On the Structure of a Fomal Cramar of
Literaxy Azebic

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1975


I wish to thank Dr. Keith Brown of the Dept. of Linguistics and Dr. Michael MeoDonald of the Dept. of Arabic for their assistance in the compilation of this thesis, and in particular for their courteous consideration of a conceptualisation with which they are not necessaxily sympethetic.

## Summary

0. This study rests on the following promises: First, that the investigation of synchronic and especially diachronic problems in greamaticsi science is moat likely to be advanced by the aloption of a fomal framework. Second, that the gramars of different language fanilies may be informed by differsing principles of structure and may therefore be beat described by nodel.s based on a suitable theory of this orcanising principle. Third, that this organising principle is characterised by the property of ill-definedness.

Fourth, that it is necessary to distinguish between the 'intexnal logic' or Weltanschequng of a language and any (1deal) language neutral aevice against which we might compare intermal $\operatorname{logics}_{8}$ or examine the "use' of utterances.

1. In part 1 we attempt to develop a theory of gramnatical structuxe appropriate to the Semitic languages. This is based fomally on elementary set theory and uses data dram for the most part from literary Arabic. In outline it comprises the following elenents.

We envisage a pair of what are temed 'codes' of content and expression - (intemal logically) senantic in the fomer case, morphological and syntactic in the latter - each accompanied by a set of collocational restrictions termed 'Ifmitation mules'。 Between the systems of content and expression are patterns of 'association' - mules stating relationships between
elements of content and oxpmession takion either singly or in multiples. To the content codo is also attached a sot of 'oncoding rulea' permitting the assiganent of oontent elements to some situetion in the perceived real morld. Part 2 of the study consists of a fragnent of the grammar of Iiterasy Arebio given partly in illustration of the hypothesis developed in part 1, and partly to indieate cortain intoresting consequences of its adoption - particulaxly in the areas of nomhology, lexical structure and the verbal systen.

The componont dealing with systens of content embraces certain of those systems associated with verbs (chapters 6 and 10), nouns (chapter 7), prepositions (chapter 8), and in addition examines aspects of 2exical staructure (chapter 9). Chapters 11 and 13 contein an outline of nominal and verbal morphology and syntactic structure respectively, while chapter 14 illustrates a selection of what are tomed 'generative properties' of the gramar.

## Part 1

## Chapter

1 Introduction
0. Retrospect

1. The scope of the study and its ains

2 A Hypothesis fox the Staucture of Semitic
0. introductory

1. An Dlementary Hypothesis for the Formalisation of Arabic
2. Outline of a fomal Basis for the Fypothesis.
3. Bxcursus: The Lexicalist Hypothesis in Transfomational Generative theory
4. A Modified Version of the dypothesis.
5. Further Observations on the Content Code.
6. Grematological Remanks.

3 On the Structure of the Expression Code.
0. Introductory

1. On the Setting up of lorphological Systens
2. The Nature of the Morpheme in the Hypothesis.
3. An Alternative Solution.
4. The Syntactic Component.

4 The Ropresentation, Roles of Rncoding and Association
0. Introductory

1. The Representation
2. Fncoding Fules
3. Rules of Association

## Part 2

5 Introduction to the Description

Part 2
(contimued)

5
0. Scope of the Description

1. Remarks on Methodology
2. Notationel. Conventions

6 Verbal Systems in the Dual Component of the Content Code
0. Introductory

1. The System 'Mrtionsax'b'
2. The System 'Ceven Modevity'

7 Morinal Systems in the Dual Component
0. Introductoxy

1. The System 'Substantivization"
2. The System 'Fhuman Animacy'.

8 The Network of Relational Systems
0. Introductory

1. The Systens of Local Relationships
2. The System "Abstract Relations"
3. The System "Cramatioal Relations"

9 The Base and Lexioal Syaters of Predicates and Substantives.
0. Introductory

1. The Systen 'Base Substantive"
2. The Bystern Base Predioate ${ }^{\text { }}$
3. The Lexical System

10 Verbal Systens of the Adherent Component.
0. Introductory

1. The System of Aspect
2. Nodifieas of Aspect

Paxt 2
(contimed)
11 Systems of the Expression Code
0. Introductory

1. The Sexies of Verbal Systens
2. The Sexies of Nominal Systems

12 Sone Association Rules of Arabic
0. Introductoxy

1. The IVth Heasume
2. The Xth Measure
3. The ITnd Heasure
4. The Vth Measume

13 The Systons of Syntactic Tomplates
0. Introductozy

1. Pom Classes
2. The System of Primaxy Templates
3. Secondary Tenplates
4. An Illustrative Example

14 Sone Generative Properties of Arabic
0. Introductory

1. The Representation
2. Some Possible Encodings
3. Drpansions

Appendices A-F

## Chapter I

## Introduction

0.0 Whereas we would not entirely share Schramm's feeling that "Tntil recently, the terms linguist and semitist were almost mutually exclusive" (1970 p260), it cannot be denied that Senitic studies have been infomed but sparsely by the theories of linguistic science. These defects, let it be added immediately, are at least as much of omission as of commission, and it would be improper not to recognize the very considerable achievements made in this field.
0.1 Older reference grammars, as for instance those of wight (1896/8) and Gesenius/Kautzsch (1910) - which remain to this day the standard works on literary Arabic and Biblical Hebrew in Finglish, may, as well as on other grounds, be criticised for their over-rigid adherence to the theoretical presuppositions and categories evolved out of the study of the "classical" languages of Greece and Rome (see on the topic of traditional grammar the sketch in Lyons 1968 section I. 2 and Robins 1967).

To illustrate the consequences of this let us consider briefly the question of the Semitic verbal system. In conformity with classical gramnatical theory the verb in Semitic was traditionally analysed along a temporal dimension - the category of "tense", both perhaps by Eastern and Western scholars. (1) However, we see in Wright (Vol. 1.77) and Gesenius/Kaut zach (paras. $47 \mathrm{n} 1^{\text {B }}$ and 106) for instance that this position has been abandoned and that we are now dealing with a contrast between a completed and an
(1) The extent to which Eastern gransarians were influenced by the theories of classical gramarians is not at all clear.
incomplete event (basically), even though the term "tense" is retained for this new category.

Now in both of these languages is a further verb form traditionally temed the "jussive" the functions of which overlap with those of the forms termed "perfect" and "imperfect" in various ways. The persistence of the traditional way of regarding the verbal system is we suggest shown in this; that despite the freeing of the verb from its temporal associations, the relationship of the "jussive" form to the new category is not properly exanined. The feeling tends to persist that the "jussive" function is primary, and that it cannot be reconciled with the system of aspect (Driver 1936 pp.19,20), and hence that it is necessary to postulate two verb forms in common Semitic to account for this synatfonic functional disparity. (As for instance Hetzron 1969). This failure to examine an alternative analysis derives ultimately we suggest, from an incomplete shedding of classical gramnatical theory.

This of course is not to overlook the very considerable difficulties attaching to the diachronic analysis of these forms. Our intention is merely to suggest reasons why the possibility could not occur to older grammarians.

As a second example let us consider the traditional category "voice" in Arabic. In Wright (1.49) we are told that with certain exceptions "All the verbal forms... have two voices, the active and the passive". Now morphological contrasts of this type are fairly rare in Semitic, and in some languages - for instance Akkadian, are entirely absent. However, in all of these languages, including Arabic, there exists a morphologically distinct but functionally similar set of verb stems, which are traditionally
taken to be "derived" from the simplest stem.
What we find in Arabic then is a rather complex interaction between these two sets of forms, which Wright's grammar, by ita mode of presentation - deriving in turn directly from its classical presuppositions, fails almost entirely to capture. (For a suggested analysis along these lines see section 2 of chapter 6).

Thirdly, these older grammars may also be oriticized on the ground of their 'impressionistic' methodology.

Consider for instance the stem with geminate second radical (Arabic Fa''aL, Hebrew Fi' 'ēL, Syriac Fa' 'ē̄, etc.) ${ }^{(1)}$ Traditionally it has been taken that the primary function of this stem is to express an idea of "intensification" of the sense expressed by the root. (See for instance Wright 1,40, Gesenius/Kautzsch 52.2, NBldecke 1898 para 159). However a sample of forms taken from the Arabic lexicon demonstrates quite clearly that for this language at least the traditional account is altogether misleading, and there is no reason to assume that the same is not true of the other languages also. (See part 7 of Appendix A and of Beeston, 1970 p75 n1 . A similar but informal argunent is offered for Akkadian in Goetze, 1942).
0.2.0 In more recent years progress has been made in meeting these criticisms - although statistically based analyses are still few and far between. (Greenberg, 1950 is a notable exception).

However, despite the adoption of such concepts as 'phoneme' and 'morpheme' from linguistic theory there has not been - for the most part, a concomitant adoption of the rigorous standards of analysis which have gone hand in hand with these notions. (Harris, 1939 is, predictably, an exception to this).
(1) For a discussion of the notation used in this study to indicate various morphological patterns see fn. 1 to para. 1.0 of chapter 2

For example, even at the present time, there remains a considerable fuzziness in the definition of the morpheme in Semitic, a defect which is attributable precisely to the absence of a rigorous methodology. (For a more detailed discussion of this question see paragraph 4.2 of chapter 2).
0.2.1 A further point related to diachronic studies - both older and more modern, is that nowhere (so far as I am aware), do we find consideration given to what might be temed the 'structure of Iinguistic change . (1)

There is for ingtance a fairly large literature on the diachrony of the Semitic verbal system, in none of wich does it seem, say in regard to the system of Aspect, to be asked whether it is better to assume one system only, or two or more sub-systems and why. Should we assuan that the systen of aspect resembles a finite state device wich simply switches from state to state, or a gradual breakdown and reassertion of the system - and once again, why ?
0.2.2 However much the most important criticism of modern Semitic linguistics is its almost total indifference to the various formal and semi-formal approaches which have been evolved in recent years. Now vhereas the history of 'forsal' or 'generative' Iinguistics has justified the caution of those investigators who preferred not to comit themselves to these new doctrines, it can no longer be disputed that the placing of linguistic. studies on a true scientific foundation entails the adoption of a fomalim of some sort, for it is only thus that the all important question of the validation or falsification of competing s鲑utions can be pursued.
(1) Unless that is we include Driver's dictum that *hat is simplest is earliest" (1936 p26)

However, against this it must be conceded that the odd excursion into formalism on the part of semitists has not been entirely successful. It is for instance unfortunate that in Reiner 1970 (p290) we read of "... a relative clause considered the underlying string of (a certain) nominal compound". This taay merely be a matter of loose phraseology but the apparent perpetration of this most basic error in transformational-generative doctrine can hardly assist the semitist wishing to understand what this particular theory is about.

## The scope of the present study and its aims

It is out of the background discussed in the preceding section that the present study is evolved. In the remainder of the first part (chapters 2-4) an outline is given of a possible structure for a formal gramar of a Semitic language. Then, in part 2 (chapters $5-14$ ) is offered a partial description of literary Arabic, which is intended both to illustrate the principles discussed in part 1 and - to the extent that it is successful, to justify them.

Neither the hypothesis nor the description are intended to be comprehensive. In particular we have assuned on the one hand that there is a set of phonemes - that is, we have taken no account of distinctive festure or prosodic analyses, and that a granmar will contain a device for making this set available to the morphological component, and which will at the same time specify their permissible syntagmatic associations.

Neither have we anything to say on discourse structure although it will be clear - and is especially clear from chapter 14, that an adequate gramar will presuppose the availability of such a component.

Theoretical linguists will doubtless be disposed to object that some (more or less) established generative theory has not been adopted, and more specifically that neither has any attempt been made to invalidate these.

In particular certain linguists, and especially Botha (1970) ${ }^{(1)}$ argue that the various transfomational-generative approaches constitute a "paradign" in the sense (or senses) of Kuhn, 1962.

That of Botha, however, strikes one as being a rather partial view of the recent history of linguistios. He does not for instance mention the relationship of the T-G paradigm to those of other formal or semi-formal theories, such as the Stratificational and Systemic - unless we are to include these among the "various taxonomic approaches".

The fact of the matter is that there is precious little agreement among linguists either in respect of gramatical theory or, even, in regard to the aims of gramatical theory. The situation is, we would suggest, that linguistic science is truly in an 'inter-paradignatic' phase (Kuhn (1962) appears not to use this expression. The present status of linguistic science is in several respects quite closely portrayed in chapter 8 of his essay). It is very much an open question whether a formal grammar is best founded on a syntactic-transformational base (Chomsky, 1965) or
(1) "...transfomational gramar constitutes a distinct linguistic paradigm, whereas the various taxonomic approaches to language study constitute, jointly, another distinct paradigm. The first developmental phase of transformational linguistics may then be characterised with reference to the notion of inter-paradismatic controversy: controversy between the proponents of the "revolutionary" transfomational paradigm on the one hand and the defenders of the "established" taxonomic paradigm on the other" (p16). This phase is "now completed" (p15)
bases of a semantic-transfomational (Lakoff, 1971), stratal (Lamb, 1966; Lockwood, 1972), systemic (Hudson, 1971) type, or some framework morefor less distinct from all of these.

Furthermore in para. 0.1 above we criticised older gramars of Semitic languages for their over-reliance on the categories of traditional gramatical theory. Now it is the case that most of the work carried out so far on the basis of these various fomal approaches has been on English - and the hypotheses indeed evolved on the basis of data from English.

We argue therefore that it is inconsistent on the one hand to criticise older gramarians for their adherence to a gramatical theory evolved independently of any consideration of Seaitic, and then having abandoned this theory to select another whose evolution has been equally independent thereof.

In other words, while we do not deny that studies of other language families may well illuminate certain aspects of Semitic, it is felt that at the present time greater progress will be made if solutions to problems in Semitic are sought within Semitic.

Despite the fact that there is no concerted attempt in what follows to refute any existing formal theory of grammar, the study does contain a certain anount of discussion on various points of dispute. A sumary of the more inportant of these and references is given below.
a) Language is taken to be an 'ill-defined' system (in the sense of Hockett, 1968).

This point is discussed in para. 2.3 of chapter 2 and is of course contrary to the assumptions in all of the theories mentioned above - with the possible exception of Systemic theory.
b) The grammar of a language is understood to be a description of the structure and generative properties of a symbolic system. This entails that there is no level of (taxonomic) grammar independent of semantics. (This against Chonsky, Stratificational and Systemic theories). See para. 4.1 of chapter 2 .
c) Grammar in general is concerned with the study of types and not tokens. This against transformational theories (See 4.1 of chapter 3).
d) We do not assume that the same theory is equally appropriate to all languages.

This of course is contrary to the views inforaing the above theories, but in the absence of a satisfactory evaluation neasure can neither be substantiated or refuted.

Semitists and general linguists alike will perhaps object to the absence of a detailed working through of many of the points raised in this study. Quite aside from practical considerations of length the approach adopted is warranted and indeed entailed by the assumption of ill-definition. That is, many areas of the gramnar are taken to be only partly susceptible to analytic techniques. It has, therefore, been felt preferable to regard the construction of a grammar as somewhat analogous to the bringing into focus of an image. Just as the relationship between the various components of an image may only be deternined by a process of gradual fooussing, so it is felt a gramnar as a totality may only be created by sketching out its structure and successively refining both the components of the structure and their relationship to each other.

Chapter 2

## A Eypothesis for the Structure of Semitic

## Introductory

0.0 Before entering onto the discussion proper it seems advisable to indicate what, for the purposes of this chapter, is intended by the term 'Semitic language'.

Ullendorf has shown (1958) that there can be no unequivocal procedure - other than diachronic, for deciding what is or what is not a Semitic language.

Now whereas this article serves as a necessary corrective to certain earlier and largely impressionistic fommations, the argument is weak in attaching too much importance to the word 'unequivocal'.(1) If we are prepared to accept a weaker and more fluid methodology - a methodology that is, which assumes that if a typological classification is in any real sense possible, it will be a function of the intersection of tendencies along a variety of dimensions, then the difficulty is eased considerably.

This is of course precisely the technique employed by comparativists and its effectiveness is shown by the fact that there is little or no dispute as to the composition say, of the Indo-European or Semitic groups.

Such a methodology does not however dispose of the case where a. language has diverged markedly from its ancestor. Ulendorf observes for instance that "In the south-Ethiopic languages farreaching phonetic processes have made havoc of the tri-consonantal
(1) More eenerally Ullendorf's argument conflates two separate questions:-
(i) whether it is proper to postulate a Semitic faraily at all
(ii) given (i) how, in synchronic tems one may decide its membership. Only in tems of such a dichotomy can the remark that there is "...a preponderance of bi-radicals in the Cushitic languages" be understood. (ibid p70)
system".
One's approach to this problem will to some extent be conditioned by one's attitude to the universality or otherwise of language structures. If we incline to the opinion that languages may differ fundanentally in their structural charactedistics then the question of whether or not in synchronic tems sone language can be said to belong to some family or another may be decided in the limit by whether or not that language can be described by a model based on the theory of linguistic structure posited for the language fanily in question.

If on the other hand it is assumed that the structures of all languages are in essence the same, this test (assuming its viability) is not available.

Moreover, the question of whether (say) Amharic is or is not a Senitic language in synchronic terns may well be undecidable even on a non-universal approach to language structure, since, (as will be argued later in this chapter) it is not unlikely that we are dealing with the growth and decay of structures, rather than a shift from one to another.

Therefore, for the purposes of this study the term 'Semitic' or 'Semitic language' is to be understood as equivalent to 'most strongly Semitic', and will be taken to refer to that group of languages sharing a majority of the tendencies which define them collectively, and sharing them moreover in comparable if not equivalent proportions.

Thus for example although Akkadian manifests a large number of biradical roots it would clearly be an exaggeration to claim that the tri-radical system had collapsed. Moreover, even in synchronic terms vagaries in the declension of forms containing
these bi-radicals are most readily explained by reference to
their tri-radical origin.
1 An elementary formalisation of Arabic grammatical structure
1.0 Among the defining characteristics of a Semitic morphology where 'Semitic' is to be taken in the sense given above, is the conjoining of a spatially discontinuous root morphene with various patterns of affixes. (For an outline of Semitic morphology see Moscati, etc., 1969).

Consider for instance the 2nd verbal measure of Arabic (1)
and in particular its second degree measures Fa'aL and Fu''iL. Each of these - which may be understood as'types' is manifested by numerous 'tokens', of which we may instance - ignoring pronominal morphemes:-
rattab: moistened vs ruttib: was moistened
kassan: roughened vs kus̉sin: was roughened
gaddab: angered vs guddib: was angered
(1) The numbering of these measures follows that traditionally adopted in Western grammars. For a list of the various forms see Wright vol. I pp298-301.

The term 'measure' is taken from Howell, 1883, being his rendering of the Arabic wazn. The traditional concept has, however, insufficient precision for our purposes and will be extended as follows.

Each of the numbers II etc. is presumed to designate a set, as for instance:-

The set II, III etc. will be terned a 'first degree measure'. Each member of these sets is itself a set. For instance:Fa''aL = Fa''aLa....Fa'raLna
Each set $\mathrm{Fa}{ }^{\prime}{ }^{\prime} \mathrm{aJ}, \mathrm{Fa}{ }^{\prime} \mathrm{aL}$, etc., will be termed a 'second degree measure. Each meraber Fa''aLa etc. of a second degree measure will be temmed a 'third degree measure'.

Nominal measures are a little simpler, being understood, with few exceptions, to comprise only a second and third degree. For instance, $\mathrm{Fa}^{\prime} \mathrm{L}$ is taken to be a measure of the second degree and as such is a set, comprising the third degree measures

Fa'Lun, $\mathrm{Fa}{ }^{\prime}$ Lan, etc.
It will be seen that the Arabic wazn corresponds to our second degree measure.
(2) In this study any token of some measure will be termed a 'form'. Note that by many Arabists 'form' is used to render wazn. The system of transcription used in this study is that followed in Wehr's lexicon (English translation, 1961) save for the treatment of initial 'alif.

The first of these consists of a spatially discontinuous root retb conjoined with a pair of affixes having the distribution AaBBaC and AuBBiC. In the other examples we have the same affixes conjoined with the roots $k \sin$ and Egdb. (1)

Thus on the simplest level what we are dealing with here is a set of triconsonantal roots:~

$$
R=\{x t b, \quad \bar{c} d b, \ldots, k \leq \pi n\}
$$

and a set of verbal affixes (V) including those mentioned above and alsi such patterms as taAaBBac, as instanced by tarattab: becane moist. Thus:-

$$
V=\{A, a B B C C, A u B B i C, \ldots \text { taAaBBaC }\}
$$

Similax arguments may be advanced in respect of second degree
Nominal measures. Consider for instance the forns:-
mansaj: weaving shed vs minsaj: 100 m
marbat: Dlace where animals are tethered vs mirbat: hawser
In this case we have a pair of roots nsij and rbt and a pair of affixes maABaC and miABaC. The roots wo may assume to be further nembers of the set $R$, while for the affixes and for others such as AaBBāC as instanced by nassāj: weaver we establish a third set:-

$$
N=\{m a A B a C, m i A B a C, \ldots, A a B B \bar{C}\}
$$

(1) Note that symbols such as Fa''al are taken to designate either a set of third degree measures or a set of forms. Notation such as AaBBaC on the other hand is taken to refer to an actual ciluster of affix morphemes.

Since symbol.s such as ra'tah designate sets of forms . that is ane types and not tokens, it is of no importance that the particular form fa'lal or whatever, or some particular consonant phoneme, does not appear as a token in some language. Compare Yoseati 1969, pasa. 12.3 (p76)

Save for the very elementary fomalisu this fragment of the gramar of Arabic differs little, if at all, from traditional accounts. The same techhique may be applied with equal facility to other Semitic languages. Consider for instance the Akkadian forms:-
uraţţab vs urtaţtib vs uraṭțib
uballat vs ubtallit vs uballif
usallam vs ustallim vs usallim (1)
meaning:-
moistens va has moistened $v s$ moistened
lets live vs has let live vs let live
makes friendly vs has made friendly vs made friendly
From these we may extract a set of roots:-
$R_{A k}=\{r t b$, bly, ..., sislm $\}$
and a set of verbal affixes:-
$\nabla_{A k}=\{u A a B B a C, u A t a B B i C, \ldots \ldots, u A a B B i C\}$
1.2

It will be noted that each member of the Arabic sets $\mathrm{R}, \mathrm{V}$ and N given above bears a sense distinct from those of the others. For the set $R$ there are the following correlations:-
rtb: moistness
Ēdb: anger
klln: roughness
nsj: weave
rbt: tie
For set $V$ we have:-
AaBBaC: causative
AuBBic: causative/passive
taAaBBaC: inchoative
(1) For paradigms see von Soden 1952 table 16

And for the set Ni -
maABaC: place
miABaC: instrument
AaBBāC: occupation
Not oniy does each member of the sets $\mathrm{R}, \mathrm{V}$ and N correlate with a different sense but the type of sense associated with each member of a particular set is very similar.

Broadly speaking, the senses attachine to set B relate to events or states, those attaching to set V relate (in the instances given) to the 'mode' in which some state is perceived, and those attaching to set $\mathbb{N}$ (in the examples cited) to a person or thing related to some event.

Note that the senses attached to meabers of the sets $R$ and $N$ correspond only approximately with the actual senses of the forms cited. This, which is more particularly true of marbat and mirbat, may be ignored for present purposes.

Now since we have chosen to understand the 'expression plane' of Arabic as comprising a set of norpheme sets, we might hypothesise that the 'content plane' is similarly constituted. ${ }^{(1)}$

That is, corresponding to the set R we might envisage a set of 'predicates':-
$P=\{$ moistness, anger, ...., tying $\}$
a set of elements of what could be termed 'causal modality':-
$\mathrm{Cm}=\{$ causative, causative/passive,...., inchoative $\}$
and a set of what, since they serve to create 'substantives' out of predicates, may be termed 'substantivizers':-

Su $=\{$ place, instrunent,,$\ldots$, occupation $\}$
(1) The terms 'content plane' and 'expression plane' are taken more immediately from Lyons, 1968, 2.1.2 and ultimately from Hjelmslev, 1961. See especially p49ff.

Grammarians of a more traditional persuasion may object at this stage that no distinction has been drawn between 'grammatical' and 'lexical' phenomena. More substantially that it is methodologically desirable to separate the two. (This presumably would be the opinion of systemic gramarians - see for instance the discussion in 1.2.1 of Hudeon, 1971. Transformational grammarians - for instance, Chomsky, 1965, would be more sympathetic). Clearly it would be absurd to incorporate a list of roots and predicates in a grammar of Arabic. However, since there are certain quite clear correlations between various subsets of 'lexical' elements of the content plane and particular 'measures' on the one hand, and syntactic structures on the other, it is apparent that the incorporation of a few fairly general statements about lexical structure into the description can only add to its adequacy. (See moreparticularly section 1 of chapter 9).

Moreover, our approach is not without theoretical justification for as Iyons has observed ( $1968, p 438$ ) "...there seems to be no essential difference between the 'kind of meaning' associated wity lexical items and the 'kind of meaning' associated with gramatical items in those cases where the distinction between these two classes of ...elements can be drawn." (The distinction between "open" and "closed" sets is ignored for a quite different reason (ibid p436) - see 2.3 of this chapter.

To sumnarise thus far, we suggest that the grammar of a Semitic language may be viewed in the first place as a pair of devices which will be temned the 'content code' and 'expression code', each comprising a group of sets of elements of one sort or another.

To this we may add - for the moment without explication,
firstly that anong the sets of the expression code there will be a certain amount of syntagmatic ordering. This may be illustrated in the following way. Measures of the third degree - be they Nominal or Verbal, are created from those of the second degree by the addition of prefixes and suffixes. This being so it will clearly be necessary to state somewhere in the grammar that the morphemes concerned stand in a particular place in the pattern or 'template.', and much the most simple way of doing this is to incorporate the ordering into the structure of the expression code itself.

Secondly we shall require a set of rules which will link elements of the content code with those of the expression code. Discussion of this aspect is also held over for the present.

## 2. Outline of a fomal basis for the hypothesis

In 1.6 of Hockett, 1967 ( p 25 ) we read "Suppose we have two sets, $A$ and B. An association from $A$ to $B$ assigns, to each element of $A$, at least one element of $\mathrm{B}^{\prime \prime}$.

More specifically (ibid p26), "A function is an association $f: A \rightarrow B$ for which, given any element acA, its image $f(a)$ is a unique element of $B^{\prime \prime}$.

Now, let $A$ be the set $C$ of the content code (see para.1.3) and $B$ set $V$ of the expression code. From the definitions given above, and keeping in mind the fragmentary nature of the description offered , it will be seen - and ignoring any further distinctions that raight be made, that the relationship between $C m$ and $V$ is an 'association', and more particularly, a function. E3ch element of Cm has as its "image" only one element of V .

However, Section 1 contained but an alementary exposition and it can readily be shown that whichever set is selected as "domain" its relationship with the other is that of association.

For example, according to our outline and the defintions given above there is a function between the elenent $C m$ (Causative) of the content code and $V(A a B B a C)$ of the expression. However, , aABaC of the fourth measure - which is of course a member of $V$, is also an associate of Cm (Causative). Similarly, V (AaBBaC) serves also to express what in pre-theoretical terms will be designated Cm (Active), as for example kaffar: protected (compare kafar with same meaning and see more generally section 2 of chapter 6).

Hockett further remarks (ibid p26), "If the inverse $\mathrm{m}^{-1}$ of an association $m$ is also an association, then the association $m$ is said to be surjective..." More simply, a surjective association can only exist where every element of $A$ has as its image at least one element of $B$, and every element of $B$ has as its counterimage at least one element of $A$ (assuming $A$ to be the domain and $B$ the range).

Intuitively it seeras correct to assume that all linguistic associations - that is between the sets of content and expression, are surjective either in this sense or in a rather different sense which will be mentioned shortly. This seems to be so since each plane exists only by virtue of the other (see Hjelmslev,1961 pp48,49 and also Saussure, 1931,p99) and hence, a content element which cannot be expressed is a contradiction in terms, and an expression element never having any function is redundant. (One exception to this generalisation in modern Arabic would seem to be the manṣub: subjunctive measure. See 2.21 of chapter 10 .

Moreover, it seems almost always to be the case that the membership of some pair of sets in association is unequal. That is, 'surjection' in the linguistic context appears to entail that for any pair of sets $A$ and $B$ between which there is an association, there will be at least one aєA whose image will comprise more than one element of $B$.

Thus by employing a deliberate semantic shift we will say that whenever the image of some association comprises more than one element of the range, that association is 'surjective'.

Hence the content element Cm (Causative) is taken to be 'surjectively associate' with the elements $V(A a B B a C)$ and V('aABaC) . This relationship will be expressed thus:-

Cm (Causative) $\longleftrightarrow\left\{\begin{array}{l}V\left(\begin{array}{l}\mathrm{AaBBaC}) \\ \mathrm{V}\end{array}, \mathrm{aABaC}\right)\end{array}\right.$
In the course of the same discussion Hockett also states, "A function $f: A \rightarrow B$ is injective ... if no two elements of the domain (i.e. set $A$ or Cm say) have the same image." (ibid p27).

Now we have suggested that the great majority of linguistic associations are surjective in Hockett's sense and have derived from this a more specifically linguistic notion of 'surjectively associate' - that is the case where some element, be it of content or expression, is associated with more than one element in the partner code. Clearly we must also envisage the case where only one element of each code is involved.

Our requirement is partly fulfilled by the notion "injective function" and partly by the more general notion "surjective association". Therefore, since for Hockett "A function which is both a surjection and an injection is a bijective function... (ibid p28) we will say (once again employing a semantic shift) that any association involving only one element of the domain and one of
the range is'a 'bijective association'.
Thus for instance since the element $R$ ( $n s j$ ) is associate only with $P$ (\#eaving), and if we assume that the reverse is also true, we will have the bijective association:-
$P$ ( Feaving) $\longleftrightarrow$ I. (nsj)
2.2 In the previous paragraphs we have felt our way to what is, In mathematical terms, a much less rigid definition of the terms 'surjective' and 'bijective association'. However, we have so far adhered to the idea that the relationship of association obtains only between the members of a pair of sets.

But it is not uncommonly the case in Semitic, as also in what are traditionally temed the "inflecting" languages (see the introduction to chapter 3) that two content sets are jointly associate with one set of expression elements. Por instance, the element $V(A a B B a C)$ is associate, in addition to $C m$ (Causative) with a further element which we will designate As (Complete). That is, our teraplate sinultaneously expresses aspect alone with causal modality.

Given then our looser definition of the tem surfection, it becomes necessary to distinguish two sub-types, which will be temed 'pure' and 'impure'. By 'pure' surfection we intend associations where domain and rance each comprise one set only. By 'irapure' surjection we intend asscciations where the domain comprises at least two sets and where one member of each is surjectively associate with at least one member of the range.

In the 'taxonomic" portion of the description, where the term 'surjection' is used at all, it will referto pure surjective associations (that is, chapters 6-10, 12.13). Elsewhere - and
especially in chapters $3,4,11,14$, it will be intended in the latter sense.

2,3 In expositions of elementary Set Theory it is commonly taken as self-evident that every set is 'well-defined'. (For a discussion of this tern in a linguistic context see Hockett, 1968). Purthermore, the assumption of well-definednes in the linguistic system is basic to the various Transformational-Generative theories of language structure (see Hockett, 1968, chapter 2 point $\mathbf{C 1 0}, \mathrm{p} 40$ ).

Now whereas for many language types - and perhaps in particular for agglutinating lancuages, it is reasonable to assune, at least as a working hypothesis, the well-definedness of the stock of morphemes and hence phonemes, it is altogether more questionable to assert the sase of the content plane. (1)

Hockett (1968) has attempted to challenge this assumption. He has argued, "...the only (well-defined) systens of which I am sure are the inventions of human intelligence: games such as chess and perhaps baseball; the formal systens of mathenatics and logic..." (1968,p57).

From this he concludes (p52) that no physical system can be well-defined, and further, asserts that language is a physical syster (p59) and must therefore be ill-defined.
(1) It is interesting to note that the gramarians of Basra also assuned well-definedness of the linguistic system although working from a set of premises which would read most oddly from the pens of MTT. (See Pleisch, $1961 \mathrm{pp} \mathrm{1,2;}$ and especially:"La noble et difficile tâche du gramatrien de Basra fut de... montrer l'harmonie du tout et de toutes les parties dans le tout, en particulier ramener, les exceptions à la regle et montrer que ce ne sont que des exceptions apparentes, qu'il n'y a pas eu véritablement exception et cela dans tout le langage:"

The strongest link in this chain of reasoning seens to be that in which it is argued that well-defined systems are the product of human intellect. What is much weaker is the assertion that language is not anong these - notwithstanding the fact that his claim is consistent with the intuitions of many linguists. (See for instance Lyons 10.5 .2 , although in fairness this is a position of agnosticism).

Hockett has indeed attempted to take the argunent a little further (pp60 and 61) but this is by no means conclusive.

The matter is much complicated by the question of 'stability' versus 'instability' in sone system. He argues (p53) that certain physical systems manifest a stability which should not be mistaken for well-definedness. Among these he instances a computer which, although manifesting stability for a considerable length of time ultimately breaks down.
nowever, this argunent fails to deal with the point that while such a system is stable its outputs and the operations giving these may be characterised in a well-defined way. Thus, although it may well be false to assune that language is a well-defined system, to the extent that it manifests stability its operations are (in theory) stateable. If this is so it is possible to envisage the case where there is indeed a "get of sentences" (Chomsky, 1957, p13).

Therefore, while one can with come confidence diaagree with the hypothesis that language is a well-defined system, the weaker hypothesis - that language is a stable system, seens more tenable. The sets of morphemes, as for instance our set $V$, are certainly stable; the first and second degree measures are computable, but what of a content system such as Cm or P ?

The position which will be adopted in this study is that language is a mixed system, manifesting areas both of stability and instability, and honce of course that there is no set of sentences. To the extent that this hypothesis is well founded, the various T-G theories of language structure are misconceived.

In the descriptive portion of the study more detailed arguments will be advanced for the instability of certain sets in the content codes (see, for instance, the discussion of 'aktionsart' and 'causal modality' in chapter 6) but for the monent we will consider evidence of a rather different kind.

Let us consider once again fors on the measures map'al and miF'aL, and especially the pair marbaṭ: place where animals are tethered, and mirbat: hawser (see 1.0). In our introductory discussion we tacitly accepted that the senses of this pair are the sum respectively of the components 'place' and 'tying' on the one hand, and 'instrument' and 'tying' on the other.

But it should be clear that this is in fact an oversimplification. In general the senses of forms on these measures are more than the senses of their components. This becomes obvious when we consider a fom which has a variety of quite distinct senses.

For the form maktab for instance Wehr (1961) gives among others:- office, study, school, department, desk.

Underlying such phenomena we suggest is a quite general principle that, given a pair of senses such as 'place', some mewber of the set $P$, and the measure mar'aL, it is not possible to predict the actual sense of any particular token of that measure. (see in rather similar vein, Beeston, 1970, pp73/4).

This may be explained if we accept that of all content sets
those which would traditionally be termed "lexical" exhibit instability in the highest degree, even though certain subsets as, for instance, kinship terms, seen on the whole to be stable. (See once more Lyons, 1968, 10.5.2).

Thus in the typical case we will have an element drawn from the unstable set $P$ in 'configuration' with one drawn from a further unstable set $5 u$ (see chapter 7 for argument). The likeliest eventuality is then that the derived sense will also be unstable.

The assumption of well-definedness or even stability entails the construction of an algorithm whereby given the constituent senses of sone item, the 'superordinate' sense may be predicted. This I believe to be impossible.

In the light of the foregoing, our original hypothesis should be modified in the following way.

The sets of the content and expression codes are either 'stable' or 'unstable'. Those of the latter, if not stable without exception, incline markedly towards stability while those of the content code evince instability to a greater degree.

However, it does not appear to be the case that the status of these sets is immutable. The process of linguistic change guarantees constant modification to the repertoire of content and expression elements, and there seems no reason to assume that this process consists merely of a simple sixitch from one stable or unstable state to another.

Rather, it eens better to envisage each set as conforming to a certain 'periodicity', wherein it rises to and decays from a peak of stability in a rhythm largely peculiar to itself. Alternatively we should allow for the case where some set collapses completely and is gradually replaced by another which itself then
rises to stability.
Such a periodicity might be represented by a graph somewhat of the following kind, where the peak indicates stability and the troughs instability.


A graph of a typical set in the expression code would preaunably show a relatively large period where stability is maintained with correspondingly small troughs, perhaps as per figure 2. Those content code sets which can be considered over to reach stability would presumably confom more to Figure 1, with relatively longer periods of instability.

From the foregoing we might go on to develop a theory of diachrony, or of the structure of linguistic change in Semitic. This would then allow us to state - albeit tentatively, a set of conditions which an account of the diachrony of some part of Semitic might be expected to fulfil. These would presumably take the fom of a specification of the posaible types of set structure and a set of postulates for the way in which these could be modified. (For some discussion of set types see paras. 2.11 to 2.14 of chapter 5).


Excursus; the lexicalist hypothesis in T-G theory
3.0

The nouns of place and instrument in Semitic seem to pose an interesting problem for the theory of language structure advancecifin Chomsky, 1965.

Among the ways in which this theory differs from that of Chomsky, 1957 is in distinguishing the set of rewrite rules from a lexicon. This modification had as one of its advantages the fact that "many of the gramatical properties of formatives (where a "formative" is a "minimal syntactically functioning unit" (1965 p3) can now be specified directly in the lexicon, by association of syntactic features with lexical formatives, and thus need not be represent ad in the rewriting rules at all" (ibid pp86,87). More generally"...the lexical entries constitute the full set of irregulartties of the language" (p142).

Now the present hypothesis - which is based firmly on the planes of content and expression, envisages no unit corresponding to the "formative" of this theory, which seems in essence to be indistinguishable from the neo-Bloomfieldiqn "morpheme" (See the discussion in section 2 of chapter 3). However, it seems not unreasonable to assume in an application of $T-G$ theory to Arabic such elements as 'tying' and 'place' would be regarded as "lexical formatives" (p65).

There are many hundreds of nouns of place and instrument in Arabic (For a sample of these see the relevant parts of the appendix to chapter 7). Their mode of formation is quite regular: one selects an appropriate predicate, adds to it 'place' or 'instrument' and expresses it in an appropriate measure.

This much a model based on Chomsky, 1965 could achieve without difficulty, and there would therefore be no need to enter
such forms in the lexicon. However, if the actual sense of such forms is not the sum of their parts we are faced with the question of accounting for the residue.

If, as we have suggested, the nature of this residue is not predictable these lexical items are to that extent idiosyncratic and, according to Chomsky, should be listed in the lexicon.

But this of course is in itself an inadequate solution since merely to list these foms in the lexicon is to mat stating the strong vein of regularity which runs through them all.

This paradox can only be resolved by adding rules to the base. If it cannot be resolved in this way then language is neither a weldefined nor a stable syster.

Moreover, since Stratificationalists also seem to base their theory on an assumption of well-definedness these forms provide an interesting test of the viability of their "sememic" and "lexemic" strata. (See Lockwood, 1972 pp22-26).
4.0 Partly on the basis of previous discussion, and partly on the basis of considerations not yet introduced, we now proceed to offer a somewhat modified version of the elementary hypothesis introduced in section 1.

Firstly we return to the question of forms on the measures maF'al and mi ${ }^{\prime} a t$ and those related to them.

Our elementary hypothesis envisaged a group of content sets expressed by members of the various sets of elenents in the expression code. And yet it is clear that if in the typical instance the sense of some form on maF'al is greater than the sum of the senses of its parts this simple conception is inadequate.

It appears then that in the content code we should envisage, In addition say to the sets $P$ and $S u$, a further set of senses which we may designate $L$, the members of which can be said to 'include' members of the sets $P$ and Su.
'Inclusion' must of course be distinguished from 'componency'. The latter term presupposes that it is possible to give an exhaustive analysis of some lexical item, while 'inclusion' - arising as it does out of the assumption of ill-definition, implies exactly the opposite.

It is not, however, the case that all sets analogous to $P$ and $S u$ stand in an included relationship to some set $L$. On the contrary it can be shown that certain sets never stand in such relationship (see especially chapter10) and, moreover, that the sets which do stand in such relationship do not do so invariably.

At this stage it will be corvenient to introduce certain temainological distinctions.

Let any content element being a member of a set such as P, Cm , or Su be termed a 'sememe', and let any element being a nember of a set such as $L$ be termed a 'lexeme'.

Let any set not having the capacity of standing in an 'included' relationship be termed 'adherent', and any other set 'duel'.

Moreover, let any set whatsoever, be it of content or of expression, be temed a 'system' of the language.

The tems 'lexere' and 'sememe' require further comment since neither of them are used in their more usual sense.

For Bloomfield (1935, p162) a sememe is the meaning of a morpheme, while in Stratificational theory (e.g. Lockwood,1972 pp.24, 25, 138) the sememe is in essence a "component" of the lexeme.

In the present study its use will approximate rather more to that of Bloomfield, with the following qualififications. First we assune that a sememe is not necessarily expressed by a morpheme: it may in certain cases be expressed by what will be termed a 'syntactic template' (See section 4 of chapter 3). Moreover, we wish to envisage cases where a sememe is given no overt expression at all, but rather its presence is to be inferred only from some idiosyncrasy of selection within the expression code (See for example, para. 2.0 of chapter 7).

Secondly and more importantly the sememe in this study will be taken to be that unit of meaning which, on the basis of purely internal evidence is seen to be the minimal unit of semantic analysis.

The semene thus understood is not the unit of componential analysis as say in Stratificational theory (see also Lyons, 1968 10.5.1). Semene in the latter sense is to be understood as a universal semantic component whereas in the present study it is to be taken as the minimal element of a structure - the content code, reflecting the "Weltanschaung" or 'internal logic' of the language concerned. (1)

The term 'lexeme' should be understood similarly. It is on the one hand a semantic unit; it is a concept of internal logic, and differs from the sememe only in that - having the capacity for including the latter, it is not a minimal unit.

This usage it will immediately be seen is totally different from that customary in the literature.
(1) The question as to whether one's patterns of thought are governed by the structure of one's language lake to be separate fror that as to whether languages have different semantic structures. The latter seems non-controversial.

For Hockett ( $1958,19.4$ ) it is clearly a unit of distribution. Lyons (1968, 5.4.4) appears on the surface to give a rather different definition, namely, that the lexeme is taken "to denote the more 'abstract' units which occur in different inflexional 'forms' according to the syntactic rules involved in the generation of sentences."

The lexeme of this last definition is, it seems, best regarded as an unordered set of (neo-Bloomfieldian) morphemes and morpheme classes. The lexeme CUT for instance (employing lyons' notation) may be written:-

CUT $=\{$ cut, Tense, Person, Number, Voice $\}$ where 'cut' is a morpheme, and the remaining elements are classes or sets of morphemes.

Since, however, it would seem to be the case that any form realising a cluster of these morphem has the sane distribution both the 'operational' definition of Hockett and the more 'formal' definition offered by lyons appear to be equivalent.

The use of the term in Stratificational theory seems also to be equivalent to these (see for instance Lockwood op cit pp21,22).

It may be objected that our definition of the term is not in the limit different from thode of Structuralist inspiration. However, there is in fact a fairly fundanental cleavage between the two approaches and this may perhaps best be discussed in the context of a discussion of the notion "grammatical level".

Gramatical descriptions of Structuralist inspiration may be viewed in terms of a (Praguian) opposition comprising a "marked" and an "unmarked" member. Strings of phonemes and morphemes (or "morphs") being observable, and hence the focus of the analysis are taken to be the marked member of the opposition. The object of the
analysis is to set up a network of "distributions" for these observables. All that is required of this network is that it furnish the means to a satisfactory taxonomy of the data. These "distributional units" (Iyons, $1968,5.3 .3$ ) may be understood as the unnarked member of the opposition.

The present approach differs in this; that whereas like the Structuralist we assume a set of morphemes we also assume that language is a symbolic system and hence, that in 'tension' with the set of morphemes is a further set of abstractions - namely the elements of content. Neither of these sets of elements is marked; the existence of each is as real or as unreal as that of the other, and each exists only by virtue of the other. (Hjelmslev, 1961, pp48,49).

We argue then that the sememe and lexeme are not units of distribution, rather the reverse - i.e. that many of these distributional units, constituents of a supposed independent level of grammar, are in fact but indifferently conceived semantic units. (See further section 2.2 of chapter 3).

### 4.2.0 On the notion "discontinuous morpheme"

For all that discussions of morphology engage the attention of Semitists to such a striking degree, renarkably little consideration has been given to the criteria through which the set of morphemes in Semitic is to be identified. Procedures for the segmentation of sose measure, where not for the most part arbitrary, have tended not to be applied with the rigour one might expect.

For instance, among the more carefully argued of more recent discussions on the topic are those of Fleisch (1956,pp21-26, and 1961, pp 247-251. The latter is mostly a verbatim reproduction of the former) and Petrákek (especially 1960).

Both of these scholars employ "Internal inflexion"
(F1. "flexion interne", Pe. "innere Flexion") as a technical term but each in a rather different sense.

Whereas Meisch on the one hand (see for instance 1956 pp37-40) confines the term to vocalic alternations occurring within the bounds of the first and last (third or fourth) radicals of the root, Petráek (ibid p583) on the other extends this in effect to embrace any vocalic element - whether within or without the bounds of the root, having grammatical function. Both scholars be it noted regrad. gemination of one of the root phonemes as coming within the definition. (I am unsure of the position of elements such as say the W of the measure Fawa'iL).

In any event it is clear that the type of morpheme envisaged by both is that which Harris (1951 p165ff) has termed "discontinuous".

Unfortunately it seems equally clear that neither of these characterisations will withstand critical scrutiny. For instance we mentioned above the measure Fawa'iL, which is a type of 'broken plural' as for example:-
fäkiha: fruit vs fawakih: fruit (plural)
Now the vowel pattern of Fawa'il is precisely the same as that of mara'il as instanced by:-
maktab: office vs makātib: offices
According to Fleisch's analysis the ma- of the latter pair is a prefix (1956 p67ff, and also para. $C$ of $p 64$ ) and is therefore not part of the "internal inflexion" of Arabic. Add yet it seems reasonably clear, at least on the basis of the measure Fawāi $i L$, that in the "plural" measures we are dealing with a vowel pattern or template appropriate to four consonants (presupposing certain other conditionfwhich are not relevant here) irrespective of whether or
not these consonants are also radicals.
In other words the decision to select the root boundary as the limit for "flexion interne" or discontinuous morphemes appears not to be supported by these examples.

Petradek approaches the problem from rather different premises. Under the influence of the Prague theory of "distinctive oppositions" he is prepared to treat as a single morphene any elements contributing to the setting up of sone gramatical opposition (this is implicit in the discussion in 2.6 on p .567 and the definitions on p583 - see for instance the pair nahr: river vs 'anhur: rivers).

However, it does not ncessarily follow that because some contrast is expressed by a series of discontinuous elements, these eleinents must belone to one morphene. Por instance, in the English "He is running" we would not wish to say that because "progressive" is expressed by "is -ing" that these two constitute one morpheme, if only because both may be employed independently of the other. ${ }^{(1)}$

However, perhaps the rost important objection to both of these methodologies is raised by Harris (loc.cit). He remarks, "In Arabic,.... we have such utterances as kataba' he wrote',...ka:taba 'he corresponded', ... from which we extract the following as independent morphemic segments: k-t-b 'write',...-ama- 'perfective'-,- (i.e. added nora of length after the first vowel) 'reciprocal'."
(1) A further point which is not essential to the present discussion is that is one is prepared to extend the notion of "internal inflexion"beyond the bounds of the root, there then is no reason to exclude such contrasts as Fa 'al vs nfa'al from the description, since these two comprise a gramatical contrast just as wuch as Fa'al vs Fu'il. (See FetráCek, 1963)

Now it is clear that both Petradek and Meisch would regard -a:-a- as one morpheme rather than two (Meisch in fact - 1956 p23, gives precisely Farris' example). And yet it cannot be disputed that in breaking down this monolithic internal inflexion Harris has incorporated a significant generalisation into his description, and one moreover which is in strict confomity with his methodological presuppositions. ${ }^{(1)}$
4.2.1 A close exanination of the Arabic verbal measures sumgests that Harris' procedure can in fact be applied with even greater rigour, although in doing so we are led into rather uncharted seas wherein as many problens are raised as solved.

Consider for instance the measures 'aF'al vs 'up'il which are related in precisely the same way as Fa'al vs Fu'il, and on the basis of which latter are traditionally set up the discontinuous morphemes -2-an and -u-i-. Now for our fomer pair of קeasures Fleisch would presumably wish to set up discontinuous morphemes something of the order of -man and --i- (since he would restrict the notion to material enclosed by the root boundaries).

But the nature of the opposition might suggest say, that the vowel a of -an is precisely the same as the second vowel a of the morpheme -ama-. Applying Harris' segmentation procedures would it then not be rare illuainating to argue that the notion "active" is expressed primarily by a morpheme a inserted between the second and third radicals and secondarily - in the case of -aman, by a further morpheme a inserted between the first and second radicals?

