantifiers to carry connotations of magnitude.

The notions MORE THAN and LESS THAN may be expressed by explicit comparison. When this is so, there appears to be no suggestion of GREATNESS as opposed to SMALLNESS.

Among the upward tending quantifiers, many applies to plural, [+count] nouns, while much governs singular, [-count] nouns.

Many, because of its association with plurality, is often used distributively, as in many a... in which case, a/an is to be interpreted as the numeral one.

There are several ways in which quantification represented by many may be emphasised, e.g. many, many. The usual one open to that represented by much seems to be through the intensifier very.

Unlike many, much appears to be falling out of use in simple, declaratives, although it is still perfectly common in negatives and questions.

The two....

The two upward tending quantifiers plenty and lots are alike in that they may govern either [+count] or [-count] nouns, but differ in other respects, most notably: the variant formulas a lot and lots cannot replace plenty in certain contexts involving the preposition in, while plenty cannot replace lot in the common formula a/an+adjective+lot. These incompatibilities are, presumably, attributable to the etymological history of the items in question.

Among the downward tending quantifiers, few and several apply to [+count] nouns, while little generally governs [-count] nouns.

Few contrasts with a few in carrying negative as opposed to positive connotations, but these are connotations only, not strict denotations.

Few contrasts with several in that it cannot be used in the sense of different, as can the latter. It is like several in that it can be employed to refer to an indeterminate number.

Little is like much in referring to [-count] nouns, but, unlike much, it may also refer to 'collective unities'. In this last use, its antonym is not much, but large, big, etc.

Conclusion

In this essay, I have tried to do two things: first, I have attempted to describe the role which quantificational studies have played in the development of some of the most popular approaches to syntax and semantics; second, I have presented my own account of the quantification of objects, concentrating in the main upon their semantic behaviour.

In those chapters devoted to the history of quantificational studies, I have tried to demonstrate that these studies have, especially in recent times, played an ever increasing role in the development of theoretical models and have contributed to an appreciable degree to the present schism in the ranks of linguists who may loosely be called Transformational/Generativists. This role has not merely become stronger, but has also become ever more central. The centrality of quantificational study has resulted largely from questions of a basically semantic nature, especially those which arise from the consideration of multiple quantification, including combinations of quantifiers and negatives. As I have attempted to show, these questions have been approached, as theories have developed, in a manner fairly closely modelled upon the procedures of the predicate calculus sketched in chapter one and, most recently, upon those of set theory.

In my own account of quantifiers, I have concentrated upon data and have shown relatively little concern for theoretical questions surrounding models of description. I have tried to demonstrate that universal and particular quantification may be expressed both overtly through quantifying items like all and some and also implicitly, in which case, there is a close relation between the quantification itself and the use of articles and the plural morphemes.

I have also tried to show that the articles play an important role in restricting universes of discourse which may themselves be quantified overtly both by logical and proportional quantifiers and have suggested that the item both tends only to be used in this type of quantification. I have, moreover, argued that of, in quantifying constructions, is to be interpreted as expressing a

partitive....

partitive relation and not one of possession - an argument which I have based, in part, upon historical considerations.

In my treatment of the overt quantifiers, I have kept the logical and the proportional apart, treating any as ambiguous. As far as the universal quantifiers are concerned, I have tried to show that they may be thought of in terms of the two notions of UNITY and DISTRIBUTION and that while some among them, e.g. each, or whole, express these notions unambiguously, others, especially all, may be employed in either way.

In my remarks upon existential some and any, I have argued that the notion of EXISTENCE is central and that it is the centrality of this notion which provides the foundation upon which they differ from their universal counterparts. I have not, however, tried to suggest that EXISTENCE is not also implied by most universal quantifiers, it merely seems that, in their case, other notions, e.g. BELONGING TO THE SAME CLASS, figure more prominently in their meaning while EXISTENCE is taken for granted.

In discussing the proportional quantifiers, I have shown that, numerous and semantically complex though they are, they may be examined within the context of a simple, tripartite system consisting of the notions: MORE THAN and LESS THAN, with intermediate NORM. The summary to the section in question is too close to this conclusion for me fittingly to repeat it here. However, I think that, among its more important assertions are (a) that certain quantifiers, e.g. many, tend to carry implications as to magnitude; (b) that no such implications are present in explicitly comparative structures, involving, e.g. more ... than and (c) that reference to a given norm is usually achieved through the use of circumlocutions such as an average amount of.