It might of course be objected that in the case of 'ap'al what we are really dealing with is a discontinuous morphene 'aman and
(1) Note moreover that the game generalisation is also valid in varying degrees for the 2nd, 5th, 6th and 8th measures.
that we have merely cinsen an arbitrary portion of this to suit our own purpose.

This objection might have more force if there were not such pairs as Fa'al vs Fa'il where the 'functional load' (see Lyons 2.4.1) is bome entirely by this same vowel a. Against this once raore it may be objected that on the basis of a wider ranging series of oppositions this functional load would seem to be spread more evenly over the two segments of discontimuous morphemes $-a-a$ and $-a-i=$ In this there is of course some force but the fact remains that if we wish to show that in the Arabic verbal system functional load is concentrated on certain phonenes to the greater or lesser exclusion of others then we must opt for the segmentation of the discontinuous norpheme, hovever defined.

Indeed, an exaraination of the various verbal measures shows that a narrow concentrating of the functional load is at least as comon as its diffusion. Consider for instance the pairs uFa' iL vs uFa" al ("active" vs "passive") and the appropriate second degree measures of the 3 rd and 4 th measures, or the pairs atara' al vs utaFa' $a \mathrm{aL}$ and similarly in the 6th measure.

Moreover, the "active" and "passive participles" of measures 2-8 and 10 all vary only on the alternation of the vowels $a$ and 1 between the second and third radicals, as for instance multaiil vs murta'aL. Pinally consider such pairs as Fa'al vs nFa'aL or Fta'al where a gremmatical opposition is borne entirely by the elements $\underline{n}$ and $\underline{t}$.

To sum up, we argue both in a preliminary way here, and more formally in chapter 12, that a more illuainating description results if we do not confine ourselves to the rigid discontinuous morpheme traditionally set up by Semitists. Rather, we should envisage
associations between content and expression of a more flexible nature, which pernit us to observe gradations in functional load.

In effect we need to view the verbal morphenes in Arabic rather like the Faglish exsaples "is" and "-ing" mentioned above which may be regarded independently or jointly accordine to the context in which they oocur.
4.2.2 have attempted in theprevious paragraph to put forward 'empirical' argment for a segmentation of the discontinuous morphese. There is, however, in addition a not insubstantial argument from formal econony for such an analysis.

Now many linguists are persuaded that arguments of this type are of doubtful relevance (see for instance, Jatthews 1972 chap.12) but it does nonetheless seen clear that if formal economy is not inconsistent with descriptive power it may be of assistance.

Aside from any functional considerations it in obvious by inapection that in Arabic verb morphology we are dealing with the interaction of a very 1 imited number of phonemes. Consider for instance the following second degree seasures of the 2 nd measure:

```
                                    Ta'!aL
                                    Fu'!iL
u Pa'MiL
```

For the purposes of our elementary exposition each of these was regarded as a separate discontinuous morpheme and a member of the set $\nabla$. Suppose, however, we 'factorise' the components of these forms. This would give:-


Assuming ve were able to build in a series of 'limitation rules' to restrict the possible forms generated by the device, we could derive from this simple array of elements:-

Fa'il; uF'al; Fa'aL; uF'iL; Fu'il in addition to the measures on which the device was based.

From the strictly formal point of view there can be no doubt which is the simpler means of presentation, but when this means requires the segmentation of the discontinuous morphemes precisely the approach for which we have previously argued, it becomes clear that the form of analysis we are advocating is not entirely ill-founded.
4.2.3 Let us then modify our hypothesis in the following way. In section 1.0 we envisaged an unordered set $V$ of verbal patterns. We now substitute for this an ordered set of morphemes and a number of 'dumny symbols' D located in positions appropriate to the generation of all second degree verbal measures. Thus on the (limited) basis of the device evolved we might write:-

$$
V=\left(m_{a}, D_{a}, m_{b}, D_{b}, I_{c}, m_{c}, D_{d}\right)
$$

where:-

$$
\begin{aligned}
& m_{a}=\{u\} \\
& m_{b}=\{a, u\} \\
& m_{c}=\{a, i\}
\end{aligned}
$$

Any pattern derived from such a device will be termed a 'template'.
4.2.4 The formal argument for a similar treatment of the set of nominal templates $N$ is equally as strong if not stronger than that for the verbal measures, given the very much greater variety of these and a similar use of a restricted repertoire of elements.

The argument from 'empirical' criteria is, however, very much weaker and it is clear that, as regards nominal measures the traditional approach exemplified by Fleisch and Petrácek is on considerably fimer ground, and is indeed essential to the description of certain phenomena. (See for instance para. 2.426 of chapter 11).

This is not to siv that there are no concentrations of functional load like those of the verbal measures. Por instance in the pair:mansaj: weaving shed vs minsaj: loom the contrast "place" versus "instrument" is borne entirely by the vowel following the initial ㅍ. Cnce again this is not to clain that the functional load is borne exclusively by the elements in question, merely that the association between these particular elements and the relevant elements of content is of a 'stronger' degree than those obtaining between the semene and other non-radical expression elements.

Hence, in confomity with the restated set $V$, (although with rather more reservations) let us also envisage an ordered set $\mathrm{N}_{\text {, }}$, again comprising sets of morpheres and duray symbols, and where once again the morphemes may function either independently or jointly with others, accordine to content.

A more detailed consideration of certain aspects of the structure of the reconstituted sets $V$ and $N$, plus a discussion of the concept 'morpheme' as used in this study, is given in chapter 3.

## 5. Further observations on the content code

That we have set up a code of 'content' implies that the elements oontained therein are in sone sense to be regarded as meaningful. In this paragraph we consider briefly the status of the elenents which have been temed 'sememe' and 'lexeme'.

From the way the argument in 4.0 and 4.1 was developed - and in particular the notion of the 'inclusion' of a sememe within a lexeme, and also from our use of the terms 'content' and 'expression', it may have become clear that what is envisaged is in fact systems of 'concepts', by which we intend a class or set of objects
or predicates which are deemed to share one or more characteristics.
In other words, the lexeme and sememe may be defined as the Intersection of the extension and intension of the phenomena it comprises. (For these terms see Lyons 1968 p 454).

Now it will be noted that it is possible to define the 'phoneme' in very similar terms. That is, the phoneme may be regarded as a set of sounds each manifesting one or more articulatory or acoustic characteristics. In certain respects this is of course an oversimplification since it is clear that in some instances a phoneme must be defined relative to the properties of other phonemes with which, in some contexts, it stands in syntagmatic relationship. However, since the same appears in part at least to be true also of sememes and lexenes the analogy is not thereby invalidated.

The point of our analoey is this; that the notion of the concept has been much criticised in recent years, notably by Lyond ( 1963 chapter 1, 1968, p.2.6. See also Ullmany 1962 p61 para (c) and p64ff). And yet in Lyons, 1968, for instance, it will be noted that a rejection of the notion concept is not accompanied by rejection of the notion phoneme. On the contrary, all linguists are united in admitting a phonological component of some sort into their grammars - be it phonemic, distinctive feature, prosodic or whatever.

In sum we argue that the concept as defined above is quite acceptable as a notion for the linguist qua linguist. This of course is a matter distinct from the question of the 'existence' of the sememe and lexeme - and of the phoneme for that matter, as also from the question of the method by which one identifies them.

We disarree neither with Lyons or Haas (1954) in their insistence
on a rigorous methodology - merely in the apparently tacit assumption that the definition of units should precede gramnatical investigation proper.

The philosophical question of the 'existence' either of the individual units or of the structure of which they form part is much more difficult, and being outside my competence I do not propose to discuss it.

### 5.1.0 'Internal' logic vs 'external' logic

Suppose we wish to perform a contrastive analysis on two languages strongly distinct as to the internal logics of their content codes, and suppose that the focus of our analysis is to be an aniso morphism between them. How, within the framework of a formal grammar, might we show this distinctness ?

One possible solution would be to take the relevant concept of language $A$ as 'base' and show the corresponding concept of language $B$ as variant thereon - perhaps by detailing the patterns of association between the appropriate sets or systems of the two languages. This procedure is laborious (and arbitrary) in that if we then wish to contrast the related portions of language $C$ we are once more obliged to select one of the three as base and contrast the other language with it. If $B$ is selected as base and $C$ contrasted then we have as yet said nothing of the relationship between A and C .

Therefore, a better method might be to construct some language neutral apparatus against which the internal $\operatorname{logics}$ of $A, B$ and $C$ could be assessed, and which would also be valid for any other languages we might choose to contrast.

Such an apparatus could have other functions. For instance, linguists working within the T-G framework tend to employ the base
component of the granmar as a sort of 'pivot' whereby the relatedness of what on the surface are more or less distinct structures can be demonstrated. Limitations in this approach have been shown by investigators working within this school (as for instance, Lakoff 1968), and its unsuitability for contrastive analysis is manifest given that description in this hypothesis is base centred, and that the "formatives" introduced into the base are language specific, rather than universal.

It will be clear that just as this language-neutral apparatus functions as a pivot for the comparison of content anisomorphism across languages, so also it could serve the pivotal function of the base in the T-G hypothesis - without the disadvantace of being language specific inherent in this latter.

Let us then assume that some such lenguage-neutral device could be made available to each grammar, and let it be temed the 'representation'.

A tentative outline of the structure of the representation is offered in chapter 4, and for the moment we may confine ourselves to noting that being language-neutral entails for the representation an 'external' (or "natural") logical structure in contrast with the various internal logics of the content codes assessed against it.

The 'generation' of some utterance, and hence more generally the grammar of a Semitic language may then be taken to have the structure shown in the accompanying diagram:-


That is, to any representation is assigned a (non-concatenated) set of lexemes and sememes. This set constitutes the 'encodingl. Next, to every encoding is assigned a set of morphemes and (primitive) syntactic structures. (For a discussion of the syntactic component of the hypothesis see in particular para. 4.2 of the following chapter). These (concatenated) setg are temed the 'expansion' and constitute a basic morphophonemic level of representation.

Thus, in addition to a description of the codes of content and expression and a list of association rules, the grammar will also contain a list of encoding rules.

Moreover it may be as well to remark at this point that there will be certain restrictions on the ireedom with which both content and expression elements may enter into 'configuration' with other elements of the same code. This requires that for each code we provide a list of 'limitation rules' which will define the admissible configurations of the language. (Note that these are not "selectional restrictions" in the sense of Chonsky 1957 or 1965. See the discussion in 4.1 of chapter 3).

A more detailed discussion of these various mule types will be found in chapter 3 (section 1.3) and 4 (passim).

## 6 Grammatolotical remarks

6.0.0 The grammar of a particular language constructed on the basis of the hypothesis outlined above will comprise both a generative and a taxonomic component. Broadly speaking the description of the codes of content and expression will in essence be a taxonomy, while the validation or invalidation of the rule scheme forms the generative component.

It would be wrong, however, to see these as very sharp distinctions. Validation of the taxonomy itself is also one of the functions of the generative component - that is, any element of content or expression is in the limit justified only if predictions made by the grammar (e.g. utterances of Arabic) are in confornity with the native speaker's intuition.

On the other hand, it seems likely that certain rules may be written down by inspection and little information is added by the subsequent application of the generative process.
6.0 .1

In envisasing a role for taxonony in grammatical studies we are to a lesser or greater extent in disagreement with one of the tenets of T-G dogma. Chomsky for instance ( $1964 \mathrm{pp} .98,99$ ) argues:- "This point of view (i.e. that "linguistic theory is concerned only with the level of "observational adequacy" ") takes a theory to be, essentially, nothing more than a summary of data. In contrast, it has been repeatedly pointed out (most forcefully, by Karl Popper) that the prevailing attitude in the sciences is to regard data as of interest primarily insofar as it has bearing on the choice among alternative theories, and to search for data, however exotic, that will be crucial in this sense. In any event, there is surely no reason why the linguist must necessarily limit himself to 'the study of phenomena and their correlations', avoiding any attempt to gain insight into such data by means of an explanatory theory of language..."

Now it will be noted that there are two slightly different arguments here. First there is the Poperian view that "data is of interest primarily insofar as it has bearing on the choice anong alternative theories", and secondly the more conservative position that the linguist should " ... attempt to gain insight
into (his) data by means of explanatory theory of language..." Popper's view of scientific investigation is most appropriate, it would seem, to those fields where data is not so readily obtainable. The problem in gramnatical science is quite the reverse; there is an embarrassment of data, such that the confirmation or disconfirmation of any hypothesis becomes difficult if not impossible.

Moreover it is particularly absurd to suggest that data is peripheral to diachronic linguistics - without data there can be no diachrony. (No sane person for instance would hypothesise a grammatical structure and diachrony for a group of old Stone Age languages).

Thus we find that in effect T-G gramarians adhere to the more conservative of the two positions mentioned by Chomsky. As has been noted elsewhere (see for instance Botha 1968, para 3.2. 4.3, pp. 67,68) studies within the T-G framework do indeed reflect considerable taxonomising activity - albeit implicit rather than overt.

That the taxonomy should be implicit is entirely proper since there can be no ideal ratio of taxonomy to generation. The means can be justified only by the end.

Between the taxonomies of traditional grammar (including those of transformational generative grammar) and that envisaged here, there is, however, a difference of some importance.

Those of traditional grammar are set up to account for - or to characterise, patterns of distribution. (For a more extended discussion see section 2 of chapter 3). Ours on the other hand is a meaning-based taxonomy; each of the samples in appendices $A$ and $B$ for instance is a classification of the forms it comprises.

But, since we regard gramar as the description of a symbolic system, it follows that a taxonomic component founded on semantic distinctions is better motivated than one based on pure distributional criteria.

A philosopher of science has written "A theory must serve as the basis for explanation, ... In order to fulfil this demand, a theory must describe the means by which the phenomena it explains come about". (Harne1972 p24)

Such a statement naturally prompts the question, what can a hypothesis such as that given above be said to 'explain' ? By introducing a level of "descriptive adequacy" Chomsky (1965 p24) clearly infers that individual grammars have little or no explanatory power, even though (ibid p25) he regards a gramenar as "...a theory of the language of which the well-fomed sentences of the primary linguistic data constitute a small sample".

Explanation proper - in the sense of identifying a causal mechanism, can for Chomsky only be achieved by "...constructing a theory of language acquisition, an account of the specific innate abilities that make this achievement possible". (p.27)

Looked at from the scientific, as opposed to the Psycholinguistic point of view, it is difficult to disagree with this, and yet one wonders whether it would not be better to envisage various levels of explanation in linguistic science. For instance the morphology and semology of Arabic might to a certain extent be explained by an account of the diachrony by which they arise, which in turn might be explained by a theory of language change such as the one tentatively offered above (see 2.4).

Likewise the differences between the Semitic and other language groups might be explained by showing that the granmar of
each language conforms to a structure, such as that outlined, which is distinct from the structure of other language families. Insofar as these are 'causal mechanisus' at all it is nonetheless clear that they are of a secondary or even tertiary nature. However since explanation in Chomsk's sense is at the moment unattainable it would seem that the more modest levels of explanation suggested in this paragraph constitute a perfectly satisfactory interim goal. (Botha (1968, paras. 3.2.32, 3.2.33, pp58-63) also has some discussion of more modest levels of explanation).

## On the struature of the ixpression Code

0.0

Introductory
Before beginning the discussion proper it would seem advisable to make a few romarks on languace typology. Introm ductory discussions of this topic serve mainly to highlight the inadequacy of the traditional classification when viewed from the standpoint of Semitic. (See for instance Lyons, 1968, sections $5 \cdot 3.6$ to 5.3 .10 and Bazell 1958).

Bazell for instance (ibid pp45,46) speaks of Semitic as 'inflecting' in type. On this basis it would then be reasonable to suppose that Arabic, as a representative of Semitic, is typologically similar to Latin - also of course bf the inflecting type. While there is a certain truth in this it is also true that Arabic is typologically at least as similar to Bnglish as it is to Latin - a fact mich could never be apparent from Bazell's eccount.

Wote further that traditionally an inflecting language is one for which linguists "can match their classes (i.e.categories) before they can match their segments".(ibid p39). Por Arabic this is simply untrue.
0.1 The major difficulty with this traditional typology is that two quite different diraensions of analysis are conflated into one. To employ Iyons' teminology, we should classify a language firatly in respect of its "segmentability" into "morphs" and secondly in regard to what might be terned its 'associability" that is, whether there is but one morpheme per morph or more. (See para. 2.1 of chapter 2).

Let us then for the purpose of this study replace the traditional 'one-dimensional' classification in three terms by a two-dimensional scheme having the following sub-divisions.

First we envisage a three-way classification of segmentability comprising the terms 'isolating', 'agglutinating' and 'fusional' - instanced by Chinese, Turkish, and Latin respectively. Next a two-term classification of associability comprising:i) the case where there is only one morpheme per morph (ii) " " " " more than one " " " However, to conform with the theoretical framework evolved in chapter 2 these latter should be redefined as follows:
i) the case where there is only one sememe or lexeme per morpheme ii.) " " " is more than one " " " " Following para.2.1 of chapter 2 languages of type i) will be termed 'bijective' and those of type ii) 'surjective'.

On the basis of this classification the following table may be compiled:-


Such a typology is in itself far from perfect since it does not capture the fact that languages tend towards one classification or another and do not entirely exclude all others. English for instance has at least some items of type $A B$ (e.g. 'sheep') and perhaps even of $C B$ (e.g. 'took).

On the setting up of Morphological systems
The principle technique employed in Item and Arrangement (IA)
analyses is segmentation, and hence it follows that any language classified along our dimension of segmentability as $A$ or $B$ is to that extent analysable infA terms. (On IA see Hockett, 1954).

Since Arabic is classified $B B$ we will then expect the description of the morphological component to be cast in 'arrangement' rather than 'process' terms. (See however the discussion in para. 3.1 below).
1.1.0 Consider the pair of second degree verbal measures uFa''il and uFa'raL. (1) These vary only on the assignment of the elements a and $\underline{i}$ between the geminate second and third radicals. The same patterm is repeated across oher pairs of cognate verbal measures, as for example:-
uFa'il vs upa'aL (3xd measure)
uF'il vs ur'al (4th measure)
Save for the interchange of $a$ and $\underline{u}$ in initial position the same contrast also characterises:-

> anTa'iL vs unPa'al (7th measure) aFta'il vs upta'aL (8th measure)
> astaF'il vs ustar'al (10th measure)

Now according to the discussion in 4.22 of chapter 2 the elements a and $i$ may be understood as nembers of a set $m_{x}$, as similarly may the elements appearing in other positions in the various measures listed above.

It is not a necessary precondition for the setting up of any morphological system that its members should contrast in all positions. For instance in the measures uFa''il and uFa''ad the element a appears between the first and second radicals in both cases. However, this element is still to be seen as a member of a system since, in the case of the cognate pair Fa''al
(1) 'Verbal' here is used pre-theoretically. For a more precise specification see 1.2 below. These measures may be instanced by ukawwif:frightens; ukawwaf is frightened.
and Fu'Iil there is a contrast between $\underline{a}$ and $\underline{u}$ in this position, in addition to the already established contrast between $\mathbf{a}^{2}$ and 1 . (Compare kawwaf: frightened, with the examples given above). 1.1.1 In formal terms these systems may be regarded for the most part as 'overlapping' (see Lyons, 1968, para. 2.3.1). This overlapping is either 'arbitrary' or 'motivated'.

Since the repertoire of elements - especially vocalic, in Arabic is limited and the aggregate membership of the various systems well exceeds the number of elements avilable, it is clear that some elements at least may be expected to appear more than once in the structure. However it seems not unconmonly to be the case that where some element occurs in more than one system we may attribute such overlapping to the fact that there is a diachronic relationship between the elements concerned. An instance of this is given by the various series of anaphoric forms. A possible analysis would systemically distinguish pronominal forms suffixed to verb forms from demonstrative pronouns. Thus the systemic analysis we choose to attach to say the -hu of kawwafahu: he frishtened him, might well differ from that for the form hāda: this, where the h in both cases is presumed to derive from one and the sane deictic element.

Overlapping of the latter kind is that which we have termed 'motivated'; all other instances of overlapping are 'arbitrary' although it is readily conceded that the precision with which we may distinguish the two types depends entirely on the state of diachronic studies.

For Arabic it seems reasonable to suggest that these morphological systems are 'stable' without exception.(See the discussion in para 2.3. of chapter 2).

A specification of the syntagnatic relations of any morpho logical system will comprise two sub-components.

Pirst, every system is taken to be a member of some 'series' where a series is an ordered set of systems of expression elements and duany symbols (of 4.2 .3 of chapter 2). For instance the 'Verbal' series will specify the form of any verbal measure, by which is understood a group of measures having approximately similar distribution and among which paradigmatic relationships may be established. (Such a definition is intended to exclude such measures as nap'ū which, although having a similar distribution to acknowledged verbal measures, morphologically stands quite alone).

Second, systeas will be specified in reapect of their relationship to the duray symbols. That is, they are either pre-fixed (p), infixed (i), or suffixed (s). Thus we envisage three subsets of the Verbal series $V$, nanely:-

$$
\begin{aligned}
V p & =(a, b, \ldots, n) \\
V i & =(a, b, \ldots n) \\
V s & =(a, b, \ldots n)
\end{aligned}
$$

Since these are ordered sets it follows that any member of say Vp (a) will precede one of $\mathrm{Vp}(\mathrm{b})$. For example, if the system \{a,u\}manifested in the contrast Fa''al vs Fu''iL be designated Via, and the systera $\{a, i\}$ by $V i b$, then it will be the case that any assignment of Via (a) will be located immediately before say Vib (a) - save for the intruding dumay symbol (s).

The conjunction of these two elements in some expansion will be designated thus:

$$
\operatorname{Via}(a): \operatorname{Vib}(a)
$$

Fe must also envisage the case where no meaber of some system is
assigned. Thus we establish the convention whereby in the absence of some $S x(y)$, an element $S(x+n)(y)$ is assigned as the 'immediate successor' of some $X(x-n)(y)$, where there is no $S(x+n-I)$ (y) or $S(x-n+I)(y)$. Consider for instance the measures 'aF'al and staf'al. A possible analysis of the prefixes of this pair might result in the following systems:-

$$
\begin{equation*}
\nabla \mathrm{pa}=\{=\{\mathrm{s}, \cdot\}, \quad \nabla \mathrm{pb}=\{\mathrm{t}\}, \quad \nabla \mathrm{pc} \neq\{\mathrm{au}\} \tag{1}
\end{equation*}
$$

Generation of some fom on star'al would then involve assignnent of the sequence:-

$$
\mathrm{Vpa}(\mathrm{~s}): \quad \mathrm{Vpb}(\mathrm{t}): \quad \mathrm{Vpc}(\mathrm{a})
$$

However, in the generation of some fom on 'ap'al no element from Vpb will be assigned. By convention $\mathrm{Vpc}(\mathrm{a})$ then becomes the immediate successor of $\mathrm{Vpa}($ ' $)$ and we have the sequence:-

$$
\nabla \mathrm{pa}\left({ }^{\prime}\right): \quad \operatorname{Vpc}(\mathrm{a})
$$

1.3 Thus far we have a model of the expression code consisting of a number of systems armanged in syntagnatic series. However it is not the case that every nember of these systers may be assigned independently of all others in the same series.

That is we wish the gramer to state that there is for instance no measure *'taFt al in Arabic nor a measure *sar'al.

We require, therefore, a means of stating these restrictions, which seem to be of at least two types:-
a) There the assignment of some element is not compatible with the assignnent of some other - as for instance $\mathrm{Vpa}($ ') is not compatible with $\mathrm{Vpb}(\mathrm{t})$.
b) Where the assignment of some element necessitat es the assigmnent of some other - as for instance the assignment of
$\mathrm{Vpa}(\mathrm{s})$ necessitates the assignment of $\mathrm{Vpb}(t)$.
(1) The system Vpe aiso assumes the measures 'uF'il and stuF'il. The basic materials for a diachronic argument of this kind may be found in Moscati, 1969, paras. 16.10-16.14. and Mright, 1:65Ren

Restrictions of this kind will be stated in the form of 'limitation rules' (cf para. 4.2.2 of chapter 2) and since elements in the content code are also taken to be constrained by such rules the following introductory remarks should be understood as valid there also.

Let there be some pair of elements $\mathrm{Ex}(\mathrm{y})$ and $\mathrm{Bz}(\mathrm{y})$ the assignof one of which is not compatible with that of the other. Then we will write:-

$$
\mathrm{Ex}(\mathrm{y}) \backsim \mathrm{Ez}(\mathrm{y})
$$

Next we must envisage the case where some pair of elements are incompatible save in the presence of some third element : This will be expressed:-

$$
\begin{aligned}
& \mathrm{Ex}(\mathrm{y}) \backsim \mathrm{Ez}(\mathrm{y}) \\
& (\mathrm{Ey}(\mathrm{y}))
\end{aligned}
$$

Where an element of some system is not compatible with any element of some other we will simply write:-


Finally there is the case where the selection of some element entails the selection of some other. Such a rule will have the form:-

$$
\mathrm{Ex}(\mathrm{y}) \Longrightarrow \mathrm{Ez}(\mathrm{y})
$$

Note that the case of mutual entailment may define, in the expression code, a discontinuous morpheme (on which see 4.2 .0 of chapter 2).

Hence, returning to the example given above, since the assignment of $\mathrm{Vpa}(\cdot)$ is taken to be incompatible with that of $\mathrm{Vpb}(t)$ we write:-

$$
\mathrm{Vpa}(>) \backsim \mathrm{Vpb}(\mathrm{t})
$$

And, since the assignment of $\mathrm{Vpa}(\mathrm{s})$ entails that of $\mathrm{Vpb}(\mathrm{t})$ - but
not vice versa, we have

$$
\nabla \mathrm{pa}(\mathrm{~s}) \Longrightarrow \mathrm{Vpb}(t)
$$

### 1.4 A Note on Duramy Symbols

In the elementary gramar given in para.1.0 of chapter 2 , members of the set of yerbal affixes were expressed in the form AaBBaC and so on, and the letters $A, B$, and $C$ are replaced by dunny mymbols in the formulation of 4.2 .3 of that chapter.

Now since certain measures have either the second or third radicals geminate we require a notational convention to permit the addition of an auxiliaxy dumay symbol as necessaxy.

To accommodate this the second and third dumay symbols will have the form $B(B)$ and $C(C)$ where appropriate, and where (B) and (C) are optional.

Since there is no measure where gemination of both radicals occurs simultaneously we may also write a rule:-
(B) $\qquad$ (C) ing paragraphs was derived from first principles. That is, we merely noted that there are in Arabic symbols - as in any other language, among which certain formal relationships can be said to obtain.

The purpose of this section is to provide a more precise specification of the nature of these expression code elements.
The status of the expression code elements
The outline of the expression code presented in the preced-

Among the assumptions underlying the hypothesis presented in the previous chapter is that a natural language is a symbolic system of a particular kind whose two aspects we have termed the planes of content and expression. Te have therefore taken as
axiomatic that any'level' posited as part of the gramar should be clearly related to one or other of these planes, and should be justified with reference to them.

Since we are speaking of the 'expression' code it follows by definition that for instance, Arabic verb forms are signs which signal some sort of content.
2.2.0 For Bloomfield the principile units of gramatical analysis were the "morpheme" and "phoneme", where the former is taken to be composed of the latter.

All of these morphemes are incorporated into a taxonomy based on a number of" fom classes", and each morphene is said to "belong to" one or more of these ${ }^{(1)}$ Noreover, "large fommelasses which completely divide either the whole lexicon or some important form-class into form-classes of approximately equal size, are called categories". (2)

Therefore on the one hand the Bloomfield morpheme is, for him, the principie and most basic unit of the expression plane. On the other hand it does not seem possible to view the morpheme as an "exponent" of sone category -- to do so would be contrary to the purely taxonomic function of the concept.
2.2.1 The inadequacies of this theory are well known and require no discussion here. (3) Nore important for our purposes are the various levels of representation conceived by the Neo-Bloomfieldians as a remedy for the defects in the original scheme.
(1) "Lexical foms having any function in common, belong to a common fommelass ..." where "...we extend the tern lexical to cover all forms that can be stated in terms of phonemes" (Bloomfield 1935 p265 and 264 respectively)
(2) ibid p270
(3) For a clear evolutionary account of Structuralism see Palmer 1971.

In particular this group of linguists laid great emphasis on distinguishing "morphologically" from "phonemically" conditioned alternation. Morphological conditioning for instance determines that the English morpheme $\{s\}$ or $\{$ plural $\}$ shall have the alternants $/ \mathrm{s} /$ and $/ \mathrm{n} /$, whereas phonological conditioning determines that the fomer shall have the altemative realisations $/ \mathrm{iz} / \mathrm{z} / \mathrm{and} / \mathrm{s} /$. Thus between the morphemic and the phonernic is introduced a further level, terned the morpho-phonemic.

The question then arises, what is the relationship of these three levels of representation to the planes of content and expression ?

Being the basic representation of the shape of some fom, the morphophoneme is clearly to be regarded as part of the expression plane, hence so is the phonemic level proper.

The problematical level is the morphemic. Is the Neo-Bloonfieldian morpheme a concept of expression, of content, or of neither ?

Hockett (1958, p134) asserts that " a morpheme in a given language is defined only relative to the whole morpheme stock of the language: a morpheme is something different from all other morphemes of the language". Thus "one...can only define ....what a specific...morpheme of a specific language is, in terms of the operations and criteria used in discovering them".

From the above it is clear and entirely consistent with structuralist theory that this morpheme is not to be understood as a unit of meaning, and therefore of content. It seems equally clear that it cannot be a unit of expression, since in this plane we are concerned with the sepmentation of utterance tokens.

Since the morpheme thus conceived appears to form part neither of the content nor of the expression code we would be
justified prima facie in concluding that a distinct Neo-Bloomfieldian morphemic level is not relevant to our hypothesis.
2.2.2 For the purpose of the above discussion we assumed a morpheme to be an entity of some kind. This interpretation is supported by Harris (1951, p16) where we find; "Two utterances, or features will be said to be linguistically, descriptively, or distributionally (my emphasis) equivalent if they are identical as to their linguistic elements (i.e. phonemes, morphemes) and the distributional relations anong these elements".

This statement is of interest since there is a body of scholars who envisage the morpheme as a mere taxonomic convenience. Bazell for instance (1953, p51) defines it simply as the "unit of distribution". Iyons, more explicitly states (1968, p183) "The morpheme is not a segment of the word at all; it has no position in the word...but merely its 'factorial' function (sic)".

Bazell supports his conceptualisation by arguing that "at the level of the sememe, (where this term is used in approximately our sense) every unit must be invariably commutable with at least one other unit". (i.e. meaningfulness implies choice). For instance"In Latin, the morpheme third person cannot invariably be commuted with any other morpheme, hence it cannot define a sememe" (ibid p81). From this it is deduced that the sememe is not an adequate unit for distributional analysis.

All of this of course begs the question of the extent to which distributional analysis is a legitimate goal of linguistic science. Bazell's example indeed may be used as an argument for the contraxy position for, in the many cases where the "third person" form is comutable with others, it is commonly the case that this conmutability reflects various possibilities of meaning. In
such cases the distribution of the forms concerned can be said to be 'semantically conditioned'. Other cases (such for instance as the impersonal verbs cited by Bazell) having no semantic motivation may be regarded as 'morphomsyntactically' conditioned.

This distinction is, we would susgest, at least as important as that drawn by structuralists between morphological and phonemic conditioning. If this is accepted it follows that the morpheme conceived as the unit of distribution makes the construction of an adequate eramar more, rather than less, difficult.

The argument discussed above, namely, that there is no one to one correlation between morpheme and semome, is strikingly similar to that advanced by structuralists to show that the granmatical categories ame not categories of meaning. Number for instance cannot be a semantic category in Inglish since there are forms such as oats and wheat, both of which are "mass" nouns, one of which is "singular" and the other "plural". (See for instance, Bloomfield op.cit. para. 16.5, p271) Wile it does in fact seem possible to answer this particular point by an appeal to the distinction draw above between 'internal' and 'external' logic, this is not our purpose here.

Rather what is interesting is that we have on the one hand a set of Neo-Bloomfieldian or "distributional" norphenes, the majoxity of which broadly correspond to semantic notions of various kinds, and on the other a set of gramatical categories which similarly, seen to correspond fairly closely to semantic categories.

In Bloomfield's theory the cstegory is a class of lextal items of morphemes. Of what, however, is the gramatical category a classification in Neo-Bloomfieldian tems - the morpheme, the morphophoneme, or both ?

The fact that both the morpheme and the grammatical category are quasi-semantic in nature seems to suggest that the latter classifies the former rather than the morphophoneme.

This is supported by the usage in Matthews 1972 where the term "morphosyntactic category" is used to refer to what are elsewhere terned "gramnatical categories", and where a "morphosyntactic property" is a term in such a category and which, from the setting of the whole study are clearly the "morpheme" and "morphemic components" of Neo-Bloomfieldian theory. ${ }^{(1)}$ See pp160-162.

Within the framework of a structuralist theory it does then seem reasonably clear that the 'elements' of our expression code should be identified with the morphophoneme, and be succeeded by a level of phonemicisation proper. Thus for instance on the measure Fta'al we should set up a 'primary expansion' dtarab: be troubled, which under phonemic conditioning becomes ḍtarab. ${ }^{(2)}$

A second possibility would be to set up the basic representation in terms of "distinctive features" (See Jakobson et al 1952). While this would in several ways be an attractive solution it will not be adopted in the study since our object is to hypothesise a structure for the expression code, and so long as this is the limit of our ambition, intelligibizity of presentation is more important than theoretical precision.
(1) For "morphemic components" see Harris 1951: ch. 17. This concept has not been discussed here since its status is from a semantic point of view, analogous to that of the morpheme. Matthews (p161 item B)seens to take the relationship between the $N-B$ morpheme and gramatical category as a "primitive" almost. Contrast Hockett 1958 where the matter is not discussed at all, and one is given no hint of such a relationship.
(2) Except where the contrary is stated, transcriptions of Arabic in this study are post-phonemicisation.

The term "morphophoneme" is rather clumsy, and since "morpheme" is available this will be used to denote the elements of the expression code. It will be noted that this usage corresponds more to Bloomfield's own. That is, the morpheme is understood as a unit of segmentation. On the other hand, it diffe ers from that of Bloomfield in the following ways:-
a) The term does not embrace phonemically conditioned allomorphs.
b) The morpheme is not the minimum unit of grammatical analysis.

## 3. An alternative solution

1 An interesting and important alternative solution to the problem of constructing a formal morphology is that of Matthews (1972) (p170ffo), whose solution is to set up a Finite state device'(FSD) through which the set of word-forms may be generated.

The purpose of the following paragraphs is, in a fairly preliminary way, to compare this solution with our own, and to suggest certain conditions under which one or other solution might be preferred.

First of all we should point out that the morphological structure of Arabic is equally amenable to this treatment as that of Latin. To show this a fragment of the morphology of Arabic is set out below, firstly as a sexies of systems and then in the form of an FSD. The fragment chosen, and whose analysis is presented without discussion ${ }^{(1)}$ concerns the series of verbal prefixes and infixes.


That the two models may be the more nearly equivalent two of the (1) For the analysis proper see section 1 of chapter 11).
more important restrictions have been inserted -. namely, Vpc( ${ }^{1}$ ) is not compatible with Vpb , and $\mathrm{Vpd}(\mathrm{n})$ is not compatible with Vpe. The equivalent FSD will have scmething of the following form:-


Fig. 2

Each of these structures must be supplemented by a set of restrictions which will permit all and only the verbal measuxes of Arabic to be generated. Without these restrictions both models will generate far more forms than actually exist (See Natthews 1972 p171: in1).

The restrictions are much the same for both models and there is no reason to assume that either one offers a more simple solution than the other. There is, however, one point which may be mentioned. It does not seem possible to envisage an PSD without such restrictions. It would therefore be erroneous to suppose that because the FSD version of the fragnent does not require supplementary statement of incompatibilities it is, therefore, superior in elegance or generality. It is only because the fragment has been much simplified that restrictions of a simibar kind are not attached.
3.1 The FSD version is in one respect definitely superior, namely, in its treatment of morphemes and dumay syrabols which in the systemic version are starred -- i.e. $t^{*}$ and $B^{*}$. The basis of our theory of the expression code is - to recapitulate, that the
word forms of Arabic are best viewed as selections from series of systems between which various syntagmatic relationships hold. The linguist will not be surprised to leam that there are exceptions to this, although what is perhaps even more surprising is that there are so few of these. In the verbal series of systems there are apparently two, the measures Fta'ad and other second degree measures of the VIIIth measure, and the measure 'i「'iLã.

There can be little doubt that the morpheme $t$ of Fta'al is the same as those of tara' 'al and taFa'aL. For this there is both diachronic and synchronic evidence. (1) There are two ways of describing these measures. We may on the one hand assume that infixation occurs in the phonemic level proper; that is, the basic form is set up as tFa'al. (2) Or we may assume a base form Fta'aI. If our description is to reflect the speaker's competence there can be little doubt that the latter is the preferred solution. However, in that case we are confronted by the problem of how to locate $t$ behind the first radical when we have assigned it to a prefixed system. It is to this end that the star convention is introduced.

Let there be some content element $C x(y)$ which is expressed either in tara' 'al or Fta'ad. The following pair of mules is then set up:-
$C x(y) \longleftrightarrow \operatorname{Vpd}(t) \quad$ and $C x(y) \longleftrightarrow \operatorname{Vpd}\left(t^{*}\right)$
(1) As diachronic evidence the Syric form etr'eL may be cited (see NOldecke 1898 para. 159 and also Vright Vol. 154 Rem). For synchronic argunent see paras. 1.5 and 2.4 of chapter 6 , and appendices mentioned there.
(2) Compare such Hebrew foms as hitstaddeq: juetify oneself, where one would presumably wish to set up a basic form hittsaddeq.

The latter is then subject to the convention:-

$$
\operatorname{Vpd}\left(t^{*}\right) \longrightarrow \quad \longrightarrow \mathrm{F}-/
$$

which may be glossed "the term to the left of the expression is to be located in the position indicatad on the right".

The measure 'ip'iLail which is taken to be analogous to 'infi'āL, and 'ifti'āL is generated similarly.

In this case we wish to locate the second radical immediately in front of Via(i) and therefore we establish a further convention:-

$$
B^{*} \longrightarrow / \_V i a(i) /
$$

It may be objected that this is a rather ad hoc device and so in a sense it is. As our second version shows the PSD can treat such phenomena in a more homogeneous manner. (On very similar Latin phenonena and the question in general see Natthews 1972:6.1 (pp57-64) and 9.2 (pp165-169). In general it may be said that any process based approach, and not only an FSD, will offer a superior solution to such problems -- if that is, "superior" is equated with "more general". It is hovever equally possible to maintain a contrary position -- namely, that if some phenomena are clearly exceptions to some more general pattern they should be seen to be so.

In the present case it seems possible to adhere to both of these positions simultaneously. For if, as we have tried to argue, both the content and expression codes of Semitic should be vieved as 'system based' then this is/most significant generalisation about its structure -- more significant by far, we would suggest, than the incorporation of a few odd processes into a homogeneous morphological franework.
appear to be the case at first sight. In general, the closer a language approaches types BA and BB (see para. 0.1 ) the more exact the parallel between the two models. In the limit, the case, that is, of a language purely $B A$ or $B B$ the two models will differ only in this; that within an PSD framework selection of the vario s morphemes will be sequential, a condition which is not imposed by the systemic model.

Now along with the notion that the planes of content and expression may be organised into series of systema related in various ways, we have assumed that the nembers of these are related to members of systems in the other plane in patterns of 'association', and that an important part of the grammar constitutes a statement of these patterns and the constraints upon their fomation.

The constraints on association appear to be of two types which, adhering to the terrainology used above (para.2.2.2), are designated 'semantic' and 'morphosyntactic conditioning'. For Arabic it is vexy much the case that the majority of constraints are semantic. That is some association:-

$$
\mathrm{Cx}(\mathrm{y}) \longleftrightarrow \operatorname{Ex}(y)
$$

if constrained at all, will comnonly be so by the presence in the content encoding of an element $\mathrm{Cy}(\mathrm{y})$ rather than the prior assignment of some expression element $\mathrm{Ey}(\mathrm{y})$. The consequences of this will be fairly obvious for, given some content encoding there will be very few associations wich will presuppose the assignment of some expression element -- that is, there will be very little requirement for rule ordering in the 'expansion'.

The main objection to the adoption of an PSD type structure is this; that if as we argue, there is a certain symmetry in
the structure of the content and expression codes then this should not be nasked by the imposing of two different models on the two codes.

If, however, we were to cast the content code in the form of an FSD we would need to impose an ordering on its elements - an ordering whic unlike that of the expression code would be entirely arbitrary.

The Syntactic Component
The grammarian encounters the tem 'syntax' used in at least three senses.

Firstly there is the traditional sense where "gyntax" is contrasted with "inflexion". That is, "inflexion treats of the internal structure of words, and syntax accounts for the way in which words combine to fom sentences" (Iyons 1968, 4.12, p133).

While the above definition is of importance for understanding the Structuralist use of the tem, it is not entirely accurate. For an exaraination of older grammars will show that for their authors 'syntax' also embraced the 'use' to which constructions and morphological forms were put. This is true of Goodwin's grammar of Greek as it is also of Wright's grammar of Arabic and Gesenius-Kaut ${ }_{z}$ sch' grannar of Biblical Hebrev.

Por our present purposes it simply suffices to note that 'use' as understood by these older grammarians is in this theory mainly incorporated in that part of the gramar dealing with the assignment of encodings to the representation. For instance if in an older grammar we are told that the mādi measures indicate "an act completed at some past time" (7right, 2.1a) this is to bo taken as equivalent to a statement in this study that if 'past
time' formas a component of sone representation then this will be encoded as an instance of completive aspect. (1)

The second sense in which the tem is encountered may in fact be understood as but a purer application of the sense theoretically assigned to it in tradition. For Hockett "loroholosy includes the set of segmental morphemes, and the ways in which words are built out of them. Syntax includes the ways in which words,...., are arraneed relative to each other on utterances". (1958, 20.1, p177. See also Bloomfield $1935,12.1, p 184$ ). If for "words" in the above quotation we substitute 'word-classes' then the definition will be in payt appropriate to an understanding of the tem 'syntax' as used in this study.

The third cument use of the term 'syntax' is that encountered in the work of the Transformational-Generative (TG) theoreticians. The term does in fact bear two slightly different senses in their usgae, namely, an earlier one where syntax is taken to be "the study of the principles and processes by which sentences are constructed in partioular languages". (Chomsky,1957,p12), and a later understanding whereby "a syntactic description of a sentence (is taken) to be an (abstract) object of sone sort, associated with the sentence, that uniquely detemines its semantic interpretation...as well as its phonetic fom". (2)

Two points should be noted here. First, for all the two quotations reflect a difference in emphasis, the role and nature of the syntactic component is in each case much the same. In the final analysis whether the grammar is conceived more abstractly

[^0]as a quasi-mathematical device as in Chonsky, 1957, or less abstractly, as "a description of the ideal speaker-hearer's intrinsic competence" (Chomsky, 1965,p4), the syntactic coraponent is still the principal means through which "structural descriptions" are assigned to sentences. Secondly, it should be noted that as it atands the 1957 definition does not differ ovemak from those of the Structuralists. The real difference resides in the fact that for Chonsky language is conceived as "a set of sentences, each finite in length and constructed out of a finite set of elements." (Chomeky, 1957,p13). That is, a TG grannar attempts not merely to specify the types of pemissible syntactic structure, but also to generate the pemissible tokens of those types.

It is prinamily for this reason that Chonsky is obliged to envisage two sub-components in his syntax, navely, those of "deep" and "surface" structure, where the former itself comprises a "phrase-structure" and a "transformational" component. (ibid p46)

For instance Chonsky observes (ibid p43) that the same "selectional restrictions" - i.e. restrictions as to the collocability of lexical items, hold for many "active" and their equivalent "passive" sentences. In the context of what he terns a "phrase structure" syntax these restrictions would need to be stated twice (p43). This "inelegant duplication" can then only be avoided by the introduction of the "transformational" subcomponent, and by a modification of the original "Markovian" phrase structure gramar so as to generate instead of sentences "teminal strines"(p47) which are converted into "cermel" and more coaplex sentences by a series of optional and/or obligatory transfomations. This is a question which can only arise in the
context of a syntax of sentence tokens, rather than sentence types.

Notwithstanding the much changed nature of the phrase structure and transformational sub-components in the 1965 version, the basic rationale for the deep-structure/surface-structure dichotomy remains the same. Indeed one of the major objectives of that study is to develop a more satisfactory model for the statement of selectional restrictions. (1965, chapter 2).

Now in a very important respect this theory and the models of grammar which have been derived from it can be said to be 'derivative' 'Derivative' that is in the sense that phenomena in the theory which are treated as 'primary' are in reality 'secondary' or even 'tertiary'. This, like much else in the theory of grammar, is a consequence of the assumption that there is a level of gramnar which can, or ought to be, studied independently of all other considerations. (See para. 4.1 .1 of chapter 2 and para. 2.2.0-2.2.2 above).

Consider for exaraple the non-string "gincerity may admire the boy" (Chomsky, 1965, 2.3, p75ff). Three things ray be said of this string.

First it is an unacceptable collocation of words.
Second it is, in the absence of any evidence to the contrary, equally unacceptable if translated into any other language.

The unacceptability of all of these equivalent strings derives from the apparent fact that - apeaking in pre-theoretical tems, the quality 'sincerity' does not possess the faculty of 'admiration', either of a 'boy' or anything else. 'Admiration' is at best a faculty possessed by aninate creatures.

This latter can on one level at least be said to 'explain' the unacceptability of these strincs and may be taken as the "primary" phenomenon. (1) 'Secondary' is the fact that - as a result of this primary phenomenon, the various equivalents of this string are unacceptable in all languages. "Tertiary' is the fact that the string ""sincerity may admire the boy" in particular, is unacceptable in Fnglish.

Bven if it could be shom that there is some language in which such an utterance is acceptable, we should still - if only on methodological grounds, define a nore restricted universe, say for instance the univerge of 7 . Buropean or Semitic languages. Such selectional restrictions would then need only to be stated once, in the metamermmar of the particular universe.

In sum, we argue that it is absurd to inoorporate such information in the gramars of particular languages, and multiply absurd to contemplate the prospect of a series of grammars each incorporating precisely the same selectional restrictions.

Indeed, Chonsky's argument for the inclusion of such selectional restrictions has not even the merit of self-consisto ency since he also argues (1965, p6) "The gramman of a particular language, then, is to be supplemented by a universal gremmar that... expresses the deep-seated regularties which, being universal, are omitted by the gramar itself. Therefore, it is guite proper for a grammar to discuss only exceptions and imegulerities in any detail".
(1) On one level since it is probably not correct to viev point three as the ultimate 'causal mechanism', identification of which is the only valid basis for 'explanation'. See Harré 1972, p24, and para. 6.1. of chapter 2.

It is in a similar sense that we believe the preocupation with the exactly similar selectional restrictions between "active" and "passive" utterances to be derivative. These restrictions, as was argued above, are tertiary upon the fact that the two utterances express the same event in the perceived real world, and upon the fact that the same restrictions can be presumed to hold in all languages permitting constructions analogous to the active-passive.

From this it follows that these restrictions also should not be incorporated in particular gramars, and if this is so the justification for a concept of 'syntax' comprising a deep and surface structure component is removed.

However, the very real usefulness of the theory of transformations to the gramarian is that it permits a fomal denonstration of the paraphrase relationships holding between different sentencetypes through the asency of certain selected sentence-tokens. In the present model this facility is made available through the strata of representation and encoding, introduced in paras. 5.1.0 and 5.1.1 of chapter 2, and discussed at greater length in chapter 4.
4.2 Syntax in this study then will be confined for the most part to the investigation of phrase structure, in a fairly restricted sense of that term.

It is a usace of the term which, in contradistinction to Structuralist theory, implies a (synchronic) dichotony between morphological and syntactic processes. To offer a definition internal to this study, syntax is the study of the principles by which foras generated by the morphological component are combined into larger units.

The starting point for any study of syntax must be the observation that, however complex the structure of some utterance may be, it is analysable into a number of smaller and more basic combinations of forms. Among these are the combinations known to traditional grammarians as subject-predicate, modifier-head, etcetera.

Let us then envisage a syntactic component which consists merely of a set of such basic structures combining in various ways under the control of elements of the encoding. These structures might then be grouped into systems according to any similarities or dissimilarites between them.

The nature of these structures may then be understood somewhat in the following way. Certain of the 'series' of the morphological component we have opted to regard as 'templates' (see para. 4.2.3 of chapter 2). The defining property of a template is that it contains at least one 'duramy' symbol which, in the particular case of morphological templates is 'replaced' by morphemes drawn from the system(s) of root morphemes.

Now there is in theory no restriction on the number of dummy symbols a teraplate may contain - the limit is of course a template composed entirely of dumny symbols. A basic syntactic structure is we would suggest precisely such a template, and, similar to the morphological templates, may be replaced by the outputs from other series.

Morphological and syntactic templates may be distinguished formally by requiring that the former contain at least one morpheme and at least one dummy, and the latter at least one dummy.

It will be necessary to distinguish at least two types of
syntactic template which will be termed 'primary' and 'secondary'. Speaking in fairly general terms they may be distinguished on the following basis. Consider the three examples
i) ’așdara 1-wazIru mansūran
ii) 'asdara 1-wazIru 1-jadIdu man'sūran
iii) 'asdara wazIru z-2irē' ati manBūran (1)

The first of these may be parsed as follows:-
'asdara (Vb)/1-wazIru (Suj)/mantūran (0j)
That is, it can be said to instance a syntactic template which may provisionally be stated:

$$
\begin{equation*}
(\mathrm{Vb}: S u j: 0 j) \tag{2}
\end{equation*}
$$

By applying elementary substitution techniques it is seen that examples ii) and iii) also instance the same template.

However, these latter differ from example i) in that two forms replace the dunny symbol Suj instead of the one form 1-waziru.

Both of these more complex replacements - which are of course "noun phrases" in Structuralist teminology, can themselves be shown to have structure, and hence to be instances of other syntactic templates.

For instance 1-waziru l-jadidu has precisely the same syntactic structure as say mansuran țawilan: a long circular - namely, that of "noun" and "attribute". On this basis we may assume a further template which may be desifnated (In:At), and of course it is this template, plus the forms which are inserted into it, that replaces the dumay 'Suj'.
(1) i) issue (3ms-act-com):the-ministertcircular "The minister issued a circular".
ii) issue ( 3 ms-act-com): the-minister: the-new:circular "The new minister issued a circular".
iii)issue ( $3 \mathrm{~ms}-\mathrm{act-com}$ ): minister: the-agriculture:circular. "The rinister of agriculture issued a circular." A list of these abbreviations is contained in part 2 of Appendix F.
(2) Note that the traditional distinction between subject and predicate is taken to be irrelevant to the description of Arabic. See para. 2.0 of chapter 13.

Similarly the phrase waziru z-zira'ati has the same structure as say mas̈rū'ātu t-ta'miri: schemes/the reconstruction, which warrants our positing as a third template (Nn:Nn) and which, once again can be said to replace the dummy symbol Suj.

It is in this sense then that the terms 'primary' and 'secondary' syntactic structure are intended. Primary structures are those which, in some form or another, occur in all utterances. Secondary structures are optional.

As will be seen from chapter 13, the actual primary syntactic templates posited for the grammar have a somewhat different form from those introduced provisionally in this paragraph.
4.3

Taking the morphological and syntactic components together the expression code may be seen as a hierarchy of insertions into progressively more abstract templates. The way the various components interlock may be seen from the accompanying diagram:


## Chapter 4

## The Representation. Rules of encoding and Association.

0. Introductory

In the following paragraphs are discussed a possible structure for the representation, the rules by which encodings are assigned to representations, and the rules stating permissible associations of content and expression code elements.

## The Representation

The representation is - let it be said at the outset, a very crude attempt to characterise the salient features of some situation or event. It has a structure in the same way that the content code is presumed to have a structure, but with this difference; that the structure of the representation is taken to be subordinate to that of the content or any other code. It is in this that the 'description centreaness' of the theory resides.

It seems necessary to make this otherwise quite trivial point only because there is a body of theoretical linguists who see as the main aim of their investigations the characterisation of some universal apparatus underlying the actual utterances of any particular language. Such an apparatus, it may be felt, bears some resemblance to what we have termed the representation. In addition to the foregoing there are certain theoretical reasons for adopting an 'instrumentalist' view of the represent(1)
(1) See Harré, 1972, p88. "(The instrumentalist)...advocates the view that theories are not to come up for judgement as true or false, indeed they cannot so come up, but are to be judged by whether they are successful or unsuccessful instruments for research."

First, it is to be doubted if there is in any real sense a set of 'natural' classes, for the study of languages whose content code structure differs widely from those of the better known Burom pean languages suggests that even the "obvious" class cannot be taken too much for granted. See for instance the Hopi word for 'dog' discussed in thorf, 1956, pp259-60.

The further one moves away from objects which are totally discrete the less obvious these classifications become. (Consider for instance the very wide range of topographical features to which the tems 'hill' and 'mountain' may be applied).

This type of argument in its turn receives support from the theory of well - and ill-defined systems. If, as Hockett argues, no body of natural phenomena can constitute a well-defined system then there can be no set of natural classes. (of para.2.3 of chapter 2)

If this is so then it would seem that there can be no set of representations - either when viewed from the standpoint of 'form', i.e. the possible configurations of representation, or from the standpoint of 'content', that is, the actual 'value' of some component of a representation.

If then it is the case that there can in fact be no language neutral descriptive apparatus it follows that our representation can only be an approximate and somewhat arbitrary portrayal of some event or state. This being so it seems best to regard it as an aid to description.

If, for instance, we wish to suggest paraphrase relationships between a pair of surface structures then the form of the representation will be that form which allows the relationship to be shown explicitly. If it is not possible to construct such
a. representation we might then conclude that in fact the presumed paraphrase relationship is spurious.

Any state or event in space-time may be viewed on the most $\mathrm{b}_{2}$ sic level as consisting of a number of 'participants' bound together by some'circumstance'. For instance a native speaker of English - since we would prefer to remain agnostic on the question of natural classes, on seeing a boy throwing a stone, might well identify two participants - a boy and a stone, linked by the circumstance of 'throwing'.

If the two participants are designated $P_{1}$ and $P_{2}$ and the circumstance $C$ then the representation of this event may be said to have the form:-

$$
\left(P_{1}: P_{2}: C\right) \quad \ldots 1
$$

More generally, save for the ill-definedaess condition, any representation can be said to have at least the form:-

$$
\left(\left\{P_{1}: P_{2}: \ldots P_{n}\right\}: c\right) \quad \ldots 2
$$

The first problem is to define more closely what is intended by the temn 'partioipant'. 'If a 'boy' is properly so regarded, what about a 'small boy'? Then, what is the status in the theory of representations of 'smallness' and other attributes ?

In one sense the answer is very straightforward. In accordance with the instrumentalist philosophy mentioned above we might treat this pair in any way that suited our immediate convenience. If we were concerned only with Bnglish we might prefer to envisage just the one participant - the boy, and modify expression 2 to incorporate the possibility of attribution of one kind or another.

If however we were to approach the matter from the point of view of Arabic we would very likely opt for a rather different
solution for, in addition to a form walad which would ultimately express the same participant as 'boy', and waladun sagirun equivalent to 'smallboy' we may also encounter the form sagir by itself with in certain contexts much the same denotatum as 'small boy'.

In this case it might be more illuminating to set up two participants, the one denoted by walad and the other either by waladun sacirun or by sagir alone, according to context, etc.

Either solution is to some extent arbitrary. If in this case one were to opt for a single participant plus attributes it is only because boys approximate fairly closely to a natural class.

However in discussing 'smallness' as applied to boys it will be noted that we are dealing with what is, to all intents and purposes an 'inalien able' attribute, and that many instances of lexical anisomorphism, insofar as it concerns the 'substantive' portion of the lexicon, can be traced precisely to differing groupings of these.

Let us then, for the purposes of this study, draw a distinction between 'alienable' and 'inalienable' attribution and set up as participants classes of objects viewed as the sum of their inalienable attributes. This again is rather arbitrary but may prove satisfactory.

In choosing to distinguish alienable and inalienable attributes we must then incorporate a mechanism for describing the fomer in the representation.

Any utterance containing an attribute of whatever type may be paraphrased by a relative clause. Thus 'small boy' is roughly equivalent to 'boy who is small'. Theoreticians in the T-G tradition have made such paraphrase relationships the basis of
their study of what they term "deep structure". That is, the string "who is small" is taken to derive from the same deep atructuxe as say "the boy is small".

Now it is evident that, according to the definition given in 1.2 above, the string "the boy is small" is the expression of a representation complete in itself - that is, it contains at least one participant and a circumstance.

This suggests therefore that the process of attribution in some representation be seen as the introduction of a further representation 'subordinate' to the first. (The linguist will note the similarity of this structure to that of the base component in Chomsky, 1965 ch.3).

Thus, if our attributes be designated $A$, expression 2 will be modified as follows:-

$$
\left.\left(\left\{(P \cdot A \cdot)_{1}: P \cdot A\right)_{2}: \ldots(P \cdot A)_{n}\right\}: C\right) \quad \ldots 3
$$

where the assignment of a value to some $A$ is taken to be optional. A discussion of attribution leads to the question of abstract nouns. Should these be regarded as expressing participants or not ?

For ithere is no doubt, as early T-G work showed (see especially Lees, 1960) that one could construct these from rather more general representations in which the abstraction takes the role of cixcumstance. The question rather is whether this is likely to prove a particularly illuminating approach.

The indications are that it would not, for there can be few if any languages winich have not the capacity for forming "abstract nouns". If this is the case and if in effect abstractions are regarded in all languages as 'pseudomparticipants' then there seems little purpose (given our 'instrumentalist' approach) in imposing a representation structure whose complexity would not be matched
by a comparable enhancing of the description.
This of course does not prevent us from showing the appropriate paraphrase relationships should we so desire; we merely wish to avoid the necessity of deriving all abstract nouns from subordinate representations in all circumstances, as the generative semanticist is obliged to do.

In 1.2 we spoke of participants being "bound" or "linked" by some circumstance. Now it is obvious that the precise way in which a group of participants are bound to a circumstance is not invariable. A participant who is the agent of an event in one case may well be the patient in another, to offer the simplest example.

Since the nature of the linkage is variable it follows that we require some device to indicate exactly what the relationship is between some pair or more of participants.

The most satisfactory theory of relational universals available at the moment is that developed by Fillmore (see especially 1968 and para. 0.2 of chapter 8). From our assumption of the ill-definedness of natural phenomena it is clear that we cannot agree with Fillmore in envisaging a "set" of relational elements. However it is equally clear that this approach offers the possibility of a satisfying description of the way in which linguistic structures reflect the real world.

Leaving aside for the moment the question of what values we might wish to assign to the relational components of the representation, let us modify the form of representation given in expression 3. If the various relationships be designated $R$ then we will have an expression of the forma:-

$$
\left(\left\{R_{1}(P \cdot A): R_{2}(P \cdot A) \ldots R_{n}(P \cdot A)\right\}: C\right) \quad \ldots 4
$$

However since more than one participant may stand in some relationship with the rest of the representation we must envisage the possibility of assigning more than one value to a participant. But, since a 'sub-participant' may well have its own attribute expression 4 should be modified thus:-

$$
\left(\left\{R_{1}(x): R_{2}(x) \ldots R_{n}(x)\right\}: C\right) \quad \ldots 5
$$

where:-

$$
x=\left\{(P \cdot A)_{1}:(P \cdot A)_{2}: \ldots(P \cdot A)_{n}\right\} \quad \ldots 6
$$

We turn next to the particular values which may be assigned
to the symbols of expressions 5 and 6 , and of these the values of participants are considered first.

In 1.1 we assumed that there can be no set of natural classes. A stronger assumption might be that there can be no natural classes at all. It is not necessary however to go as far as this for, even on the weaker assumption it follows that we can specify precisely neither the 'extension' nor the 'intension' of any class we care to set up (For these terms see Lyons, 1968, p454).

Altermatively, if one adopts a "Structuralist" approach to semantic analysis (see Lyons, 1963 and 1968 chap. 9) there can be no set of "referents" of any linguistic form (1968 9.4.1) nor any set of "sense" relationships (ibid 9.4.2).

Thus it seems that we are obliged to recognize from the outset that it is not possible to assign precise values either to participants or - and more especially, to circuastances. That is, the 'content' of our representation is taken to be ill-defined (see again 1.1).

Hence the way in which we choose to cast the values of the participants is bound to be a compromise, and to contain elements of the arbitrary.

In 1.2 we suggested that an object and its inalienable attributes might be encoded variously in different languages, or even within the one language, according to contextual and stylistic factors. Now if we are to examine this process we require to know which facets of the participant in question are encoded and in what way.

If for instance we decide that a 'small boy' shall constitute one participant only, rather than a participant plus attribute, and if we agree that this same participant may on some occasion be encoded without reference to his smallness we would like to have a formal indication of whether and how his smallness is encoded.

Given this requirement it seens reasonably olear that participant-values cast in the fom of a 'componential analysis' are likely to provide the nost revealing description of the ways in which various forms and structures are used.

This is not to deny the force of the criticisms advanced in particular by Lyons against this approach (see especially 1968 10.5.2) - indeed, as our assumption of ill-definedness implies, we agree entirely with them. Rather, it is merely that, for present purposes, there is nothing better.

As to the precise structure of any participant we must take refuge in the instrumentalist philosophy mentioned earlier. The componential structure of any participant will be that which permits predictions most in accordance with the intuitions of native speakers. The structure so evolved will be presumed to say nothing about the 'real' structure of the object in question.

The sare is true when we come to consider the values of the circumstance - if not more so, For it will be noted that the
majority of componential analyses are of substantives rather than predicates. As Lyons notes, the "universality of semantic components" "...is an assumption which is commonly made by philosophers and linguists on the basis of their anecdotal discussion of a few well-chosen examples from a handful of the world's languages".

This is no accident for, events and states not manifesting defining attributes in the relatively clear way that many discrete and semi-discrete objects do, they are least readily grouped into classes.

The question of attributes of the circumstance is also very difficult since we have not, as in the case of participants, the possibility of distinguishing those which are alienable and inalienable. The resolution of such problems must once again it seems be left to the description itself.

Little need be said about the values of the relational components. These, it will be obvious, are but a particular form of circumstance, and all that has been said above is applicable here also.

Before proceeding to offer one or two examples in illustration of the topics discussed above, we should consider the question of what kind of information the representation should contain over and above the 'components' of participant and circumstance and the value of relational elements.

Do we for instance wish to incorporate information about 'definiteness' and 'time' and other similar notions ?

That certain of these have no place in the representation seems fairly clear. For instance it is obvious that any state or event is neutral with respect to the 'definiteness' of its
participants. Such distinctions where applicable are dependent upon the structure of discourse and, in the absence of a formal model of discourse we can do no more than note the fact and introduce these notions into the encoding by what are essentially ad hoc means.

Much the same is true of "voice". "Activeness" and "passiveness" are judgements imposed on the representation and are not inherent to it.

What then of 'time' or 'aspect' ? Are these inherent to the representation or judgements imposed upon it ? One might for instance say that the 'completeness' or 'incompleteness' of some event is a matter of fact and should therefore be included in the representation. On the other hand if, as seens to be the case, there is no end to the number of aspectual distinctions one can make is the whole notion of 'real' rather than 'iraposed" aspect not vacuous ?
"Time" seens to be a rather better candidate for inclusion since if we are making temporal distinctions there appear to be some at least on which there might be fairly general agreement.

A possible solution - and the one which is adopted in chapter 14, is to employ temporal and aspectual distinctions contrastively.

That is, if - as is the case in Arabic, the verbal systen is in essence aspect based a more illuninating description might ensue if we contrast the internal logical category of aspect with the extermal logical category of tine, and to study how the fomer is employed to express the latter. This of course is precisely what grammarians do when they make statements of the type Whe perfect...indicates... an act completed at some past time" (Fright2.1).

Conversely if it may be assumed that the English verbal system is essentially "tense" based, the more revealing procedure might be to see how this systen serves to express aspectual notions.

Consider first an event in space-time where a group of men move - for some reason or another, a presumably large, black stone. Let us further assume that there are five men involved.

The first step in constructing a representation of this event is to note that there will be two participants - the men and the stone, and a circumstance, namely "moveraent". Moreover the men are the agency by which the stone is moved and the stone is the object against mich this causation is directed.

Therefore from expressions 5 and 6 of 4.1 .4 we construct the representation-form:-

```
    \(R_{1}(x): R_{2}(x): C \quad \ldots 7\)
```

where $x=\{(P, A)\}$
... 8
Hence the representation has the form:-

$$
R_{1}(P \cdot A): R_{2}(P \cdot A): C \quad \ldots 9
$$

Next, adopting in part the "case" categories of Fillmore 1968 (pp24,25) let $R_{1}$ have the value 'agentive' and $R_{2}$ the value 'objective'.

From this it will follow that the value of $P\left(R_{1}\right)$ is "five men" and that of $P\left(R_{2}\right)$ "black stone" or "large black stone". Since neither of these participants is presumed to have any alienable attribute the two symbols $A$ of 9 are empty of content.

A provisional componential analysis of $P\left(R_{1}\right)$ might then be:-
$\left[\begin{array}{c}\text { object } \\ \text { ani ate } \\ \text { human } \\ \text { male } \\ \text { adult } \\ \text { five } \\ \vdots\end{array}\right]$

```
and of P( }\mp@subsup{\textrm{R}}{2}{}):
```



It will be noted that these 'feature complexes' in contrast to those of r-G theory are not cast in binary form (see for instance the discussion in Chonsky, 1965). A decision not so to construct the complexes is entailed by the assumption that there can be no sethor natural classes.

As was noted in 1.5 an account of the content of any circumstance is not lieght undertaking but the following analysis of "movement" should suffice for present purposes:-


Thus, assigning content as appropriate we will have the representation of this event show below:-
$\mathrm{R}_{1}$ [agentive]; $\mathrm{P}\left[\begin{array}{l}\text { object } \\ \text { animate } \\ \text { hwnan } \\ \text { male } \\ \text { adult } \\ \text { five } \\ \vdots\end{array}\right]: \mathrm{R}_{2}$ [objective] $\mathrm{p}\left[\begin{array}{l}\text { object } \\ \text { inanimate } \\ \text { natural } \\ \text { mineral } \\ \text { base } \\ \text { black } \\ \text { large } \\ \text { one } \\ \vdots\end{array}\right]: c\left[\begin{array}{l}\text { notion } \\ \text { dinected } \\ \text { zolling } \\ \text { past time } \\ \vdots \\ \end{array}\right]$

From this representation we may derive at the least the following utherances of Arabic:-
i) harraka r-rijā̄u 1-hajara
ii) hurrika 1-hajaru
iii) huxrika 1-hajaqu 'alã yadi kansati rijālin
iv) tahamraka 1- hajaru 1-'aswadu (1)

There are of course many more.
(1) i) move (3ns-act-com): thement the-stone. "The men moved the stone"
ii) move (3fs-pass-con): the-stone. "The stone was moved".
iii) move (3fs-pass-con) : the-stone: upons hand: five: men:
iv) move (3fs-incoah-con): the-stone: the-black: "The bla ck stone moved"

Note that the thind of these examples is not acceptable to all speakers.

As a more complex example consider the case where five men are moving a stone which has previously fallen (for some reason or another) into a house -perhaps through the roof. Here of course we are concerned with two distinct events, a more recent, where men are moving a stone, and an earlier where a stone has fallen into a house.

It should be clear that the representation-form of expression 9 is appropriate to the most recent event. The difference between the two cases lies in the values assigned to the various elements. For, the element $A\left(R_{2}\right)$ which in the previous example was assigned no value is here assigned the representation of the earlier event, since its having fallen into the house is an attribute of the stone and, in accordance with the discussion in 1.2 must be regarded as an alienable attribute.

This second representation contains two participants, namely, the stone, which once again is in the 'nedtral' i.e. 'objective' relationship with the remainder of the representation and the house, in a 'directional-locative' relationship.

Since the representation-form of expression 9 is appropriate to this event also, the representation-form for the pair of events will be as shown below:-

$$
\begin{aligned}
R_{1}(P \cdot A): R_{2}(P \cdot A): C \\
R_{1}(P \cdot A): R_{2}(P \cdot A): C
\end{aligned}
$$

The value of $P\left(R_{1}(A)\right)$ will of course be that of $P\left(R_{2}\right)$ of expression 9, while the value of $P\left(R_{2}(A)\right)$ will be somethint like:-

$$
\left[\begin{array}{l}
\text { object } \\
\text { inanimate } \\
\text { manufactured } \\
\text { brick } \\
\text { dwelling } \\
\text { one } \\
\vdots
\end{array}\right]
$$

And the value of $C\left(A\left(R_{2}\right)\right)$ :-

$\left[\right.$| motion |
| :--- |
| free |
| downward |
| past time |
|  |$]$

## 2. Encoding Rules

2.0 The encoding rules enable the assignment to any representation of an array of lexemes and sememes adequate to the expression of that representation and any judgements imposed thereon, whether dictated by the structure of discourse or whatever.

At the simplest level the encoding mules may simply be regarded as a species of rewrite rule, whereby one or more 'features' of the representation are replaced by a content element. Encoding is complete when all features have been replaced by sememes or lexemes.

If a lexeme is assigned to some feature 'bundle' the matter may become rather more complex for, in such cases we can either simply rewrite the bundle as a lexeme or augment the description by adding a breakdown of the feature bundle showing which features are replaced by which 'included' sememes.

For instance let there be some participant $P$ in a relationship $R$ with the rest of the representation, and let $P$ have the value $\left[f_{1}, f_{2}, f_{3} \ldots f_{n}\right]$ where each $f$ is a feature, and $R$ the value $f_{x}$.

Then, let us assume that $\left[f_{1}, f_{2}, f_{3}\right]$ are encoded as a 'substantive' sememe $\mathrm{Cs}(\mathrm{x})$, algebraically:-

$$
P\left[f_{1}, f_{2}, f_{3}\right] \longrightarrow C s(x) \quad \ldots 10
$$

Moreover let $f_{n}$ be a feature indicating the number of participants (see 1.7), then,

$$
\mathrm{p}\left[\mathrm{f}_{\mathrm{n}}\right] \rightarrow \mathrm{Cn}(\mathrm{x}) \quad \ldots \ldots 11
$$

where $\mathrm{Cn}(\mathrm{x})$ is a sememe of 'Number' (e.g. singular, dual). Similarly if $\operatorname{Cr}(x)$ is a relational sememe we may also write the expression:-(1)
$\mathrm{R}\left[\mathrm{f}_{\mathrm{x}}\right] \longrightarrow \operatorname{Cr}(\mathrm{x}) \quad$ •..12
An encoding of any representation is taken to comprise a number of 'segments' where, in the simplest case each segment is the realisation of a participant, a circumstance, or an attribute.

Since however attributes are themselves representations, consiating in their turn of participants, etc., a segment will often comprise a number of sub-segments.

Each segment and sub-segment of an encoding is 'governed' by a relational semene or - very occasionally, lexeme, and any encoding must contain a statement of the patterns of government of the segraents, whether in Algebraic or Tabular form. Since the fomer requires a rather complex bracketed notation encodings here and elsewhere will be given in table form.

Expregsions 10-12 then give the following encoding segment:-

| $\operatorname{Cs}(x)+\operatorname{Cn}(x) \quad \ldots . .13$ |
| :---: | :---: |

where the placing of $\mathrm{Cr}(\mathrm{x})$ in a separate box indicates that it governs the elements to its left. Note that the segment is taken to be an unordered concatenation of sememes (and lexemes).
2.1 Let us next consider the case where $\left[f_{1}, f_{2}\right]$ of $P$ are encoded as a substantive semene $\operatorname{Cs}(y)$ and $\left[f_{3}\right]$ - which we will take to be
(1) Note that if the content element assigned is a member of an unstable system any rule involving that element is itself to be understood as unstable.

In sone cases this instability will have no effect on the acceptability of the resulting expression. In others it will give rise to utterances about which the native speaker will have doubts - to say the least.
some inalienable attribute, is encoded as a predicate seraeme $\mathrm{Cp}(\mathbf{x})$. Hence we will have the expressions:-


Now it is argued elsewhere that there is in arabic a senene whose sole function is to indicate that certain strings of sememes are in a relationship of attribution with others (see para. 3.2.1 of chapter 8). Such a sememe may in a certain sense be terned 'gramatical' since - at least where an inelienable attribute is concerned, it is not a realisation of anything in the representation.

If it does not encode some feature of the representation a rewrite rule is not appropriate, since there can be no 'input'. To cover such case we require a rather different sort of rule, a rule which, in some context or another, permits the 'addition' of a further sememe. In the present instance the context is that some participant ${ }^{\text {is }}$ encoded as the sum of a substantive and a predicate seneme, along with sundry others.

Let us then introduce a rule of the following type, namely:-

$$
[\mathrm{c}] \quad \mathrm{c}(\mathrm{x})
$$

which is to be read "in the context $c$ add the semene $C(x)$ ". In the present case this will give an expression something like:-

$$
\left[P\left[f^{-}\right] \rightarrow C \bar{p}\right] \quad \operatorname{Cr}(y) \quad \ldots 16
$$

That is, "in the context of an inalienable attribute encoded as a predicate add the sememe $\operatorname{Cr}(y)$," where the latter is taken to be the sememe of attribution.

Thus from expressions 14-16, in conjunction with 11 and 12 introduced earlier, we have the encoding shown below:-

| $\operatorname{Cs}(y)$ | $+\operatorname{Cn}(x)$ |  |
| :--- | :--- | :--- |
| $\operatorname{Cp}(x)$ | $\operatorname{Cr}(x)$ |  |
|  |  |  |

Note that the portion governed by $\mathrm{Cr}(\mathrm{x})$ is a 'segment' and that governed by $\operatorname{Cr}(y)$ a 'sub-segment'.

It was noted above (1.6) that in the absence of a formal model of discourse certain 'judgements' depending thereon must be introduced into the encoding by essentially ad hoc means. notions of 'definiteness' and 'causal modality' being prominent among these. The 'addition' rule seems fairly well suited to this purpose also.

For, without the benefit of discourse analysis the most we can say is that any substantive semene shall be marked for definiteness and any predicate encoding the circunstance of a representation, for causal modality - statements which do in effect amount to little more than the traditional statements that every noun is definite or indefinite and every verb is inflected for voice.

The appropriate rules will then have something of the following form:-


That is, "where some Cs is assigned some Cd is also assigned" and, "where some Cp being the encoding of some C is assigned, some Cc is also assigned".

A further problem arising from the inadequacy of our extram linguistic foundation concerns the encoding of participants in anaphoric form.

Patterns of anaphora, like those of definiteness etc. are
informed by discourse structure and we are, therefore, obliged once more to employ rather ad hoc devices.

The simplest solution to this problem is to introduce a 'context-sensitive' rewrite rule. If we may assume an anaphoric encoding to require four sememes, namely, a member from each of Cn and Cd (number and definiteness), comonly a seneme of 'gender' (Cg) and of deixis (say Ce), we will have an expression of the form:-

$$
\mathrm{P}\left[f_{x}, f_{y}, \ldots\right] \quad \xrightarrow{[\mathrm{x}]} \quad \mathrm{Cn}(\mathrm{x})+\mathrm{Cd}(\mathrm{x})+\operatorname{Cg}(\mathrm{x})+\mathrm{Ce}(\mathrm{x})
$$

where the context ' $x$ ' remains unspecified.
As mentioned in 2.0 an encoding involving a lexeme may comprise two sub-components. Let there be a participant $P\left[f_{1}, f_{2}, f_{3}, f_{4}\right]$ and a lexeme $C_{B} / \ldots /$ alone with the included sememes $/ C p(x) \sim C x(x) /$. Let us further assume that:-

$$
\begin{array}{ll}
P\left[f_{1}, f_{2}, f_{3}\right] \longrightarrow C s(x) & \ldots 21 \\
P\left[f_{4}\right] \longrightarrow \operatorname{Cn}(x) & \ldots 22
\end{array}
$$

Then, over and above this, it nay also be the case that:-

$$
\begin{array}{ll}
P\left[\mathbf{f}_{1}\right] \rightarrow / C p(x) / & \ldots .23 \\
P\left[r_{2}\right] \rightarrow / C_{W}^{s}(x) / & \ldots .24
\end{array}
$$

Notice that in the second part of the encoding it is not necessary to 'exhaust' the feature bundle. Feature $f_{3}$ we have assumed, has no discrete realisation.

Such two-part encodings are of course nore appropriate to lexical rather than studies of the generative properties of the linguistic system.

To conclude this section let us resume our exanination of the representation developed in 1.7 and assign a specimen encoding thereto.

It will be recalled that the first participant in that representation, $\left(P\left(R_{1}\right)\right)$, is a group of men, analysed:-
$\left[\begin{array}{l}\text { object } \\ \text { animate } \\ \text { human } \\ \text { male } \\ \text { adult } \\ \text { five } \\ \vdots\end{array}\right]$

Let us now assume that for some reason unknown to us in the structure of discourse, this participant is to be encoded without reference to the fact that there are five men involved. Let us further assume (wich for Arabichis true) that with the exception of the feature 'five' all of this bundle is encoded by one sememe. We will then have the following expressions:-


Then, let us ascume that, in accordance with the rule of expressien 18, we also have the addition rule:-


Cd (Definite)
.28
Finally for this participant, and in conformity with the rule of 12 let us assume:-

$$
\mathrm{R}_{1} \text { [agentive] } \rightarrow \mathrm{Cr} \text { (Subject) } \ldots 29
$$

Note that alternative outputs of 28 and 29 might be Cd (Indefinite) and Cr (Agentive) respectively. Sememes such as (Subject) and (Agentive) would not in actual fact form part of the same system, but are merely assuaed to do so here for simplicity.

The following will thus be a segment of our encoding:-

$$
\begin{array}{|c|c|}
\hline \text { Cs (rajul: man) }+ \text { Cn(Plural) }+ \text { Cd (Definite) } & \text { Cr (Subject) } . . .30 \\
\hline
\end{array}
$$

Turning to the second participant, $P\left(R_{2}\right)$, we have, it will be recalled, the following feature complex:-
$\left[\begin{array}{l}\text { object } \\ \text { inaninate } \\ \text { natural } \\ \text { mineral } \\ \text { base } \\ \text { black } \\ \text { large } \\ \text { one } \\ \vdots\end{array}\right]$

In this case let us assume that the blackness of the stone is to be highlighted but not any other feature, and that it is some particular stone known to the "speaker" and his audience.

Given these paraneters we may then write the following expressions:-


$$
\mathrm{R}_{2} \text { [objective] } \rightarrow \mathrm{Cr} \text { (Object) } \ldots 36
$$

From 31-36 the second segment (and sub-segment) of the encoding may be written down thus:-


Finally the circumstance, which has the value:-
$\left[\begin{array}{l}\text { motion } \\ \text { directed } \\ \text { rolling } \\ \text { past time } \\ \vdots\end{array}\right]$

Note here that the actual predicate we choose will depend on the particular features of the event we wish to highlight. If
'rolling' is of special significance then a predicate is assigned which will allow this to be reflected in the expression. However in the present instance let us assume that little more than directed motion is involved. Therefore:-

$$
\begin{aligned}
& \text { C }\left[\begin{array}{c}
\text { motion } \\
\text { directed } \\
\text { rolling } \\
\vdots
\end{array}\right] \rightarrow C \text { p (2hrk: movement) } \quad \ldots 38 \\
& \text { C }\left[\begin{array}{l}
\text { past tine }]
\end{array} \rightarrow \mathrm{Ca}(\text { Perfect })(1) \quad \ldots 39\right.
\end{aligned}
$$

Then in accordance with 19 we also require:-


Expressions $38-40$ give the encoding segment:-
$\mathrm{Cp}($ 2hrk: moverent $)+\mathrm{Ca}($ Perfect $)+\mathrm{Cc}($ Active $)$... 41

Finally let us also assume that the utterance is to take the form of a statement, rather than a question etc. Since sememes of this kind might be said to 'modify' encodings as a whole let us provisionally term the system Cm . Hence we will have:-

$$
\xrightarrow{[\mathrm{c}]} \mathrm{Cm}(\text { Dec }) \text { larative } \quad \ldots 42
$$

We now have a complete encoding of the representation of 1.1.7.

3 Rules of Association
3.0

Each encoding is 'expanded' to give an appropriate 'expression'.
(1) Note that this is a pre-theoretical sememe. For an analysis of the aspect of Arabic see section 1 of chapter 10. For an analysis of causal modality see section 2 of chapter 6 .

The term 'expanded' is used because the number of morphemes simultaneously expressing some semere is conmonly more than one, (1) and because the 'direction' of eeneration, although presumed to be reversible, is in this study taken to be representation $\longrightarrow$ expression.

As discussed in section 2 of chapter 2, the relationship between any one semerse and morpherae is assumed to be one of 'association', and hence, the rules of association provide an account of the permissible associations of sememes and lexemes with morphemes.

Deriving from the nature of their encodings the associations between lexenes and their morphemes are rather more complex and will be discussed separately. (For encodings see 2.3, for associations, 3.8).

In the simplest case associations will be of the form:-

$$
C x(x) \longleftrightarrow \operatorname{Ex}(x) \quad . . .43
$$

where the use of the double-headed arrow implies that the gramar is neutral as to any precedence of content or expression. Each code presupposes the other (Compare 2.1 of chapter 2 ).

In Arabic there are many cases where some association is sememically constrained, and rather fewer (it would seen) where the constraint is morphenic (see 3.2 of chapter 3) ${ }^{(2)}$ To accommodate such cases we require rules of the following type:-

$$
\begin{array}{lll}
C x(x) \\
C x(\mathrm{~s}) \\
\stackrel{[\mathrm{Cy}(\mathrm{x})]}{[\mathrm{Ey}(\mathrm{x})]} & \mathrm{Ex}(\mathrm{x}) \\
\mathrm{Ex}(\mathrm{x}) & \ldots .44 \\
\ldots
\end{array}
$$

(1) The extent to which this claim is true is of course dependent on the particular theory of Semitic morphology adhered to. See 4.2 of Chapter 2.
(2) This is so because on the one hand the language is agglutinating (in the sense of 0.1 of Chapter 3) and we must then anticipate a certain independence in the way morphemes cluster; on the other it is 'surjective' that is there is typically more than one sememe per morpheme. In this case it is obvious that the value of the morpheme will be constrained by the values (jointly) of the sememes.

In any particular expansion each semene will be associate typically with more than one morpheme. Therefore it is necessany to draw a distinction between the set of morphemes with which each sememe is associate and the sub-set of these which constitutes its expansion in the context of a particular encoding.

In addition to their association with morphemes certain sememes are also associate with syntactic, and morphological templates (See 4.2 of chapter 3 and 4.2.2-2.3 of chapter 2 respectively). Since syntactic templates are grouped into systems the relevant mules will be cast in the form:-

$$
\mathrm{Cx}(\mathrm{x}) \longleftrightarrow \operatorname{Esx}(\mathrm{x}) \quad . .446
$$

where Esx is any system of syntactic templates.
Once again we may anticipate constraints on association although in this case the constraints are, to all appearances, entirely sememic. Hence we also require rules of the form:-

$$
\mathrm{Cx}(\mathrm{x}) \underset{\longleftrightarrow}{[\mathrm{Cy}(\mathrm{x})]} \mathrm{Esx}(\mathrm{x}) \quad \quad \bullet .47
$$

Associations between semornes and morphological templates are rather different. There are many ocoasions - particularly in the expansion of substantives, when the association is between the semene and a complete template, i.e. dumay symbols plus affixed morphemes (See the discussion in 4.2 .4 of chapter 2). In such cases we are in effect dealing with a type of discontinuous norpheme.

These mules will be of the form:-

$$
C x(x) \longleftrightarrow S(E x x(x): D a: E y(x): D b: E z(x)) \quad \ldots .48
$$

where $S$ is some morphological series (see para. 1.2 of chapter 3 ) and $D$ a dumay symbol.

A more simple (and much more unusual) type of association is that between a sememe and a duray symbol. The instances noted
all seem to involve gemination of one of the duany symbols and rules may hence be cast in the form:-

$$
\mathrm{Cx}(\mathrm{x}) \longleftrightarrow \text { (D) . ...4 } 49
$$

(For the bracketed convention see 1.4 of chapter 3 ).
3.2 In any expansion there are several distinct stages:-
a) the assignment of morphemes, morphological templates, and syntactic templates.
b) a process of 'summing' the various morphemes and morphological templates on the one hand, and the syntactic templates on the other.
c) the 'replacement' of syntactic dunny symbols by morpheme strings.
d) the introduction of any necessary morphemes not associate (in the particular expansion) with a sememe.
e) phonemicisisation, the rules of which will not concern us. Let us work through the various stages of the expansion with the aid of the specimen encoding assigned in 2.4. This it will be recalled has the structure:-

| 1 | Cs (rajul:man) +Cn (Plural) +Cd (Definite) |  |  | $\operatorname{Cr}$ (Subject) | $\begin{gathered} \mathrm{Cm}(\text { Declar } \\ \text { ative }) \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| a | Cs (hajar :stone) +Cn (Singular) $+\mathrm{Cd}($ Definite $)$ |  |  |  |  |
| b | Cp (swd:blackness) | Cr (Attribute) |  |  |  |
| 3 | $\mathrm{Cp}(2 \mathrm{hrks}$ movenent) +Ca (Perfect) +Cc (Active) |  |  |  |  |

Each segment will be expanded in turn.
3.3 The sememe $C s(r a j u l$ man) of the first segment is not nerely associate with the root rjl but also with a 'Nominal' template (See Chapter 12 for a discussion of nominal templates). This is shown by the fact that there are such forms as rijl: foot, whence it can be seen that the 'load' of Cs(rajul:man) cannot be borne by the root alone, since the actual distinction of the two senses
is made by the affixes attached thereto.
Now whether the sememe is expressed by the form rajul or rifial depends upon the presence in the encoding of Cn (Plural) or Cn (Singular). Since in this case we have the former the particular associations involved will be assigning for the moment purely arbitrary designations to the various expression systems:-
$\mathrm{Cs}($ rajul:man $) \longleftrightarrow \mathrm{Fa}(\mathrm{rjl}) \quad . . .50$
Cs (rajul:man) [C $n($ Plural $)] \quad N(A: E b(i): B: E c(\bar{a}): C) \ldots 51$
Rule 50 reflects expression 43 and rule 51 expressions 44 and 48. Hereafter the rule type involved will be added in brackets after the rule number.

The next two semenes of this segment are expanded thus:-


The difference between the right hand side of rules 51 and 52 requires comment. If we consider a form which has been borrowed from a non-Semitic language - as for instance film: film, we would presumably wish to say of the English version that the concept is expressed by the single morpheme film. By analogy we would wish to say that in the Arabic version also the same concept is expressed by the whole entity.

However since in the case of the Arabic version it happens that the form film can be regarded as an instance of the measure Pi'L, and thus (regularly) has the plural "aflam, we assume that the analogy would take the fom of a statement that the concept is expressed by the conjunction of the root f1m and the template AiBC. This we would suggest is exactly the case with the form rijäl and hence there is our warrant for rules 50 and 51.

But if this is so why is rule 52 not cast in similar form to

51 ? Our argument for the latter mule rests in fact on the notion 'functional load'. If in the case of a pair such as mansaj vs minsaj: weaving shed vs loon, where the load of expressing 'place vs instrument' is borne entirely by the contrast a vs 1 following the prefix $m$, then it seems counter-intuitive to claim that the contrast is borme by the terplates maABaC and miABaC (See para. 4.2 .4 of chapter 2). If then we wish to analyse these elements on a monophonemic basis it seems reasonable by analogy to treat equivalent phenomena in rijal similarly.

Thus there seem to be two distinct ways of viewing the data which as ever are not strictly alternatives. It may be objected and not unreasonably, that our approach is over-influenced by the structure of Seraitic verb morphology, and it may well be that a more thoroughgoing examination of Semitic nominal morphology would show the superiority of a more traditional form of analysis.
$\operatorname{Cr}$ (Subject) has two modes of expression, a morphological and a syntactic. In the presence of the former the latter bears little or no load. The moxphological association is given by the mule:-

$$
\mathrm{Cr}(\text { Subject }) \leftrightarrow \mathrm{Be}(\mathrm{u}) \quad \bullet . .54
$$

There are in fact very few exceptions to this rule. For the syntactic association let us assume a thematic structure such that the order verb-subject is imposed, rather than the (equally likely) reverse. Hence:-

$$
\operatorname{Cr}(\text { Subject }) \quad[x] \operatorname{Esa}_{a}(v b-s u j) \quad \ldots .55
$$

This completes the expansion of the first segment. The result of the expansion is best sumarised in table form thus:-


If then we 'sum' each column, replacing duasy symbols by radicals, and counting each other morpheme only once, we get:-

$$
1 \begin{array}{lllllll}
1 & i & j & \bar{a} & 1 & u & \ldots .
\end{array}
$$

Note that the expression code imposes a rigid ordering of systens with respect to each other, an order which for present purposes we have merely assumed. Among other reasons this order is important in the case where no template is assigned as an
associate. In such cases the expansion process is completed by inserting dumny symbols in positions appropriate to the morphemes assigned.

Expansion of the second segment proceeds similarly. The sememe Cs (hajar:stone) differs from Cs (rajul: man) in that it is associate solely with the root hjr and not, in addition, with a Nominal template. (1) Hence we have the association:-

$$
\mathrm{Cs} \text { (hajar:stone) } \longleftrightarrow \mathrm{Ea}(\mathrm{hjr}) \quad \ldots 57
$$

Cn(Singular) has in this case the association:-


The expansion of cd(Definite) is as per 53.
Cr (Object) like Cr (Subject) has a two part expansion. The morphological part is:-

$$
\mathrm{Cr}(\text { Object }) \longleftrightarrow \mathrm{Fe}(\mathrm{a}) \quad . . .59
$$

and the syntactic:-

(1) This it must be conceded is a matter of judgement rather than fact. What we are really saying is that the root hjr is 'strongly associate' with the sememe (stone). (See Wehr p157) and the root rjl 'weakly associate' with the sememe man. (Wehr 329). Since we have not attempted to quantify 'strong' and 'weak' association, our assertions are not particularly well-founded, but do at least serve the present purpose.

The expansion of Cp (swd: blackness) has its peculiarities. Colour terms in Arabic are associate with a particular group of measures, namely 'aP'aL (ms), $\mathrm{Fa}{ }^{\prime} \mathrm{La}^{\prime}$ '(fs), and $\mathrm{Fu} \mathrm{I}^{\prime} \mathrm{L}(\mathrm{p})$. Since Cp(swd:blackness) is one of these it will be associate both with a particular root and an appropriate template. (See para. 2.1 of Chapter 9). The first association will be:-

Cp (swd: blackness) $\longleftrightarrow \mathrm{Ea}($ swd $) \quad \ldots 61$
On the second association there will be two constraints, namely a senemic - that is, the sememe belongs to a particular class which is expressed by the above measures, and morphemic (in this case), in that the particular one of these templates actually assigned depends on the class of Nominal template.

Semitic Nominal templates are divisible into two large classes, which are traditionally the category of "gender". Since in the description we will posit content systems based on sex distinctions this traditional term seems better avoided. Let us then denote these classes ' $x$ ' ("masculine") and ' $y$ ' (feminine).

Now since that associated with segment $2 a$ is an $x$ class template our second association of Cp (swd:blackness) will be:-
 sememes.

Finally in segment 2 there is $\operatorname{Cr}$ (Attribute).
In this the simplest case $\operatorname{Cr}$ (Attribute) has a two part expansion. Morphologically its expansion mirrors those of the Cd sememe and governing $C r$ sememe in the appropriate segment. In traditional terms the adjective agrees with its noun in case and determinacy. It is further constrained according to whether the Nominal template associate with the Cs sememe belongs to class
$x$ or $y$. That is, it also agrees in gender with its noun.
Secondly Cr(Attribute) in this case is also associate with
a secondary syntactic template ( $\mathrm{N} n: \mathrm{Aj}$ ) (see 4.2 of ohapter 3 ). If
the syetem of secondary syntactic templates be for the moment
designated Esb we will have the following associations:-


With these associations the expansion of the second segnent
is complete. As before we may compile tables - one for each sub-part of the segment. Thus:-

|  |
| :---: |
|  |  |
|  |  |

57
58 Table 2
53
53

Note that where a complete template is not associate with some semene, and assuming no duray symbol to be an associate, dumy symbols are assigned automatically at the conclusion of the expansion. Suming table 2 we get:-

$$
1 \text { h } a j a r a
$$

And fron the expansion of segment 2 b :-


Hence:-
$1 \boldsymbol{B}_{a}$ s w a d a
... 67
From a synaffionic point of view $\mathrm{Cp}(2 h r k: m o v e m e n t)$ is associate both with the root hrk and with gemination of the second dunmy symbol. (See expression 49 above). The may therefore
(1) Note that this is not the only possible syntactic expansion. It is however the comonest and most simple and may hence be seen as unnarked and stated without context.
write down the associations:-

$$
\begin{array}{ll}
\mathrm{Cp}(\text { 2hrk: movement }) \longleftrightarrow \mathrm{Ea}(\text { hrk }) & \ldots 668 \\
\mathrm{Cp}(\text { 2hrk: movement }) \longleftrightarrow(B) & \ldots .69
\end{array}
$$

The semenes $C a($ Perfect ) and Cc(Active) are surjectively associate with morphemes $\mathrm{Eg}(\mathrm{a})$ and $\mathrm{Fh}(\mathrm{a})$ of the verbal series. Hence we may write:-

$$
\left.\begin{array}{l}
\mathrm{Ca} \text { (Perfect) } \\
\mathrm{Cc} \text { (Active) }
\end{array}\right\} \longleftrightarrow \operatorname{Eg}(\mathrm{a}): \quad \mathrm{Fh}(\mathrm{a}) \quad \ldots .70
$$

This expression states that whereas the terms on the left hand side are surjectively associate with those on the right, the reverse is not the case. That is, $\operatorname{Eg}(a)$ for instance may associate with the two sememes with or without Eh(a).

Since expansion of the third segment is exhausted we may construct a further table:

| $\begin{array}{l:l:l:l:l} \hline A & a & B & & a \\ n & C \\ h & x & B & k \\ \hline \end{array}$ | 70 69 68 |
| :---: | :---: |

Once again summing the colurans we have:-

$$
\text { 学 } \mathrm{z} \text { rak } \quad \text {... } 71
$$

Note that in the case of gemination of some symbol, the appropriate radical is merely copied onto it, as shown above.

Thus far we have four strings of morphemes, and what we now require is a syntactic structure into which to insert them. In essence the procedure for sumaing syntactic templates is the same as that for suming morphemes. The major difference between the two cases is that we cannot afford, in suming syntactic templates, to ignore context - be it sememic or morphemic.

For instance in expression 55 a teraplate ( $\mathrm{Vb}: S u \mathrm{j}$ ) was assigned and in $60(\mathrm{Vb:Oj})$. It is obvious that both subject and object follow the verb but which of these precedes the other ?

Typically the object follows the subject but whether this is or is not the case will depend on the thematic structure of the utterance.

From this it clearly follows that a syntectic summation cannot be completed without reference to this and other parameters, and that the table should have something of the form:-

| x | Vb Suj <br> Vb oj <br> Vb  | $\begin{aligned} & 55 \\ & 60 \end{aligned}$ | Table 5 |
| :---: | :---: | :---: | :---: |
|  | Vb suj $0 j$ |  |  |
|  | Vb Suj $0 j$  <br>     | 65 | Table 6 |
|  | Vb Suj Nn Aj |  |  |

That is, in table 5 expressions 55 and 60 are summed. The order of subject and object is detemined by the thematic sememe or sememes $x$. To the result of this sumning are attached any secondary templates or sumnings of same, to give the structure of 72 .

The conclusion of sumnation marks the completion of stage b) of the generative process detailed in 3.2. We now proceed to examine stage $c$ ) - the replacement of dunny symbols by morpheme strings.

It is at this stage that the notion 'govermment' (see 2.0 above) becomes important. Each relational sememe has been associated with both morphemes and syntactic templates. The process of 'replacement' is then this; a morpheme string being the expansion of some concatenation of sememes under the government of some relational semene, replaces the appropriate syntactic dumny symbol associate with that same relational sememe.

Thus in the present case we have the string ( $1 \times i j \bar{a} 1 u$ ) as the expansion of segment 1 . The relational semene Cr (Subject) governs the concatenation of sememes underlying this, and is associate with the template Esa (Vb:Suj) (expression 55). If by convention we assume that such a string cannot replace the symbol Vb it can only replace Suj. (1)

> Replacement rules will then be of the form:morpheme string $\left[\begin{array}{l}\text { relational } \\ \text { context }\end{array}\right]$ duman symbol $\ldots 73$

Hence strings 56, 66 and 67 will be inserted into the structure 72 through the following rules:-

$$
\begin{aligned}
& 1 r i j \bar{a} 1 u[\operatorname{Cr}(\text { Subject })] \quad \text { Suj } \quad . .74 \\
& \text { I ha j ara } \overline{[\operatorname{Cr}(0 b j e c t)} \overline{\operatorname{lon}}] \operatorname{Nn}(0 j) \quad . . .75 \\
& \left.1 \text { 'a swa d a-[ } \begin{array}{c}
-\overline{C r}(\text { Attribute }) \\
\operatorname{Cr}(\text { Object })
\end{array}\right] \quad \operatorname{Aj}(O j) \quad . .76
\end{aligned}
$$

Since there is now only one unfilled position in 72 this must be replaced by expression 71 (harrak). Therefore, closing up the various components of the strings and inserting - purely for convention, a dash between the initial morpheme 1 of $56,66,67$ and the second item we have the structure:-
harrak 1-rijālu l-hajara l-'aswada ....77
Save for one item this is an acceptable pre-phonemicised utterance of Arabic. To be fully acceptable we require a suffix -a to be added to harrak.
(1) In the descriptive portion of the study this rather loose formulation is made more precise on the basis of relationships between relational semenes and the particular word classes represented by dummy symbols. See Chapter 13.