Inevitably, my dual purpose has forced upon my work a measure of comparison. In that part devoted to the history of quantificational studies, I have been obliged to compare the work of one period against that of another as well as the different approaches within a given period. Moreover, in my own account of quantifiers, I have been forced to reveal, in the manner in which I have proceeded, my own, personal feelings regarding the general state of the discipline in so far as syntactico-semantic questions are concerned.

Reflection....

Reflection upon these comparisons shows, quite clearly, a conservative bias in my thinking. While I am greatly impressed by the work of Transformational/Generative scholars, I cannot help feeling that there is a tendency among them, more marked in some than in others, to be over-concerned with the development of models and to evince too little interest in the actual semantics of quantifiers themselves. This obsession with the model and relative indifference toward the data is, I think, a predictable, if unhappy consequence of the general lines along which much current linguistic thinking has developed.

Although Chomsky succeeded brilliantly in bringing the study of syntax and, indirectly, semantics into the centre of the linguistic stage, this success was due in considerable measure to the beautiful clarity of his system of rules - a system which, however, was designed to perform very limited operations. When hosts of his followers, e.g. Lakoff, Postal and Ross became his detractors, their former allegiance left them with an obsession for mechanistic rules which Chomsky himself would probably not share, at least when semantic questions are at issue. While this 'linguistic engineering' to use Bolinger's term, has produced a rich harvest in the more formal areas of syntax, offering tools for making judgements about grammaticality and throwing into sharp relief many aspects of sentence structure, for example, the composition of aux, its importation into the more uncertain waters of semantics has brought with it, in my opinion, a tendency towards superficiality and dogmatism which offers little promise of ultimate progress to any significant degree.

Semantics, always l'enfant terrible of the discipline, cannot, in my view, be chained up by the new machinery of transformations any more than Fenrir could be confined by the massive fetters of Weland's smithy. The wolf of the North was eventually overcome by a slender chain of magical contrivance. As far as semantics is concerned, I do not feel that such a leash has yet been found. At the very best, we may be able to make rough estimates as to probabilities, we may make statements concerning tendencies, but we can scarcely hope to develop a neat net-work of categorical rules, at least not one which captures more than the grossest generalities.

This general....

This general observation is, I believe, as applicable to the specialised study of quantifiers as to any branch of the discipline. Quantifiers seem to many to offer a special case, an exceptionally well-behaved animal in the ill-disciplined menagerie of the semantic jungle. This, I believe, is an illusion springing in part from a tendency to equate these items with the static operators of the predicate calculus. Quantifiers, it is true, do conform in their behaviour to a few, more-or-less clear cut patterns. The precede and command relations discussed by Lakoff and others, offer one such example on a general level, the inability of _every_ to quantify sets of only two members is another on a more detailed level. However, as I have tried to show, these favourite children of the Transformational/Generativist disciplinarian are apt to misbehave, just as are other lexical items. To say, therefore, that given quantifiers _tend_ to be used in such and such a way, rather than to insist that they do so in accordance with some strict rule, is not, to my mind, an admission of defeat, it is, as Bolinger observes with respect to the relationship between _any_, _some_ and _neg_, simply an admission that there is no substitute for facts.

In my own discussion of quantifiers, I have tried to show also that the student, even when his interests are basically synchronic, must be prepared to study the history of the language if he is to attain an understanding of _why_ certain phenomena exist as well as knowing that they do exist. The language of today cannot be divorced from its past, especially where semantics is concerned. I would not, for one moment, suggest that the average, native speaker is aware of the etymological history of the words he uses and that this awareness governs his lexical choice. As Lyons (1968) points out, the modern _ear_, applied to barley or to the anatomy of a living creature, is one word with several senses, in spite of the fact that the Old English forms were different. However, from the viewpoint of the student, trying to understand why, not just how items behave as they do, a panchronic approach is frequently imperative.

This essay, I perfectly realise, may leave much to be desired. There are probably many areas which I have either overlooked, or could have examined in greater depth. Its inadequacies, discounting

those which....

those which are directly attributable to my own weaknesses as a student, are, however, typical of most ventures into the turbulent waters of syntactico-semantic enquiry. Above all else, I would wish to make it clear that I exclude myself from the universal statement, collected by the industrious Dr. Fuller (1732):

> Every ass thinks himself worthy to stand with kings' horses.

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