Now when some participant is assigned an anphoric encoding the resulting seneme cluster may be surjectively associate with this morpheme. In the present case and for present purposes we will assume that this suffix has no functional load, and is merely to be introduced subsequent to the expansion proper.

Its assignment to the expression depends on theone hand on the class ( $x$ or $y$ - see para. 3.4) to which the nominal template belongs, and on the other to notions of 'Animacy' which might be present in the encoding, coupled with the position of the subject relative to the verb.

Since in this case we are dealing with a form expressing a substantive sememe belonging to the sub-class of human animate substantives, and since the subject follows the verb, the suffix -a is assigned. Hence:-
where Csx is an appropriate sub-class of substantives. Since this will be a morpheme of the Verbal series it will automatically take its place at the end of the string harrak. Rule 78 is of course a form of addition rule. (Compare expression 16).

Hence following phonemicisation we will have the utterance:harraka r-rijālu 1-hajara 1-'aswada ... 79

- "the men moved the black stone".

Just as the encoding of lexemes was a two-part process (see 2.3) with the second part optional, and depending on the focus - generative or lexical, of the study, so the expansion of the lexeme may similarly comprise two parts.

By its very nature a lexeme will tend to associate with a Nominal or Verbal template, in a way very much analogous to that
of CB (rajulsman) in paragraph 3.3. The difference between that type of phenomenon and the lexeme is that the included sememes of the latter may be separately associate with certain of the morphomes of the template associate with the lexeme.

Consider for instance the form maktab: office. At the generative level we would have a pair of rules something likes-

$$
\begin{aligned}
& \text { Lsx (maktab:office) } \longleftrightarrow \mathrm{Fa}(k t b) \quad . . .80
\end{aligned}
$$

However if Lsax(maktab) is assumed to have the semeraic structure $h / C x$ (Place) $\sim \mathrm{Cp}(k t b$ :writing $) /$ we should on the lexical level have the expressions

$$
\begin{array}{ll}
/ \mathrm{Cx}\left(\mathrm{Pl}_{\text {ace }}\right) / \longleftrightarrow \mathrm{Ff}(\mathrm{ma}) & \ldots 82 \\
/ \mathrm{Cp}(\mathrm{Ktb}: w r i t i n g) / \longleftrightarrow \mathrm{Ea}(\mathrm{ktb}) & \ldots 83
\end{array}
$$

3.9 No mention has so far been made of the question of ordering within the rule syatem. However it will have been noted that we have tacitly assumed an unordered system. While this assumption has been made out of concern for simplicity of exposition it rests ultimately on the fact that the theory of itself is taken to require relatively little in the way of ordering.

This derives from the way in which the functioning of the limitation rules is conceived. Por instance let there be some semene $C(x)$ associate only with a morpheme $E(x)$, and a further semene $C(y)$ which among others is associate with a morphene (Ey) which is not compatible with $\mathbb{E}(\mathbf{x})$.

If the expansion of $C(x)$ occurs before that of $C(y)$ the associations of the latter are 'scanned' until one is found which is compatible with the assignment of $E(x)$. If the expansion of $C(y)$ occurs before that of $C(x)$ and $E(y)$ is assigned, then,
on the expansion of the latter the associations of $c(y)$ are rescanned and a suitable alternative assigned.

On the other hand it can be shown that certain phenomena entail at least a fairly gross ordering among rules. For instance in this rather elementary exposition we have taken no account of the thenatic structure of the utterances generated. As soon as this is done however it becomes clear that the assignnent of what will be termed 'thematic sememes' must precede all others. (Por this and other classes of rule ordering see sections 2 and 3 of chapter 14).

Scope of the Description
In the chapters which follow a part-description of the grammar of Literary Arabic is offered, based on the hypothesis evolved in chapters 2-4. While no rigorous attempt has been made to distinguish between the Classical language and what is
hee temed ( 4970 ) Modern Standard Arabic (hereafter denoted respectively by the abbreviations $C A$ and SA ) our data for the most part been drawn from the modern lexicon and from more or less contemporary texts.

The description falls broadly into the following parts:
First, a description of a selection of the systems of the content code, with particular reference to those of verbs, nouns and prepositions. Certain other systems, the structure of which is taken to be non-controversial (given the hypothesis) are introduced where necessary without argument. Such is the content of chapters 6-10.

Second, a description of certain of the systems of the expression code. In this case, particular attention is given to morphological systems of the Verbal and Nominal series (in chapter 11. see for these terms para.1.2 of chapter 3 ), and the systems of syntactic structures, in chapter 13.

Third, an account of some of the rules of association, in chapter 12. This is intended to be in part descriptive and partly in justification of the approach to Arabic morphology adopted in chapter 1.1.

Finally, an introduction to certain of the 'generative properties'
of Arabic, by which we mean the ways in which particular morpheme strings are employed to express various types of representation. This component, which forms the subject of chapter 14, also contains a selection of association rules presented albeit in fairly non-rigorous fashion, and in addition certain of the rules by which encodings are assigned to representations.

Remarics on Nethodology
The procedure used for the identification of morphemes is founded in the main on standard Structuralist techniques. That is, to take the simplest case, given two strings of phonemes:
$\ldots a b x y c d$

... abpqcd
...(2
and given that $a b$ is a morphene and $a d$ is a morpheme, then we infer that $x y$ and pq are also morphemes. Furthemore since we have chosen to regard the structure of a Semitic lansuage as consisting of two sets of syste $s$ between which hold certain patterns of association, we shall also infer that $x y$ and pq are in addition members of the same system.
1.0.1 The requirement that morphemes should, insofar as is intuit ively consistent, be grouped into systems demands that the procedure of the previous paragraph be augmented by a further which will be temed 'factorisation'.

Let there be two strings of phonemes:
$\ldots a b x y c d \ldots$............ 3
where it has been established that ab xy pg ad and ef are all morphemes. Let it further be assumed that there are no strings varying only on the assigmment of $x y$ and $p g$, and none varying
only on cd and ef.
In such cases we may (in theory if not always in practice) set up a factorisation table, using the morpheme common to both strings as 'base', thus:

> | $a b$ | $x y$ | $c d$ |
| :--- | :--- | :--- |
| $a b$ | $p g$ | $e f$ |

We than assume that the 'sum' of each column constitutes a part or all of some system. Thus from the above we would derive the two systems:

$$
\mathrm{Sa}=\{\mathrm{xy}, \mathrm{pq},--\infty \quad \text { and } \quad \mathrm{Sb}=\{\mathrm{cd}, \mathrm{ef},--\infty
$$

where the convention (---) indicates that the set is finite and may comprise more elements than those stated.

Since the setting up of these tables is a rather laborious process the procedure - and certain variants thereon, are implicit in chapter 1 I rather than made explicit.

The procedure adopted for the identification of content elements is somewhat different from that used for morphemes, and rests on arguments of the following kind.

If we say, for instance, that the Arabic root hmr has the sense 'redness', or expresses a concept (Redness) we do not necessarily require that it should have this meaning in every context in which it is encountered. Rather, such claims appear to rest on the tacit assumption that, in a given sample of contexts, there would occur what will be terms a 'significant incidence' of a putative association hmr $\leftrightarrow$ (Redness).

Within the framework presupposed here this assumption may be generalised thus: we assume that, as a prerequisite for the identification of some element in the content code, there shall be a significant incidence of some sense in association with some
morpheme or morpheme string.
This of course prompts the question, what do we mean by 'significant incidence' ? If in a given sample of contexts each containing some morpheme $x$ we find that in every case $x$ appears to have the sense $y$ then we shall have no hestiation in concluding first that $\bar{Z}$ is an element of the content code, and second that among the associations of this grammar is $x \longleftrightarrow y$.

Sinilarly if in some sample of strings each containing a morpheme $\mathbf{p}$ we find say $50 \%$ where $\mathbf{p}$ appears to have the sense $q$ and a further $50 \%$ where $p$ has the quite distinct sense $\underline{x}$ then here also we shall conclude that $g$ and $\underline{x}$ are both content elements of the grammar, and that $\mathrm{p} \leftrightarrow \mathrm{q}$ and $\mathrm{p} \leftrightarrow \underline{x}$ are associations. However if $50 \%$ constitutes a significant incidence what about $40 \%$ or $20 \%$ in other words what percentage constitutes a reasonable lower limit ?

Traditional exammars of Semitic languages contain much information about the patterns of meaning associated with the various firgt degree verbal and nominal messures. (For these terms see footnote 2 tochapter 2). Samples taken of these measures suggest that the incidences of the senses associating with the verbal measures in particular is rather low - say on the average around $8 \%$ or $9 \%$ of any sample. (See expecially section 1 of chapter 6 and Appendix A)).

Hence it follows thętif these traditional statements are to have any validity at all the figure for 'significant incidence" must be set quite low.

Our opinion is that such information is a vital part of any grammar of Arabic and therefore we conclude that the level for significant incidence should be set provisionally at $5 \%$.

It will have been noted that 'significant' has not here been used in its usual statistical sense. The principles reason for this is that it is difficult to understand how the notion of 'randomness' might be relevant to such samples.

Clearly if in some sample we detected say fifteen incidences of $5 \%$ we should properly doubt that these conclusions were of any interest. However since we have encountered no sample giving such results the question will not be pursued further in this study.

Were Arabic an unrecorded language our procedure would to some extent entail the compilation of 'context-based' samples of the morpheme or string under consideration and thereafter attempting to isolate significant incidences of one or more senses. As an alternative to this we might merely take one or two examplea of the item in question and 'project' any conclusions drawn onto a larger corpus, assuming that they would be supported by a contexto based sample.

However where a lexicon exists these two procedures may in many cases be dispensed with. For, if we wish to investigate the sense patterns associated with some first degree nominal or verbal measure we need only compile a sample of form on that measure from the lexicon.

Each of these procedures is employed in what follows but in inverse proportion to the order of their introduction here. Chapters 6, 7 and 9 are founded entirely on lexicon-based samples, chapter 10 on the 'projective' technique for the most part, and chapter 8 on a combination of all three.

## 2. Notational Conventions

2.0.0 Each content systern will be designated by a code which is an abbreviation of the name of the system. Thus for instance, the system which is naned 'Aktionsart' will be referred to by the code Ak.

Each of these systems is either dual or adherent (see para.4.0 of chapter 2). Lexical systems, the codes of which are prefaced by $I$, are taken to be dual by nature. Othervise, the code of each system will be prefaced either by the letter D (dual), or A (adherent), as for example DAk.

The relationship between a lexeme and its included sememes or lexemes will be expressed through the formula:

$$
\mathrm{Lx}(\mathrm{y}) \mathrm{h} / \mathrm{Ly}(\mathrm{y}) \sim \mathrm{Dx}(\mathrm{y})---/
$$

That is, the lexeme $L x(y)$ includes the lexeme $\operatorname{Ly}(y)$ and the dual sememe $D x(y)$. (For the convention (--w) see para. 1.0.1 above).

Each sememe or lexeme is given a name corresponding approxinately to its value, as for instance (Bxtensive). Generally speaking, any content element will be referred to by the code of the systera to which it belongs and an abbreviation of its name. Thus since the sememe (Extensive) is a member of DAk it will be designated DAk (Fixten). (For a summary of these abbreviations and those of the systems see part 1 of Appendix F).

Bvery content syster is either stable or unstable (see para.2.4 of chapter 2). Unstable systems are distinguished from the former thus: $C x(y)$ vs $C y(y)$. Thus for instance we will have DAk (Exten).
2.0.1 The designations of the morpheme systems of the expression code and their members will be as per para. 1.2 of chapter 3 . Systems of syntactic teraplates are designated $\mathrm{Sa}, \mathrm{Sb}$, etc.
2.1.0 In para. 2.4 of chapter 2 it was hinted that the concept of a periodic stability and instability in systems might have consequences for the kind of system structures which actually occur. In the course of our investigation into the structure of the content and expression codes of Arabic it did in fact become clear in particular that the notion of a unitary system either in a state of instability or stability is in certain respects simplistic.

More precisely it seens that a collapse into instability and reconstitution of the members of a system comonly entails a stace wherein the earlier and reconstituted versions of the same system comexist as sub-systens of the sane system.

Leaving aside the special case of the systems of predicates and substantives discussed in chapter 9 the following types of structure have been identified.
2.1.1 First there is the case where two or more sub-systens of the same system 'overlap'; that is, subosystems share one or more meabers. Let such structures be termed 'type 1'.

There appear in fact to be two varieties of type 1 system, namely, the one where each meraber of each submsystem stands in stronger or weaker paradignatic contrast with every other, and the other where this is not the case. 马ystems of the fomer sort will be designated 'type $1 a$ ' and those of the latter 'type 1 b '.

The sub-systems of a type 1 a system will be designated 'x' and 'y'. Thus if there be some system Sa , its sub-systems will be Sax and Say. Each member of these which does not overlap is referred to thus: $\operatorname{Sax}(y)$, $\operatorname{Say}(y)$. An element conmon to both gubsystems will simply be denoted $\mathrm{Sa}(\mathrm{z})$.

The sub-systems of a type 1 b system are designated ' g ' and ' h '. This notation is used analogously with that of the type $1 a$ systen.

In diagram form such systems will be represented thus:

Type 1a


Type 16

2.1.2 Very similar to the type 1 systems are those where the subsystems are non-overlapping. These we will tern 'type 2'. The algebraic representation of such systens will be as per that for type 1, while the diagramnatic representations will be:

2.1.3 Somewhat different from types 1 and 2 is the case where a system changes not through internal modification but by the addition of elements similar in nature but conceived along rather different internal logical principles. In such cases it appears that not only may the sub-parts overlap and contrast, but also that in certain elements may in addition enter into a 'configurational' relationship with each other. Such structures will be termed 'type 3', and are taken to comprise:

Pirst, a group of elements which do not have the possibility of entering into configuration with others.

Second, two sub-sets which will be designated ' $p$ ' and ' $q$ ' the members of which may contrast with the first group ar with each other, and where in addition the members of branch $p$ may enter into configuration with those of $q$.

Analogous to those of type 1 and 2 systems, the nembers of
the sub-sets $p$ and $q$ will be referred to thus: $\operatorname{Sbp}(y), \operatorname{Sbq}(y)$, and the sygtem will be represented in diagramratic fom as shown below:

Sype 3


Note that the intrusion of one system into another need not necessarily take this fom, but may for example give rise to a type 1 structure.
2.1.4 Pinally there is the case where what is in effect a series of systems stands in contrast with one or more single elements. Such a structure is attested only for certain of the morpheme systems of the expression code. In diagram form this structure, which we will term type 4 , may be represented thus:


The sub-systems designated by 'I' and 'm" are given algebraically in the form: Scl and Som.
2.1.5.0 Note that certain of the morpheme systems are 'compound. in that they combine two or aore of the types introduced above.
2.1.5.1 In the description the atructure of these systems may be given either diagramatically or algebraically or both. Where overlapping sub-syatems are to be given algebraically their statement will take the following form.

Let there be a system Sa having the overlapping subesysteras Sax and Say, and let the system comprise the three elements $a, b$,
and $c$, where $b$ is coamon to both sub-systems. Then we will writes
$S a x=\{a, \quad b 7\} \quad$ Say $m\{\Delta, 7\}$

## Chapter 6

## Verbal systems in the Dual component of the Content code

Introduction
We have already referred in several places to the rather striking way that verbal measures are formed in Semitic by the associating of a typically triradical root with a template of affixes. Moreover the evolution of the hypothesis on which this description is based derived in the first place from the recognition that certain distinct patterns of sense are associated with each measure. (See section 1 of chapter 2).
0.1 The types of sense expressed by verbal measures of the first degree appear to be two. Pirst, we find a series of senemes some of which at least can be seen as essentially "adverbial" in that one way or another they give adidional information about the predicate with which they are in configuration.

These sememes, which on the whole are of rather spasmodic incidence, have been much discussed in the literature and for the most part the account given in section 1 differs from those previous only in the degree of importance attached to the various elements.

The 'dual' nature of the system should become apparent fairly readily from an examination of the relevant parts of appendix $A$, and its instability from the discussion in Section 1. With a membership of ten the system is the largest in the Dual component with the exception of the systems of predicates and substantives. In structure the system is taken to be of type 3 (See para. 2.1.3 of chapter 5).

Along the second dimension of analysis the Arabic verbal system manifests two types of form by which Nestern grammarians are commonly termed "active" and "passive". (See for example Wright 1. 73-76 and compare Beeston pp82,83, where the same distinctions are drawn using different tems). In this respect Arabic is in conformity with a goodly number of the Indo-European languages.

However between Arabic and many of these latter there is an important difference in this regard - namely that an Arabic verb having the "passive" form may not nomally be conjoined with a noun phrase expressing the agent of the event (say). This is particularly true for CA. and not markedly less so for SA.

The relative paucity of these constructions is of importance for a description of the Arabic verbal system since in the first place, verbs having a "passive" form may enter into exactly the sane sort of syntactic structure as certain other measures Which are termed "active", as for example:-
ia) hurrika 1-hajaru
ib) taharraka 1-hajaru
These syntactic correspondences are paralleled by a certaid amount of morphological evidence tending to suggest that the dichotony "active vs passive" has been somewhat exaggerated in
(1) a) Move (3ms - pass - comp): Stone (msn)
"The stone was moved"
b) Move (3ms - incoah - comp): Stone (msn)
"The stone moved"
the tradition, for, as has been pointed out in several places not all "active" measures have a "passive" counterpart - or if in theory they have, these latter are seldom if ever encountered.

Of such measures we may instance Fa'iL, Fa'uL, and the 7th measure. An inspection of any sample of these will quickly show that - in consequence of their meaning, the vast majority can have no "passive" counterpart.

Moreover SA. provides a not inconsiderable number of instances where a "passive" form has lost all sense of 'implication of source' (For this term see para. 2.3) and may be seen as functionally equivalent to say Pa'iL or Pa'ul.

These factors would then seem to suggest that it is not sufficient for a description of Arabic that contrasts should be made solely along an axis comprisint the teras "active" and "passive" (1)

Rather, there is a larger and more fundamental set of contrasting elements which may be seen to include "active" and "passive", given a suitable semantic reinterpretation.

In sum, the pre-eminence for the content code of a contrast along the lines of "active vs. passive" is disputed. Even where semantically, some "passive" fors may occur it will typically do so but rarely. This should occasion little surprise in fact, since the "passive" form is very much a rarity in Semitic, and the
languages possess what are for the most part perfectly satisfactory alternatives. (2)

[^1]The second system also is taken to be unstable and to have a type 3 structure. The relevant sections of appendix A provide evidence for its inclusion among the dual systems.

Wright (1.40) that the 2nd measure servies to express an 'intensive' sense. That this claim has been well criticised by Beeston (1970 p75n1) is supported by the fact that our sample failed to bring to light any convincing instance of this function.

However there are certain nominal measures, having in common gemination of the second radical, in which an intensive - or more appropriate perhaps, 'extensive' (see Wright loc. cit), function may be detected. The sample of forms on the measure Fa''āL for instance produced a $39.5 \%$ incidence, while Fa''āJa gave 1I. $3^{\circ}$. (see parts 4 and 5 of Appendix B).

Of the former measure we may instance nattoan: given to butting and on the latter
bahhāta: eminent scholar
The sense of certain of these forms seems to shade off into "habituation" rather than "intensity", but this apparent inconsistency perhaps reflects the internal logic of Ninglish rather than that of Arabic.

In the light of the foregoing then we posit as the first term in our system the sememe DAk (Exten)sive.

Also in the sample on Fa ''ă was detected a $48.8 \%$ incidence of forms indicating 'ocupations' of various kinds, as for instance:
labbān: brickmaker
As is noted in the discussion of the sample in part 4 of Appendix $B$
it is in some cases difficult if not impossible to distinguish between forms expressing 'extensiveness' and those indicating an occupation, as for instance:
nasssāb: cheat
which constitutes part of our evidence for the unstable nature of the system DAk.

As the second tern in the system we then posit DAk (Occpn).

The primary function of the third measure is of all the verb forms of Arabic the most difficult to understand. (See the discussion in part 8 of Appendix A). It does however appear to be the case that a sense of 'directionality' lies behind many of these forms, which has the principle syntactic consequence of creating a 'direct object' where Dnglish say would require government by a preposition, or where an altermative Arabic encoding might result in a similar construction.

The apparent commonness of $t$ is sense in the sample (73.6) is perhaps the greatest weakness of the analysis, for it suggests that we are treating of an element so anorphous as to be almost without descriptive value.

Very much secondary to 'directionality' in the third measure again in contrast to the impression given by traditional accounts (see once more part 8. of Appendix A), is a sense of 'trying' or 'seeking' to achieve something, which is represented by two examples only in the sample (3.4 ). For example:
( 3 nfs ): try to obtain (1)
By itself this incidence cannot be regarded as significant.
(1) In this study verbs will be cited as here, where the numeral indicates the first degree measure on which it is based, and the letters the relevant root.

However better support for the sememe is provided by the sample on the tenth measure, (see part 14 of Appendix A) where seven forms (12.2\%) having this function were detected, of which we may instance:
(10dnw): try to be nearer
It is assumed that the notions 'seeking' and 'trying', manifest in the English translations of these forms reflect the internal logic of $\operatorname{singlish}$, and that Arabic envisages a unitary concept embracing both of these. (That is, the range of nuances embraced by the semene is similar to that expressed by the verb (Iṭlb).

Thus the third measure is taken to provide evidence for a sememeDAk(Dir)ectionality, and the third and tenth measures jointly evidence for an element DAk (Seek)ing.

The sample of verbs on the tenth measure also contains seven forms taken to express an 'estimative' sense in addition to the predicate, as for instance:
(10hqr): consider contemptible.
Hence we posit as the fifth temn of the system a sememe DAk(Est)imative.

Significant also for the tenth measure is a 'reflexive' sense which is discernible in 10.5 of the sample, as fof instance:

$$
\left(10 \mathrm{df}{ }^{3}\right): \text { warm one's self }
$$

However the strongest evidence for this sememe comes from the fifth measure, in the sample of which we detect a $20.5 \%$ incidence, as for example:
( 5 zyn ): adorn one's self
In part 10 of Appendix A it is argued that 'reflexiveness' is in Arabic secondary and deriving from the sense 'oncoming effect'
(on which see para. 2.3 of this chapter). It thus comes as no surprise to find two other 'effective' measures - namely the seventh and eighth, showing significant incidences of this same reflexive sense, although - at 15.2 and $8.8 \%$ respectively, in neither case is the percentage so striking as for the fifth measure. (Against this however we find no instances of this sense in the samples on Fa'll and Fa'uL - see parts 2 and 3 of Appendix A).

The sample on the fifth and sixth measures each contain a number of forms ( 3 and 6 respectively) where the sense augmenting the predicate may be glossed "behave in such and such a manner".

In translation these fall into two distinct types, namely, those requiring a rendering "show one's self to be $x$ ", as for instance:
( 5 rzn ): show one's self calm and those requiring "feign or pretend to be $x^{\prime \prime}$, as:
(6jhl): feign isnorance
Logically speaking, these types are distinct in that the former in effect concedes the quality ascribed to the person concerned, while the latter denies it. The question arises then whether, despite the external logical distinction between the two groups, we should not, in the light of the similarity between them, treat them as instances of one sememe rather than two, in internal logical terms.

The most persuasive kind of evidence would be a verb where both interpretations are admissible, but such unfortunately does not occur in our samples. On the other hand if we do not adopt the unitary analysis the two forms constituting our warrant for a separate sememe "showing" or the like are not significant for the saraple on the fifth masure in which they occur.

Tentatively then we will assume that we are dealing with but one element, which may be designated DAk (Evin)cive, assigned variant interpretations in context.

In the sample of forms on the sixth measure was also detected a. $10.2 \%$ incidence of a sense 'iteration', as for instance:
(6tb'): follow in succession
Given the significance of this result we assume as further element of the system a sememe DAk(Itn). (1)

The most important sense attaching to the 6th measure is 'reciprocity' which is detected in 50.8 , of the sample (See part II of Appendix A) as for instance:
( 6 wkI ): trust each other
Hence we assume as the ninth nember of the system DAk (?ecip)rocity.
As is pointed out in Wright 1.43 b this sense is on occasion detectable among forms on the third measure, However on the basis of our sample reciprocity cannot be regarded as significant for the measure since it appears to furnish only one example (See Table D of part 8 of Appendix A).

Turning aside from the verbal measures proper we consider the many "adjectives" on the measure 'ar'al which express an 'elative' sense.

Since this sense can be seen to augment a predicate in a way analogous to those discussed in the preceding paragraphs it would seem that its proper place is within this system - and indeed, at least one instance can be seen to fom part of the configuration underlying a token of a verbal measure. (See Table $G$ of part 14 of Appendix A).

Hence we assume an element DAk(EI) ative for the system.
1.10 These then comprise at least the most comonly encountered
(1) Note that on the basis of the sample studied the statement
in Beeston 1970 p75 apropos this measure is not strictly
correct. First the sample produced only one instance of a form which could be said to express a "gradually phased process", namely: (6bkl): give grudgingly. Moreover Beeston's example tasācaṭa d-dammu: the blood dripped can clearly be understood as an instance of DAk(Itn).
elements of DAk. The findings do not diverge much - save in emphasis, from those of more traditional accounts.

However on the evidence of certain configurations underlying forms on the sixth measure (part II of Appendix A) it seems that we are here dealing with a type 3 system (see para.2.1.3 of chapter 5) having the structure shown in the accompanying figure.


This structure will, on the evidence taken into consideration, entail the following limitation rules:-

$$
\begin{aligned}
& D A k_{p}(\text { Est }) \backsim D A k_{\mathrm{g}}(\text { Reci }) \quad \ldots 61.1 \\
& \underset{(\operatorname{DAkp}}{\binom{\text { Dir })}{\text { Seek })}} \longrightarrow \mathrm{DAkq}(\operatorname{Refl}) \quad \ldots 61.2
\end{aligned}
$$

The systern C(ausal) m(odality)
The sememes DCm (Causn) and DCm (Eff)
Inspection of the samples on the measures Fa 'iI and $\mathrm{Fa}^{\prime} \mathrm{uJ}_{\text {( }}$ (see parts 2 and 3 of Appendix A) shows a preponderance of what, in traditional tems, would be "stative" verbs - $86.9 \%$ and $97.8 \%$ respectively.

An indication of the nature of the configurations underlying these forms is best given if they are contrasted with the set of forms on thesecond and fourth measures (see parts 7 and 9 of

Appendix A). For among these we find many instances where the sense of the form relates to the simple bringing about of some state or process.

For many predicates these two types of sense stand in paradigmatic contrast, as for exanple:-
katun: be rough vs. kas̊san: make rough
'alim: suffer vs. 'allam: cause to suffer
Pairs such as these, of which there are many, surgest that we should envisage pairs of configurations differing only on the assignment of a sememe which will be designated 'causation' versus an element 'effect'. Since, as the appendices show thet 'causation' in particular may either be included or adherent, the system of which they are members - and which will be termed C (ausal) m (odality), is to be regarded as dual. These sememes will then be designated DCm (Causn) and DCm (Eff).

### 2.0.1

In traditional gramars of Arabic it has been customary to claim that forms on the measure Fa'il express "a temporary state or condition, or a merely accidental quality in persons or things", whereas the measure FaruL "indicates a permanent state, or a naturally inherent quality" (2.0.0).

In the absence of any explication of these notions it is difficult to evaluate such a claim. However, on the evidence of the samples in parts 2 and 3 of Appendix A, it does not seem possible to find any satisfactory basis for a distinction of this type. For on the one hand it will be noted that not a few concepts may be expressed in either measure. On the other hand, certain antonymous concepts are not expressed consistently, as:-
basi': be ugly vs. hasun: be beautiful
This is not to deny that there is at least some substance in the
claim. For it will be seen that far fewer forms on Fa'ul are in traditional terms "transitive" than are forms on Fa'iL. Now while it will be argued in the following paragraphs that "transe ivity" is a category of 'secondary' rather than 'primary' description in Arabic, it is nonetheless true in general that a tendency towards "transivity" is inconsistent with a tendency towards "stativeness". Given that Pa'uI does not manifest the fomer trait ovemuch it would seem to follow that its predicates must in some way be more "stative" than those of Fa'iL, but the precise basis for the distinction remains obscure.
2.0.2 (ibight observes (ibid) "the vowel in the sane (i.e.medial) position has generally an intransitive signification, $\underline{u}$ invariably so".

On the basis of our samples this statement appears to be it almost entirely correct - and yet is "transivity" to be regarded as a primary category of the verb (with Frigit etc.) or as a secondary (which is implied by our 'causation vg. effect' analysis in 2.0 .0 )? In general, given two possible analyses of the data how may we decide which of the two is to be preferred?

In the case of Fa'il some 89.2 of the sample may be analysed as "intransitive" and 10.8 as "transitive". Against this, there is a 91.3 incidence of 'effective' (i.e. "stative") senses. Such figures clearly provide no basis for the evaluation of competing analyses and warrant for our description must be sought elsewhere.

### 2.1.0 The sememe DCm (Dyn)

Part 1 of Appendix A comprises a sample on the measure Pa'aL. An analysis of these foms on the basis of the contrast "transitive vs intransitive" gives an incidence of 78.2 for the former and
28.8 for the latter. (Certain verbs may be either).

While these results are strongly significant in terms of our methodological assumptions, and provide a certain degree of formal support for the statement in Wright, 1.37, a rather more impressive result is obtained if we analyse the forms in terms of the 'activeness' or 'dynamicity' of their predicates, or otherwise.

Along this dimension the sample furnishes a positive incidence of $91.1 \%$ and a negative incidence of $8.7 \%$

Now the more significant the incidence of some sense the more general will be the ensuing description -which is of course at least one of the desiderata for a satisfactory granmar. on this basis the latter analysis with its positive incidence of 91.1 as against $78.2^{\text {c }}$ is clearly to be preferred.

It does then seem likely that "transifvity" is a category of secondary rather than primary description in Arabic, and should not be regarded as a system of the content code. The very high incidence provided by an analysis along the axis "transitive vs. intransitive" comes as no surprise for, if some predicate is viewed "actively' or 'dynanically' there is, in the nature of things, a strong likelihood that this dynamicity will be directed against some second object - or what by internal logic is specified as an object for the language.
2.1.1 It is in this light that our account of Fa'il and Fa'uL may be understood. For if Fa .al serves principally to express 'dynamicity' of some sort it does not seem inherently improbable given the strong morphological coryesgondences between the three measures, that the fomer pair should function as the counterpart of the latter. That is, "intransifity" may be viewed as secondary to 'effectiveness', where the latter term is, as we have
argued, approximately equivalent to "stative".
Aside from the independently detected contrast 'causation vs effect' our position finds support in such pairs as:
hazan: saddened vs hazin: was sad
where the morphological contrast may be understood to reflect a pair of configurations varying only on the assignment of a dynamic sememe versus $\operatorname{Dcm}(E f f)$.(1)
2.1.2 Thus far we have identified three distinct elements which potentially at least, may stand in paradigmatic contrast with each other and may be set in configuration with predicates - and less commonly with substantives, in various ways. The nature of the elements 'causation' and 'effect' seems reasonably clear, but what of the 'dynamic' element typically expressed by Fa'aL ?

We may note, first of all that it can in many cases be seen to overlap 'causation' - and there are indeed many forms on the second measure which are interchangeable with a cognate in Fa 'al as for example:-
kazan-kazzan: stock kafar-kaffar: protect
kamas-kammas: scratch
In similar fashion this sense may on occasion overlap with
number
'effective' senses, since we find a considerable/of forms Fa'al which may be substituted by Fa 'iL, as for example:-
hadaq-hadiq: was skilful haras-haris: desired
(1) It may well be asked how, if Fa'il is to be seen as a counterpart of $\mathrm{Fa}^{\prime} \mathrm{aL}$, it can also be said to be the counterpart (say) of the second measure.

In syncrhonic terms we argue that such a position is justifiable. The diachrony giving rise to this situation is a different question which cannot concern us here.

The dilemma may be resolved through examination of the notion 'action'. An action may on the one hand be seen as something which begins and ends in a relatively short space of time, as is instanced by such forms as qatal: killed and darab: beat. On the other hand an action may persist for no small length of time - of which katab: wrote might be an example.

Now an action of this latter kind is susceptible of being regarded as a state. That is, whether the 'activeness' of some event is stressed or what may be termed its 'ongoingness' is largely a matter for the internal logic to decide- and internal logics may be expected to differ and to be internally inconsistent as to which aspect is emphasised. Viewed in this light it becomes possible to understand these apparently contradictory patterns of overlap.

Let us posit then as the third element of the system the sememe $\operatorname{DCm}($ Dyn)amic, which is to be understood as a concept neutral between the more "process" type of state and "agency". From the discussion of the relationship between these three sememes it seems fairly clear that the system should be regarded as unstable.

Evidence for paradigmatic contrast between $\mathrm{DCm}(\mathrm{Dyn})$ and DCm(Causn) is provided by such pairs as

| (Idkr): remernber | vs | $(4 \mathrm{dkr}):$ remind |
| :--- | :--- | :--- |
| (Ibrz): emerge | vs | $(4 \mathrm{brz}):$ cause to emerge |

The sememe DCm ( $0-E$ )
An examination of the lexicon shows that two term contgasts between forms on Fa 'iL and the second measure are not infrequently accompanied by a third form on the fifth measure. In addition there are many raore "defective" paradigms where the contrast is
between forms on the second and fifth measures only.
As an example of a three way contrast we may cite the root rtb which gives the foms:
raṭib: be moist vs raṭṭab: moisten vs tarațțab: become moist Given such instances, and the fact that the sample of forms on the fifth measure (part 10 of Appendix A) shows a $27.7 \%$ incidence of this same "inchoative" sense, we conclude that we are here dealing with a further nember of DCm .

This element has of course both a dynamic and a stative aspect, of which the "entering" into a state is the fommer and the "state" which is entered the latter. It is therefore not too surprising to find many forms in this same sample whose meaning appears to have polarised on one aspect or the other, giving in particular significant incidences of both DCm (Eff) and DAk(Refl).

That this potentiality may be the more readily kept in mind the sememe is given a two-tem designation, intended to reflect both of these aspects. Hence the name 'oncoming-effect' is assigned, abbreviated to $\mathrm{DCm}_{\mathrm{m}}(0-\mathrm{B})$.

Certain verbs on the measure Fa'iL are rendered in Wehr's dictionary "be or become $x$ ". The nature of these is discussed in paras. 1.0-1.3 of chapter 10 - see especially para. 1.3.1. The sememe DCm ( $\mathrm{E}-\mathrm{I}-\mathrm{S}$ )

Save where they have acquired a distinct sense forms whose measures are based on the vowel pattern (...u..i) are not listed in the lexicon. This however is somewhat of a concession to western grammatical theory, since one cannot but doubt that is, as was the case, Wehr's dictionary was compiled from running text the incidence of forms on these measures was rather slender. We have already argued (para. 0.2 above) on the basis of pairs such
as:-
taharraka 1-hajaru and hurrika 1-hajaru
and other evidence, that these measures should not be regarded as one of the pillars of our account of the Arabic (and Semitic) verbal system.

This is not to say that our problems are solvea by rejecting the primacy of the dichotomy "active vs passive": as the following discussion shows, this is far from being the case. It is suggested merely that a satisfactory synchronic account of the verbal system cannot be constructed unless this particular contrast is dislodged from its plinth, so that other equally ifnot more important contrasts are allowed to come to light.

There are then two questions relating to measures on the vowel pattern (...u..i). Firgt, what is the nature of the particular sememe they express, and second, what is its systemic relationship to the other elements so far discussed.
2.3.1 If it be accepted that taharraka expresses 'oncoming-effect' then it will immediately be apparent that hurrika also must express an 'effective' sense of some kind.

The difference between them resides in that hurrika directly expresses the fact that aome 'agent' or 'source' is involved in this 'motion'. That is, in the former case the 'agency ', source' or 'instrumentality' is of no consequence to the user whereas in the latter case it is - if only peripherally.

The sense of the element expressed by hurrika can then be understood as 'effect-with-implication-of-source' - to employ the most neutral designation, and the one applicable to the widest number of cases. This designation will be abbreviatednto $D C=$ ( $\mathrm{B}-\mathrm{I}-\mathrm{S}$ ).
2.3.2 The analysis offered above, while adequate for those forms in paradigmatic contrast with a form on Fa'al expressing $\operatorname{DCm}(\mathrm{Dyn})$ is not entirely appropriate to those forms whose counterpart expresses DCm (Causn). Consider for example the following set:-
iia) kasuna l-kas̉abu: the wood was rough
iib) kasssiana 1-kasaba: (he) soughened the wood
iic) kus̈s̊ina l-kas̈abu: the wood was roughened Provisionally these forms may be analysed:-
a) $\quad P$ (kgn: roughness) $+D C m$ (Eff)
b) " " $\quad$ " DCm (Causn)
c) " $" \quad n \quad+D C m$ (Causn) $+D C_{m}$ (E-I-S)

Now if - as is the case, 'causation' may contrast with 'dynamicity' and the latter may contrast with DCm ( $\mathrm{E}-\mathrm{I}-\mathrm{S}$ ), then it clearly follows that first and third of these may also be in contrast. However in example iic) we have an instance where DCm (Causn) and DCm (E-I-S)supplement each other.
2.3.3 Rather different however are such forms as 'akraj: expelled which is taken to express the configuration:

$$
\begin{aligned}
& \underline{L}(4 \underline{k r j}: \text { expel }) / \ldots /+\underline{D C m}(D y n) \\
& h / \underline{P}\left(I_{k r j}: \text { go out }\right) ~ \\
& \text { DCm }(C a u s n) /
\end{aligned}
$$

Hote firstly that since the concept 'expel' is taken not to be equivalent to 'cause to go out' - in that there is an element of force implicit in the former in respect of which the latter is neutral, the sememes P (Ikrj: go out) and DCM (Causn) are set in an included relationship.

Now we clearly desire only one structure for $L$ (4krj:expel) and yet the form 'akraj: expelled contrasts with 'ukrij: was expelled. If the composition of the lexeme is to be held constant the
configurations underlying these two forms can be differentiated only if we assume that they vary on the assignment of DCm (Dyn) vs DCm (E-I-S). That is 'ukrij should be analysed:

$$
\begin{aligned}
& L(4 \mathrm{krj}: \text { expel }) / \ldots /+\underline{D C m}(\mathrm{E}-\mathrm{I}-\mathrm{S}) \\
& \mathrm{h} / \underline{\underline{P}}(\text { Ikrj: go out }) \cap \underline{D C m}(\text { Causn }) /
\end{aligned}
$$

However, since in these examples DCm (Causn) stands in an included relationship it can be said to enter into configuration with DCm (Dyn, E-I-S) only indirectly, they should not be interpreted as an argument for a syntagmatic relationship between DCm (Causn) and DCm (Dyn) also.
2.4.0 In addition to those used to postulate the various sememes introduced above there are other measures which also furnish significant incidences of the elements concerned. The most prominent among these are:
i) For DCm (Eff) aFiLL -74.2\% (Part 6 of Appendix A) Vth $-29.6 \%$ (Part 10 of Appendix A) VIIIth- 35.5\% (Part 13 of Appendix A) Xth - 19.3\% (Part 14 of Appendix A)
(ii) Fow DCm (Causn) $\mathrm{Xth}-21 \%$
iii) For $D C m$ (Dyn) aFuLL - $94.4 \%$ (Part 5 of Appendix A)

IInd - 24.4 (Part 7 of Appendix A) VIIIth- $42.2 \%$
iv) For $\mathrm{DCm}(0-\mathrm{E}) \quad$ VIIth $-71.7 \%$ (Part 12 of Appendix A)

To a large extent the measures FaL and Fall (on these measures see para. 1.1.4 of chapter 1J) are unable to form
 However in respect of the latter sub-group of first degree measures this function is fulfilled - as the above list shows, by the mudãri'
measures afuLL and aPiLI (and also, but infrequently, by araLL). This is particularly interesting when it is noted that the medial vowel of the measures aFuL and aFiL, which are cognate with Fal, do not have this function to anything like the same extent, and in this they parallel the measures $a F^{\prime} u L$ and $a F^{\prime} i L$ cognate with Fa'al. (See part 4 of Appendix A for aruL and aril and part 1 for $a F^{\prime} u L$ and $\left.a F^{\prime} i L\right)$. If our samples are not atypical the implication for the diachrony of FäL and FaLt is clear.

### 2.5.0 The structure of the system

Given the nature of the relationship between DCm (Causn) and $\operatorname{DCm}(\mathbb{I}-\mathrm{I}-\mathrm{S})$ it becomes clear that we are dealing with a type 3 system (see para. 2.1.3 of chapter 5) having the structure:


Among limitation mules attaching to DCm are the following:-

2.5 .1

An examination of the sample on the fifth measure will show that the incidence of DAkg (RefI) is much the same as that for DCm $(0-E)-25.9 \%$ as against $31.5 \%$ see part 10 of the appendix). Furthernore we have noted there the problem of trying to distinguish
instances of the one sense from the other.
Now if these senses do tend to overlap why do we assign them to different systems, and why in fact do we posit two different systems rather than one?

This question is all the more relevant if, instead of beginning as we have with the structure of the content code we had first considered that of the expression code - which is, in effect the approach of traditional grammarians. Had we adopted the latter course the very strong morphological parallelism among the various verbal measures might well have suggested an analogous single system for the content code - an approach which might well find support from the fact that certain of the elements of DAk and DCm may not stand in syntagmatic relationship.

It does not in fact seem that there can be any real answer to the question. The elements DCm and DCm (E-I-S) do not contrast paradigmatically with those of DAk, but if as we have argued the former are closely related to $\mathrm{DCm}(0-\mathrm{E})$ etc., then the structure posited in this chapter will seem most natural. If not, then although $t w o$ systems would still be required their structure would differ considerably from those outlined in this section and section 1.

## Chapter 7

## The systems for substantivization

## Introductory

0.0 Among the more striking characteristics of Arabic is the way in which semantically complex substantives are created either out of a base or complex predicate, or out of a base substantive.

This process may be understood as the adding one or more augmentive elements to the concept serving as foundation, the configuration so created being either adherent or more comonly, included within the complex substantive so created.

In this chapter the nature of these elements is discussed, along with the systens which they comprise.

## 1 The system Su (bstantivization)

$1.0 \mathrm{DSu}($ Place $)$
Arabic has a great many nouns on the first degree measure maP' (v) $L(a)$ whose instances are maF'aJ, maF'iL, maP'aLa and map'ila. An examination of any sample of their forms will show that they nost comonly express the 'place' either where some event occurs or state obtains, or where numbers of some object exist. For instance, of the sample of forms mar'al listed in the appendix to this chapter, $54.2 \%$ express this sense, as do $57.8 \%$ of the sample of foms map'il (See parts 7 and 8 of Appendix B).

A conjunction of fomal and semantic criteria of this significance clearly warrants our positing 'place' as one of the elements which sexve as substantivizing augnents.

While these are the most common measures used to express this sense, they are by no means the only ones. In particular,
significant incidences underlie the 'asmā'u l-maf'ol ${ }^{(1)}$ of the expanded verbal measures. For instance, the sample of forms muFa''al (See part 12 of Appendix B) exhibits a 19.4\% incidence again clearly significant. Although the other measures have not been investigated in any detail, there is no reason to suppose that the situation there is markedly different.

### 1.1 DSu (Locus)

By Eastern and Western grammarians alike forms on the measure mar' (v) $L(a)$ are known as the 'asmā'u l-makāni wazmamān: nouns of time and place. What seems not to have received much attention is the fact that while many of these forms express only a sense of 'place', very few appear to express only a sense of 'time'، On the other hand there is a significant number of forms which may express either 'time' or 'place' according to one's interpretation: that is, they are essentially neutral with respect to these notions.

Another point which appears to have received little attention is the semantic relationship between the masdar mimI (that is, a (3) masdar which conforms to the general measure maF'(v)L(a)) and the nouns of time and place. Many of the former - as is commonly the case with the masdar, have both predicative and substantive senses and, in the latter case, the substantive is - reasonably enough, indifferent to notions of time and place.

It is however possible to argue that 'indifference' to time and place and 'neutrality' thereto are not entirely unrelated concepts, and while we do not wish to suggest that substantives cognate with a masdar mini should be regarded as nouns of time and place, looking at the matter in this way does enable us to
(1) Approximately equivalent to the traditional "passive participle"
(2) Of the 54 forms maF'al and maF'il listed in the appendix only one - mahill: due date expresses 'time' only.
(3) Literally 'source'. Issually translated 'gerund' or verbel nown'.
understand more clearly the nature of those substantives which, while not syncghonically related to the masdar mimi are neither very clearly related to the notions 'time' and 'place' - as for example matma': coveted object and mabhat: field of investigation.

That is, we would prefer to envisage a continuum, at one end of which stands the unique signifying of 'place', and at the other a total indifference thereto. Between these poles stands, we suggest, a group of substantives - including matme', mabhat, maw'id: appointment, majlis: gathering, which while not entirely indifferent to the notion 'place' yet express it only vaguely. That is, they indicate only the 'locus' of some event, state, or set of objects, without nearer definition. This sense 'locus' we posit as the second term of the system. (1)

### 1.2 DSu(Inst) rument

Comonly encountered is the first degree measure miF' $(a / \bar{a}) L(a)$, of which the instances are mir $a d$, miF'ala, and mil ${ }^{\prime}$ à . Examination of these measures shows that they frequently express the 'instrument' through which some event or state is brought about, or an instrument which is in some non-specific relationship with a base substantive or predicate. Of this latter type we may instance mihjan: crooked staff that is "an instrument characterised by being bent".

In particular, this function is extremely common among forms miF'al and comprises $92.4 \%$ of the sample (See part 9 of Appendix B).
(1) From the construction of the argument it will be clear that we are disposed to regard the masdar mImI as a creation from a cognate substantive - contrary to the usual direction of development and what seems to be the traditional view.

Such evidence clearly warrants our positing this sense as the third element of the system.

The incidence of 'instrument' in the measures miF'ala and mi $F^{\prime}$ ald, while perhaps not so great as that for miF'al is nonetheless substantial.

Other significant incidences of 'instrument' occur in Fa' 'āLa (47.7\%), Fä'ila (15.4\%), and muFa' iL ( $8 \%$ ) (see parts 5,2 and 11 respectively of Appendix B. On Fa' 'ā̃a compare Monteil 1960 p 118 and on muFa''iL p116). Certain other measures, while not investigated in any detail, do fumish evidence suggesting a potential significance, as for example, musawwira:camera, muḍamida: compress, on the measure of muFa'iila.

Although the sense 'locus' is rarely if ever in paradigmatic contrast with 'place', the sense 'instrument' may contrast with the other two, and in so doing provides formal justification for our system Su(bstantivization).

For example, from the predicate $D B p(n s f: w e a v e)$ are created mansaj: weaving mill and minsaj: loom - being respectively the 'place where weaving is done' and the 'instrument through which weaving is done'.

There is a variety of evidence for instability in the system. First, certain substantives may be expressed by either of the general measures maFi$(v) L(a)$ and $\operatorname{miF}^{\prime}(a / \bar{a}) L(a)$ as for example mi'dana, ma'dana: minaret - 'instrument for' or 'place of' sumnoning.

Second, insofar as it is proper to analyse foms on the measure Fa'ila as expressing this sense, the boundary between 'instrument' and certain members of the system DCm is in the li it illusory (See part $A$ of the appendix).

Thirdly, in 1.1 above we presented arguments for an element 'locus'. Since the burden of this argument was to suggest that between clear cases of 'place' and clear cases of non-specific substantivization lies a continuum, somewhere along which the sense 'locus' is set, it follows that between 'place' and 'focus' also, there can be no definable boundary. to be 'instruments' is such that a more fortunate term might be 'device'.

The advisability of this opening remark is suggested by the fact that arong the sample of forms Fa''ala we have chosen to detect an incidence of $11.3 \%$ for a sense which has been termed 'vehicle' (Part 5 of the appendix). Since the sense 'device' is rather more general than 'instrument' - which latter tends to have certain implications for the size of the object in question, this group of forms could well be included with those discussed in para. 1.2 if the fommer tem were to be adopted.

On the positive side our analysis receives support from the fact that, of the forms mi $\mathrm{F}^{\prime}$ al listed in the appendix, none can be said to denote a vehicle of any kind, and this is true equally of the more modern innovations, as the list given in Monteil shows (p118). Hence, if somewhat tentatively albeit in at least partial agreement with Monteil's classification (p118), we include DSu(Veh) as the fourth element of the system.
5 DSu (Indiv)iduation
It is perhaps the case that the majority of the de-predicative substantives of Arabic are not distinguished by expansion into a distinct expression mode.

Being commonly derived from the masdar or from participial forms they are typically assigned the same expansion as their base, and differ only in their capacity for pluralisation.

That is, on the one hand this capacity is not available to the masdar viewed from a strictly verbal standpoint: on the other hand, although participial foms have a distinct pattern of pluralisation when functioning predicatively, certain of them exhibit different patterns when having substantive function. Contrast for example:-

$$
\begin{aligned}
& k a ̈ t i b(u n)-k a ̈ t i b(u n a): \text { writing } \\
& k a ̄ t i b(u n)-k u t t a ̄ b(u n): \text { writer }
\end{aligned}
$$

Now while the capacity for forming a plural is a defining characteristic of all depredicative substantives, this is in many instances supplemented by the distinguishing of a substantive from its related predicate by the addition of the tä) marbūţa (The "bound (letter) T " - i.e., the "feminine" of traditional Vestern grammarians).

Inspection of a number of measures does in fact suggest that this marking of 'individuation' - the denoting of an instance of some predicate, is the primary function of this morpheme.

For example, of the forms on Fäila listed in the appendix (part 2) $35 \%$ have this function, as do $61 \%$ of forms on Fa'ila (part13).

The 'instance of a predicate' thus created may be either 'concrete' or 'abstract': there is no evidence to suggent that the internal logic of Arabic draws any distinction between the two types unless, in addition to being concrete, the gubstantive is also animate (See 2.0 below).

Further light may be shed on the nature of this sememe by
observing that it can be regarded as the foundation upon which the "personal pronouns" are constructed. That is, DSu(Indiv) is in effect taken to be a neutral deictic - a deictic element not defined as 'nearer' or 'further'. With the exception of DSU(Place) and DSu(Locus) each sememe is taken in principle at least to have the capacity for standing in paradigmatic contrast with the others. That is - the system can be seen to conform to the type designated 1 b in para. 2.1.1 of chapter 5, and will hence have the structure:-

DSu


The system $H$ (uman) a(nimacy)
The case for a sytem of 'human anima te' concepts rests upon three points, of which two are morphological and the other syntactic.

The morpheme tä marbūṭa which, we argue above, most commonly serves to express the element DSu (Indiv), is tradition ally regarded as the "feminine" morpheme. Now while "ferainine" in this sense is presumably to be regarded as a "grammatical" rather than as a "semantic" category there are indeed many cases where the tā' marbuta serves to distinguish a naturally masculine concept from its feminine counterpart, as for example:-

## baqqāl-baqqāla:male-female greengrocer

kayyāt-kayyāṭa: tailor-semstress
In the second place, pluralised depredicative substantives referring to human animates tend to be assigned distinctive morpheme patterns. Compare for example:-
kātib-kuttāb: writer-writers
dāsir-dawāsir: propellor-propellors
Both of these are derived from similar predicate configurations and the difference in plurel forms must be attributed to the fact that kātib has come to refer to a male person.

These morphological criteria, may be supplemented by the evidence provided by agreement patterns between subject and verb, where certain idiosyncracies are best understood in certain cases on the assumption of sememes of 'human animacy'. (For a more detailed discussion see para. 1.1 of chapter 9).

The first point then demands a means for distinguishing natural gender, while the second and third are most elegantly described on the assumption of such a system.

On a first viewing it might be anticipated that this system would form part of the adherent rather than the dual component. That this is not the case is suggested by the pairs of examples cited above.

The pair baqqāl-baqqāla may be analysed as follows:-
L (baqqāl:greengrocer)/.../ + ( $\mathrm{Ha}(\mathrm{Male})$ ) h/ S (baql: vegetables) ~ DSu (Indiv) ^ DAk(Occpn)/
and
L (baqqāl: greengrocer) $/ \ldots /+(\mathrm{Ha}(\mathrm{Tem}))$ etc.

That is, the latter is merely the female counterpart of the
former. However, in contrast to this the pair kayyät-kayyāta seens best malysed as follows:-

and
L (kayyāța: senfotress)/.../
h/ S (kayt: thread) ~ DAk (Ocopn) ~ DSu(Indiv) $\sim(H a($ Fen $)) /$
That is, kayyata is regarded not merely as the female counterpart of kayyāt, but as something else besides.

If the foregoing analysis is acceptable it follows that the system is dual in nature. Then, since it is clearly to be regarded as stable, it will simply have the structure:

$$
\xlongequal[\substack{\text { Male } \\ \text { Female, }}]{\text { DHa }}
$$

## Chapter 8

The Network of Relational systems defined as that semene:

First, which is assigned as the encoding of some term $R$ in a representation (see para. 1.4 of chapter 4).

Second, which is assigned by 'rule of addition' (see para. 2.1 of chapter 4) to indicate an 'attributive' relationship between two sub-segments of an encoding.

Evidence for this network is provided in the main by prepositions, supplemented in certain places by reference to sundry particles, some of which - as for instance li'anna and likay, in any case share a morpheme with the prepositions.

The method of analysis adopted for the description combines both 'projective' and 'statistical' techniques (see para.1.1.1 of chapter 5). The former is necessary on the one hand because, unlike say the prefixes of the measures mar'al and mir'al, each preposition is, broadly speaking, listed only once in the lexicon.

On the other hand it does occur that many verbs tend to associate rather more strongly with certain prepositions than with others, and the particular associations and any peculiarities in sense arising from their conjunction are listed separately in the lexicon, and from these listings we may compile samples and interpret them just as in chapters 6 and 7.

Since such a sample is concerned in the main with exceptions it might be thought that our analysis will be somewhat distorted by failing to take into account the (presumably) not inconsiderable
number of strictly 'local' instances. However to judge from the one case where we have compiled both lexicon - and contextbased samples (for the preposition 11 - see parts 2 and 3 of Appendix X), the reverse appears to be the case. That is the number of 'local' - or quasi-local, uses occurring in the former is markedly greater than in the latter.

Particular portions of the description are approached either from the projective or from the statistical angle as simplicity dictates.

The relationship between the relational sememe and Fillmore's "deep case" is taken to be somewhat analogous to that between the sememe and the Neo-Bloomfieldian morpheme. (For discussion of this latter see paras. 2.2 of chapter 3 ).

That is, we understand by Pillmore's "case" a grarmatical (or "syntactic") abstraction which accounts for the acceptability, and hence to some extent the distribution, of syntactic structures. For instance of the pair:-
i) John muined the table
ii) John built the table

Pillnore argues that "Our ability to give distinct interpretations to the verb-object relation in these two sentences" "...does have syntactic relevance..."in that "... one might relate (i), but not (ii), to the question...":-
iii) What did John do to the table ? (1968 p4)

In other words the question he is asking of this pair is why the distribution of iia) is other than that of iib). However just as the unit of distribution set up by Structuralists - the morpheme, is quasi-semantic in that many of the distributions for
which it purports to account are in the limit founded on semantic distinctions, so also with the "case". Indeed in the latter case the closeness of the parallel is such that Fillmore's work has been criticized for being "...too strongly motivated by semantic considerations".(ibid p88)

By contrast the present study asks two rather different questions:

First, how does Arabic express a relationship which is in external logical terms 'factitive" - that is a representation containing an $R$ tem having the value [factitive].

Second, does the internal logic of Arabic recognize a sememe (Factitive).

Thus if our understanding of the nature of Fillmore"s "case" is correct it becomes clear that he is, in effect, supplying an answer to the first of these. The second question remains unanswered and indeed, given his "universalist" standpoint, would be regarded as imelevant.

## 1

The Systems of Local Relationships
The System S(tatic) 1 (ocal) 2(elations)
Given the relatively non-controversial nature of what follows argument is for the most part presented in projective fashion, supported here and there by evidence from various lexicon-based samples.

Consider the following strings:
iva) jalasa l-waladu fI s-sundūqi
ivb) " "ala
ive) " " fawqa "
ivd) " " tahta " (1)
ive) " " $"$
(1) Sit (3ms-actmcom): the-boy: -m: thembox
"The boy sat $-\infty$ the box."
For the abbreviations used here see part 2 of Appendix $F$

No one of these is synonymous with any other and the difference In meaning is in each case taken to be a function of the differences in meaning among the various prepositions. From this we infer that each of these expresses a distinct sememe of 'static' local relationship and further, that these sememes form part of a system which we will term Slr.

Examples ivand are evidence respectively for the members (In), (Upon), (Above), (Below) and (By) of this system, while the forms 'amāma, warā'a, dākila, and kārija which may also be substituted in the same environment, are evidence for the further members (Before), (Behind), (Inside), and (Outside) respectively.

Moreover, while in terms of external logic the concept "likeness" is difficult to comprehend in 'local' terms the lype of preposition ka:like may also be substituted in this/frame and is therefore perhaps best regarded as a member of SIr.

Partioulariy elusive is the local sense of bi. Whereas each of the examples vand has a fairly precise local sense, that of:-
v) jalasa 1-waladu biṣ-sundūqi is vague to an extent where, given the nature of the two participants, the string tends to be unacceptable. The acceptability of spatial expressions containing bi seems in fact to be confined to those cases where no precise relationship exists, or where a precise specification is felt to be unnecessary, as for instance:
vi) waladda lanā țṭawafu bil-hadIq ati
(1) and-pleasing (3ms-act-com): to-us: the-going about: in-thegarden: "We found it pleasant to wander about in the garden."

In certain older studies of case systems it was argued that one case often expresses those senses not assigned to other members of the system - that is, it bears an essentially neutral sense. (See Hjelmslev 1935, especially pIIIff, and also Fillmore 1968 p10).

Such an analysis seems not inappropriate to the local function of bi. That is, it can be understood to express a sense which is neutral with respect to the other members of Slr, serving merely to express the locus of some circumstance without nearer definition.

Such an analysis also allows us to understand the wide range of "secondary" functions attaching to this preposition. (See para. 1.3.2 and section 2 below). Tentatively then, let us assume this neutrality to be the value of the sememe, and designate it (At), which English preposition seems not dissimilar in function.

Prepositions having a basically local sense some by analogy to be used in more abstract constructions, as for instance in the string:
vii) ....warā'a l-'ilmi wafawqa t-taqāfati (1)
where the elements underlying warala and fawqa can in no sense be regarded as a class (in the sense of para. 5.0 of chapter 2) of spatial or temporal locations.

Now although we have not attempted to compute the incidence of this type of construction two things seem intuitively to be fairly clear:

First, that the external logical features expressed by the
(1) ...behind: the-science: and-above: the-culture
"...behind science and above culture."
preposition in such strings are varied and rather randon. Second, that the particular feature expressed in any given case can be identified only by reference to the accompanying environment and especially the noun "governed". Thus the probability of a preposition bearing a specific sense in such environments is high.

If this is so it would appear that we should regard the senses of the prepositions in vii not as a distinct sememe but as quasi-abstract instances of those of Slr, thus assuaing for the latter a rather more abstract nature than initially seemed to be the case.

Among other instances of the same phenomenon are taken to be:
viii a) fa'innamā na'nㅍ bihädihi n-nisbati...
viii b) 1ā tusi'ū biqiswati zezanni 'ilā 1- qarabati
viii c) 'a nuqIrau taqāfatanā 'alā 1-fir'awniyati (1)
Example viii b) is of interest since it demonstrates that it is not necessary for the preposition to govern an "abstract" noun in order to receive a quasi-local interpretation.

While in external logical terms these relationships would doubtless be regarded as abstract, for present purposes they are to be distinguished from the type of sememe discussed in section 2 below.

It may however be worth pointing out that thebrather loose type of local relationship discussed here seens to be a necessary
(1) a) for-only: mean (Ip-act-incom): by-this: the-attribution: "We merely mean by this attribution..."
b) (neg): $\operatorname{err}(2$ mp-apoc $):$ by-harshness: the-opinion: to: therelatives: "Do not make the mistake of thinking harshly of your relatives."
c) (int): establish(Ip-act-incom): culture-our: on: Pharaoism "Do we base our culture on Pharaoism..."
precondition for the evolution of abstract sememes proper. For, on the basis of our hypothesis of a periodicity in system stability (see para. 2.4 of chapter 2) we might envisage quasi-local relations as a decline from stability - or more plasuibly a decline into further instability, which is partly relieved by the resolution of certain local sememes into a system of abstract sememes.

We find several instances where a uniquely spatial or temporal interpretation of the sense of some preposition is possible only on the basis of the senses of the accompanying nouns. Consider for instance the examples:-
ix a) fakadabū wa'dahum...wa'a'ādū, fi 1-qarni 1-isrina,sirāta 1-quxūni 1'ū1ā
ix b) ijtanib dāranā bin-nahāri
ix c) ji'tuka 'inda ṭulū'i se-bamsi (1)
If we compare the phrases containing the prepositions fi,bi, and 'inda with those of iva, ivc, $\mathbf{v}$, we find that their interpretation in temporal or spatial terms is determined not from the prepositions themselves, but from the physical or temporal nature of the phrases they govern. This suggests that in such cases we are dealing - in internal logical terms, with elements the senses of which are in essence neutral between time and space.
(1) a) then-lie (3mp-act-com): promise-them:....and-resume (3mp-actcom): in: the-century: the-twenty: path: the-centuries: thefirst: "They promised falsely ...and resumed in the twentieth the attitudes of earlier centuries."
b) avoid (ms-imp): house-us: by-the-day: "Avoid our house by day"
c) come (Is-act-com)-you at: rising: the-sun: "Icame to you at sunrise."
Fxamples ixb and ixc are cited from Wright

On the other hand just as there are certain prepositions having only spatial senses so there are others expressing purely temporal senses, as for instance:-
x a) zurtu 1- qāhirata qabla yawmayni
$x$ b) kuntu 'azūru 1-qāhirata mundu yawnayni
$x$ c) sawfa 'azūru l-qāhirata ba'da yawmayni
which are taken respectively to be evidence for the elements: (Before), (Since), and (After).

On the basis of the rather restricted amount of evidence considered and the argument derived therefrom the following tentative conclusions are offered on the structure of this system.

Several of the elements posited above are attested also in the lexicon-based samples given in the appendix. However, the most interesting point raised by these is that they provide a certain amount of evidence to suggest that $\operatorname{Slr}$ be seen as a dual system.

For instance the predicate element lying behind the verb (Thbb): rebel against can plausibly be analysed thus:

L (Ihbb: rebel agst) $h / P$ (Ihbb.: move) $\sim \operatorname{Slr}$ (Upon) / denounce
and (Iwsy): betreyt as:
$L$ (Iwìy: betray) $h / P$ (Iwsy: slander) $\sim \operatorname{Slr}(A t) /$
(See parts 1 and 5 of Appendix C).
Noting in particular the imprecise sense of bi it seems that the system should further be regarded as unstable.
(1) a) visit (Is-act-com): Cairo: before: two days
"I visited Cairo two days ago".
b) be (Is-act-com): visit (Is-act-incom): Cairo: since: two days "I have been visiting Cairo for two days."
c) (future): visit (Is-act-incom): Cairo: after: two days
"I shall visit Cairo in two days time."

On the basis of those sememes which are neutral between space and time it is clear that the system is of type 1 (see para. 2.1.1 of chapter 5). In addition, while it is conceded that the possibilities for direct paradigmatic contrast between nature sememes of a spatial and a temporal/are few, the two sub-systems are taken to be 'contrasting' rather than 'non-contrasting', and hence of type 1a. (It is possible to envisage contrast between the two types of sememe when dominating an encoding segment which contains a lexeme including DSuh (Locus) - see para. 1.1 of chapter 7).

Hence we conclude that the syrstem DS1r comprises:
A sub-system DSlmx $=\{$ Above, Below, Upon, Inside, $-\infty \quad[$ In, By, At, $-\infty]\}$
A sub-system DSIry $=\left\{\left[I_{n}\right.\right.$, By, At, $\left.-\infty\right]$ Since, Before, After $--\infty$ Note finally that certain of these should perhaps be regarded as lexemes - as for instance DSlr (Däkila: inside) which can reasonably be said to include the sememe $P$ (dkl: entering). This point has been ignored in order to simplify the description. (See however para. 1.3.1 below).

### 1.1.0 The System $D$ (yna mic) $I$ (ocal) $x$ (elations)

Consider the strings:
$x i$ a) sāfara sos̄āihu 'ilā l-qähirati

| $x i$ | b) | " | mina | " |
| :--- | :--- | :--- | :--- | :--- | :--- |
| xi c) | " | " | natta | " |
| xi d) | " | " nahwa | " |  |

Example xib differs from the others:
First in the assignment of the morpheme min (the final -a is added by rule of phonemicisation).

Second in that it indicates motion away from a point whereas
(1) amd) travel (3ms-act-com): the-touxist: "The tourist travelled $\qquad$ Cairo."
broadly speaking, the others indicate action towards a point.
From this we infer that min is the expansion of a sememe (From).
The relationship between the remaining examples is rather morecomplex. The morphemic contrast "hattā va nahwa" corresponds to a semantic contrast "as far as vs towards". More generally, as spatial translations of hattā Wehr gives "up to, as far as", and as those of nahwa "in the direction of, toward, to".

From this it seems fairly clear that the former indicates motion up to a point where the latter, typically, is less specific. Let us then assume that among the semenes of Dlr are (Up to) and a second which we shall term ( $\mathrm{T} O$ ), and by which we intend a concept neutral between those expressed by the English 'to' and 'towards'. (See also the samples of 11 in parts 2 and 3 of the appendix).

Now the sense of xia is ambiguous between those of xic and xid. Moreover the set of spatial renderings given by Wehr is almost the sum of the sub-sets assigned to hatta and nahwa namely, "to, toward; up to, as far as". That is, there is no rendering of 'ila which is not also a rendering of one of the other two.

From this we conclude that 'ila expresses no distinct sememe but may equally express either of (Up to) and (To). In other words we would argue that the three-way internal logical distinction drawn by English, and expressed in the strings "as far as - to towards", is in Arabic reduced to two by the conflation of the second and third terms.
1.1.1 As with the members of DS1r so also these sememes appear in essence to be neutral with respect to space and time. For example, deriving in the first instance fron the differing ways in which maw'id:place/time of a meeting may be interpreted, the string:-
xii sāfara ṣṣā ihu hattā l-maw'idi
is ambiguous between "the tourist travelled as far as the meeting place" and "the tourist travelled until the time of the appointment".
1.1.2 From the evidence considered in these paragraphs the system DIr is assumed:

First, on the basis of certain forms listed in the appendix, as for instance (Ind' + 'an): stop doing st where 'an is taken to be broadly equivalent in local function to min, which may be analysed:
$L$ (Ind' + 'an) : stop doing) $h / P$ (Ind': calmness) ~Dlr (From) / We conclude that, like DSIr the system should be seen as dual.

Second, bearing in mind that (Up to) implies (To) but not vice versa, to be stable.

Hence it is taken to have the structure:
DDIr $=\{$ From, Up to, To, $-\infty\}$
1.2.0 The system $T$ (ertiary) 1 (ocal) $r$ (elations)

By 'tertiary local relational element' we will understand such concepts as "agency", "instrumentality", etc.

In contrast to that adopted for the discussion of DSIr and DDlr our procedure in this case will for the most part be to rely on the lexicon-based samples given in the appendix. However the element Tlr (Ag), which is discussed in the next paragraph, poses rather special problems, for the resolution of which a particular and not entirely satisfactory form of argumentation is adopted.
1.2 .1

It is well known that Classical Arabic has no direct means of indicating the (external) rogical agent of some event. In consequence of this we find on the one hand that the incidence of such constructions in/Standard Arabic is rather sporadic, and on the other that on those occasions when the agent is expressed
the devices used to signal this are various. Certain investigators indeed are inclined to doubt that they are agentive constructions at all. (See for instance Monteil 1960 p237 and Beeston 1970 p82 fn2).

Therefore, although we have not attempted to compile a sample of "passive" constructions with agent expressed it does not seem unlikely that sienificant incidences would not be forthcoming, which would imply that SA like CA has no 'agentive' element in its content code.

However an examination of the lexicoh brings to light the phenomenon of relationships which may be expressed by two or more prepositions, to all appearances in free variation. Certain of these merely reflect the assignment to the encoding of different, but in the context equally appropriate menbers of DSlx and or DDlr, as for instance the conjoining of bi and fi with the verb (Iqry: remain), which are taken to reflect instances of the assignment of DS1r (In) and DSIr (At) respectively.

More interesting however are those cases where the relationship between the verb and its object cannot be regarded as 'statically' or 'dynanically' local. In these it seems preferable to assume (notwithstanding the fact that in the previous paragraphs we have argued for a fairly liberal interpretation of the term 'local') that the prepositions concerned express some third sense. Consider for instance the verb (Ihlm):dream. The noun indicating the subject matter of the dream is governed either by the morpheme bi or by 'an which elsewhere mas express Slr (At) and Dlr (From) respectively.

Now it is clear that these sememes are not appropriate to
the present case and this being so we assume that some third content element is involved - perhaps having the value 'concerning' or suchlike, which might then be 'projected' onto other instances of these two morphemes when they are not in free variation.

Consider then the stringe:
xiii a) tamia l-ma太sū'u lisarikatin muktalifatin
xiii b) hanalati l-mar'atu min éayri zawjihā (1)
In each case it is clear that in external logical terms at least the phrases "Barikatin muktalifatin" and "gayri zawjihä" refer to the agents of the respective events. The question then arises, can 1 li and min in the absence of 'significant incidences' be said to express a sememe 'agentive' ?

Now the li of xiii a) may, we suggest, be replaced by the phrase min qibali without change of meaning, and similarly the min of xiii b) may be replaced by 'alā yadi. Hence on the basis of the argument offered above we conclude that neither $1 i$ or min in this context expresses a member of Slr or Dlr. If this is so they may then be considered to express a further sememe 'agentive', both in these examples and in others where an external logical agent is concerned.

In this particular case there is however a further complication. Given the relatively infrequent incidence of this element it seens preferable to regard the strings min qibali and 'ala yadi as semantically 'complex' (See para. 0.0 of chapter 9).
(1) a) complete (3ms-act-com): the-project: by-company: different "The project was completed by a different company".
( b) become pregnant (3fs-act-com): the-woman: by: other: husband-her "The woman becane pregnant by other than her husband."

That is, the "original" senses of min, qibal, 'ala and yad are taken to be included in the element 'agentive'. In other words it is to be understood either as a lexene or as a sememe depending on its internal constitution.

Hence it follows that we are here dealing with two elements rather than one, namely:

$$
\begin{gathered}
\operatorname{LMlr}(A g) h / S(y a d: \text { hand }) \sim \text { DSlrx }(\text { Upon }) / \\
\text { or }
\end{gathered}
$$

$\mathrm{h} / \mathrm{P}$ (qibal: power) $\sim \operatorname{DDlr}$ (From) /
and of course the sememe $\operatorname{Tlr}$ ( Ag ).
Note that the existence of $\operatorname{ITln}(A g)$ constitutes a formal argument for the incorporation of Slr and $D \mathbf{I x}$ within the dual component of the content code.

### 1.2.2 The Sememe Inst (rument)

In contrast to the elements $\operatorname{IMIr}(\mathrm{AG})$ and $\operatorname{Tlr}$ ( AG ) discussed in the previous paragraph, the isolation of this sememe is a fairly straightforward matter in that our sample of verbs closely associating with the preposition bi is taken to provide an $18 \%$ incidence of an 'instrumental' sense. (See part 1 of the appendix).

This sememe is assumed to be identical to that introduced in para. 1.2 of chapter 7. In this respect the system Tlr may be understood to 'overlap' DSu and, in the terminology of para. 1.1.1 of chapter 3, is taken to be 'arbitrary' rather than 'motivated'.

### 1.2.3 The Sememe Ben(efaction)

Evidence for this semene is provided by the samples listed in parts 2 and 3 of the appendix. Part 2 is a sample of verbs closely associating with the preposition $1 i$ and furnishes a barely significant incidence of 6': for a 'benefactive' sense. Part 3
on the other hand, which is a context based saraple of the same preposition, gives an incidence of $8 \%$.

Hence we assume $\operatorname{lln}$ (Ben) as the third member of our system.

### 1.2.4 The Sememe Pos(session)

Certain linitations in our procedure of relying on samples of associations of verb and preposition are exposed by this element. For the verb based sample of the preposition 11 in part 2 of the appendix produced no evidence for a 'possessive' sense, a result clearly inconsistent with traditional accounts (see 7 Fright II.53b) and intuition.

On the other hand, the context based sample of part $C$ offers an incidence of $16 \%$, an altogether more satisfactory result.
1.2.5 Of particular interest among the items listed in part A of the appendix is the verb (8hdy): take as a model. This verb may quiteplausibly be understood as a lexeme, comprising the sememes: $/\left(\right.$ hdy: guide) $\sim D_{\text {m }}$ (Eff) $\sim \operatorname{Tlr}($ Inst) $/$ That is the sense 'take as a model' is assumed to be derived from 'be rightly guided by'. (See the entry in Mehr).

If this is a reasonable analysis it follows that the system Tlr should be seen as dual - even though we have at the moment no evidence for the duality of any other of its members.

An examination of parts 1 and 2 of the appendix will also show the rather tentative nature of certain of our analyses involving these somemes. This being the case it seems fairly clear that we should regard the system as unstable.

Thus on the basis of our rather limited investigation we posit a systems

$$
\underline{\text { DTII }}=\{\text { Ag, Inst, Ben Pos, }---\}
$$

The System A(bstract) r(elations
By 'abstract relations' we intend a system of elements distinct from those abstract relationships encoded and expressed by analogy with those of local relations, and discussed in para. 1.0.2.

Once again the evidence on which the analysis is based is mainly statistical, although supplemented here and there by argument of the 'projective' kind. This statistical approach tends to mask the fact that to a certain extent we are dealing with 'weak' rather than 'strong' paradigmatic contrast. That is, despite their conceptual simidarity, which is taken to justify their inclusion within the one system, the extent to which these elements may contrast is restricted by the senses of the elements with which they stand in configuration, the assignment of which is in turn governed by the possible forms which may be taken by the representation.

### 2.1 The Sememe(Reason)

Significant incidences of an element indicating the 'reason' for some event or state are given by the samples of verbs associating with the propositions bi and min $-8 \%$ and $10 \%$ respectively, (see parts 1 and 4 of the appendix), and also by the sample of strings containing 11 in part $3(10 \%)$. (Note that here again the lexicon-based sample for li gives no examples).

This same sememe is also taken to be expressed by the string li'an(na). Selection of either bi, min, or 11 on the one hand, and li'an(na) on the other, and the various syntactic consequences following therefrom, is taken to be constrained commonly by the value of the 'thematic' sememes assigned to the encoding. (See the discussion in para. 2.0 of chapter 14 and the references given there). For instance the string:
xiv a) waqad tanabbaha dakā'uhā katiran li*aztilatihā bihäūali d-duyūfi
where Ar (Reason) is expressed by li, presupposes that the lady's
'mixing' with the guests has already been referced to, while:
xiv b) waqad tanabbaha dakā'uhã 1i' annahā qadi ktalatat bihā'ūlā'i d-duyūfi (1)
does not.
2.2 The Sememe $I(n) R($ espect $) O(f)$

Evidence for this element is provided by the following prepositions:
bi ( $6 \%$ ), li (12\%) (part 3), 'alā ( $26 \%$ ),fi ( $46 \%$ ), 'an ( $34 \%$ )
As typical instances of the sememe the following may be cited:
xv a) Jannani najawtu mimmā lam yanjū minhu l-misriyina fi t-tasmỉyati
xv b) famina 1- mustaqbali 'an natahaddata 'an hubbinā wabaytinā
xv c) wahädihi l-kutubu tu'addu mina t-tala'i'i lihādihi d-dı rāsāti ${ }^{(2)}$
2.3 The Sememe Purp(ose)

The only statistical evidence available for this element is provided by the context-based sample of $1 i$ in part 3 of the appendix, where a $16 \%$ incidence is detected. (This should be compared with the $4 \%$ given by the lexicon-based sample in part 2). As an instance of this function we may cite:
xvi a) wahina jā'ati l-bayta 'ākira marratin liqādā'i 'uṭlati 1-'İdi (3)
(1) a) and-displ: become aware (3ms-incoh-com): intellect-her:much: by reason of-mixing-her: with-these: the-guests "Her intellect became considerably sharpened as a result of mixing with these guests."
b) First three items as per a): because-*he: displ: mix (3fs-actcom) : remainder as per a). "Her intellect was sharpened because she had mixed..." ...that-I: escape (Is-act-com): from-what: neg: escape (3ms-apoc): from-it: the-Egyptians: in reg ard to: the-
(footnote continued

When expressing $\operatorname{Ar}$ (Purp) if may in certain contexts be replaced by the particles kay and likay, and also by the preposition hattie without change in meaning, as is shown by the set: xvi b) jalasnā linasma'ahu/ kay nasma'ahu/likay nasma'ahu/
hattā nasma'ahu (4)
In other contexts however - as for instance that of xvi a), the selection of li plus masdar rather than the other three plus a (5) mansūb form or li plus a mansūb form, appears to be constrained as was the case in respect of Ar (Reason), by the pattern of thematic sememes assigned to the encoding.

Especially in the case where DOm (Eff) or DOm ( $0-\mathrm{E}$ ) is assigned to the encoding there is a tendency to confusion between the sememes $\operatorname{Ar}$ (Reason) and Ar (IRO), as for instance (Mhz'): jeer at.

However it does not seem correct to infer from this that we are in fact dealing with one sene rather than two, for there are many contexts in which they are not interchangeable.

Footnotes continued from p.163:-
(2) (a) continued -
naming: "...t that I escaped what (other) Egyptians did not in regard to the giving of names."
(b) for-from: the -future: that: discuss (Ip-subj): about: love-our: and-house-our:
"...for part of (discussing) the future was that we should talk of our love and our home."
(c) and-this (ifs): thembooks: consider (3fsopass-incom): of: theprecursors: in respect of-this (ifs): the-studies:
"These books are considered among the earliest studies of their kind".
(3) and -when: come (3fs-act-com): the-house: last: time: to-spend holiday: the-festival:
"When she came to the house for the last tire, to spend the festival holiday..."
(4) Each of these may be parsed:
sit (Ip-act-con): in order to: hear (Isact-incom)-him:
"We sat down to listen to him."
(5) The "subjunctive" of Western Grammanans. Literally, inflected is on the analogy of the nash accusative -ie final $a$.

For example it is clear that the latter is not appropriate to example xiv a), where we have detected an instance of Ar (Reason). On the other hand this latter in its turn would not be appropriate to the representation underlying xva).

Hence we conclude, on the basis of such verbs as (Ihz')
that the system as a whole should be regarded as unstable, even though Ar (Purp) does not appear to participate in this instability.

The sample of verbs closely associating with the preposition 'an is of particular interest in that 41 of the examples considered to instance $\operatorname{Ar}$ (IRO) appear to exhibit inclusion of this sememe within a lexeme. From this we conclude that the system is dual in nature.

Thus in the light of these considerations and on the basis of the elements discussed in the foregoing paragraphs we posit a system:

$$
\text { DAr }=\{\text { Reason, IRO, Purp, }-\infty\}
$$

3 The System $G$ (ramnatical) $r$ (elations)
If we were to compile a sample of 'subject-verb' constructions of various kinds and then in our usual manner attempt to detect significant incidences of sense patterns, we would very likely find a significant incidence of an 'agentive' relationship. On the basis of our methodological presuppositions we would then be obliged to conclude that by the "nominative" case endings and say the syntagm (verb-subject) ts expressed the sememe DM2r (Ag) (See para. 1.3.1).

But this to all appearances would be a counter-intuitive conclusion in that the possibility of such strictly "grammatical" notions as 'subject' and 'object' seems to depend on an awareness
that the external logical relationships between say a pair of participants and some circumstance can often be inferred from their nature, and need not therefore be encoded and expressed directly.

For instance if we are given the "English" string (kick-ball-boy) and are told that it is meaningful, then in the typical instance we can only conclude that we are concerned with a boy kicking a ball. No other conclusion is possible and no additional relational markers are necessary to enable ug to draw this conclusion.

In other words we suggest that such notions as 'subject' and 'object' are a device whereby language 'minimalizes redundant encoding'. But the question then arises, how can we reconcile this intuitive interpretation of the nature of these grammatical concepts with the analysis entailed by our methodology ?

First of all our basic assumption that similar methods of analysis are appropriate both to what are traditionally "lexical" and "grammatical" items does not entail that content elements of both types are equally meaningful. That is, certain elements are taken to be contextually more predictable than others. (See Lyons 1968 para. 2.4.2).

Now this appears to be particularly true of the various relational sememes introduced in the previous paragraphs, so much so that one is tempted to see their role as reinforcing the information given by other components of the string, rather than the direct conveying of information.

To the extent that they serve merely to reinforce information given elsewhere prepositions are redundant, and it is therefore to be anticipated that there will be certain contexts where one has the option of dispensing with them entirely, particularly
when 'local' sememes are assigned to more abstract relationships. (See para. 1.0.2). Where this is the case it commonly happens that say a preposition plus noun is replaced by the noun alone functioning as the direct object of a verb. (See in particular parts 4 and 7 of the appendix).

This evidence we suggest supports our contention that 'subject', 'object', etcetera are best understood as devices whereby relationships may be encoded with a minimum of redundancy.

From the foregoing it appears that we should envisage gradations of infomation-content among the various content elements, where lexemes, 'base gubstantives' and 'base predicates' (on which see section 1 of chapter 9) would be taken on average to be the least predictable. This in turn requires that the identification of a content element "proper" - rather than an element such as 'subject', should be a function both of the statistical method assumed thus far and also of the information content of the elements thus identified in relation to the place in the encoding where they are assigned.

Hence to return to our initial example we argue that the sememe DPIr (Ag) is not expressed by the nominative case morphemes or the various subject-verb syntagms because the probability of its occurring in the various places where it might be assigned is high.

This of course begs the question of what probability we would regard as the cut-off/point and in what proportion of instances we would require such a figure. However since the problem is peripheral to our main concern in this study and is anyway of a very complex nature it must be left unresolved.

### 3.1.0 The Sememes $\operatorname{Gr}(\operatorname{Su}(b) j$ ective and $\operatorname{Gr}(O(b)$ j) ective

Given the foregoing discussion we assume without further argument that among the elements of the system Gr are 'subjective' - abbreviated to $\operatorname{Gr}(S u j)$, and 'objective', abbreviated to $\operatorname{Gr}(0 j)$.

These semenes are expressed jointly by morphemes and syntactic structure. If however a 'non-augnented' - i.e. "unvocalised", graphemicisation is assigned the whole of the functional load is in many cases borne solely by the syntax.

Consider for example the strings:
xvii a) dakala 1-mu'allimu 1- madrasata
xvii b) dakala 1-ma'allimūna 1-madrasata (1)
In xvii a) $\operatorname{Gr}\left(S u_{j}\right)$ is associate both with the syntagm (v:npI) and the "nominative" case morpheme $u$, while $\operatorname{Gr}(0 j)$ is associate with the syntagm (v:np2) and the "accusative" case morpheme a. The respective associations are the same for xvil b) (Note that the $\bar{u}$ of mu'allimūna is taken to comprise the case morpheme $u$ and a morpheme of length assumed to be an associate of a sememe (Plural).

If however a non-augmented graphemicisation is assigned to the 'primary (i.e. morphophonemic ) expansions' of xvii a) and xvii b) (on this tem see para. 2.4 of chapter 3) we get:
xviiii a) dkI $x \ln ^{\prime} 1 \mathrm{~m} x \operatorname{lmdrsh}$
xviii b) dka xlm'lmwn ximdrsh
where the symbols $x$ and $h$ represent the 'alif and tā' marbuta respectively.

In xvili a) the case morphemes are absent and both sememes have only syntactic associated. In xviii b) however the functional load borne by the syntax is rather less, since the

[^2](2) b) as (a): the-teachers(mpn): as (b)
"The teachers entered the school".
grapheme $w$ is the realisation of the morphemes ü of xvii b).
There is in Arabic a group of clause types introduced by the particles 'an, 'anna, and 'inna, which broadly correspond to English subordinate clauses introduced by 'that', and which in the typical instance provide further specification of some emotional or mental state, or the content of some message. For

## instance:

xix a) wamina l-mufidi 'an nukarrirahā tanwiran 1il-'adhāni
xix b) fasa nadri 'anna 1-"ihtirāma 1-ladI nubdihis l-yawma...
xix c) qāla inna s-safinata qad wasalat (1)
Now there are certain verbs - as for instance ( $3^{\circ} 1 \mathrm{f}$ ): tyy hard
to where the complement may either have the "accusative" ending,
and as such reflect the assignuent of $G x(0 j)$ to the encoding, or one of these particles. Thus for instance we might have:
xx a) 'ālaja l-kurūja
xx b) 'ālaja 'an yakruja (2)
The differing assigmment of the forms kuruja and yakrujq is initially to be explained by the non-assignment of an aspectual sememe to the encoding in the former case (see section 1 of chapter 10), and the assignment of 'durative' aspect in the latter (see paras. 1.2 and 1.5 of chapter 10). This difference
(1) a) and-from: the-useful: that: repeat (Ip-act-incom)-it: enlightenment: to-the-minds. "It is useful. for us to repeat it by way of enlightenment to the mind".
b) for-neg: know (Ip-act-incom): that: themespect: that: show (Ip-act-incora)-it: the-day
"And we do not realize that the respect we show today..."
c) say ( $3 \mathrm{~ms}-\mathrm{act-com}$ ): that: the-ship: displ: arrive(3fs+act-com):
"He said that the ship had arrived".
(2) a) try hard (3msmact-com): the-go out
b) as a): that: go out (3msmact-incom)

Both: "He tried hard to go out".
is in its turn to be explained most probably on the assumption that the pattern of assignment of thematic sememes is different in the two cases.

Wuch the same also appears to be the case where a verb has a complement introduced either by a preposition or by one of these particles, as for instance:
xoxi a) samaha lahu bil-kuraji
xxxi b) samaha lahu 'an yakrruja ${ }^{\text {(1) }}$
On the basis of such evidence it seems reasonable to conclude that these particles are merely alternative modes of expressing $\operatorname{Gr}(0 j)$ in the context of certain patterns of assignment of thematic sememes.

### 3.2.0 The Sememes Ann(exation) and Att(ribution)

Among the comonest syntagms in Arabic is that instanced by: xxii wazIru z-zirā'ati ${ }^{(2)}$

In such structures the juxtaposing of two (or more) nouns indicates only that a relationship of some kind exists between them. The final term in the string has the article and the "genitive" case morpheme unless it refer to a proper name, when the article is commonly omitted.

The external logical relationships so expressed are various (see for example Beeston 1970 p45ff) and are usually predictable on the basis of the nouns comprising the construction. The sirailarity between this device and those of 'subject' and 'object'
(1) a) allow(3ms-act-com): to-him: the-go out
b) as a): as a): that: go out (3nsmact-incom)

Both: "He allowed him to leave".
(2) minister (msni): the-agriculture (fsg)
"The minister of agriculture"
will be obvious, a parallel which leads us to suggest that it
should be analysed in much the same way.
That is, we may conclude that we are here treating of a sememe, which will be designated $G r(A n n)$ exation, assigned as the encoding of a number of relational features in the representation, in the case where the probability of such a relationship obtaining is high. in certain ways is the sememe $\operatorname{Gr}(A t t)$ ribution, which we take to be expressed in such constructions as:
xxiii) wazIrun jadīdun (1)

Once again the mode of expression is both syntactic - i.e. through the syntagm (nsatt), and morphological, through agreement of the adjective with the head noun in respect of definiteness, case, and - albeit with certain complications, number and gender.

The sememe $\operatorname{Gr}(A t t)$ differs from the others in that there is in this case no variety of external logical relations lying behind its assigmment to the encoding; it indicates merely the attribution of some characteristic to some participant. (See especially para. 1.2 of chapter 4).

Note that this same sememe is taken to lie behind such traditionally "adverbial" constructions as:
xxiv) dakala dānikan
and also the various forms introducing relative clauses. (3)
(1) minister(msni): new(msni) "A new minister".
(2) enter (3ms-act-con): laugh(ap-ms-ai) "He entered laughing".
(3) Note that this is a strictly synchronic interpretation and does not overlook the deictic origin of the morphenes $d$ and $t$ of the relative pronoun, nor such "substantive" uses as: 1-ladina yunfiqūna 'amwālahum (those: spend(3mpact-incom): wealth-them: "Those who spend their wealth..." Cited from (Wright 2.172)
3.3 Since it is difficult to conceive of any circunstance where these elenents could be included in a lexeme it seems clear that Gr should be seen as an adherent system, and one which is moreover stable in nature.

Note also that our incorporating these four elements in the one system is conventional, rather than motivated by considerations of paradigmatic contrast.

The system may then be stated thus:

$$
\text { Agr }=\{\operatorname{Suj}, \text { Oj, Ann, Att, }--\}
$$

## Chapter 9

## Base and Lexical Systems of Predicates and Substantives

 of chapter 4) contains an element which, speaking in traditional terns, can be said to be of a more strictly "lexical" nature. Typical examples might be the sememes (nsj: weaving) (see para. 1.2 of chapter 2) and $C s($ rajul:man) (see 2.4 of chapter 4).These lexical elements are of two types. On the one hand we find systems of 'simplex' predicates and substantives whose members are sememes, of which the pair given above are instances. On the other hand there are the systems of lexemes (see 4.0 and 4.1 of chapter 2) which are 'complex' in that they are in various ways further analysable into included sememes or lexemes.

Our purpose in this chapter is to investigate the structure of these systens -albeit in a very preliminary way. This last remark is necessary since it will be self-evident that a comprehensive account of the lexical structure of Arabic is beyond the scope of this study, even assuming that such a description is in any real sense practicable. Therefore in what follows we confine ourselves merely to suggesting the structure of a possible description.
Introductory
Every segment or sub-segment of an encoding (see para.2.0

The first point to note about these systems is that they may be analysed into sub-systems along at least two dimensions. Firstly there is the dimension which concerns us most immediately which, again in accordance with traditional usage, might be termed "grannatical". This would comprise a grouping of elements on morphological and syntactic criteria; as for instance
the bringing together of elements expressed in a conmon measure. The second dimension is more properly "semantic", and consists in the grouping together of elements on the basis of various conceptual fields.

The grammarian will object that the latter is not at all a proper activity for the grammarian, but such an approach can certainly be defended on the ground that the structure of conceptual fields provides sone of the clearest evidence for 'internal logic'. Since the content code is taken to reflect a part of the internal logic of the language (see 4.1 of chapter 2) there seems no reason inprinciple not to include all such distinctions within the one framework.

## 1 The system $D B$ (ase) s(ubstantive)

This system comprises the set of what will be termed 'primitive substantives' (compare Wright 1.191) embracing such concepts as those expressed by 'ab: father, hajar: stone, sams: sun, etc. etc.

While the system as a whole must be regarded as unstable, certain sub-parts - whether analysed along the grammatical or the semantic dimension, should without question be seen as stable. The field of kinship tems (see Lyons 1968 2.2.1,p54) for instance, would seem to be such a one on the semantic dimension.

One of the differences between natural or external logic and internal logic is made clear by this system.

Consider for instance the forms ab: father and rajul:man. Now whereas it is possible to perform a componential analysis on these form there is no evidence to suggest that this analysis would be congruent with the structuring imposed on these forms by Arabic itself.

For example there is no reason to analyse them along the axis "male vs fenale" since the norpheme -at, which typically expresses the latter never occurs with either of these forms, in contrast say to the pair mu'allin vs mu'allimat: male vs female teacher, where the morphological contrast is best understood as the reflex of the contrasting sememes $\mathrm{DHa}(\mathrm{Male})$ and DHa (Fenale) (see section 2 of chapter 7).

Slightly different are such sememes as ('unm: mother) where, notwithstanding the fact that in componential terms it incorporm ates the feature "female", the sememe DHa(Female) is not assigned (as is shown by the absence of -at) simply because the sememe can only refer to a female.

Now although we have argued above that a form such as rajul:man does not express the seneme DFa (Male), certain patterns of agreement between verb and subject are encountered which suggest that some natural logical categories are indeed of importance in the gramar, despite not being assigned a sememe in the encoding. Consider for instance the following:
ia) daraba 1- ’a wlādu 1-janala
ib) qāla 'inna l-'awlāda qad darabū 1-janala
ic) darabati 1-jimālu 1-walada
id) qāla 'inna l-jimãla qad darabati l-walada (1)
(1) ia) Strike(3ms-act-comp): the-boys(nom): the-camel (acc)
"The boys struck the camel"
ib Say:that: the-boys(acc): strike(3mp-act-comp):-he the-canel (acc) (pp)
"He said that the boys had struck the camel"
ic) Strike (3fg-act-comp): the-camels (nom): the-boy(acc)
"The caraels struck the boy"
id) Say-he:that: the-camels(acc): (pp): strike(3fs-act-comp) the-boy (ace)
"He said that the camels had struck the boy"

It will be seen that the verb foms whose subject is 'awlad differ from those whose subject is jimāl. The rules governing these patterns may be stated somewhat as follows:-
a) If the subject is a noun denoting or referring to more than one human animate, and follows the verb, then the third person singular verb form is used - masculine or feminine accoring to the sex of the person. (example ia).
b) If this same subject precedes the verb then the latter has an appropriate third person plural fom. (example ib).
c) If the subject is other than that of a) and follows the verb then the latter has an appropriate third person singular form. (exanple ic).
d) If the subject of c) precedes the verb the form of the verb is that of $c$. (example id).

Now in the case where sone form expresses a configuration having some member of $\mathrm{DHa}_{\mathrm{a}}$ a statement of the above rules in algebraic form presents relatively few problens. However since in the case of such sememes as ('ab: father) we have decided that no meaber of DHa is assigned, rules a) and b) can only be applied if we group all such sememes together as a distinct sub-system within DBs.

Thus, taking the semene ('ab:father) as a paradigm, we have the following situation. We may envisage on the one hand a subset of kinship terms including the above and also such sememes as ('ak: brother) and ('amm: paternal uncle). Let this sub-system be designated DBsa. Over against this there will be two further sub-sets, in this case along the grammatical dimension, namely, one sub-system comprising male human animate concepts let this be DBsxa, which will include ('ab:father) and (rajul:man),
and the second similarly comprising female human animate concepts.
If we project this structure onto the system of base substantives in general, we will derive two sets, namely:-

DBsA $=\left\{a_{1}, a_{2}, \ldots a_{n}\right\}$ of conceptual fields, and:-
$\underline{\operatorname{DBsX}}=\left\{x_{1}, x_{2}, \ldots x_{n}\right\}$ of grammatical sub-systens, where each $a$ and $x$ thay or may not itself be a set of further sub-systems. The system $D B$ (ase) $p$ (redicate)

The structure of this system is analogous to that of DBs in various respects. First, just as the members of DBs are the set of primitive substantives so those of DBp comprise the set of primitive predicates. That is, it comprises elements which are taken to classify events and states in the perceived real world, and which resist further analysis into sememes.

Secondly, as before we must envisage a two-dimensional analysis along semantic and grammatical axes.

To illustrate this two-dimensionality let us consider the conceptual fields of colour and physical characteristics. The majority, if not all, of these sememes are expressed by the measure 'aF'aL when assigned in configuration with DCm (Eff). In traditional terms this measure is used in "adjectival" contexts.

Then, several but not all of the colour semenes are expressed by the ixth measure when in configuration with $D C m(0-E)$. (See Appendix D).

Thus we have the following situation: along the semantic dimension there will be a pair of sub-systems corresponding to the conceptual fields of colour and physical characteristics. Let these be designated DBpa, and DBpa ${ }_{-2}$ respectively. Over
against these will be a grammatical sub-systen comprising all those sememes expressed by 'ap'al in the context mentioned. Let this sub-system, which will include the sememes of DBpa, and DBpa $_{2}$, be denoted DBpx.

The latter will itself comprise at least two sub-systems, namely, a set DBpxa (possibly stable) of those sememes expressed by the IXth measure, and the remainder.

Assuming that similar dichotomies may be imposed on the remainder of DBp it follows that, in outline at least, the organisation of this system will be similar to that of DBs .

Implicit in our discussion of both of these systems has been the assumption there is only one sense associated with any one form, and that there is necessarily a semantic relationship between two foms having the same root. Both of these assumptions - made for simplicity of exposition, are of course false.

The force of semantic drift (see Ullman̂ 1962 p193ff) is such that many forms acquire senses quite distinct from their original and, becone additional primitives. Thus both of these systems will contain semenes expressed either by a fom morphologically complex, or by a root shared with other items in the same system.

Among the fomer for instance is the form magrahiya: play, where the semantic development appears to have been:-

Srh: roan freely > maşrah: place of same pasture > scene > mašahiya: play

Clearly it would be ludicrous to suggest that there is any synchronic link between the senses play and noarn freely. As an instance of the latter type we may cite the verb farra:pull which has acquired the secondary grammatical sense of put a word into the renitive.

Each of these will then be listed separately as DBs
(magrahiya: play) and DBp (jxr:"gentivize").
3.0.0 The creation of lexenes can be understood as successive processes of substantivization or predicatisation. Although in theory there is no limit to the number of times this may occur -- and therefore no 'most complex lexeme', their structure is in practice constrained by two factors.

Firstly the morphological resources of the language are limited and complexity of content is, broadly speaking, paralleled by complexity of expression, which in turn restricts lexeme complexity. Second, a lexeme of whatever complexity must by definition be semantically transparent to greater or lesser degree. Now it is the case that the greater the complexity of some lexeme, the more nearly it Inclines to opaqueness and hence, rather than the formation of exceedingly complex lexemes, we tend instead to find replenishment of the stock of base elements (as for instance masrahlya discussed in para. 2.2 above).

Within the rather limited scope of our investigation we have in fact encountered no lexeme of complexity greater than the '4th degree' -- and very few of these. By 'lexeme of the nth degree' we intend one which is fomed by ' $n$ ' successive processes of substantivization or predicatisation.
3.0.1 In this section we present an overview of the structure of the lexical systems to which end illustrative examples have been cited from the appendices. (In view of the fact that these samples have been compiled on a rather impressionistic basis consequent upon the assumption of ill-definedness, and have not been tested against the intuition of native speakers, it should be understood that the following analyses are for the most part tentative.) After each example is noted first the appendix,
followed by the particular part in which the example is to be found. Thus for instance 'A7' would indicate a form listed in part 7 of appendix A.

### 3.1.0 Lexemes of the first degree

Lexemes of the first degree either derive from base elements by simple semantic shift -- while including the sense of the base predicate or substantive, or include not the sense of a base element but merely an element from one of the 'augmentive' systems -- that is, a system whose members are 'included' with a sememe from DBs or DB p , or with a lexeme, to give either a lexeme or, in the latter case, a more complex lexeme. Lexemes of the former sort will be termed type A and those of the latter type B .

Type B lexenes tend to be expressed by measures which typically express the same augment in configuration with a base element, as the examples will make clear.

### 3.1.1.0 The system Is

Lexemes of type A are backed by the configuration $/ \mathrm{DBs}(\mathrm{x}) /$ as:-
3.1.1.1 Lexemes of type $B$ fall into the following sub-types:-

Type Ba; having a configuration in DSu
Type Bb; " " " " DAk
Of type Ba the following are attested so far:-

| i) | DSu (Inst) | as | Ls (mitras:bolt) | ....B9 |
| :---: | :---: | :---: | :---: | :---: |
| ii) | DSug ( $\mathrm{Pl}_{\mathrm{a}} \mathrm{ce}$ ) | as | Ls (manjam:mine) | ....B7 |
|  | See also B5 |  |  |  |
| iii) | DSu(Veh) | as | Ls (karrãka:dredge) | ...B5 | Of type Bb only DAk (Occpn) is attested:-

Ls (rahib: monastic)
See also B4

Type A lexemes are backed by a configuration in DBp, as:-

$$
\frac{I p}{h / D B p\left(I d f^{\prime}: \text { push away }\right)}
$$

See also: A10, B1, B3
3.1.2.1 Predicates of type $B$ may be subdivided as follows:Type Ba those backed by a configuration DAk

Type Bb " $\quad$ " " $\quad$ DSlr (1)
Of type Ba the following elements are attested:-
i) $\mathrm{DAkp}^{\text {(Dir) as }}$ See also: $\mathrm{A} 11, \mathrm{Lp}(3 \mathrm{nzr}$ : compete) $\ldots \mathrm{A}$
ii) DAk (Exten) as Lp (qahhär: conquering).. $B 4$

Of type Bb only DSIr (warä'a: behind) is thus far attested, as:-
Lp ( 3 wry: concealing) ...A8

### 3.2.0 Lexemes of the second degree

From lexemes of the first degree, or from base elements, may be formed lexemes of the second degree, commonly by the attachment of an augent to these former, more rarely by multiple semantic shift.

From each base or first degree substantive may be formed a second degree substantive and a second degree predicate, and similarly for a base or first degree predicate.

The second degree substantive element-systems are $\mathrm{Ls}($ ubstantivized $) \mathrm{p}$ (redicate) and Ls(ubstantivized) $s$ (ubstantive).

The second degree predicate systems are $L p$ (redicatised) $p$ (redicate) and $L p($ redicatised) $s(u b s t a n t i v e)$.

Possible expansions are then as given in Fig. 1 below.

(1) On DSIx see $/$ of chapter 8 .
section I

The configurations attested for this lexeme comprise either two terms (Type A) or three (Type B). Each lexeme of type A has an augment in DSu, of which the following are so far attested:-
i) DSu (Inst) as $\quad \mathrm{Lsp}$ (mitqab: drill) ...B9 See also: B2, B5, B11
ii) DSug (Place) as Lsp (fawwara: fountain)...B5 See also: B7, B8, B12
iii) DSu (Indiv) as Lsp (jummä': aggregate)...B6 See also : B2, B4-7


See also: B8
v) DSu (Veh) as Lsp (Ēawwāṣa: submarine)...B5
3.2.1.1 Each type B lexene comprises as part of its configuration the element DSu (Indiv). On the basis of second augment types we may make the following sub-divisions:-

Type Ba configurations having augment in DAk
Type Bb " " " " DCm
Of type Ba the following are attested:-
i) $D A k$ (Mxten) as Lsp (zafüf: ostrich) ...B3

See also: B2, B4-6, B11
ii) $\mathrm{DAk}(0 c c p n)$ as $L s p$ (qawwän: manager) ...B4

See also: B2, B4, B5, B11
Of type Bb the following are attested:-


```
iii) DCmp (Causn) as Lsp(fazza, a: one who
    inspires fear) ...A7
```

See also: 811
iv) $\operatorname{DCm}(\mathrm{Dyn})$ as Lsp (dāsir: propeller)...B1
See also: B2, B11

### 3.2.2.0 The Lpp system

The configurations attested for this type are all of two
terms. These may be broadly subodivided as follows:-
Type A: configurations with an augment in DAk


Type C comprises the sub-types:
Ca: configurations with an augment in DSIr

| Cb : | 11 | " | " | " | " | DD1r |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Cc: | " | " | " | " | " | DT1r |
| Cd: | " | " | " | * | " | DAP |

3.2.2.1 Of type $A$ the following elements are attested:-
i) DAkg(Recip) as Lpp (6jld:fight w/-swords)
$\mathrm{h} / \mathrm{Lp}$ ( 3 jld : fighting)//...// $/$
DAkg (Recip)/ ...A11
ii) DAk(Exten) as:-
$\operatorname{Lpp}($ rakūd : swift $) / \ldots$ /
$\mathrm{h} / \mathrm{DBp}$ (rkd: racing) $\sim$ DAK (Exten)/ ...B3
iii) DAks (Dir) as:-

Lpp (3nfr: avoidance)/.../
h/DBp (nfr: flight) ~ DAkp (Dir)/ ...A8
See also: B4, B10
iv) DAk(Itn) as:-

> Lpp (6b'd: following at regular intervals)
> $h / D B p\left(B^{\prime} d:\right.$ distance $) \sim D A k(I t n) / \quad \ldots A 11$

3.2.2.3.2 of type Cc is attested:-
i) DPIr (Inst) as:-
$\operatorname{Lpp}(8 \mathrm{hdy}+\mathrm{bi}:$ take as a model)/...)
h/DBp (8hdy: guide rightly) ~ DTIr (Inst)/ ...C1
3.2.2.3.3 of type Cd is attested:-
i) $\mathrm{DAP}(\mathrm{I}-\mathrm{R}-0)$ as:

Lpp (Ijbn-'an: be too cowardly for)/.../
h/DBD (Ijbn: cowardliness) ~ DAr (I-R-0) / ...C7
3.2.3.0 The Lss system

The configurations attested for this type comprise either two terms (Type A) or three (Type B).
3.2.3.1 Of type $A$ the following elements are attested:-
i) DSug (Place) as:-

Lss'matban: strawstack)/.../
h/DBs (tibn: straw) DSug (Place)/ ...B7
See also: B12
ii) DSu (Inst) as:-

Lss (mi' bar: needlecase)/.../
$h / \underline{D B s}$ ('ibra: needle) ~ DSu (Inst)/ ...B9
iii) DSu (Veh) as:-

Lss (bakkira:steamboat)//
h/DBs (bukkar: steam) n DSu(Veh)/ ...B2
iv) $\quad \mathrm{DSu}$ (Indiv) $a^{\text {s:- }}$

Lss(sã'ida: tributary)/.../
h/DBs (sā'id: forearm) n DSu (Indiv)/ ...B2
3.2.3.2 All type $B$ configurations have as one of their augments DSu (Indiv). The second augment is drawn from DAk, of which the following are attested:-
i) $D A K$ (Exten) as:-

```
Lss(tallāja: iceberg)/.../
h/DBS (talj: snow/ice) ~ DAk (Bxten) ~ DSu(Indiv) /...B5
```

ii) DAk(0ccpn) as:-

Lss (qawwās: bowmaker)/.../
h/DBs( Qaws: bow) $\cap$ DAk(dccpn) $\cap \mathrm{DSu}($ Indiv) / ...B4

### 3.2.4.0 The Lps system

The configurations attested for this type comprise either one term (Type A) or two (Type B).
3.2.4.1 Of type A we may instance:-

```
Lps (damū': watering)/.../
h/DBs (dam': tears)/ ...B3
```

See also: A7, A14, B12
3.2.4.2 Of type $B$ the following elements are attested:-
i) DAkg(Recip) as:-

Lps (6, kW: fratemise)/.../
$\mathrm{h} / \mathrm{DBs}($ 'ak: brother) $\sim$ DAkg (Recip)/ ...A11
ii) DAk (Evin) as:-

Lpg(6bdw: pose as a bedu)/.../
h/DBs(badu) $\cap$ DAk(Evin)/
iii) DAkp(Dir) as:-

Lps ( $3 w j h:$ facing)/.../
h/DBs(wajh: face) $n$ DAkp(Dir)/ ...A8
iv) DAkg(Refl) as:-
$\frac{\text { Lps (10dbr: tuming the back)/.../ }}{\mathrm{h} / \mathrm{DBs} \text { (dubr: back) }}$ D DAkq (Refl)/ ...A14

## 3. Lexemes of the third degree

3.3.0 From each lexeme of the second degree may be formed substantives and predicates of the third degree. The possible range of third degree lexeme types is shown in fig. 2, with which fig. 1 should be compared.


### 3.3.1 The Lpsp system

The configurations attested for this lexeme are of one tern only, as for instance:-

Lpsp (3hdw: giving a present)/.../
h/Lsp (hadiya: gift)//.../// /
See also: A7, A10. A14

### 3.3.2.0 The Lssp system

The configurations attested for this lexeme comprise either two tems (Type A) or three (Type B).
3.3.2.1 Of type A we may instance:-

Lssp(midfa'I: artilleryman)/.../
h/Lsp (midfa': gun)//...//n DSu (Indiv)/
3.3.2.2 of type $B$ we may instance:-

Lssp(wassä: seller of embroidered fabrics)/.../.....B4
h/Lsp(wasy: embroidered fabric)//...//n
DAk (Occpn) n DSu (Indiv)/

### 3.3.3 The Lppp systera

Only one instance of this lexeme is so far attested, namely:-
Lppp(mus̈arrad:neglect)/.../
h/Lpp(2srd: driving away)//.../// /
h//DBP (Srd: fleeing) $n$ DCmp (Causn)//

### 3.3.4 The Ispp system

The two examples attested for this lexeme have identical
configuration types, as instanced by:-
Lspp(nașiha:sincere advice)/.../ ...B13
h/Lpp(ngh: advising sincerely) $n$ DCm(Sff) $\cap$ DSu (Indiv)/
See also: B12
From the example given it will be apparent that a further possible configuration set might be:-

```
\(\operatorname{Lspp}(x) / \ldots /\)
    \(h / \operatorname{Lpp}(x) \wedge\) DSu ( \(x\) )/
```

where DSu would have (say) the values (Inst) or (Place).

### 3.3.5 The Lpss and Lsss systems

Although no instances of either of these lexemes have thus far been attested, the type is not excluded, even if rather irprobable.

Consider for example a lexeme Lss expressed on maF'aL or mi F'al (see parts 7 and 9 of Appendix B). From maF'al we might find a verb taMaF'af ${ }^{(1)}$ which would express the configuration set:-

Lpss (2mf'l)/.../
h/Lss (mar'ai)//...// /
$\mathrm{h} / \overline{\mathrm{DPs}}(\mathrm{x})$ ค DSu (Place)//
From mi. F'al we might form a substantive miF'ali having the configuration set:-

```
Lsss (miF'ali)/.../ + \(\mathrm{DHa}(\) Male \()\)
\(\mathrm{h} / \mathrm{IBs}\left(\mathrm{miF} \mathrm{maL}^{\prime}\right) / / \ldots / /\) n DSu (Indiv)/
    \(\mathrm{h} / \overline{\mathrm{DBs}}(\mathrm{x}) \sim \mathrm{DSu}\) (Inst) //

\subsection*{3.3.6 The Lpps system}

In each attested instance this lexeme is backed only by a one tem configuration, as:-

Lpps (2snf: composing)/.../
h/Lps(2snf: classifying)//...// /
\(\mathrm{h} / \overline{\mathrm{DBS}}\) (sinf:sort)// ....B11
See also: A10, B12

\subsection*{3.3.7.0 The Lsps system}

The configurations attested for this lexeme comprise either two terms (Type A) or three (Type B). These latter may be subdivided as follows:-

Ba: configurations having an augrent in DCm
Bb: " " " " " Dak

\subsection*{3.3.7.1}

Type A configurations have an augment in DSu of which the following are attested:-
(1) Compare the not entirely unrelated tamaghab: adhere to a religion -- an example in fact of Lpsp.
(2) Corapare midfa'I in 3.3.2.1 above.
i) DSu (Inst) as:-

See also: B9
ii) DSug (Place) as:-

Lsps (musattan: winter residence)/.../
\(h / L p g\) (2stw: passing the winter) \(/ / \ldots / / \sim\)
DSug (Place)/
\(\mathrm{h} / / \mathrm{DBs}\) (Bitä': winter)// ...B12
3.3.7.2 of configuration type Ba we may instance:-

Lsps(sahūr: meal before daybreak)/.../
\(h /\) Lps ( 5 shr: eating before daybreak) //...///
DCm(Eff) \(\cap \operatorname{DSu}(\) Indiv \() /(1)\)
h//DBs (sahar: early morning)/7... (1)
...B3
of type Bb is attested:-
Lsps (muşawwir: creator)/.../ ...B11
h/Lps (2swr: fashion)//...//~ DAk (Occpn)n
DSu(Indiv)/
\(\mathrm{h} / \mathrm{hBs}\) (süra: form)//

4 Lexemes of the fourth degree
3.4.0 From lexemes of the third degree may be formed substantives and predicates of the fourth degree. The set of possible expansions is as siow in the diagran below, which should be compared with figs. 1 and 2. (For Fig. 3 please see p.190)
(1) A doubtful example since it is possible that tasahhar is derived from sahur rather than sahar.


Although many if not all of these types may occur in theory, only two have been attested so far -- namely, Lppps and Lspps.

\subsection*{3.4.1 The Lppps system}
```

Only one instance of this type is so far attested:-
Lppps (mușawwar: illustrated)/.../ ....B12
$\mathrm{h} / \mathrm{Lppg}(2$ swr: representing $) / / \ldots / / \sim \mathrm{DCm}$ (Eff) $/$
h/Ips (2swr: fashioning)//
h//TDBS (sūra: form)///

```
3.4.2.0 The Lspps system

The configurations attested for this lexeme comprise either one term (Type A) or two (Type B). These latter may be subdivided as follows:-

Ba: configurations having an augment in DAk
Bb: " " " " " DCm
3.4.2.1 of type \(A\) we may instance:-

> Lspps (muṣawwar: photographer's studio)/.../
> h/Lpps (2swrs representing)//...//n DSug (Place)/ /
3.4.2.2 Of type Ba we may instance:-

Lspps(musannif: author)/.../ ...B11
h/Lppg (2gnf: composing)//...//~DAk(Occpn) \(\cap\)
\(\mathrm{h} /\) /hos (2snf: classifying)///.../// //
\(\mathrm{h} / / / \mathrm{DB}\) (sinf:sort)///
Of type Bb is attested:-
Lspps(musannaf: literary work)/.../ ....B11
h/Lpps (2snf: composing)//...// \(\sim\) DCm (Eff) DSu (Indiv)/
3.5 Iittle need be said of the structure of these systems. The only point to note is that, in addition to the two dimensions of analysis envisaged for the Base systems, we will here have a third which will reflect the different types of configur ation giving some particular set of lexemes.

\section*{Chapter 10}

\section*{Verbal systems of the Adherent component}

Introductory
0.0 Within the context of the present study an examination of the system of Aspect and systems related thereto presents considerable difficulties, in that the variety of second degree verbal measures (with which we are here mainly concerned), and the variety of syntactic structures into which they enter, are such as to merit a separate study in themselves.

Thile not wishing to minimise the difficulties attendant on a satisfactory description of the verbal system this inherent complexity has in the case of Arabic - and similarly in respect of other Semitic languages, been compounded by a certain inadequacy of treatment, both anong Eestern and Festern grammarians, older and more modern.

These inadequacies fall broadly into three types:
First, there is the failure in the Eastern tradition to recognize that the primary basis for contrast in the Arabic system is aspectual rather than temporal. (See for instance Howell, paras. 403 and 404, Wright, 1. 77Rem a).

Second, the failure of the Festern tradition - while indeed tending to recognize the non-temporal basis of the system, to abandon more completely the categories of "classical" grammatical theory. We would in particular draw attention to their treatment of the so-called "Jussive" measures, and their neglect of the crucial question of the morphomsyntax of "stative" verbs.

Thirdly, the failure of the more modern grammars of the literary language to point out certain differences in contemporary usage
when contrasted say with those of the Qur'ān. (See for instance the relevant sections of Cowan, Nahmad-Haywood, MECAS.)

Two simple examples should suffice to demonstrate this last point:
Common in the Qur'ān is the use of a mādI measure to express a state in a context such that the English present tense is required in translation. For instance:-
1) mā 'alimtu lakum min' 11 ähin ḡayrí (1) This use is much diminished in modern texts.

Also common in classical texts but rare in more modern is the use of an apocopate: majzūn verb form in positive conditional clauses, although there is evidence for its use in such clauses with a more strictly future significance. (See Beeston op.cit. p105 and MECAS Ch.XXIV).

Western grammarians are in fair measure agreed that, whatever modifications may have appeared subsequently in the various languages, there has been at least one stage in Semitic when the primary contrast has been between completed event or state and incomplete. (See for instance Moscati 1969, paras. 16.28-32 and bibliography, Gray 1934, paras. 358-65) and for Arabic in partica ular Meish 1957, p170ff).

An internal logic of this nature seems on first sight rather similar to that found in the Slavonic languages. Further examination, however, suggests that the differences between the two systems are more important than their similarities. (2)

Characteristic of the Russian system is that "stative" verbs do not occur save in configuration with "imperfective" aspect.
(1) neg: know(Is-act-comp): for-you(mp): of:god(sg): other than-me I know of no god for you other than myself. (qur'ān 2839)
(2) For a contrastive account see Kuxylowicz 1973

For the Semitist this is of interest in two respects:
First, in certain Semitic languaees - as for instance Biblical Hebrew, and to a lesser extent CA (for the abbreviations CA and SA see para. 0.0 of chapter 5), stative verbs incline to configuration with the "perfective" or "complete" aspect to the exclusion of "incomplete". This is instanced by example i) above and by the Biblical Hebrew:-
ii) wayyömer yhwh 'el-qain 'ē hebel 'āhikā wayyömer lō yäda'tI hวšōmēr 'āhr 'ānōkI

However in SA many stative verbs occur both in mādi and mudāari' measures, which suggests that, whatever the internal logic of the SA system may be it is other than that of Russian and, perhaps, (since we have not gone into the question in any detail) different from that of CA.

Moreover if stative verbs may occur in either measure - when not having the sense of "entering into a state", then it would sean that a contrast "complete vs incomplete", if understood as analogous to the Russian system, cannot constitute an entirely adequate theory of the internal logic of the verbal system of SA.

\section*{1} The system As (pect)
1.0.0 An interesting exception to the customary claim that the verbal systern of Arabic (and Semitic) is founded on the contrast "complete vs incomplete" is Beeston 1970 who notes that( p 76 ) "the semantic contrast between suffix and prefix set (of the verb)... depends on whether the predicate is envisaged dynamically as depicting a change from one situation to another, or statically as depicting a single, ideally 'frozen' situation."
(1) and-said(3ms-incomp): the Lord: tomCainswhere:Abel:brothen you: and-said-he:neg:know( Is)comp):int-keeper: brother-me: I The Lord said to Cain "Where is Abel your brother". He answered "I know not, am I my brother's keeper ?" (Gen. \(4{ }^{9}\) )

As an instance of this duality contrast the two foms
＇araftu in the following examples：
iiia）waqad yastag̈ribu qawli＇annI＇araftu biwãsiṭati l－kātibi 1－＇injiliziyi sayyida l－＇arabi 1－＇akbara
famà labila ba＇du man＇arefūni hattä
iiib）wa＇a＇n⿹勹口

In the first of these the form might be rendered into English by ＂Igot to know＂（dynamic），and in the latter simply by＂I know＂ （static）．

However it will be noted that the verbs cited by Beeston in support of his analysis are either stative（i．e．（9hmr）： be red and（ \(I^{\prime} 1 \mathrm{~m}\) ）：know），or verbs which may be seen as depicting an ongoing process（1．e．（Irkb）：ride，（4qwm）：reside，and（Ihkm）： govern）．Moreover the verb（I＇rf）of examples（iii）is also stative．

If however we set up a similar contrast using a verb which is neither stative nor indicates a process，a somewhat different pattern results，as for instance：
iva）．．．faḡarasa 1－fallāḥu 1－＇aß̆jāra ．．．
ivb）．．．fa＇asqaţh－＇asjāra 1－lati ḡarasahā 1－fallāhu．．．．（2） As with examples（iii）we have the same verb garasa occurring both in a main clause and a relative clause．In（iva）we would translate＂the famer planted．．．＂（dynamic），but the latter（from the context in which it occurs）requires＂．．．which the farmer had planted．＂

\footnotetext{
a）and－may：be strange（ \(3 \mathrm{~ms}-a c t-i n c o m)\) saying－my：that－I know （Ismcom）：throughomedium：themwriter：themenglish：lord：the Arabs：theogreat＂ly saying that I got to know the great lord of the Arabs through the medium of the Finglish writer may seem strange＂
b）and－diotuxb（ 3 memaet－com \()\) hins in regaxd to：that：thatseroup－ of－those：know（Igmeom）：ins the－oppositionsGerman＂And what disturbed him in that nespect was that a group of those who were in oppeeition－were German．＂and－not tarry（3ms－act－com）
（2）Footnote contimued on p． 196 some：who：know（3mp－act－com）－me： until．＂Some of those who knew me lost no time in．．．＂
}

Thus, while there is a sense in which one might regard the Englishplumperfect as indicating a "static" aspect as well as past-in-past this would not seem to be the 'unmarked' interpretation (see for instance Leech 1971 pp42,43). Rather one would be inclined to interpret both events as "dynamic", with the latter merely sited in the more remote past.
1.0.2 The question then arises, is it better to envisage - with Beeston, a pair of aspectual contrasts "dynanic" and "static" or, given that there seems, on the basis of example (iv) and many others, to be some blending of the two notions, and given that both are expressed in a unitary expression mode, would it be more satisfactory to envisage but one aspectual concept admitting of varying interpretation according to context ?
1.1.0 A note on Semitic verbal diachrony

Some light may be shed on the problem posed in para.1.0.2 by considering the question of what diachronic processes could have given rise to this duality.

A number of Semitists are of the opinion that common Semitic possessed a prefix conjugation of the measure yar'uL, having a "preterite" or "completive" sense, and a suffix conjugation on the measure Fa'il having a "stative" or "permansive" sense (see Moscati 1969, para. 16.31). The question of what if any conjugations accompanied these may be ignored for present purposes.

Footnote (2) continued from previous page 195:
a) then-plant (3ms-act-com): the-famer: the-trees "Then the farmer planted the trees".
b) then-water(3fs-act-com)+she: the-trees: which:plant(3ms-act-com): the-farmer "...and then they(the clouds) watered the trees which the farmer had planted."

Scholars who are of this opinion then assume that in some Semitic dialects - including Arabic and Hebrew, the suffixed measure later spread and infarying degrees cane to supplant yar'uL. 1.1.1 In distinction to Arabic and Hebrew, Akkadian retains both of these putative common Semitic measures with something like their "original" function, and certain of the syntactic structures into which forms on these measures enter provide interesting evidence as to how the changes in Hebrew and Arabic might have occurred. (See particularly Rowton, 1962).

Consider for instance:
v) eqel bit abiya sta i甘甘tu ūmI mādūtim sabtanu PN... ibqurannima (field:house:father-my:which:since:days:many:hold(Ip-perm): PN:claim(3msmpret)-me. "The field of my family's house, which we have held for a long time, PN has claimed from me")

Note first of all that the "permansive" verb sabtānu which occurs in a relative clause, and which is essentially tireless, tends to require translation into Finglish through the perfect tense. The same is frequently true of Arabic mādi forms in relative clauses, as for instance:
vi) ....l-ladina 'ajazati z-zirâ'atu 'ani 'atikdänihim

On Beeston's analysis this latter verb would be said to express "static" aspect.

Now the form ibqur - which is also translated by the perfect tense, can, within Beeston's framevork, be regarded as expressing "dynamic" aspect, and such seems commonly to be the case with
who(mp): unable(3fs-act-com): the-agriculture:in regard to: eraploying-them "...whon agriculture has been unable to employ"
verbs on this measure. Let us then hypothesise that this, rather than the expression of "completion", was the primary function of the common Semitic yoriuh, and that the diachronic process in Arabic consisted of the spread of mādi forms - perhaps from subordinate clauses since the "static" interpretation seems more comon there, especially in relative clauses, supplanting for the most part the earlier yaF'uL. (See parts 1 and 2 of Appendix E).

For such a process to occur it would seem to be a necessaxy precondition that the hitherto distinct aspectual contrasts "dynamic" and "static" should become unstable and be replaced by some concept more or less embracing the two. If this is so then there is a strong likelihood that on a synchronic basis we should regard "dynamic" and "static" in the mädi measures as variant interpretations and not distinct internal logical concepts.

\subsection*{1.2.0 The Apocopate verbal measures}

Semitists who take the position stated in para. 1.1.0 tend to regard certain of the apocoptte verb measures as remnants of the common Semitic yaF'uL etcetera. Mhis is commonly held to be true of measures occurring with the negative particle lam, and those - more particularly in Classical Arabic, appearing in hypothetical constructions introduced by the particle law, as for instance:
viia) lam yajlisi s-suayku fi 1-ḡurfati
in
viib) yajlisi sh-sbayku fi l-ḡurfqti...
The sane measures also occur in "jussive" and negative imperative clauses, as:
```

viic) liyajlisi s-sֻayku...

```
viid) Iă tajlisi fI I-ḡurfati

However it is usually denied that there is a diachronic link between the verbs in the first pair and those of the second, on the ground that (to quote Driver) "...it is inconceivable that a preterite and a jussive form...can have a common origin or indeed be in any way connected with one another...since the description of a part event differs in kind toto caelo from a command which in its very essence relates to future time". (1936, pp19,20).

But if for "preterite" or "completion" we substitute the notion "change from one state to another" (Beeston) a quite different picture emerges since the "jussive" and "imperative" functions are by no means incompatible with the latter concept. Thus:
(a) The old man not (cause a change of state in regard to eitting)
b) If the old man had (cause a change of state in regard to sitting)
c) Let the old man (cause a change of state in regard to sitting)
d) Do not (cause a change of state in regard to sitting)
1.2.1 From the foregoing two inferences may be drawn. First, we argue that the examples (vii) support our hy othesis that the common Semitic measures yap'ul and Fa'iL served to express a contrast along the dinension "dynamic vs static", and hence supports our argument for a unitary concept behind the maḍ measures.

Secondly we may infer - albeit rather tentatively, that this "dynamic" element is synchronically relevant for the apocopate measures. This claim must be made with reservation since it is clearly possible to argue that the notion "jussive" say is synchronically a concept of internal rather than external logic.

\subsection*{1.3.0 A part structure for the sygter}

On the basis of the discussion thus far we will make the
following assumptions about the system As. First we assume that the mäd measuces express only one concept embracing both dynamic and static facets. The differences between classical and later usage mentioned in para. 0.0 suggest that the range of this concept has become somewhat namrower. (Beeston, on the basis of his examples of qad 'alimnā in 1970 , \(p 78\), would presumably not agree - see his example (iii). Our samples, although limited in depth, produced no examples of stative verbs functioning thus, with the exception of those noted below).

Let us then on the analogy of the Russian system term the sememe of classical Arabic Perfective', and, to differentiate, that of SA 'Completive'. Note that certain verbs, as for instance lays: negative and 'asā: perhaps, are taken to express the former element, which entails that all three elements form part of our synchronic system. These verbs are exceptional in having no mudāari' form.

Since the term 'dynamic' has already been used for a semene of \(D \mathrm{Cm}\), the change of state taken to be expressed by the apocopate forms will be termed "Translative'.

Since As(Trans)lative is taken not to stand in paradigmatic contrast with As (Comp)letive and As(Perf)ective - assignment of the former being conditional upon the assignment of other elements, it is assumed that we are here dealing with a system of type 1b (see para. 2.1.1 of chapter 5), and the system thes far will therefore have the structure: (1)

(1) Please see p201 for footnote
1.3.1 From the foregoing discussion it should be apparent why verbs on the measure Fa'iL listed in Wehr as having the sense "be or become \(\mathbf{x}^{\prime \prime}\) are analysed as expressing DCmq(Eff) rather than \(\operatorname{DCm}(0-E)\) or both. The "be" and "become" are taken to reflect the two interpretations of Ash(Corap).

\subsection*{1.4 The sememe As(Dur)ative}

The verbs of examples (iv) should be compared with:
(viii) wayağgrusu l-fallāhu 1~aşjāra fi kulli sanatin

Whereas in the former case we are concemed with an event which is complete, in the latter the event is iterated.

If on the other hand the verbs of examples (iii) are compared with:
(ix) 'a'rifu 'an 'amānati hādā s-sea'bi mä qara' tuhu fI 1-kutubi (3)
we find that the contrast is between completion and the existence of a state.

Given that in both (viii) and (ix) we have a verb on a muḍāri measure expressing differing modes of duration we might conclude that once again we are dealing with a unitary concept interpreted variously - although this time perhaps more according
(1) Footnote from p. 200 previous:

Note that it might be preferable to regard verbs such as lays as expressing the conmon Semitic "stative" aspect, in which case the system would be presumed to have the structure:

where the verbs would be taken to be incompatible with Asi(Trans) concerned.
(2) and-plant( 3 msmact-incom) : the-farmer: the-trees: in: every:year "The farmer plants the trees every year"
(3) know(Is-act-incom):in regard to: trustworthiness: this:people: what: read(Is-act-com):in:the-books "I know, of the trustworthiness of these people, what I have read in books"
to the value of the particular circumstance expressed.
Let us then posit as the fourth member of the system the element As (Dur)ative. Since this sememe is taken to stand in paradigmatic contrast with each of the first three the system will now have the structure:


\subsection*{1.5 The sememe As(Prog)ressive}

The pair of examples:
xa) wabaynā kāna sākiran liş-sืayki...
xb) wafI kulli yawmin kāna yas̈kuru liş-šayki
are congruant in that each has the form kāna which we take to indicate an event occurring in past time (see para.2.2.0). Against this we have the form säkiran contrasting with yaskkuru where the latter is isomorphic with yas̄rusu of (viii). This last being taken to express \(A s(D u r)\), from the context of \(x b\) ) we may assume that yaskuru functions similarly.

The context of xa ) differs from that of xb ) in that the former relates to an event actually in progress, as against the iteration of the latter, which allows us to conclude that the contrast "Bäkiran vs yaskuru" corresponds to a semantic contrast "progressive vs durative", and therefore that As(Prog)ressive is a fifth member of the system.
(1) and-while:be(3ms-act-com): thank(ap-ms): to-the-old man:
(a) "Whilehe:was thanking the old man"
(b) and-in:every:day:be( 3 ms-act-com): thank(Is-act-incom): to-the-old man: "Every dayhe would thank the old man."

It is well known that stative verbs in English may not ocour in configuration with the progressive aspect. That is, the syntagms "I am knowing" or "I am believing" etc. are not acceptable. This restriction seems to be founded on the external logical principle that a state is of its essence "in progress" and hence, a. further sememe indicating precisely this can only be redundant.

Therefore, while it does not necessarily follow that internal logic will be in conformity with external, we might anticipate that, if we are correct in identifying a sememe 'progressive', it will not occur with stative predicates.

This prediction appears to be fulfilled, in that the "active participle" and muḍãri'measures (of which saảkiran and yaskuru are instances) are to some extent interchangeable when the predicate is a true state, as for instance:-
\(x i\) a) 'innaka'ālimun 'an satanāma...
xi b) 'innaka ta'lamu'an satanāma (1)
Note that the maṣdar, when expressing a 'circumstance' (i.e.
when not expressing DSu (Indiv) - see 1.5 of chapter 7) is taken to be the case of non-assignment of aspect, as for instance the form 'Imāni in:
xii) ta'ajjabtu min'Imāni hādā l-jIli bihurriyati r-ra' yi (2)

\subsection*{1.6.0 Adjectives}

Characteristic of stative verbs when an "active participle" is employed to express \(\mathrm{As}(\operatorname{Dur})\) is that their syntax is identical with that of "adjectives" when occurring in a "predicative" rather
(1) (a) nf-you: know(ap-ms): that: fut-sleep(2ms-act-incom) (b) " know(2ms-act-incom): (as above):

Both: "You know that you will sleep"
(2) surprise(Is-incoah-com):at: belief(mas): (remainder as per iiib) "I was surprised at that generation's belief in freedom of opinion".
than an "attributive" construction. Compare for instance:-
xiii a) kāna r-rajulu jāhilan
xiii b) kāna r-rajulu za'lāna
Furthermore, examination of the lexicon shows that certain stative verbs will have a form of the "participial" measure Fä'il which is synonymous with a further form on the measure Fa'IL. For example:-
'ālim vs 'alIm: knowing näṣị vs naṣih: sincere
Of this latter measure several reaarks may be made. First, there are certain verbs whose "passive participle" on the measure map'ŭ is in some contexts interchangeable with a form on Fa'IL. Anong these are:-
maqtūl vs qatil: killed \(m_{\mathrm{a}}\) znūn vs zanin:suspect(ed)
From a diachronic point of view this latter usage is unremarkable since the measure Fa 'IL is regular for the passive participle on the first measure in Aramaic. (See Moscati 1969 paras. 16.68/9 and Rosenthal 1961 para.40).

Thirdly, Fa'il is a cormmon - if not the most common measure for adjectives in Arabic.

The burden of this argument is then to suggest that, since the correspondences between participial forms of stative verbs and adjectives are so striking, and since the former tend to be interchangeable in predicative contexts with their mudāari' counterparts (as per examples xi), there seens no reason in such contexts to analyse adjectives as other than stative verbs expressing a particular type of configuration.

\footnotetext{
a) be( \(3 \mathrm{~ms}-\mathrm{act}\)-com) : the-man: ignorant (ap-ms)
"The man was ignorant"
b) be(3ms-act-com): the-man: angry "The man was angry"
}

Hence both jähilan of xili a) (by analogy with 'ālimun of xi a), and hence za'lāna of xili b) are taken to express As (Dur). (1)
1.6.1 This analysis does however appear to entail that an adjective when functioning attributively must also express this sememe, which intuitively as least does not seem at all satisfactory. One solution to the problem may be had by appeal to the dictum "meaningfulness implies choice" (See Lyons 1968 9.3.3). That is, the assignment of As (Dur) in such contexts must presuppose the possible assignment of some other semene in As. But since such assignment does not seem admissible we must conclude that no member of As is present in encodings of this type.

The difficulty with this argument is that it entails in such contexts a configuration: DBpx \((y)+D C m g(E f f)\), where DBpx \((y)\) is some state, which configuration is also taken to underlie the masdar on the measure \(\mathrm{Fa}{ }^{\prime}{ }^{\prime} \mathrm{L}\), , as for instance za 'al:annovance (see xiii b) and compare taz'Il; causing annoyance).

Of course it is not in principle difficult to arrange the rule schema so as to select each form in the appropriate environment, but one is stiml left with the suspicion that something has been overlooked. Thus the analysis proposed above must remain rather tentative.

\subsection*{1.7 The structure of the system}

Since the semene \(A s\) (Prog) is taken to have the possibility of contrast with each of \(\mathrm{Asg}(\) Trans \()\) Ash (Comp) and Asi(Perf) it will form part of all three sub-systems.
(1) Compare also such forms as munbatily: level and musayyin: dishonourable.

In addition we assume first that the system is adherent, since none of its elements appears to have the capacity for inclusion in a lexeme and second, that it is stable.

Hence the sub-systems may be stated thus:
AAsg \(=\{\) Trans, [Dur, Prog \(]\}\) AAsi \(=\{\) Perf, [Dur, Prog \(]\}\)
AAsh \(=\{\) Comp [Dur, Prog \(]\}\)

Modification of Aspect
2.0 .0

There is in Arabic a series of morphemes which indicate the temporal relationships between two or more clauses. For instance in the example:-
xiv) waqaftu marratan bibābi maktabatin...fa' akadat
'ayni kutayyiban
the morpheme fa of fa'akadat indicates that the event of the second clause occurred subsequently to that of the first, and moreover occurred fairly closely upon it.

In imposing a temporal ordering on events or states these elements can be understood to modify aspectual sememes which merely note the incidence or persistence of some circumstance.

Since a discussion of the structure of this particular system is not our immediate concern, we will for the purpose of what follows simplyaassume that anong the adherent content systems is one A M(odifier of) \(a(\) aspect \() a\), which is taken to be stable and one of whose members is AMaa(Next) expressed by fa, and it will also be assumed that the elements of Alaa may be determined by the usual techniques of substitution etc.
(1) stop(Is-act-com): occasion(fsmacc):at-door: bookshop... then-take(3fs-act-com): eye-my: booklet:
"I once stopped by the door of a bookshop...and my eye was caught by a booklet..."
2.0.1 The type of structure instanced by xiv) can be regarded as unmarked, in that the sequence in which the events happened corresponds to the sequence in which they are reported on the page. However, the particular thematic structure imposed on the encoding may entail that the sequence on the page is the inverse of that in which the events occurred.

Then the verbs express AAsg(Comp) a displacement of this kind is commonly indicated by the morpheme qad. Conpare for instance example xy) below with xiv):-
xv) waqaftu marratan bibābi maktabatan waqad 'akadat 'aynI ( kutayyiban
2.0.2 Beeston (op.cit.p78) notes that the "modifying functional qad transforms a suffix set item with dynaraic aspect into one with static aspectual value". 罥保in the framework evolved in the previous section this might be restated thus; the morpheme qad resolves the ambiguity inherent in the senene AAsh(Comp) by imposing a static, pluwperfect, or perfect interpretation according to the particular predicate involved and the context in which it occurs. (Compare for instance examples iii b) and iv b).

This alternative explanation is of interest when we consider that it is not necessarily the case that qad is preposed to the second or subsequent of a string of clauses - whether main or subordinate. For instance:
```

xvi a) walaysa mina 1-'edㄱi 'an naluma d-dina 'ala dālika, faqad haqqaqa 1-islāmu lil-mar' ati makānatan fāçilatan,... wagad 'atmarat hādā l-makānatu timảrahā f 1 1-uhūdi d-dahabIyati...

```

\footnotetext{
(1) As per footnote (1) on p. 206 except for waqad. "I once stopped by the door of a bookshop, my eye having been caught by a booklet..."
}

On an analysis based on the notion 'displacement of sequence' the use of qad in these examples can only be understood as analogic extension - wich is of course quite plausible. On the other hand Beeston's account is simpler and more general, and on that account is to be preferred. The difference between them is anyway not very great since in both cases we are dealing with essentially teaporal modifications.

Let us then assume a second system of aspect modifiers, designated ANab, one of the members of which is AMab(Displ)acement.

\subsection*{2.1.0 The Sememe AMab(Hon-definite)}

The second use of qad to which we draw attention is that when preposed to a mudäri' form, as for instance:-
xvii ...yasheddu bi' anna s-sumrata qad takūnu'aktara jādiblyatan mina l-bayäḍi

In such clauses the morpheme indicates that something or other tends to be, or may be, or is sometimes the case. The sememe expressed by qad will be temed (Non-definite) - abbreviated to ( \(\mathrm{N}=\mathrm{D}\) ).
(1) a) and-neg (3ns-com): from: the-fustice: that: blame(Ip-act-incom): the-religion: on account of: that: for: verify (3ms-act-com): the-Islam: to-the-woman:status:meritorious,....:and-displ: bear fruit( 3 fs-act-com): this: the-status: fruit-her:in: the-epochs:the-golden..."It is not fair to blame this on religion, for Islam assigned to women a worthy status,... This status had borne its fruit in the golden ase..."
b) displ:announce(Ip-act-com):from:the-beginning: goals: movement-our "筲e have made the goals of our movement clear from the outset..."
(2) ...testify (3ns-act-incom): that: thembrowness: may:be(3fs-act-incom): greater: attractiveness: than: the-whiteness "...it testifies that browness (of complexion) may be more attractive than whiteness."

Although the diachronic link between this function of qad and that of expressing \(\mathrm{AMab}(\) Displ \()\) is clear they are synchronically quite distinct, for the two sememes have quite different conseqences for the encoding and hence for the expansion in that the former appears to entail the assignment of AAs(Dur).

\subsection*{2.1.1 Consideration of the sense of qad in xvii suggests that there} may be nore than a passing resemblance between this construction and the measures termed by Western grammarians "subjunctive".

These mansūb measures (i.e. inflected on the analogy of the accusative (nasb)) occur more particularly in clauses following a small group of morphemes expressing a variety of subordinate relationships, as for instance:-
xviii) la nurídu 'an nuḥājjahum bimā qarrarahu 1-'ulamā' u \({ }^{\text {(1) }}\) However in constructions of this type a mansib form never has the possibility of contrast with a muḍāri' or majzūm form. Hence we conclude, on the basis of the dictum "meaningfulness implies choice", that the former can bear no independent functional load in such contexts, and is therefore not to be understood as functionally analogous to qad when expressing ( \(N-D\) ). (Compare however the rather different use of the mansūb measures discussed in Beeston 1970 p98).
2.1.2 The sememes \(A M a b(D i s p l)\) and ( \(\mathrm{N}-\mathrm{D}\) ) are not in paradigmatic contrast since the former presupposes the assignment of AAsh(Comp) and the latter AAs(Dur). However since both are clearly modifiers of aspect and since they share the same expression mode it seems best to regard the latter also as a member of AMab.
(1) neg: wish(Ip-act-incom): that: dispute with(Ip-act-subj)-them: with-what: decide(3ms-act-com): the learned: "We do not wish to question what the learned have decided."
dispute

However since these two do not have the possibility of contrasting paradigmatically it is clear that, for present purposes at least, we are dealing with a system of type \(2 b\) (see para. 2.1.2 of chapter 5), which will therefore have the structure:

AMab


\subsection*{2.2.0 The system AMac}

Example (viii) of para. 1.4 contrasts with:
xix) wakāna l-fallāhu yaḡrusu l-'asjāra fi kulli sanatin \({ }^{(1)}\) first, in that (xix) has in addition the form kana and second, that the subject l-fallăhu now precedes yaḡrusu. Since this latter is taken to be syntactically conditioned it may for present purposes be ignored.

Semantically the two examples are similar in that both express an event which is iterated - and are therefore taken to encode instances of \(\mathrm{AAs}(\operatorname{Dur})\); they differ in that (xix) refers to an event iterated in the past.

In similar fashion example (ix) of para. 1.4 may be contrasted with:
xx) kuntu 'a'rifu 'an \({ }^{\prime}\) 'amānati hādā s-isa'bi mā qara' tuhu \(\underset{\text { I-kutubi }}{ } \quad\) (2)
(1) and-be (3ms-act-com): remainder as per example (viii). "The farmer used to plant the trees every year".
(2) be(Is-act-com): remainder as per (ix) "I knew of the tmustworthiness of these people what I had read in books". This example sexves to show the near equivalence of certain of these sememes, since one might suppose that 'araftu expressing AAsh(Comp), would also be acceptable here. With
true stative verbs there does appear to be a tendency to use
(Ikwn) plus the mudari' rather than the madi, when the latter (continued on p.211)

Here again we have a string with a member of the verb (Ikwn) and one without.

Semantically they are similar in that both indicate a state in existence but differ in that in ( \(x x\) ) this state exists in the past.

Frora the two pairs we infer that anong the functions of (Ikwn) is the expressing of a sememe (Past) which, since it also can be understood to modify sememes of aspect, is taken to be a member of a system AMac.
2.2.1 The relationship between the sememes \(A / a b o(D i s p l)\) and AMac (Past) is rather complex. Pirst of all, it will have been noted (see para. 2.0.2) that this 'displacement' is in essence neutral as to diraction. For instance the clause:-
xxi) waqad sa'altu 'anismababi fi diyā'i tilka 1'ātāari may be translated into English - if context is ignored, by either of the following:-
a) "I have enquired..." or b) "I had enquired..." Let the first of these be terned 'forward' displacement and the other 'backward'.

If the context is not adequate to the resolution of this anbiguity, backward displacement may be marked by adding Avac (Past) to the appropriate segnent of the encoding, expressed once again by some mâdi form of (Ikwn), as for instance:-
xxii) kānati 1-'umarau 1-muttahidatu qadi s̈taraṭat 'alā 'isra'ila 'an tataqayyada biqirāri t-taqsimi
(1)
and-displ: ask(Is-act-com): about: the-reason: for: destruction: those: the-remains:
"I have asked the reason for the destruction of those remains"
(2) be(3fsact-com): themations: the-united: displ: oblige(3fs-
act-com): Israel: that: bind(3fs-incoah-incom): by-decision: the-partition: "The United Nations had obliged Israel to be bound by the resolution on partition."
Footnote (2) continued from p. 210:
...is interpretable as expressing a simple past time - presumably to minimise the risk of ambiguity.
2.2.2 On the other hand, while there would seem to be no universally applicable means of indicating 'forward' displacement unambiguously, the string laqad when preposed to the verb of the first of a string of clauses seems to entail such an interpretation, as for instance:
xxiii) laqadi staraṭati 1-'umamu lmuttahidu 'alā 'isrā'ila (1) The obvious exception to this generalisation is the case where laqad is preposed to a "passive" verb, where it appears to have no function. (See part 3 of appendix \(\mathbb{I}\) ). Thus we would not agree with Beeston (1970 p103) that the string laqed is "wholly otiose".
2.2.3 The case of forward displacement should be distinguished from that where we have in effect a displacement into the 'future', as instanced by:-
xxiv) wafi hādihi l-'atnā'i yakünu l'aṭfālu qad 'ahātū bil-masjidi \({ }^{(2)}\)

Since this clause varies from:-
xxv) waff hād̄ihi 12atnä'i kāna 1’aṭfālu...(3)
only on the assignment of yakünu vs kāna, where the latter expresses Amac(Past) we may infer that the former expresses a further temporal semene \(\mathrm{AMac}(\) Future).

If however AAs(Dur) is assigned to the encoding rather than AAsh(Comp) (as in xxiv)) then (Future) if assigned at all, will be expressed by either sawfa or sa, as for instance:-
(1) perf-displ: (remainder mostly as per footnote (2) on p.211) "The United Nations has obliged Israel..."
(2) and-in: this:(during): be(3ms-act-incom): the-children: displ: surround (3mp-act-con): the-mosque: Meanwhile the children will have gathered round the mosque".
(3) kāna: be(3ms-act-com). "Meanwile the children had gathered..."
xxvi)...sawfa yahubbu matā 'azifati s-sā'atu (1)

A third variant occurs when \(A A s\) (Dur) is accompanied by the sememe (Negative) - not discussed in this study, in which case AMac(Future) is expressed by the morpheme lan and a mansūb form (see 2.2.1). Thus:-
xxvii) waläkinna tafawwuqahu...tafawwuqun waqtiyun, lan yadüma tawilan. \({ }^{(2)}\)
2.2.4 Strictly speaking the assignment of AMac (Past) specifying backward displacement renders \(A M a b(D i s p l)\) redundant, and we do in fact encounter cases where the latter is not assigned.

Note that Western granmarians (Beeston 1970 pp78-81 being an exception) have tended to regard qad as an optional extra in such clauses as xxii). So far as SA is concerned the reverse is more nearly the case.
2.2.5 The system Alac is taken then to have the structure:-

AMac \(=\{\) Past, Future \(\}\)

\subsection*{2.3.0 Limitation Rules}

In the following paragraphs we draw together certain of the restrictions on collocation of sememes either implicit or made explicit in the course of the preceding discussion.

\subsection*{2.3.1 Let the set of state predicates say in \(D B P\) be denoted by} DBpx, then:-
\(\underline{D B p x} \bullet\) 9As (Prog) 9.1(see para.1.5)
Next, let there be a subset DBpxa of DBpx comprising those
(1) ...(future): rise up(3ms-act-incom): when: draw near(3fs-act-com): the-hour: "... which will rise when the hour draws near".
(2) and-but: superiority-his:...superiority: temporary:(neg-fut) endure (3ms-act-incom): long: "But (their) superiority is temporary and will not endure for long".
predicates entering into configuration with AAsi(Perf). Then:
DBpxa \(\because\) AAsg, AAsh 9.2(see para.1.3.0)

Yoreover since this appears to be a rather restricted group having no mudaari' form we must also write:
\[
\text { DBpxa } \sim \text { AAsi(Dur, Prog) } 9.3
\]
2.3.2 From the discussion in 2.0.1 we infer that assignment of AMab(Displ) entails the assignnent of AAsh(Comp). Hence:-
\[
\text { AMab(Displ) } \quad \Longrightarrow \quad \mathrm{AAs} \text { (Coap) } \quad 9.4
\]

Again from 2.0.1 it is assumed that AMab(Displ) is not compatible with AMaa(Next). Hence:-

AMab (Displ) \(\quad\) AMaa(Next) 9.5
It also appears that AMab (Displ) is not compatible with AAsi(Perf) given the restricted range of predicates with which the latter is compatible. Hence:-
\(\mathrm{AMab}(\mathrm{Displ}) \longrightarrow\) AAsi (Perf) \(\quad 9.6\)
From 2.2 .0 we infer that \(A M a b(N-D)\) may be assigned only in conjunction with AAs(Dur). Hence:-
\[
\mathrm{A} \operatorname{Mab}(\mathrm{~N}-\mathrm{D}) \quad \Longrightarrow \quad \mathrm{AAs}(\mathrm{Dur}) \quad 9.7
\]

Pinally, \(A \operatorname{Mab}(N-D)\) is taken not to be compatible with any member of ANac. Thus:-
\[
\operatorname{ANab}(\mathrm{N}-\mathrm{D}) \backsim \mathrm{AMac} \quad 9.8
\]

\section*{Chapter 11}

The Verbal and Nominal series of the expression code theoretical discussion in sections 1-3 of chapter 3.

It is not to be understood as an atterapt to provide a comprehensive account of the Verbal and Nominal morphology of literary Arabic but rather, as a description which while not too fragmentary to permit evaluation omits more peripheral phenomena.

Thus for example the description of the Verbal series in section 1 confines itself to measures I-X, despite the fact that odd references to other measures occur elsewhere in the study. (See for instance appendix D).

Note that all the systems discussed in this chapter are assumed to be stable.

\section*{1. The Series of Verbal Systems}
1.0.0 This series can be defined broadly along the following two dimensions. First, it will comprise those systems which can be inferred as the basis for the various verbal measures. It is therefore taken not to include the systems through which case where suffixes are assigned. However/a certain measure is inflected for case, and yet in other respects corresponds closely to the verbal measures proper; that portion relating to these latter is presumed to be generated from the verbal series. This of course particularly pertains to participial measures, (1)

\footnotetext{
Aside from what may or may not be regarded as a "close correspondence", this formulation also fails to take account of the evident overlapping anong the systems of verbal suffixes and case suffixes.

For instance, there is clearly some relationship between the suffixes of mattālūna: sculptors and yumattiluna: they sculpt or between kitābāni: two books and yaktubani: they (two) write.
}

1．0．1 Discussion will be based on the sets of 2 nd degree measures listed below．The first degree measures to which they belong are given in brackets．

Set 1
\begin{tabular}{|c|c|c|}
\hline 1 & Fa＇al & （I） \\
\hline 2 & Fa＇iL & （I） \\
\hline 3 & Fa＇uL & （I） \\
\hline 4 & Fa＇＇al & （II） \\
\hline 5 & Faial & （III） \\
\hline 6 & ＇aP＇aL & （IV） \\
\hline 7 & taFa＇\({ }^{\text {al }}\) & （V） \\
\hline 8 & taFä＇al & （VI） \\
\hline 9 & \(n \mathrm{Fa} \mathrm{a}^{\prime} \mathrm{aL}\) & （VII） \\
\hline 10 & Fta＇aJ & （VIII） \\
\hline 11 & F＇aLL & （IX） \\
\hline 12 & star＇al & （X） \\
\hline
\end{tabular}

Set 4
\begin{tabular}{|c|c|c|}
\hline 1 & ar＇aL & （I） \\
\hline 2 & aF＇iL & （I） \\
\hline 3 & \(\mathrm{aF}^{\prime} \mathrm{UL}\) & （I） \\
\hline 4 & uFa＇\({ }^{\text {IL }}\) & （II） \\
\hline 5 & uFä1L & （III） \\
\hline 6 & uF＇iL & （IV） \\
\hline 7 & atara＇\({ }^{\text {al }}\) & （V） \\
\hline 8 & atarā＇aL & （VI） \\
\hline 9 & anTa＇iL & （VII） \\
\hline 10 & afta．1L & （VIII） \\
\hline 11 & aF＇aLL & （IX） \\
\hline 12 & astaF＇iL & （X） \\
\hline
\end{tabular}

Set 2
\begin{tabular}{|c|c|c|c|c|}
\hline Fu＇iL & （I） & Fa＇iL & 2 & （I） \\
\hline Fu＇\({ }^{\prime}\) & （II） & muFa＇\({ }^{\text {a }}\) & 4 & （II） \\
\hline Fü＇il & （III） & muFâ＇iL & 5 & （III） \\
\hline ＇uF＇iL & （IV） & muF＇iL & 6 & （IV） \\
\hline tuFu＇ 11 & （V） & mutaFa＇\({ }^{\text {a }}\) & 7 & （V） \\
\hline tupu＇iL & （VI） & mutaFä＇iL & 8 & （VI） \\
\hline nFu＇iL & （VII） & munca＇il & 9 & （VII） \\
\hline Ptu＇i」 & （VIII） & 碞了ta＇iL & 10 & （VIII） \\
\hline & & muF＇aut & 11 & （IX） \\
\hline stuF＇iL & （X） & mustar＇iL & 12 & （X） \\
\hline
\end{tabular}

Set 5
\begin{tabular}{|c|c|c|c|c|}
\hline uF＇ad & （I） & maF＇ü & 2 & （I） \\
\hline uTa＇＇aL & （II） & mula＇\({ }^{\text {a }}\) & 4 & （II） \\
\hline uFE \({ }^{\text {a }}\)（ & （III） & mupa＇aL & 5 & （III） \\
\hline uF＇ad & （IV） & muF＇ad & 6 & （IV） \\
\hline utala＇al & （V） & mutaFa＇\({ }^{\text {a }}\) & 7 & （V） \\
\hline utara＇as & （VI） & mutapa＇aJ & 8 & （VI） \\
\hline unPa＇aL & （VII） & munFa＇aL & 9 & VII） \\
\hline uFta＇aJ & （VIII） & muFta＇als & 10 & （VIII） \\
\hline ustaF＇aL & （X） & mustap \({ }^{\text {P }} \mathrm{aL}\) & 12 & （x） \\
\hline
\end{tabular}

Set 7
\begin{tabular}{|c|c|}
\hline tap＇il & （II） \\
\hline mupãalat & （III） \\
\hline ＇irau & （IV） \\
\hline tara＇tol & （V） \\
\hline tarä＇uL & （VI） \\
\hline ＇InPi＇ãJ & （VIII） \\
\hline ＇ipti＇\({ }^{\text {a }}\) & （VIII） \\
\hline ＇iP＇iLā & （IX） \\
\hline ＇istiF＇aL & （X） \\
\hline
\end{tabular}

\section*{1．1．0 Infixed systems－The system Via}

The structure posited for this system is based on an examination of sets 1,2 ，and 7 ．

Set 1: 1-5, 7-10 differ from set 2:2-5, 7-10. Among other things, in the altemation of the elements a and \(u\) between first and second radicals. Note that the altermation between Fä'al and Fu'iL( \(1: 5\) and 2:5) is strictly speaking between \(\bar{a}\) and \(\bar{u}\). However the parallelism between this and other pairs cannot be denied, and it does therefore seem more satisfactory to treat these vowels as a combination of \(a\) and \(u\) with a third morpheme: (Compare the discussion in 4.2 .0 of chapter 2 ).

Also, the measures Fta'aL and Ftu'iL (1.1.0 and 2.1.0) stand apart from the main group to some extent. However, on the analysis of the morpheme \(t\) see 3.1 of chapter 3.

Sets 1: 9,10 and 2: 9,10 should also be contrasted with 7: 9,10. In these examples we have a three-way alternation between first and second radicals, namely, between \(a, i\), and \(u\). Since, with the exception of sukūn, there are no other possibilities we posit a system Via=\{a,u,i.\} Sukün is regarded as the case of nonassignment from this system in particular, and other systems in general. (sukūn: quiescence, i.e. the case of a consonant having no following vowel).

The cognate measures of sets 3 to 6 are presumed to have more restricted selectional possibilities within Via -- being confined in fact to Via(a) or zero.

\subsection*{1.1.1 The system Vib}

The analysis of the first vowel of the measure F'al into the two morphemes \(a\) and \(:\), and that of Fu'iL, into \(u\) and :, entails a further system to accommodate the morpheme :. Since the various measures under examination do not exhibit any other phenomena of a similar nature we posit as the second system \(V i b=\{\) \{ (1)
(1) If the scope of our study were to embrace such measures as \(\mathrm{F}^{\mathrm{t}}\) aw \({ }^{\prime} \mathrm{ad}\) as for instance grawra \(a\) be bathed in tears, the w component of the measure would be included in Vib.

\subsection*{1.1.2 The system Vic}

We turn now to the systems which, broadly speaking, are infixed between the second and third radicals.

Consider once again the sets 1 and 2. Neasures 4-12 of set 1 each have a morpheme a between the second and third radicals. The corresponding members of set 2 each have \(i\) in the same position. (There is of course no equivalent of \(\mathrm{F}^{\prime}\) aLL (1.1I)).

More striking, this alternation of \(a\) and \(i\) is the sole feature distinguishing the pairs 4:4-6 and 5:4-6.

The importance of the alternation is however seen most clearly among the participial forms of sets 3 and 6 . Here we find a whole series of measures, \(3: 4-10,12\) and \(4: 4-10,12\) differing only on the assignment of one or other of this pair. This suggests that we are dealing with at least a system Vic \(=\{a, i\}\)

There are however two factors which render its analysis rather more complex. Conidider first the masdar measures listed in set 7. Leaving aside \(7: 4\), which, it will be seen bears no partial resemblance to its cognates (1-6:4), each measure has either a, ā, or \(u\) between the second and third radicals. The a of muFä'aj at an clearly be related to that of mapa'al ( \(6: 5\) ) while the \(\bar{a}\) of \(7: 6\), 9-12 is perhaps best understood as an amalgamation of two morphemes and and :, in which case the a may be regarded as an instance of Vic(a).

The structural similarity between taFa''uL and taFä'uL on the one hand, and tara' 'al and tara'al on the other, suggests that the morpheme \(u\) of the former pair should also be regarded a a member of Vic.
1.1.2.1 Isolation of the systemic structure presumed to lie behind the measures of sets \(1,4: 1-3\) is not without difficulty.

Consider first of all set 1:1-3. Bach of these measures varies from the others on the value of the vowel inserted between the second and third radicals. We may assume therefore that these are generated from some system having at least the membership \(\{a, u, i\}\). However, each of the three also contrasts with the measure Fu'iL (set 2:2). Now since this latter is cognate in structure with the remainder of set \(2, t\) he morpheme \(i\) between its second and third radicals must represent an assignment of Vic(i).

The situation is similar with regard to the measures of set 4:1-3 and 5:2. By a parallel form of argument the a of UF'aL is taken to be an assignment of Vic(a).

We therefore have the situation where the three morphemes \(a, u\), and \(i\) of sets \(1,4: 1-3\) not only contrast among themselves but contrast also with \(\operatorname{Vic}(a, i)\).

This then entails a two-part structure for Vic. Moreover, since there is no reason not to regard the second a of Fa'al as identical to that of Fa''al we conclude that the two subsystems overlap and hence that the system is of type Ia since, for example, the \(i\) of Fa'iL is taken to contrast with the a of Fa' 'aL. (See para. 2.0.0 of chapter6).

Thus we have the sub-systems:-
Vicx \(=\{u, i,[a]\} \quad\) Vicy \(=\{[a] \quad u, i\),
where the former corresponds to our initial system Vic.

\subsection*{1.1.3 The system Vid}

The analysis adopted above, whereby the a of the masdar measures of set \(7: 6,10-12\) was presuned to be an amalgamation of two morphemea a and \(:\), necessitates a fourth infixed system to accommodate the latter. We therefore set up the \(V i d=\{:\}\)

With Vid we conclude our outline of the infixed verbal systems. We must now relate to these systems dummy radicals appropriate to the generation of the required templates. The first dummy, designated \(A\), will obviously precede the first infixed system Via. Similarly, the thind dumny, designated \(C\) will succeed the final system Vid. However in this case the structure of the measures of sets 1,3,4:11 ( \(F^{\prime}\) alls etc) necessitates an optional second dummy. The pattern will therefore be of the form \(C(C)\) (see para. 1.4. of chapter 3).

The second will also be an optional two-place dunny, designated \(B(B)\), and will be located between Vib and Vic.

Particularly awkward - and foreshadowing a pattern more common among the nominal measures (see 2.2 .2 of this chapter), is the maṣar'ipfiläl (7:11). The distribution of vowels in this measure is clearly analogous to that of the measures 'inpi'äd and 'ipti'ā̃ \((7: 9,10)\) and the dummies should obviously be positioned so as to take this into account.

Of the two appearances of the third radical the penultimate which is presurned to be the optional repeat, must be located with the dumy B, that is between Vib and Vic. Generation of this measure will then entail selection of both of these.

However, having concluded that the 1 of 'inri'āL is an instance of \(V i a(i)\) we must either introduce a further instance of \(B\) before the system Via or, following tye discussion in para. 3.1 of chapter 3, apply the 'starred' convention to the original symbol B. (Note moreover that if the ultimate appearance of the third radical in 'iF'iLāJ is taken as the optional, the starred convention must also be applied to \(C\) ). Since among the verbal measures this kind of phenomenon is very much the exception it is on balance perhaps
preferable to opt for the latter.
Thus we infer the following part-structure for the series:


Among the limitation rules pertaining to this segment of the series are:-

111:1 Via(a) Picx (u) Permits the generation of Fa' \({ }^{\prime}\) uL (Vib(:)) and Fä'uL (set 7:7,8) but not Fa'ul.

111:2 Via(u) \(\longrightarrow\) Vicx \((a, u) \quad\) Permits Fu'iLa etc. but not Fu'aLa or \(\mathrm{Fu} \mathbf{}^{\prime}\) uLa etc.

111:3 \(\quad \mathrm{Via}(\mathrm{u}) \longrightarrow\) Vicy \(\quad\) Broadly as perII1:2, but see also the discussion in 1.1.3 above.

111:4 \(\quad \mathrm{Via}(\mathrm{i}) \cdots \mathrm{Vib}(:) \quad\) Prohibits 'infi'ālun etc.
111:5 Via(i)-(B) Prohibits 'infi'9äLun etc.
1.1.4 It should be noted that the question of whether or not some set of forms is to be generated in this series of infixed systems must be decided empirically.

Thus for instance while verbs on the first measure whose third radical is \(w\) or \(y\) are taken to be generated in the series developed in the foregoing paragraphs those medial \(w\) and \(y\), by virtue of their more sharply differentiated paradism, are assumed to be generated in a separate series of infixed systems.

For simplicity we have oritted any consideration of this and analogous variants.

\subsection*{1.2.0 The Prefixed systems}

Relevant to this discussion is set 9 of the paradigns of
third degree measures given below:-
Set 8
\begin{tabular}{|c|c|c|c|}
\hline Fa'taLa & 3 sm & yuFa'rilu & -ila \\
\hline 2 Fa''aLat & 3 sf & tuFa''ilu & -La \\
\hline 3 Fa'ralta & 2 sm & tuFa' \({ }^{\text {cilu }}\) & -ila \\
\hline 4 Fa'ralti & 2sf & tuFa''ilina & -ilis \\
\hline 5 Fa'taltu & 1 s & 'uFa''ilu & -ila \\
\hline 6 Pa''ala & 3 dm & yuFa''ilañ & -ila \\
\hline 7 Fa''alata & 3df & tupa''iLāni & -i上号 \\
\hline 8 Fa''alū & 3pm & yupa''ilunna & -iLu \\
\hline 9 Fa''alna & 3 pf & yuFa'tilna & -ilna \\
\hline \(10 \mathrm{Fa}{ }^{\prime \prime} \mathrm{laj}\) tum & 2pm & tuFa''ilunna & -iLū \\
\hline 11 Fa'taLtunns. & 2pf & tupa''iLna & -iLna \\
\hline 12 Fa ' 'aituma & 2d & tupa''ilan & -iLa \\
\hline 13 Fa''aLnā & 1p & nuFa' \({ }^{\text {ilu }}\) & -ila \\
\hline
\end{tabular}

Each of the measures listed in sets 1 and 2 is inflected with pronominal suffixes according to the paradigm given in set 8 , while
each of those listed in sets 4 and 5 is inflected in accordance with the paradigms given in sets 9 and 10. (The inflection of the majzūn measures is onitted, since these comprise a subset of those of the mansuub given in set 10).

\subsection*{1.2.1 The system Vpa}

The composition of the first prefixed system, Vpa, may lare a inferred from set 9. Consider for instance 9:1-3, 5,13. These five vary only on the assignment of initial \(y, t\), , or \(n\), and it is clear that the remaining plural and dual forms merely utilise a subset \(y\) and \(t\) of these.

The similarity between the forms of set 9 and the participial forms of set 3 (especially) and set 6 will be obvious. In particular the plural form of \(3: 4\)-nuFa''ilunna, differs from \(9: 9,10\) only on the assigment of m rather than \(y\) or \(t_{0}{ }^{(1)}\) Pron this we
(1) It is true that in the view of llestern grammatical theory at least the fomer is an instance of inflection for nominative case and plural number, while the letter signal plurality only. This however is to overiook the fact that there is in Semitic a much closer if nonetheiess eluaive relationship between nominal
(continued on p.223)
may infer that in should likewise be regarded as a member of Vpa, although in a less close relationship with the first four morphemes than they are with each other. Thirdly, a comparison of, say, the measure yastaF'iL (4:12) with 'istip'ā工 (7:12) shows that although they have no vowel in common, the relative distribution of consonants and vowels is the same. That is, a factorization of these two measures would suggest that the initial a of astar'il should be regarded as a member of the same system as the initial \(i\) of 'istip' \(\bar{a} L_{,}\)and the \(y\) of yastar'iL as a monber of the same system as the' of 'istif'可L.

Thus it seems that in Vpa we are dealing with a type 2a system (para. 2.1.2 of chapter 5), whose sub-systems have the structure: \(V\) pax \(=\left\{y, t,{ }^{\prime}, n\right\} \quad\) and Vpay \(=\{m, ’\}\)

Note that because Vpay (') forms part of a surjective association the paradigmatic contrast between it and the elements of Vpax is markedly weaker than that between Vpay(m) and Vpax. Our notation does not of course permit the quantification of degrees of paradigmatic contrast - even assuming that such quantification is possible in any real sense.

\subsection*{1.2.1 The system Vpb}

Evidence for this system is provided princtpally by sets 4,5,7: 9,10,12.

Footnote (1) contimued from previous p.222:
... and verbal inflections than appearg to be the case in IndoBuropean.

Contrast for instance the measures yanfa'ilu and yunfa'aLu, and then these with 'infi'āLun. In addition to the assignment of Vicx(i) versus Viox(a) the fomer two vary on the assignment of a morpheme a versus \(u\) inmediately succeeding \(\operatorname{Vpax}(\mathrm{y})\). Then, as was pointed out in the previous paracraph, save for the material after the third radical each of these three measures has the same distribution of consonants and vowels - that is, CvCCvCVC. This suggests that the morpheme i, although like Vpay(') not in direct contrast with the other two (1) nonetheless forms part of the same system. Therefore, we assune that Vpb is also a type 2 a system comprising the two sub-systems:
\(\mathrm{Vpbx}=\{a, u\}\) and Vpby \(=\{i\}\)

\subsection*{1.2.2 The systems Vpe and Vpd}

The composition of these systems is not particularly clear and the description offered is sonewhat tentative.

On the basis of astar'il and ustar'aL ( \(4,5: 12\) ) where the morpheme s immediately succeeds \(\mathrm{Vpbx}(\mathrm{a}, \mathrm{u})\) it is clear that \(\mathrm{s} \in\) Vpc , and that the morpheme \(t\), which immediately succeeds \(\mathrm{Vpc}(\mathrm{s})\), is a member of Vpd.

Now it is possible to regard the \(t\) of astar'il as the same as that say of atara''aL (see for instance Fright I:65Rem, and especially the akkadian data in Moscati 1969, 16.21). If so it entails that the \(t\) of the latter and that of atapa'al etc. (1-7:8) are members of Vpd and not, as might appear at first sight, members of Vpe.
(1) Whe mrecisely the question is one of degree th thach of in at least two particulars. The measures yatara''alu and yutara''alu (sets 4,5:8) provide the best instance of the contrast a vs \(u\) in second prefixed position - but of course the masdar is in this case inappropriate.

It was argued in 3.1 of chapter 3 that this morpheme \(\operatorname{Vpd}(t)\) is also instanced by Fta'al. This being so, and in accordance with the discussion there, the element should also have a starred version.

This leaves the ㄱ of 'ar'al etc. (1,2:6) and the \(\underline{n}\) of nFa'al etc. (1-7:9).

Since \(\sim\) is immediately succeeded by a in 'ap'al and \(\mathrm{Vpd}(\mathrm{t})\) in tapa''al is also succeeded imnediately by a, there is a prima facie case for including 2 with the latter in Vpd. On the other hand there is evidence to suggest that the relationship between 'ap'al and star'aL was originally analogous to that between Fa'al and Fta'aL. Moreover, in classical Arabic there are a few forms on 'aF'aL contrasting with forms on a measure sar'al - which is clearly to be related to star'al (Wright loc.cit). Wn other words there is a case for viewing s and _ as standing in weak paradigmatic contrast.

Hence it seems more satisfactory to posit Vpc \(=\{\mathbf{s , \prime}\}\) although in strict syncrhonic terms an analysis' \(\epsilon\) Vpd would be equally adnissible.

The measures Fta'al etc. and nFa'al etc. are traditionally related to Fa 'al and the former two are indeed to some extent functionally interchangeable (see Wright 1:113 for instance). This view is supported by evidence from other Semitic languages where one measure or the other tends to be found but not both. (1)

This being the case it is not unreasonable to see morpheme \(\underline{n}\) also as a member of Vpd. Since these two stand neither in strong nor weak paradigmatic contrast it follows that we should envisage a non-contrastive two part system of type 2 b comprising \(\mathrm{Vpd} \mathscr{G}=\{\mathrm{t}\}\) and \(\nabla p d h=\{n\).
(1) Akkadian being an exception.

Hebrew for instance has nir'ad 三 nFa'al, while Biblical Aranaic has hitp'el ミFta'al.
See Gesenius-Kautzsch Sec. 51 and Rosenthal 1961 Sec.99ff.

\subsection*{1.2.3 The system Vpe}

The structure of the final prefixed system may be infermed from set \(1: 7,8,12\) as contrasted with \(2: 7,8,12\). Here we find an alternation of \(a\) and \(u\) imediately succeeding \(\operatorname{Vpdg}(t)\). A further but more limited contrast is found between (7:12) 'istir'al and the measures 1,2:12. The sane alternation of amui may be detected across 1,2,7:6.

Given that (i) stands in weaker paradigmatic contrast with (a,u) than the latter two do with each other it follows that Vpe is a type 2a system identical in composition to Vpb .
1.2.4 The structure of the prefixed component of the series is then taken to have the form shown below:

1.2.5 There will be a rather large set of limitation rules determining the possible collocations of the nembers of these systems with with each other, and with the infixed systems introduced in subsection 1. Instances of these are given below.

First, restrictions among the prefixed systems themselves:-
\(111.6 \mathrm{Vpax} \longrightarrow \mathrm{Vpby}\)

\section*{\(111.7 \operatorname{Vpay}(m) \longrightarrow \operatorname{Vpb}(\mathrm{a}, \mathrm{i})\)}
111.8 \(\operatorname{Vpay}(') \Longrightarrow \operatorname{Vpbx}(\mathrm{a}, \mathrm{u})\)

Prohibits \({ }^{*}\) ifa"ilu etc.

" \({ }^{*}{ }_{u n F i}{ }^{\prime}\) alun etc.
No measure may begin with a vowel.
Nothing may stand before the , of 'aF'aL

\subsection*{1.3.0 The suffixed systems}

Consider the paradigms given in sets 8 and 9. In the former we have a stem Fa''al - to which are attached a series of suffixes, being the inflections for person, number and gender. The cognate forms of set 9 comprise a stem -ufa''iI to which are attached prefixes from the systen Vpax, and a further series of suffixes. Set 10 differs from set 9 in two respects. First, certain forms are reduced versions of counterparts in set \(9(4,6,8,10,12)\) and second, certain others ( \(10: 1-3,5,13\) ) differ from their counterparts 9:1-3, \(5,13 \mathrm{only}\) on the assignment of a final a rather than u.

Certain of the suffixes in each series resemble others in one or more particulars and certain of the suffixes in sets 8 and 9 show resemblances across the series. This latter point suegests that some of these suffix morphemes may be drawn from the same systens, notwithstanding their participation in different paradigns.

\subsection*{1.3.1.0 The systern aVs}

Inspection of the morphenes suffixed to the stem Fa'ral in set 8 will show that this is a more diverse group than are the systems of prefixes discussed above.

In particular, whereas the morphemes of the latter -- and also those of the infixed systems, are without exception 'monophonemic', this is not nearly so true of suffixed norphemes. In consequence although the number of phonemes suffixed to any stem may well equal or exceed the number of those prefixed, the number of distinct systeas into which they are analysed will be fewer.

However these suffixes are not totally irreducible and we shall be obliged to envisage sub-systems within the major systems.

Consider first set 8:2, 6,7, 9-12.
The item \(\mathrm{Fa}{ }^{\prime \prime}\) 'alat (8:2) varies from Fa''altum (8:10) on the assignment of a suffix -at versus -tum. Taken in isolation this pair are not further reducible and we might therefore provisionally posit a morpheme at and a second tur.

Contrasting with these two is the pair Fa''aLata (8:7) and Fa''altuma (8:12). This latter pair vary from the former on the assignment of a final \(\bar{a}\). These two both express a sememe ANu(Dual) \({ }^{(1)}\) and a distributional analysis would show beyond doubt that this sememe is associated with the element \(\bar{a}\). Now the suffix - \(\bar{a}\) of 8:6 also associates, anong others, with \(A N u(D u a l)\) and this being the case it is reasonable to infer that the element \(\bar{a}\) of \(8: 6,7,12\) is one and the same.

Therefore we have the situation where the suffixes -tum and -at contrast both paradismatically and syntagmatically with the moxpheme \(\overline{\mathrm{a}}\) and hence it follows that we are dealing with part of a type 3 system, having the structure:

1.3.1.1 The circumstance is similar in regard to the suffix na of 8:9 and -tunna of \(8: 11\). The latter is best understood as being composed of tum+na at the morphemic level followed by phonemicisation to tunna, since the morpheme na can in each case be analysed as an associate of the sememes ANu (Plural) and DHa (Fenale). (For the latter see para. 2.0 of chapter 7). Once again then we have
(1) We assume without argument an adherent and stable system of number, ANu \(=\) \{ Sing(ular), Dual, Plural. \(\}\)
a situation where the morpheme tum stands in both syntagnatic and paradiguatic contrast with some other -- in this case na. our structure may therefore be modified thus:-

1.3.1.2 In contrast to -tum and -at, the suffixes \(-\mathrm{a}(8: 1)\), \(-\bar{u}(8: 8)\), and \(-n \bar{a}(3: 13)\) do not enter into more complex suffix strings. Bach of them merely contrasts with the other morphemes in the paradigu. The systern may then be expanded to take the form shown below:-

1.3.1.3 Consider next the suffixes -ta (8:3), -ti (8:4), -tu (8:5), in conjunction with -tum already discussed above.

Common to all of these is an element t. In the case of 8:3,4 and 8:10 (Fa''altum) \(t\) is an associate of a semene APe ( S econd) \({ }^{(1)}\) which may therefore be understood as different instances of the sane morpheme.

Moreover, although APe(Second) is not an associate of atu, and the item Fa ''alitu thereby stands apart fron the others to some extent, there is at least some agreement among Seaitists that the element \(t\) of this suffix is a further instance of the same morpheme \(t\), derived by analogy with these latter (See Noscati 1969 16:45).
(1) Sinilarly to Alvu we assume without formal argument a system of 'person' which is taken to be stable and adherent and to have the structure:
\[
\text { APe }=\{\text { First, Second }\}
\]

It becomes apparent then that this group of suffixes may be reduced to the following systems:-
\begin{tabular}{lll} 
& \(a\) \\
\(u:\) & \(m\) \\
\(i\)
\end{tabular}

However since the other suffixes are not further analysable (or only doubtfully so) the present group can contrast with these others only as a unit. That is -at for instance contrasts say only with the string t:u:m, and not with some individual morpheme within it. Thus the above systems must be understood as a type 4 unit (see para.2.1.4 of chapter 5) foming a part of the dominant type 3 system.
1.3.1.4 The elements introduced above are all those necessary to the generation of the suffixes of set 8 . Since the paradigns of sets 9 and 10 are largely distinct from those of set 8 their suffixes are taken to be drawn from a different system to those of the latter.

However there is a sense in which both of these systems are serially equivalent, in that both sets of suffixes are located in inmediate succession to the third radical. Therefore, if both systems be designated \(V s\) we may distinguish that introduced in the foregoing paragraphs from that to be discussed below by the prefix a. Hence this first suffix system is taken to have the form:


\subsection*{1.3.2.0 The syster bVs}

Consider first of all sets \(9,10: 9,11\) (items having a suffix -na) in conjunction with \(9,10: 1-3,5,13\) (items having a suffix in \(-u(\operatorname{set} 9)\) or \(-a(\operatorname{set} 10)\).

In set 9 the items in -u contrast with the items in -na; in set 10 the items in -a similarly contrast with those in -na. Furthemore set \(9: 1-3,5,13\) vary from their equivalents in set 10 only on the assignment of \(-u\) or -a .

From this we may infer:-
a) that there is a morpheme \(\underline{u}\) which contrasts paradigmatically with a morpheme a.
b) that both of these contrast with a further morpheme na.
c) that the system from which they are drawn will be of type 2 a and have the part-structure shown below.

1.3.2.1 The morphemes \(u\) and na of set 9 also contrast with the suffixes -Ina (9:4) -āni (9:6,7,12) and -ūna (9:8,10). These latter are paralleled by the suffixes \(-\bar{I}(10: 4)\) - \(\bar{a}(10: 6,7,12)\) and \(-\bar{u}\) \((10: 8,10)\) which clearly shows that -ina should be analysed into the morphemes I:na, and -āni, -ūna into ā:ni a nd ū:na respectively.

The group of morphemes: \(\overline{\mathrm{a}} \mathrm{ni}\)
I : na
ū
must then be understood as a type 4 unit inserted into the ' \(y\) ' amm of the type \(2 a\) system. Since these elements are adequate to the generation of all the suffixes of sets 9 and 10 and the system
is serially equivalent to aVs, it is taken to have the structure:
bVs


\section*{1.3 .3}

Further observations
Certain of the morphemes of bVs are both formally and functionally similar to others in aVs. The most obvious instances are \(a V s q(n a)\) and \(b V s y(n a), a V s(u)\) and \(b V s y l(u), a V s q(a)\) and bVsyl(a) and it might be asked why the two systens aVs and bVs have not been incorporated into a unified system - especially as they are serially equivalent.

The difficulties attaching to the construction of a unified system should, however, be fairly obvious. The most important of these is that the relationships among the morphemes in the two systems differ - if only in fairly subtle ways. If the analysis underlying these systems is tenable, then in the case of those morphemes which appear in both systems two designations will be required, the first of which will specify their relationship to the one set of morphemes, and the second their relationship to the other.

For instance the relationship of na to the other morphemes is indicated by the designations Vsq and Vsy. If our analysis is sound there is no way of avoiding a statement of the fact that in the one case na stands in a ' \(q\) ' relationship with the other
morphemes of its paradigm on the one hand, and in a 'y' relationship on the other.

If this is necessary it is then more readily achieved by positing two systems rather than one, and if this is so we are dealing simply with a case of strongly 'motivated' overlapping (for this tem see 1.1 .1 of chapter 3 ).

It may be noted that there is perhaps a rather similar motivated overlapping between certain members of \(a V s\) and members of Vpa (see 1.2.1 above).

For instance both \(a V s p l(t)\) and \(V p a x(t)\) are associates of \(\mathrm{APe}(S e c o n d)\), while \(a V s(n \vec{a})\) and \(\operatorname{Vpax}(n)\) are both associates of Alu(Plural) and \(\mathrm{APe}(\) Pirst). In this case of course the syntagmatic correspondences are quite unlike those between aVs and bVs. (1)
1.3.4 Excluded from this discussion are the suffixes attached to participial and masdar measures (sets \(3,6,7\) ). These suffixes ane identical with those attached to Nominal measures and are therefore discussed along with other components of the Nominal series of systems in section 2 (see in particular para.2.4).

Given below is a selection of the limitation rules relating to the suffix systems outlined above.
\begin{tabular}{|c|c|c|c|}
\hline 111.111 & \(\mathrm{Vpa}, \mathrm{Vpb} \bullet\) aVs & Prohibits & "tupa' "iLta etc. \\
\hline 111.12 & VpayombVs & " & *mula' 'ilna etc. \\
\hline 111.13 &  & " & * muFa' 'ilna etc. \\
\hline 111.14 & \(\operatorname{Vpax}(\mathrm{y}) \longrightarrow \mathrm{mVsyl}(1)\) & " & *yuFa' 'ilina etc. \\
\hline 111.15 & aVs. \(\longrightarrow\) Vicx(u) & " & * Fa' 'uLtu etc. \\
\hline
\end{tabular}
(1) Note that the evidence of \(V p a x(n)\) might tempt one to analyse the morpheme nā as n: \(\overline{\mathrm{a}}\), rather than as we have done.

\subsection*{2.0.0 Introductory}

The Nominal series is defined as that series of systems which permits the generation of all measures declined for "case", except the participial and maşar measures which, save for their "case" suffixes, are generated in the verbal series.

Excluded by this definition are anaphoric elements, particles, and roots, and of course all verbel measures other than participles and masdars.
2.0.1 The simple notion of sets of systems prefixed, infixed, or suffixed to radicals exemplified by the Verbal series in section 1 of this chapter, becomes in the present case somewhat blurred.

There is in particular a small number of measures associate with \(A N u(P l u r a l)\) for which the vowel pattern is dominant and the radical dumies and consonants are disposed in various ways to interlock with these. Por instance the measures mara'il and Fawa'il both have a structure CaCāCic. But whereas in the case of maFá'il the first radical is located in the second consonant position, the first radical of Fawa'iL locates in the first consonant position. This situation is somewhat analogous to that of 'ir'ilā discussed in para. 1.1.4.
2.0.2 Since the great majority of nominal measures are radical based, with
rather thaf as is the case/Fawa'iL, vowel (or consonant) based, analysis will be most conveniently conducted along the following lines.

First the measures without prefixes will be exanined, and on this basis a preliminary structure for the infixed systems evolved.

Then measures with prefixes are considered and from these a
set of prefixed systens will be posited. This array of infixed and prefixed systems is then taken to be adequate to the generation of the 'radical based' measures from which it is inferred. Given this we may then incorporate an analysis of 'vowel/consonant based' measures, making any necessary modifications to previously postulated systens.

This is then followed by an analysis of the suffixed systems.
2.1.0 Reasures without prefixes

Consider first the set of measures listed below:-
Set 1.
\begin{tabular}{lll} 
Fa'al(un) & \(F a^{\prime} L\) & Fu'aL \\
Fa'il & \(F i^{\prime} L\) & Fu'uL \\
Fa'uL & \(F u^{\prime} L\) & \(F i^{\prime} a L\)
\end{tabular}

Only two points need be noted in connection with this list:-
a) between the first and second radicals may appear the morphemes
a, \(u, i\), but not sukūn (see para.1.1.0)
b) between the second and third radicals may appear \(a, u, i\), or sukūn.

From this we may infer that there will be at least two infixed systems and that they will have at least the membership \(\{a, u, i\}\).
2.1.1 Next there is a group of measures characterised by augnentation of the first vowel - either by lengthening or by dipthongisation. These are:-

Set 2. Fā'iL 1 Faw'al 2 Fay'aL 3
Iten 2:2 varies from \(2: 3\) only on the assignment of wather than y. Item 2:1 does not contrast directly with the other two, but does on the other hand contrast with Fa'iL (1:2). The latter contrasts with Fa'al (1:1) which in turn contrasts with \(2: 2\) and \(2: 3\) above.

On this evidence therefore we may posit a third infixed system which will have at least the membership \(\{:, \mathrm{w}, \mathrm{y}\}\) and which stands in
(1) For simplicity case endings are omitted at this stage.
immediate succession to the first system \(\{a, u, i\).
However，since w and y contrast more strongly with each other than they do with \(\dot{Z}\) it seems that we are here treatinty of a type 2a system，comprising the sub－systems：
\[
\begin{aligned}
& x=\{w, y\} \\
& y=\{:\}
\end{aligned}
\]

2．1．2 Let the first system \(\{a, u, i\}\) be temporarily designated NiI， the system \(\{:, ~ w, y\}\) of 2.1 .1 be designated \(\mathrm{Ni2}\) and the second system \(\{a, u, i\}\) Ni3．Then，inserting the first and second radical dumies as appropriate，we will have the part structure for the series shown below：－


2．1．3 The nembers of Mi3 may also be augmented similarly to those of Nit，as the following list of measures shows：－

Set 3.
Fu＇ūL 1
Fay＇al 4
Fa＇iL 7
Fa＇āL 5 Fay＇ūL 8
Fu＇ã 3 Fa＇ūL 6 Fi＇迎 9
Trom these measures it will be seen that each member of mi3 may be augmented by a morpheme ：\(^{2}\)

We therefore posit as a fourth infixed system a \(1714=\{:\}\)
2．1．4 Gemination raay be applied to either the second or third radical，as the following lists of measures show：－ Set 4.
\begin{tabular}{|c|c|}
\hline Fi＇M凯 1 & Pu＇＇aL 5 \\
\hline Fa＇＇ūL 2 & Fi＇tiL 6 \\
\hline Fa＇＇ä 3 & Pi＇＇ā 7 \\
\hline Fu＇\({ }^{\text {a }}\) 矿 4 & Fi＇ric 8 \\
\hline
\end{tabular}

Set 5.
Fu'aLL 1 Fu'uLL 2
Since the infixed systems developed thus far are adequate to the generation of all of these we need only locate optional radical dumies as appropriate. Therefore, incorporating the system Ni4 of 2.1.3, the part structure of Fig. 1 may be expanded to that given below.
Ni1
a
u
1
Ni2
Ni3 Ni4

a
:
- Fig. 2
C (c)

A

\subsection*{2.2.0 Measures with prefixes}

Among the measures with prefixes are those with two vowels and those with three. A set of these having two vowels is listed below.
\begin{tabular}{|c|c|c|c|c|c|c|}
\hline \multirow[t]{2}{*}{Set 5.} & maF'al & 1 & miP'al & 5 & 'ap'il & 9 \\
\hline & maF'ūL & 2 & 'af'al & 6 & 'ap'ū & 10 \\
\hline & maF'iL & 3 & 'af'ul & 7 & tapläd & 11 \\
\hline & \multirow[t]{2}{*}{mip'el} & 4 & 'ar'ā & 8 & tar'il & 12 \\
\hline & & & & & taF'iL & 13 \\
\hline
\end{tabular}

The measures mar'al and 'ar'ai vary only on the assignment of an initial morpheme m or ', as do also mar'ūJ and ar'ū工. Similarly, the measure mar'il varies from tar'il only on the assignment of initial m versus t .

Since the other measures have no morpheme except these in first position we may assume a first prefixed system Npa \(=\{m, ', t\}\) Similarly, on the basis of such pairs as \(5: 1\) and \(5: 4\), a further system having the membership \(\{a, i\}\) may be assumed in immediate succession to Npa. Let this system be temporarily designated NIx.

An inspection of the infixes of set 5 will show that the systems Nil-4 outlined above are adequate to their generation.
2.2.1 Consider next the measures:

Set 6. maFä'iL 1 maFä'IL 2 'aFā'iL 3 'ara'IL 4
The measure maFäin is cognate both semantically and morphologically with set 5:1, 3-5, and the measure malo in is similarly cognate with maF'ūt (5:2).

Since \(6: 1,2\) vary from \(6: 3,4\) only on the assignment of initial m versus ?, and since the former two are taken to instance the various elements introduced thus far, we amsume - noting the presence of Npa ( \()\), that the existing set of elements are also adequate to the generation of \(6: 3,4\).
2.2.2 The measures of set 6 have the vowel/consonant patterns \(\mathrm{C}_{1} \mathrm{aC}_{2} \overline{\mathrm{a}}_{3} \mathrm{iC}_{4}\) and \(\mathrm{C}_{2} \mathrm{aC}_{2} \overline{\mathrm{a}}_{3} \mathrm{IC}_{4}\).

These same pattems also occur in the measures :
Set 7. Fawā'iL 1 Fawā'IL 2 Fa'ā'iL 3
In \(7: 1,2\) the morpheme \(w\) fills the slot \(C_{2}\), a position which, in \(6: 1,3\) is filled by the first radical. Thus this morpheme may be said to 'factorise' (see para. 1.0 .1 of chapter 5) with the dummy radical \(A\) of Fig. 2 .

Similarly, the initial radical of set 7 measures factorises with Npa(m) and Mpa (') of set 6 measures, while the second radical of 7:3 factorises with the first of set 6.

Thirdly, the morpheme , of 7:3 factorises with the second radical of the set 6 measures.

Therefore, in addition to the systems introduced in 2.2 .0 we require the following modifications to the part-structure of Figure 2:
i) a system \(\{w\}\) which in a sense contrasts paradigmatically with the first dumy radical. This will be an infixed system and will immediately precede system Nil of Fig. 2.
ii) a second appearance of the duany radical \(A\) to 'contrast' with the system Npa. Let this new appearance be termed \(A_{1}\) and that of Pigure \(2 \mathrm{~A}_{2}\).
iii) on the basis of item \(7: 3\) we require a further appearance of the second durany radical, which contrasts with \(A_{2}\) and the syster \(\{w\}\). Let this appearance be designated \(B_{1}\) and that of Pigure \(2 \mathrm{~B}(\mathrm{~B})_{2}\)
iv) acgain on the basis of \(7: 3\) we require a system \(\{\) '\} which contrasts with \(B(B)_{2}\). This will also be an infixed system and is inserted between Ni2 and Ni3.
2.2.3 Given these modifications we nay now assign permanent designations to our systems.
The system \(\mathbb{N p a}=\{\mathrm{m}, \mathrm{l}, \mathrm{t}\}\) retains its existing designation. The system \(l \mathbb{l} \boldsymbol{\bullet}\{a, u, i\}\) is anbivalent, in that it is a prefixed system in respect of sets 5 and 6 and an infixed system in respect of set 7. Such systems will be temed 'joint' and this particular instance will be designated \(N j=\{a, u, i\}\)

The infixed syster \(\{w\}\) introduced above thus becomes the first infixed system and is designated Nia \(=\{\) w. \(\}\) Pollowing this the systems Mi1 and Ni2 are redesignated Nib and Nic. The infixed systen also introduced above then becomes Nid \(=\{\), \(\}\) while the systems Ni3 and Wi4 are redesignated Nie and Wif.

The part-structure for the series now has the fom:

2.3.0 Rules for prefixed and infixed systems

The following is a selection of rules relating to the infixed systems.
\begin{tabular}{|c|c|c|c|}
\hline 112:1 & \(\mathrm{A}_{1} \longrightarrow \longrightarrow \mathrm{~A}_{2}\) & & \\
\hline 112:2 & \(\mathrm{B}_{1} \longrightarrow \mathrm{~B}(\mathrm{~B})_{2}\) & & \\
\hline 112:3 & \(\mathrm{A}_{1} \Longrightarrow \mathrm{Nj}, \mathrm{Nia}\) & & \\
\hline 112:4 & \(\mathrm{A}_{2} \Longrightarrow\left\{\begin{array}{l}\mathrm{Nj} \\ \mathrm{Nib}\end{array}\right.\) & \[
\left\{\begin{array}{l}
\text { Prohibit } \\
\text { clusters. }
\end{array}\right.
\] & initial consonant \\
\hline 112:5 & \(\mathrm{Nib}(\mathrm{u}) \longrightarrow \mathrm{Nie}(\mathrm{i})\) & Prohibits & Fu'il etc. \\
\hline 112:6 & Nic \(\Rightarrow\) Nie & & Fa'l L etc. \\
\hline 112:7 & \(\mathrm{Nic}(:) \longrightarrow \mathrm{Nie}(\mathrm{a})\) & " & Fa'aL etc. \\
\hline 112:8 & \[
(\mathbb{N i f}(:) \rightarrow \operatorname{Nie}(u)
\] & & Fã'uL but admits Färū \\
\hline 112:9 & \(\mathrm{Nib}(\mathrm{u}, \mathrm{i}) \longrightarrow \mathrm{Nic}\) & " & Fü'aL etc. \\
\hline
\end{tabular}
2.3.1 Among the limitation rules relating to the prefixed system are the following:-
\begin{tabular}{|c|c|c|c|}
\hline 112:10 & \(\mathrm{Npa}(\mathrm{P}) . \square \mathrm{Nj}(\mathrm{i})\) & Prohibits & * 'ip'aj etc. \\
\hline 112:11 & Npa \(\longrightarrow\) Nia & " & naw- etc. \\
\hline 112:12 & \(\mathrm{Npa} \sim \mathrm{Nib}(u, i)\) & " & * maFri'iL etc. \\
\hline 112:13 & Npa \(\sim\) Nicx & " & *maFaw'iL etc. \\
\hline 112:14 & Npa \(\longrightarrow\) Nid & & \\
\hline 112:15 & \(\mathrm{Npa} \sim \mathrm{Nie}(\mathrm{a}, \mathrm{u})\) & " & *marãru etc. \\
\hline
\end{tabular}

\subsection*{2.4.0 The suffixed systems}

The Nominal series manifests two types of suffixed system. First there are those suffixes which form part of the measure proper, and second, those suffixes which are the associates of sememes of animacy, number, and relation.

\subsection*{2.4.1.0 Suffixes forming part of the measure \\ Consider the set of measures:-}
\begin{tabular}{|c|c|c|c|}
\hline Set 8. & Fu'İ 1 & Fa'ala \({ }^{\prime}\) & 6 \\
\hline & Fu'Lãn 2 & Fa 'Lā & 7 \\
\hline & Fu'aLa' 3 & Fa'äLa & 8 \\
\hline & Fi'Lān 4 & 'aF'ila' & 9 \\
\hline & Fa'La' 5 & 'ip'ila' & 1 \\
\hline
\end{tabular}

Ea ch of these has an element \(\bar{a}\) in inmediate succession to the third radical. Note further that Fa'Lā (8:7) varies from Fa'Lä' (8:5) only on the assignment of a final _ versus its absence. Similarly, Fu'Lān (8:2) varies from Fu'La (8:1) only on the assignment of final n.

Therefore, bearing in mind that our data provides no varrant for the separation of \(\bar{a}\) into the elements a and : we infer that these suffixes are assignments from two systems.

The first of these is designated Nsa \(=\{\bar{a}\}\) and the second \(N s b=\{, n\}\).
2.4.1.1 Also among the suffixes forming a part of the measure is the morphemefty through which thepelative adjective: al-ismu l-nanṣubu is created.

Let the system of which this is the member be designated Nsc \(=\{\mathrm{Iy}\}\)
2.4.1.2 The following is a selection of limitation rules associated with systems Nsa and Nsb.
```

112:16 Npa(m,t) ـ~ Nsa, Nsb Prohibits *maF'ila' etc.

```
112:17 \(\quad A_{1} \longrightarrow N s a, N s b\)
112:18 Nia Nsa, Nsb
(1) As usual the representation given here is 'morphemic' Structuralist 'morphophonemic'. Measures such as 8:1 give rise to a rather unusual -- for literary Arabic, divergence of phonemic and graphemic representation. Fu'La is phonemicised/Fu'Lā/, but is graphemicised Fu'Lay being an instance of alif maqșūra: abbreviated alif. (See Fright 1:7 Remb.)

112:19 Nicam Nsa, Mab
112:20 \((B)_{2} \longrightarrow N s a, N s b\)

\subsection*{2.4.2.0 Suffixes not forming part of the measure}

The sets of items listed below are paradigns of the various suffixes attached to the Nominal series which are not part of the measure. (Note that this is only partly true of the suffix -at):-

Set 2
\begin{tabular}{|c|c|c|c|c|c|c|c|}
\hline 1 & Fa''ātun & msna & 1. & -u & msnd & -u & manc \\
\hline 2 & Fa''ãLan & nsai & & -a & msad & -a & msac \\
\hline 3 & \(\mathrm{Fa}{ }^{\prime \prime}\) 'alin & msgi & & -i & msgd & -1 & nege \\
\hline 4 & Fe' 'āLāni & mdn & & -āni & man & - \(\overline{\mathrm{a}}\) & mdne \\
\hline 5 & Fa''āLayni & ma & & -ayni & mdo & -ay & mdoc \\
\hline 6 & Fa' 'āLūna & rapn & & -ūna & mpn & -ū & mpne \\
\hline 7 & Fa' 'ȧlina & mpo & & -ina & mpo & -I & mpoc \\
\hline & Set 12 & & & 13 & & & \\
\hline 1 & Fal'atatun & fsni & \(1-\) & -atu & fsnd & -atu & fsnc \\
\hline 2 & Pa''alatan & fsai & & -ata & fsad & -ata & fsac \\
\hline 3 & Fa''āatin & fsgi & & -ati & fsgd & -ati & fage \\
\hline 4 & Fa''āJatāi & fan & & -atāni & & -ata & fdno \\
\hline 5 & Fa''alatayni & fdo & & -atayn & sao & -atay & face \\
\hline 6 & Fa' 'alautur & \(f \mathrm{pn}\) & & -atu & fpn & -ātu & fpne \\
\hline 7 & Pa''aLātin & fpc & & -āti & fpo & -āti & fpoe \\
\hline
\end{tabular}
(1) The code appended to each item is to be interpreted thus:

1st letter
\(m\) nasculine
\(f\) feminine
2nd letter
s singular
d dual
p plural
3xd letter
n nominative
a accusative
g genitive
- oblique

4th letter
\(i\) indefinite
d definite
c construct All of these terms are to be understood as pre-theoretical.
2.4.2.1 Contrast first of all items 9:1-3. These three vary only on the assignment of \(u\), \(a\), or \(i\) in penultimate position.

If now 9:1-3 are contrasted with 10:1-3 and 11:1-3, it will be seen that they vary on the assignnent of final \(n\) versus its absence, and in the case of 10:1-3 on the assiEnment of initial 1 .

From this we infer that there will be one system having at least the membership \(\{\mathrm{a}, \mathrm{u}, \mathrm{i}\}\), and a second system in immediate succession to the first having at least the membership \(\{n\}\).

Contrast next 9:1-3 with 12:1-3. These vary only on the assignment of at immediately behind the final radical. Then, between 12:1-3 and 13:1-3, 14:1-3 is a relationship exactly similar to that between 9:1-3 and 10:11:1-3. Since there is no evidence to suggest that the material at comprises other than one morpheme we infer that there is a further suffix system having at least the membership \{at \}, located immediately in front of our putative system \(\{a, u, i\}\). (1)

The following part-structure for these systems may therefore be set down. The system designations are temporary.
\begin{tabular}{|c|c|}
\hline Ns1 & Ns2 \\
\hline \multirow[t]{3}{*}{at} & a \\
\hline & u \\
\hline & i \\
\hline
\end{tabular}

Fig. 4
2.4.2.2 Consider next items 9:6,7 and their equivalents 10,11:6,7. Set \(11: 6,7\) vary from \(9: 6,7\) only on the assignment of final na.
(1) This morpheme overlaps with aVsp(at) discussed in 1.3 .1 .0 of this chapter. This overlapping is motivated since both are associates of \(\mathrm{DHa}(\mathrm{Fem})\). (See 2.0 of chapter 7 ).

Since this situation is partly although not fully analogous to that obtaining in respect of 9:1-3 and \(10,11: 1-3\) we mav infer that the \(n\) of \(9,10: 6,7\) is an instance of \(N s 3(n)\). This being so we must therefore envisage a further system in imediate succession to Ns 3 having at least the membership \(\{a\}\). This systern is temporarily designated Ms4.

Items 11:1-3 vary from 11:6,7 in two respects. First, \(11: 1,3\) vary from the latter only on the assignment of \(\dot{Z}\) versus its absence. Second, there is no equivalent to Fa' 'äla (11:2).

Since members of the system Ns2 are associates of those of AGr (see section 3 of chapter 8), and since the elements \(u\) and \(i\) of 11:6,7 are also associates of this content system, we infer that they form a subset of Ns2 which is then taken to have a type 2a structure. The element \(\boldsymbol{Z}\) is then assumed to be a member of a further system Ns 5 which stands in inmediate succession to Ns2.

The part structure of figure 4 is then modified to have the form shown in figure 5:-


Further examination of \(11: 6,7\) and contrast with \(11: 1,3\) shows that the morphene \(\operatorname{lis5(:)}\) is an associate of ANu(Plural) (see the footnote to para. 1.3.1.0), since this sole variation across the two groups of expressions is paralleled by a variation of encoding only in respect of the assignment of \(\operatorname{Alvu}(S i n g)\) versus ANu(Plural).

A comparison of the equivalent items of set 14 shows a similar state of affairs. Items \(14: 1,3\) vary from \(14: 6,7\) only on
the assigment of an element : ; the encodings underlying them vary only on the assignment of \(A N u(S i n g)\) versus ANu(Plural). From this we infer that the final element \(\dot{\text { of }} 14: 6,7\) and cognate itens is an associate of Alvu(Plural) and hence is a further instance of Ns5(:).

Now since as items 12:6,7 show there are expression encodings which involve all of the systems Ns1,Ns2 and Ns5 at the one time it follows that if in such a case Ns5(:) is to be located in its correct position we require a 'starmed' morphene, in conformity with the discussion in para. 3.1 of chapter 3.
2.4.2.3 The "dual" forms - items 9-14:4,5 are unusual infertain respects. Consider the first itens 11,14:4,5 in contrast with 9,12:4,5.

The fomer group vary from the latter on the assignment of a final element ni. Since this situation almost exactly parallels that relating to \(9: 6,7\) and \(11: 6,7\), and since we established that the \(n\) of the fomer is an instance of \(\mathrm{Ns} 3(\mathrm{n})\), it seems reasonable to assume that the ni of the dual items is composed of an instance of Ns3(n) plus a further morpheme i.

A factorisation of say, Famāāni (9:4) andFa "āLūna (9:6) then suggests that the morpheme \(i\) of the fomer should be viewed as a nember of the systera Ns4. This then will have the composition \(\{a, i\}\).

Again applying the technique of factorisation we find that the a of 9-14:4 is best analysed as an instance of Nsx2(a):Ns5(a). Then, since 9-14:4 vary from 9-14:5 solely on the assignment of 1735(:) versus an elenent \(y\), we mav assume that this latter is also a nember of Ns5.

\subsection*{2.4.2.4 A final point concerns the so-called "diptote" nominal}
\begin{tabular}{|c|c|c|c|c|c|}
\hline \multicolumn{3}{|r|}{Set 15} & \multicolumn{3}{|c|}{Set 16} \\
\hline 1 & maF'alun & msni & \(1-\) & -u & mgnd \\
\hline 2 & mar'alan & msai & & -a & msad \\
\hline 3 & maF'alin & msgi & & -i & msgd \\
\hline 4 & maFa'ilu & mpni & & -u & mpnd \\
\hline 5 & mapāila & mpoi & & - & mpad \\
\hline 6 & & & & -i & mpgd \\
\hline
\end{tabular}

The rather idiosyncratic behaviour of the plural items in these paradigns prevents us from setting up direct contrasts. However a factorisation of the items in set 15 suggests that the final \(u\) and \(a\) of \(15: 4,5\) are instances of Ns2 \((u, a)\), an analysis which is borme out by the fact that these like the morphemes of Ns2 are associates of the system AGr.

From this it follows that we must envisage a further subsystem within Ns2 comprising the morphemes \(\dot{y}\) and a. This subsystem is analogous to Ns2y of 2.4.2.2 above in that both relate to classes of measures declined (in some sense) for only two
"cases". System Ns2 is now seen to be of type 1a.
(1) Codes as per the footnote to para. 2.4.2.0. The codes of 15; 16:4-6 omit, for the sake of simplicity, to point out that these measures form part of class 'y' (see para. 3.4 of chapter 4).
The term "diptote" used by Western gramarians is unsatisfactory on two grounds. On the one hand it does not correspond to the Arabic term gayru munsarif which refers to measures not having tanwin, rather than, as the English term would imply, measures inflected for two cases. (see Wright 1:308fn).

Secondly, the set of measures declined for only two cases is not co-extensive with the set embraced by the term diptote (see Wright 1:309). For clearly, the 'sound' plurals have only two cases as sets \(9-14\) show, and yet are classed as tidiptote.

Moreover, certain of the measures classed by Wright as diptote are undeclinable, as for instance dikrā:memoxy (ibid 309b )although they are gayru munsarif.

In the light of the discussion in 2.4.2.3 and 2.4.2.4 a
final structure may be assigned to this series, along with permanent designations for the systems. This segment of the suffix series has then the form shown below.

2.4.2.5 Among the linitation rules relating to these systems are the following:-

112: 21 Nsd (at) In traditional terms theex
112: 22
\[
\begin{aligned}
& \text { Nsd(at) } \\
& (\mathrm{Nsf}(:))
\end{aligned}
\]
a) that measures having the feminine ending are not diptote
b) the plural ferinine ending has the restricted declension u-i.

112:23 Nsex \(\longleftrightarrow\) Ns. 8
112:24 \(\quad\) Ns \(\in(u, i) \longrightarrow \mathbb{N s f}(y)\)
112:25 Nse \((u, i) \ldots \operatorname{Nsh}(i)\)
112:26 \(\operatorname{Nsf}\left(:^{*}\right) \rightarrow / \operatorname{Nsd}(a-t) /\) (See the discussion in 2.4.2.2)
2.4.2.6 The "plural" items listed in sets 15 and 16 (15,16:4-6) are apparently subject to a rather odd set of linitation rules.

Let us first of all introduce teminology to replace (or rather to combine) the traditional terms "triptote" "diptote" "ruunṣarif" and "Ēayru munṣarif".

As was hinted in the footnote to 2.4 .2 .4 , nominal measures may in this regand be classified along two dimensions. First they may be classified in respect of the number of cases for wiog they are declined. Neasures declined for two cases will be temed 'bicasal' and those declined for three 'tricasal'.

Secondly, they may be classified along a dimension of 'presence of tanvin vs absence of tanwin' (On tanwin: nunnation see Beeston, 1970, chapter 7). Measures having tanvin will be temed 'nunnating' and others 'non-mmnating'. This latter pair of temas are taken to be equivalent to the Arabic terms "munṣarif" and "Egayru mungarif": the terns triptote and diptote are abandoned.

Thus the following discussion and rules relate to nonnunnating bicasal neasures.

The striking feature of non-nunnating bicasality is that it is morphologically conditioned. An exanination of the list of measures given in Wright 1:309 shows this. Thereas the content encodings underlying ther have little or nothing in comon except in the nost trivial sense, it is possible to predict that particular measures will exhibit non-numnating bicasality although to this generalisation there are, as ever, exceptions.

In contrast to this, however, when a semene \(A D t\) (Def) is assigned to the encoding \({ }^{(1)}\) these measures are tricasal, a clear instance of semantic conditioning.

The relevant rules will then be roughly as follows (for the form of these mules see para. 3.0 of chapter 4):

When \(A D t(D e f)\) is not assigned.
112:27 \(\quad \operatorname{AGr}(\mathrm{x}) \quad \underset{ }{\left[\begin{array}{l}\operatorname{ADt}(\operatorname{Indef}) \\ \mathrm{N}(\mathrm{x})\end{array}\right]} \operatorname{Nsex(x)}\)
where \(\mathrm{H}(\mathrm{x})\) is any messure configuring with non-munating bi-casality (Note that in this and other cases of morphologically conditioned assignment of suffix elements Petrádek's concept of

\footnotetext{
(1) An adherent, stable system of 'derminacy' is assumed without argument, and is taken to have the structure: \(A D t=\{\) Indef(inite), \(\operatorname{Def}\) (inite) \(\}\)
}


A further variant on this pattern occurs anong those measures selecting in Nsey. In this case also, association is semantically constrained - by the assignment of \(\mathrm{DHa}(\) Fem \()\) and ANu(Plural). Thus we would require the further rule:112:29

2.5 The Norpheme Npp(1)

Implicit in the discussion in the previous paragraph was the assumption that, in synchronic terms, the morpheme \(\operatorname{Nsg}(n)\) is an associate of \(A D t\) (Indef).

Now since the morphene 1 which commonly precedes Nominal forms is an associate of \(A D t(D e f)\) there seems to be no good reason for not treating it also as an element in the Nominal series. Let us then, in recognition of its somewhat individual status, regard it as a system of pre-prefixes, located imnediately in front of Npa, having the designation Npp and the structure:
\[
N p p=\{1\}
\]

\section*{Introductory}

In this chapter we propose to investigate in rather more detail a subset of the association mules of Arabic.

This investigation has an additional aim to show that, in the verbal system at least, a statement of association is rendered the more elegant by the rejection of a rigid conception of the notion "discontinuous morpheme". The chapter is thus intended as a partial justification for the approach discussed in paras. 4.2 of chapter 2, and also of the morphological systems of the expression code identified in chapter 11.

The particular subset of association rules is that pertaining to the verbal measures, excluding measures of the 'thixd degree' (see the footnote to para. 1.0 of chapter 2). The content systems concerned are DAk, DCm and AAs, while the expresrion systems are those of series \(V\). (For these content systems see sections 1 and 2 of chapter 6 and section 1 of chapter 10 respectively).

It would seen that the study of any gramatical rule system in any detail is a most complex undertaking and it has become apparent that for present purposes the profitability of an analywis of the association rules for these measures is to some extent inversely proportional to its length.

It is considered therefore that the more illuminating description will result if only a subset of these measures is exarined, and to this end we have selected measures II,IV,V and \(X_{0}\) These four are chosen for a variety of reasons but principally because:-
a) between them they express almost all the semenes under consideration.
b) measures IV and \(X\), and II with \(V\), are morphemically cognate.
c) many of the rules derived from these four should be relevant also to the remaining measures. (For instance certain of the rules governing the contrast between measures II and V should be appropriate to the very similar III and VI).

The analysis is carried out in the following way. Each second degree measure is contrasted with others, either within the same measure or without. Material which is comon to all measures is left out of consideration - that is, selections from systens Vpax, aVs, and bVs, even though these may on occasion have associates in the relevant sememic systems.

Any second degree neasure selected for contrast with the one under consideration must fulfil two conditions:-
i) the configuration it expresses should vary from that of the measure being examined on only one sememe.
ii) If there is more than one measure conforming to i) the one chosen is that bearing the closer morphemic resemblance to the object measure.

It sometimes arises that there is no measure fulfilling condition i). In such cases associations are derived by analogy with those of the second degree measure in the same first degree measure bearing the closest morphemic resenblance to that under consideration.

The realisation that there may be two measures fulfilling condition i) leads us to recognize that in some cases we will be dealing with degrees of association, along a scale from 'strong' to 'weak'. Given our assumption of the ill-definedness of the
gramantical device this should occasion no surprise.
Associations derived on the basis of conditions i) and ii)
will be the strongest available. Whether any one is stronger or weaker than any other will not concern us, since we must also assume that strencth and weakness in tis context are in the limit inquantifiable.

The procedure assumes that any morphemic distinction betveen the two measuxes is to be attributed to the value of the sememes on which they vary, and therefore that an association exists between the particular sememe and the morphenic material which is peculiar to the measure in question.

The results of each analysis of this type are set dow in the fom of one or more bijective associations.

This process is repeated until each sememe in the configuration - save the predicate, has been separately contrasted and its associations stated.

The set of tentative bijective associations for the measure under investigation is then examined for surjectivity and the result of the analysis -a group of bijective and/or surjective association rules, is stated. (1)
0.3 Aside from the question of monophonemic versus discontinuous morpherees, there are two possible ways of presenting the results of the analysis.
(1) Note that in this analysis we are to some extent presupposing the outcome. That is, in certain cases we might - in the absence of other evidence, assume an association between a sememe and a discontinuous morpheme, rather than two or more associations of monophonemic morphemes. However since as the analysis shows there are many purely bijective associations anong the rules it seens preferable to adopt a realistic approach at the outset.

The approach adopted here - of listing rules as bijective or surjective as appropriate, is one possibility, or altematively all associations may be stated bijectively.

On the face of it this latter approach appears to have certain advantaces since several of the bijective rules deduced may be seen to form a sub-part of other, surjective rules.

In either case the total number of rules is in fact much the same, as is their complexity. For in the former case the rules thenselves are commonly more complex and the contextual constraints more simple, and in the latter the rules are more simple but the statenent of constraining context more complexd

The argunent against the second approach is tipped by the fact that in a purely bijective rule system the essential surjectivity of many of these associations can only be inferced. For Instance let there be some semene \(S x\) associate with a noxpheme M0x in the context of a semene Sy . (Hence:- \(\mathrm{Sx} \underset{\sim}{\mathrm{Sy}]}\) Nix). Now if Sy and Sx are surjectively associate with mx then we shall require a further rule:-
\[
\text { Sy } \underset{\rightleftarrows}{[5 x]} \mathrm{six}
\]
and the fact thot these senenes mutually presuppose each other is recovered only with difficulty.

The contents of tias chapter are as follows:section 1 Analysis of the IVth measure


\section*{1 The IVth neasure}

If we ignore morphenes contributing to measures of the third degree the IVth measure may be defined as follows:-
\(\mathrm{V}\left((\operatorname{pay}(\mathrm{m})):(\mathrm{pbx}(\mathrm{u})):\left(\mathrm{pc}\left({ }^{\prime}\right)\right):(\mathrm{pex}): \mathrm{AB}: \mathrm{icx}(\mathrm{a}, \dot{\mathrm{j}}): \mathrm{c}\right)\) where the systems in brackets do not participate in all second degree measures.

The principal second degree measures of IV are:-
\begin{tabular}{|c|c|c|c|c|c|c|c|}
\hline & pay & pbx & pc & pex & AB & icx & C \\
\hline IVa & & & , & a & \(\mathrm{F}^{\prime}\) & a & L \\
\hline IVb & & & , & u & \(\mathrm{F}^{\prime}\) & i & L \\
\hline IVc & & u & & & \(\mathrm{F}^{\prime}\) & \(i\) & L \\
\hline IVd & & & & & T' & a & L \\
\hline IVe & m & u & & & F' & i & L \\
\hline IVf & m & u & & & \(\mathrm{F}^{\prime}\) & a & L \\
\hline
\end{tabular}

The masdar measures - 'iraL etc., are not taken into consideration.
1.1 The following is the most common configuration expressed by IVa:-
```

AAsh(Comp) + DCmp(Causn) (See part 9 of Appendix A)

```

The associations of AAsh(Comp) are given by:-


The associations of DCmp(Causn) are best given by contrasting the second degree measure Fa'al of 1, as for instance:-
damaj: enter \((f \bar{I})\) something
vs
'admaj:enter something
( \(\mathrm{f} \overline{\mathrm{I}}\) ) something
where the former varies only on the assignment of \(\operatorname{DCm}(\mathrm{Dyn})\).
Hence:-

which gives:-


From 1-5 the following mules may be written:-


The most cormon configuration expressed by IVp is:-
\[
A \operatorname{Ash}(\text { Comp })+\underline{D C m p}(\text { Causn })+\operatorname{DCmq}(\mathbb{E}-S) \quad\left(\begin{array}{c}
\text { para.2.3.3 } \\
\text { (ofapter 6) }
\end{array}\right.
\]

Associations of AAsh(Comp) are Eiven by contrastine IVd which varies only on the assignment of AAs(Dux). Tence:-

which gives:-


Associations of DCMP(Causn) are given by contrasting Fu'iL of 1 winich varies in not being assimed this sememe. For instance:-
dukir: st. was remembered vs
'udkir: so. Was caused to nomomber
Hence:-


Which gives:-

(1) Interin or 'working' associations are numbered in a series 1-200. Association mules proper are mubered 500 \(-5 x\).

Associations of \(\mathrm{DCma}(\mathbb{E}-\mathrm{I}-\mathrm{S})\) are given by contrasting IVa which varies only on the non-assiennent of the above. Hence:-

which gives:-
\[
\begin{aligned}
\text { DCma }(\text { D-I I-S }) & \leftrightarrow \operatorname{pex}(u) & \ldots 11 \\
" & \leftrightarrow i c x(i) & \ldots 12
\end{aligned}
\]

From 6-12 the following mules may be derived:-
\begin{tabular}{|c|c|}
\hline \multicolumn{2}{|l|}{AAsh(Comp) )} \\
\hline DCrap (Causn) \(\leftrightarrow \rightarrow\) pex(u) & . .502 \\
\hline \multicolumn{2}{|l|}{\(\overline{\mathrm{Bran}}(\mathrm{S}-\mathrm{I}-\mathrm{S})\)} \\
\hline \multicolumn{2}{|l|}{AAsh(Comp) , ) ...503} \\
\hline \multicolumn{2}{|l|}{DCmp (Causn) \({ }^{\text {( }}\)} \\
\hline \multicolumn{2}{|l|}{AAsh(Comp)} \\
\hline (T-I-S) \(\} \leftrightarrow \operatorname{Icx}(\mathrm{i})\) & .. 504 \\
\hline
\end{tabular}

The most common configuration expressed by IVí is:-
\[
A A s(D u r)+D C n p(\text { Causn })
\]

Associations of AAs(Dur) are given by contrasting IVa, which varies only on the assignment of AAsh(Comp). Hence from figure 1 we get:-
\[
\begin{aligned}
\text { AAs(Dur) } & \longleftrightarrow p b x(u) & \ldots .13 \\
" & \longleftrightarrow i c x(i) & \ldots .14
\end{aligned}
\]

Associations of DCmp (Causn) ace given by contrasting (y)aF'uL of 1 which varies only on the assignment of \(\mathrm{DCm}(\mathrm{Dyn})\), as instanced by yadmuj vs yudmij (see para. 1.1). Hence:-
which gives
\[
\begin{array}{rll}
\text { DCmp }(\text { Causn }) & \leftrightarrow p b x(u) & \ldots .15 \\
\prime \prime & \longleftrightarrow i \operatorname{cx}(i) & \ldots .16
\end{array}
\]

From 13-16 the following rule nay be derived:-

\[
\mathrm{AAs}(\text { Dur })+D \operatorname{Cmp}(\text { Causn })+D C m g(\mathrm{~B}-\mathrm{I}-\mathrm{S})
\]

Associations of Aas(Dur) are given by contrasting Ivb which varies only on the assigment of AAsh(Comp). Hence:-
which gives:-
\[
\operatorname{AAs}(\operatorname{Dux}) \longleftrightarrow \operatorname{icx}(\mathrm{a}) \quad \ldots 17
\]

Associations of \(D C m p\) (Causn) are civen by contrasting (y) wid of 1 , which varies only on the assignnent of \(\operatorname{DCin}(D y n)\). Hence:-
u P • a L
8
uF'aL
These measures it will be noted are identical and therefore DCmp (Causn) here has no associates. Associations of DCmq(E-I-S) are given by contrasting IVc, which varies only on the nonmassignnent of this sememe. Hence:-

which gives:-
\[
\underline{\operatorname{DCmq}}(E-I-S) \leftrightarrow i \operatorname{cx}(\mathrm{a}) \quad, \ldots 18
\]

From 17 and 18 we derive:-

The most common configuration expressed by IVe is:-
\[
\operatorname{AAs}(\text { Pros })+\operatorname{DCmp}(\text { Causn })
\]

In the case of the associations of ANs (Prog) there are at least two configurations fulfilling condition i) of 0.1, namely, IVa and IVc. However since Ivc clearly bears the closer morphological resemblance to IVe by condition ii) of 0.1 it is the one chosen
for contrast. Hence:-
\[
\text { II } \begin{array}{llll}
u & F & i & I \\
u & i & 10
\end{array}
\]
which gives:-
\[
\mathrm{AAs}(\operatorname{Prog}) \longleftrightarrow \operatorname{pay}(\mathrm{m}) \quad \ldots .19
\]

Associations of DCmp(Causn) are given by contrasting Fã'iL of 1, which varies only on the assignment of \(D C m(D y n)\), and is instanced by the pair damij vs mudmij. Hence:-

Which Gives:-


From 19-22 we derive:-

1.6 The most common configuration expressed by IVf is:-
\[
A A s(\text { Prog })+D \operatorname{Cmp}(C a u s n)+D \operatorname{Cng}(T-I-S)
\]

Associations of AAs(Prog) are given by contrasting IVd which varies on the non-assignment of \(\operatorname{DCmg}(E-I-S)\). Hence:-
\[
\text { Tu } \begin{array}{lllll}
u & F & \text { a } & I & \\
u & F & \text { a } & I & 12
\end{array}
\]

Which eives:-
\[
\mathrm{AAs}(\operatorname{Prog}) \longleftrightarrow \operatorname{Pay}(\mathrm{m}) \quad \ldots 23
\]

Condition i) for the analysis of this measure is fulfilled by maptuL which is closely associated with measure 1 although taken
not to be in the Verbal series on account of its quite distinet morphology. For the same reason it is not a suitable vehicle for contrast in the present case. Therefore, in accordance with the discussion in 0.1 associations of DCmp (Causn) should be inferred by anelogy with those of some closely cognate measure.

In this cass the closest measure is IVd which, as was noted in 1.4 above, gives no associates for this semene. Hence we assume the same to be the case in the present instance.

Assooiations of \(\operatorname{DCmq}(\mathrm{E}-\mathrm{I}-\mathrm{S})\) are siven by contrasting IVe Which varies only on the non-assignment of this sememe. Hence:-

Which Eives:-
\[
\text { BCmg }(T-I-S) \longleftrightarrow \operatorname{icx}(a) \quad . .24
\]

From 23 and 24 we derive:-
\begin{tabular}{ll} 
AAs \((\) Prog \() \longleftrightarrow\) pay \((\mathrm{m})\) & \(\ldots .509\) \\
\(\mathrm{DCmq}(\mathrm{P}-\mathrm{I}-S) \leftrightarrow\) icx \((\mathrm{a})\) & \(\ldots .510\)
\end{tabular}

The Xth Yeasure
The tenth measure may be defined thus:-
\(V(p a y(m):(p b x): p c(s): p d g: ~ p e x: A B: i c x(a, i): c)\)
As part 14 of appendix A shows, this measure expresses perhaps the widest mange of semenes of any of the Verbal measures, and its analysis is therefore comespondingly more complex. The relevant second degree measures are:-
\begin{tabular}{|c|c|c|c|c|c|c|c|c|}
\hline & pay & pbx & pc & pd 8 & pex & \(A B\) & icx & C \\
\hline Xa & & & s & t & a & F' & a & L \\
\hline Xb & & & S & t & u & \(\mathrm{F}^{1}\) & 1 & L \\
\hline Xe & & a & s & t & a & F' & i & L \\
\hline Xd & & u & s & \(t\) & e & \(\mathrm{F}^{\prime}\) & a & L \\
\hline Xe & n & u & s & t & a & \(\mathrm{F}^{\prime \prime}\) & 1 & L \\
\hline Xf & m & u. & s & \(t\) & a & \(\mathrm{P}^{\prime}\) & a & L \\
\hline
\end{tabular}

The most common configurations expressed by \(\mathrm{X}^{\mathrm{d}}\) are:-
\[
\begin{aligned}
& \text { 1) } \mathrm{AAsh} \text { (Comp) }+\operatorname{DCm} \text { (Rff) } \\
& \text { ii) AAsh (Comp) }+ \text { DAkp (Est) }+ \text { DCm (Eff) } \\
& \text { iii) AAsh (Comp) }+ \text { DAkp (Seek) }+ \text { DCm }(\text { Dyn }) \\
& \text { iv) } A A s h(\text { Comp })+7 A k q \text { (Refl) } \\
& \text { v) } A A \operatorname{sh}(\operatorname{Comp})+D C m p(\text { Causn })
\end{aligned}
\]

Associations of AAsh(Comp) are given by contrasting Xc, which varies on the assignment of AAs(Dur). Hence:-
\[
\left[\begin{array}{llll}
s & t & a & F \\
\hline a & a \\
s & t & a & F \\
I
\end{array}\right]_{L} 13
\]
which gives:-
\[
\text { AAsh }(\operatorname{Comp}) \longleftrightarrow \text { icx }(\mathrm{a}) \quad . . .25
\]

Associations of \(\operatorname{DCm}\) (Eff) are given by contrasting Xb , which varies only on the assignment of DCmq(E-I-S), as for instance stahaqq: be entitled vs stuhiqq: have so's entitlement upon. \({ }^{(1)}\) Hence:-
which gives:-
\begin{tabular}{rlr}
\(\mathrm{DCm}(\mathrm{Eff})\) & \(\longleftrightarrow \operatorname{pex}(\mathrm{a})\) & \(\ldots 26\) \\
\("\) & \(\longleftrightarrow \operatorname{icx}(\mathrm{a})\) & \(\ldots 27\)
\end{tabular}

Thus for configuration i) we derive the following:-


Associations of DAkp(Est) are given by contrasting FaliL of 1, which varies only on the non-assignment of this sememe as for instance hamiq: be stupid vs stahmaq: consider stupid. Hence:-
(1) This example is of course slightly imregular in consequence of having a root with geminate second and third radicals. The paralellism between the two measures is anyway not common.

which gives:-


Thus from 25-31 we derive the following rules for configuration ii):-


Associations of DAkp(Seek) are given by contrasting Fa'ai of 1 , which varies only on the normassigmment of this semene, as for jnstance geafar: forgive vs stāfar: ask forgivoness. Hence:-

which gives:-
\[
\begin{array}{rlr}
\text { DAkp (Seek) } & \mapsto p c(s) & \ldots .32 \\
& & \longmapsto p d g(t) \\
& & \ldots \operatorname{pex}(\mathrm{a})
\end{array}
\]

Associations of \(\operatorname{DCm}(D y n)\) are given by figure 14, where Xb variea only on the assignment of DCmg(I-I-S). Hence we write:-
\[
\begin{aligned}
\operatorname{DCm}(\operatorname{Dyn}) & \longleftrightarrow \operatorname{pex}\left(a_{0}\right)
\end{aligned} \quad \ldots 35
\]

Thus from 25, 32-36 we derive the following miles for configuration iii):-

\begin{tabular}{|c|c|}
\hline DAkp (Seek) \({ }^{\text {a }}\) (pe(s) & \\
\hline pakp (seek \(\mathrm{AT-}\) ppdg(t) & (instance of 514) \\
\hline
\end{tabular}

Associations of DÂkg(Refl) are given by contrasting Fa'il of 1, varying only on the assignment of \(\mathrm{DCm}(\mathrm{Bff})\) as instanced by dafi': be wamm vs stadfa' wam onself. Hence from figure 15 we get:-
\begin{tabular}{rlr} 
DAkq(Refl) & \(\leftrightarrow p c(s)\) & \(\ldots 37\) \\
\("\) & \(\leftrightarrow \operatorname{pdg}(t)\) & \(\ldots 38\) \\
\("\) & \(\ldots p \operatorname{pex}(a)\) & \(\ldots 39\) \\
\("\) & \(\leftrightarrow i c x(a)\) & \(\ldots 40\)
\end{tabular}

Thus from 25, 38-40 we get the following rules for configuration iv):-


Associations of DCmp(Causn) are given by contrasting Fa'al of 1 which varies only on the assigment of \(\mathrm{DCm}(\mathrm{Dyn})\) as instanced by halaf: swear vs stahlaf: make swear. Hence from figure 16 we get:-
\[
\begin{aligned}
\underline{\mathrm{DCmp}} \text { (Causn) } & \longleftrightarrow \mathrm{pc}(\mathrm{~s}) & \ldots 41 \\
" & \longleftrightarrow p d g(t) & \ldots 42 \\
" & \longleftrightarrow \operatorname{pex}(\mathrm{a}) & \ldots 43
\end{aligned}
\]

Thus from 25, 41-43 we derive the following rules for configux ation v):-
```

AAsh (Comp) $\rightarrow$ icx(a) ...(in 501) .
DCmp(Causntr $\left\{\begin{array}{l}\text { pc(s) } \\ \text { pds ( } \\ \text { pex }(a)\end{array}\right.$
... 520

```
```

            i) AAsh(Comp) + DAkp(Est) + DCmq(D-I-S)
            ii) AAsh(Comp) + DAkp(Seek) + DCmq(E-I-S)
    iii) A/sh(Comp) + DCmp(Causn) + DCmq(E-I-S)

```

Associations of AAsh(Comp) are given by contrasting Xd when varying only on the assignment of AAs(Dur). Hence:-
which gives:-
\[
\begin{aligned}
\text { AAsh(Comp) } & \mapsto p \operatorname{cox}(u) \\
" \quad & \ldots \text { icx }(i)
\end{aligned}
\]

Associations of DAkp(Est) are given by analogy with those in Xa (28-31 above) since there seems to be no fom fulfilling condition i) of 0.1. Hence we get:-
```

$\mathrm{DAkp}($ Est $) \longleftrightarrow \mathrm{pc}(\mathrm{s}) \quad$...46
" $\longleftrightarrow \operatorname{pdg}(t)$
... 47
" $\longleftrightarrow \operatorname{pex}(u) \quad$... 48

```

This gropp contains no equivalent to expression 31, since that association is warranted only by the fact that the particular measure used for contrast is Fa'iL. If there were to be a suitable measure in the present case the likeliest candidate would be Pu'il which would of course not be in contrast with Xb in that particular respect.

Associations of DOnq( \(\mathbb{B}-\mathrm{I}-\mathrm{S}\) ) are given by contrasting Xa, when varying only on the non-assignment of this seneme. Hence from figure 14 we get:-
```

DCmq (E-I-S) $\longleftrightarrow \operatorname{pex}(u) \quad . .44$
" $\longleftrightarrow$ icx(i) ...5 50

```

Thus from 44-50 we have the following rules for configuration i):-


Associations of DAkp(Seek) are given by contrasting Fu'iL of 1 when varying only on the non-assignont of this semome, as instanced by:-
```

Eufirati l-jarinatu
the crime was forgiven
vs
stugfirati l- jarimatu
forgiveness was asked for the crime

```

Hence:-

which gives:-


Thus from 44,45. 49-53 we have the following rules for configuration ii):-


Associations of DCmp (Causn) axe also given by contrasting Fu'iL of 1 , whon varying only on the non-assignment of this semene, as for instance hulif: was swom vs stuhlif: was made to be sworn. Hence from figure 18 we get:


Thus from \(44,45,49,50,54-56\) we have the following rules for configuration iii):-

2.3 The most common configurations attaching to Xc are:-
i) \(A A s(D u r)+D A k p(\) Seek \()+D C m(D y n)\)
ii) \(A A s(D u r)+D A k q\) (Refl)
iii) AAs(Dur) + DCmp (Causn)
iv) \(A A s(\) Prog \()+D C m(E f f)\)
v) \(\operatorname{AAs}\) (Dur) +DAkp (Est) +DCm (Eff)

The associates of AAs(Dur) are given by contrasting Xa when varying only on the assignment of AAsh(Comp). Hence from figure 13 we get:-
\begin{tabular}{rlrl} 
AAs(Dur) & \(\longleftrightarrow \operatorname{pbx}(\mathrm{a})\) & \(\ldots .57\) \\
\("\) & \(\longleftrightarrow\) & icx(i) & \(\ldots .58\)
\end{tabular}

The associates of DAkp(Seek) are given by contrasting (say) aF'ul of 1, when varying only on the non-assignment of this sememe. (1) Hence:-

(1) Since the choice of \(u\) or \(i\) between the second and third radicals of these measures is arbitrary, it is of no import whether we use ar'uL of ar'iL for contrast. As it happens, in the present case the former gives a sironger association than the latter, but this may be neglected for our puxposes (see part 1 of appendix A).

\section*{which gives:-}
```

DAkp(Seek) $\longleftrightarrow$ pc (s) ....59
" $\longleftrightarrow \operatorname{pdg}(t) \quad . . .60$
" $\longleftrightarrow \operatorname{pex}(a) \quad$...61
" $\longleftrightarrow$ icx $(1) \quad$... 62

```

The associates of \(\mathrm{DCm}(\mathrm{Dyn})\) are given by contrasting Xd , when varying only on the assignment of \(\mathrm{DCmq}(\mathrm{E}-\mathrm{I}-\mathrm{S})\). Hence:-
which gives:-
\[
\begin{array}{rlr}
\operatorname{DCm}(\operatorname{Dyn}) & \longleftrightarrow \operatorname{pbx}(\mathrm{a}) & \ldots 63 \\
" & \longleftrightarrow \operatorname{icx}(i) & \ldots 64
\end{array}
\]

Thus from 57-64 we have the following rules for configuration i):-


The associates of DAkg (Refl) are given by contrasting ar'al of 1 , when varying only on the assignment of DCm( Dff), as for instance yadfa': (shall) be warm vs yastadfi': warms himself. Hence from figure 19 by substituting a for \(u\) we get:-
\begin{tabular}{rlr} 
DAkg(Refl) & \(\longleftrightarrow p \mathrm{pc}(\mathrm{s})\) & \(\ldots .65\) \\
\("\) & \(\longleftrightarrow p \mathrm{pdg}(\mathrm{t})\) & \(\ldots .66\) \\
\("\) & \(\longleftrightarrow \operatorname{pex}(\mathrm{a})\) & \(\ldots .67\) \\
\("\) & \(\longleftrightarrow \operatorname{icx}(\mathrm{i})\) & \(\ldots .68\)
\end{tabular}

Thus from 57, 58, 65-68 we derive the following rules for configuration ii):-

The associates of \(\operatorname{DCmp}\) (Causn) are given by contrasting (say) ar'uL of 1, when varying only on the assignment of \(\mathrm{DCm}(\mathrm{Dyn})\). Hence from fisure 19 we get:-


Thus from 57, 58, 69-72 we derive the following mules for configuration iii):-



The associates of AAs (Prog) are given by contrasting Xa, when varying only on the assigmnent of AAsh(Comp). Hence from figure 13 we get:-
```

AAs (Prog) $\longleftrightarrow \operatorname{pbx}(\mathrm{a}) \quad \ldots 73$
" $\longleftrightarrow$ icx(i) ...74

```

The associates of \(\operatorname{DCm}(B f f)\) are given by contrasting \(X d\), when varying only on the assignment of DCmq( \(\mathrm{m}-\mathrm{I}-\mathrm{S}\) ), as for instance yastahiqq: is entitled to vs yustahaqq: has an entitlement upon. Hence from figure 20 we get:-
```

$\operatorname{DCm}$ (Bff) $\longleftrightarrow \operatorname{pbx}(\mathrm{a}) \quad \ldots 75$
" $\longleftrightarrow$ icx(i) ...76

```

Thus from \(73-76\) we derive the following rule for configuration iv):-


The associates of DAkp (Est) are Given by contrasting aital of 1 , when varying only on assignment of this semene, as for instance yolnaq: is stupid vs yastahmiq: considers stupid. Hence from figure 19 with appropriate modification we get:-


Thus from 73-80 we derive the following rules for configuration v):-
\[
\begin{aligned}
& \left.\begin{array}{l}
\begin{array}{l}
\operatorname{Ass} \text { (Prog }) \\
\operatorname{DCm}(\text { Rff })
\end{array}
\end{array}\right\} \longleftrightarrow \operatorname{pbx}(a) \quad \ldots 531 \\
& \operatorname{DAkp}(\text { Rst }) \longleftrightarrow\left\{\begin{array}{l}
\operatorname{pe}(\mathrm{s}) \\
\operatorname{pdc}(\mathrm{t}) \\
\operatorname{pex}(\mathrm{a})
\end{array} \quad \ldots .533\right.
\end{aligned}
\]

The principal configurations attaching to Xd axe:-
i) \(A A s(D u r)+\operatorname{DAkp}\) (Seek) \(+\operatorname{DCmq}(\) P-I-S \()\)
ii) \(\operatorname{Ms}\left(D_{u r}\right)+\operatorname{DCmp}(\) Causn \()+\operatorname{DCmq}(\mathrm{Bm}-\mathrm{S})\)
iii) \(\mathrm{Als}(\) Prog \()+\operatorname{DCma}(\) Im-S \()\)
iv) AAs (Pros) + DAkp (Bst) + DCma (B-I-S)

The associates of \(\mathrm{AAs}(\mathrm{Drux})\) are given by contrasting Xb , when varying only on the assigment of Mah(Comp). Hence from figure 17 we get:-


The associates of DMkp(Seek) are given by contrasting uF'al of 1 ,
when varying only on the non-assignment of this sememe, as for instance yugfar:is forgiven vs yustaḡfar: is asked forgiveness for. Hence:-
which gives:-
\[
\begin{array}{rlr}
\text { DAkp }(\text { Seek }) & \longleftrightarrow p c(s) & \ldots .84 \\
" & \longleftrightarrow \operatorname{pdg}(\mathrm{t}) & \ldots .85 \\
" & \longleftrightarrow \operatorname{pex}(\mathrm{a}) & \ldots .86
\end{array}
\]

Associates of DCmg (E-I-S) are given by contrasting Xc when varying only on the assignment of \(\operatorname{DCm}(\) Dyn \()\). Hence from figure 20 we get:-
\begin{tabular}{rlrl} 
DCma (E-I-S) & \(\longleftrightarrow p b x(\mathrm{u})\) & \(\ldots .87\) \\
\("\) & \(\longleftrightarrow\) icx \((\mathrm{a})\) & \(\ldots .88\)
\end{tabular}

Thus from 81-88 we derive the following mules for configuration i):-

\[
\underline{\mathrm{DAkp}}(\text { Seek }) \longleftrightarrow\left\{\begin{array}{l}
\mathrm{pc}(\mathrm{~s}) \\
\mathrm{pdg}(\mathrm{t})
\end{array} \quad \ldots(\text { in515 })\right.
\]

Associates of DCmp(Causn) are given by contrasting ur'aI of 1 when varying only on the non-assignment of this sememe, as for instance yuhlaf: is sworm vs yustahlaf: is made to be sworm. Hence from figure 21 we get:-
\[
\begin{array}{rlr}
\operatorname{DCmp}(\text { Causn }) & \longleftrightarrow \operatorname{pc}(\mathrm{s}) & \ldots .89 \\
" & \longleftrightarrow \operatorname{pdg}(\mathrm{t}) & \ldots 90 \\
" & \longleftrightarrow \operatorname{pex}(\mathrm{a}) & \ldots .91
\end{array}
\]

Thus from 81-83,87-91 we derive the following rules for configuration ii):-

\(\left.\begin{array}{l}\operatorname{AAs}(\text { Dur) } \\ \operatorname{DCmp}(\text { Causn })\end{array}\right\} \leftrightarrow \operatorname{pex}(\mathrm{a})\)
\(\xrightarrow{\mathrm{DCmp}}(\) Causn \() \leftrightarrow\left\{\begin{array}{l}\mathrm{pc}(\mathrm{s}) \\ \mathrm{pdg}(t)\end{array}\right.\)
Associates of \(\mathrm{AAs}(\) Prog ) are given by contrasting Xb , when varying only on the assignment of AAsh(Comp). Hence from figure 17 we get:-


Thus from 87, 88, 92-94 we derive the following rules for configuration iii):-


Associates of DAkp( Ist) are given by analogy with those of Xc, in the absence of any measure fulfilling condition i) of 0.1 . That is, the proportion:-
yahmaq: is stupid : yastahmiq: considers stupid
cannot be paralleled by a second based on
yustahmaq: is considered stupid.
Hence expressions 77-79 are considered good for this measure also. Expression 80 is omitted since if a suitable contrasting form were to be found it would most likely be on the measure Wial of 1, which would not of course give 80 .

Thus from 77-79, 87, 88, 92-94, we derive the following rules for configuration iv):-

2.5 The principal configurations attechine to Xe are:-
i) \(\operatorname{AAs}(\) Prog \()+D C\) (Pff \()\)
ii) AAs (Prog) + DAkq (Refl)
iii) \(\mathrm{AAs}(\) Prog \()+\operatorname{DAkp}(\) Seek \()+\operatorname{DCm}(\) Dyn \()\)
iv) \(\mathrm{AAs}(\) Prog \()+\operatorname{DAkp}(\) (sst) + DCm (Dff)
v) \(\mathrm{A} \Lambda s(\) Prog \()+\mathrm{DCmp}\) (Causn)

Associates of AAs (Prog) are given by contrasting Xc when varying only on the assignnent of AAs(Dur). Hence:-
which gives:-
\[
\begin{array}{rlr}
\mathrm{AAs}(\text { Prog }) & \longleftrightarrow \operatorname{pay}(\mathrm{m}) & \ldots \cos \\
n & \longleftrightarrow \operatorname{pbx}(u) &
\end{array}
\]

Associates of \(D C=(\) Pff) are given by contrasting \(X f\) when varying only on the assignment of DCmq(D-I-S). Hence:-

which gives:-
\[
\operatorname{DCm}(E f f) \longleftrightarrow \text { iox }(i) \quad . . .97
\]

Thus from 95-97 we derive the following mules for configuration i):-


Associates of DAkg (Refl) are given by contrasting Fa'il of 1 , when varying only on the assignment of \(\overline{D C m}(\mathbb{E f f})\), as for instance:-
käfin: hidden vs mustakfin: hidins oneself (1)
Hence:-
\[
\text { Mustarin il } 24
\]
which gives:-
\begin{tabular}{rl} 
DAkg \((\mathrm{Refl})\) & \(\longleftrightarrow \operatorname{pay}(\mathrm{m})\) \\
\("\) & \(\longleftrightarrow \operatorname{pbx}(\mathrm{u})\)
\end{tabular}

Thus from 95, 96, 98-102 we derive the following rules for configuration ii):-
\[
\begin{aligned}
& \left.\begin{array}{l}
\text { AAs(Prog) } \\
\text { DAkq(Refl) }
\end{array}\right\} \leftrightarrow\left\{\begin{array}{l}
\text { pay (m) } \\
\operatorname{pbx}(\mathrm{u})
\end{array} \quad \ldots 542\right. \\
& \mathrm{DAkg}(\operatorname{RefI}) \longleftrightarrow\left\{\begin{array}{l}
\operatorname{pc}(s) \\
\operatorname{pdg}(t) \\
\operatorname{pex}(a)
\end{array} \quad \ldots(\text { in 519 })\right.
\end{aligned}
\]

Associates of DAkp(Seek) are given by contrasting Fa'il of 1 when varying only on the non-assignment of this sememe, as for instance:-

ḡafir: forgiving (so) vs mustagfir: asking forgiveness
Hence from figure 24 we get:-
\begin{tabular}{rlr} 
DAkp( Seek) & \(\longleftrightarrow\) pay (m) & \(\ldots .103\) \\
\("\) & \(\longleftrightarrow p b x(u)\) & \(\ldots 104\) \\
\("\) & \(\longleftrightarrow p(s)\) & \(\ldots 105\) \\
\("\) & \(\longleftrightarrow p d g(t)\) & \(\ldots 106\) \\
\("\) & \(\longleftrightarrow p e x(a)\) & \(\ldots .107\)
\end{tabular}
(1) Note that the root is kfy; nunnation is purely for convenience.

Associates of \(\operatorname{DCm}(D y n)\) are given by contrasting \(X f\) when varying only on the assignment of \(D C m q(E-I-S)\). Hence from figure 23 we get:-
\(\operatorname{DCm}(\operatorname{Dyn}) \longleftrightarrow\) icx (i) ... 108
Thus from 95, 96, 103-108 we derive the following rules for configuration ii1):-
\[
\begin{aligned}
& \left.\begin{array}{l}
\operatorname{Ass}(\text { Proe }) \\
\operatorname{DAkn}(\text { Seek })
\end{array}\right\} \longleftrightarrow\left\{\begin{array}{l}
\text { pay }(m) \\
\operatorname{pbx}(u)
\end{array} \quad \ldots .543\right. \\
& \text { DAkp (Seek) } \leftrightarrow\left\{\begin{array}{l}
\operatorname{pc}(s) \\
\operatorname{pdg}(t) \\
\operatorname{pex}(a)
\end{array} \quad \ldots\right. \text { (in526) } \\
& \operatorname{DCm}(\operatorname{Dyn}) \longleftrightarrow \text { icx(i) ...554 }
\end{aligned}
\]

Associates of DAkp(Est) are Given by contrasting R'idi of 1 when varying only on the non-assignment of this sememe, as for instance:-
ka' in: treacherous vs mustalwin: distmusting
(consīdering treacherous)
Hence from 24 we get:-
```

DAkp(Est) $\longleftrightarrow \operatorname{pay}(m) \quad . . .109$
" $\longleftrightarrow p \mathrm{pbx}(\mathrm{u}) \quad \ldots 110$
" $\longleftrightarrow \mathrm{pc}(\mathrm{s}) \quad . . .11$
$" \longleftrightarrow \operatorname{pd}(t) \quad$...112
$" \longleftrightarrow \operatorname{pex}(a) \quad . . .113$

```

Thus from 95-97, 109-113 we derive the following rules for configuration iv):-


Associates of DCmp(Causn) are given by contrasting Fa'il of 1
when varying onfly on the assignment of \(\overline{D C m}(\mathrm{Dyn})\), as for instance:-
hālif: swearing vs mustahlif: making to swear
Hence from figure 24 we get:-
\begin{tabular}{|c|c|c|}
\hline DCmp (Causn) & \(\rightarrow \mathrm{pay}(\mathrm{m})\) & ... 114 \\
\hline " & \(\longleftrightarrow \mathrm{pbx}(\mathrm{u})\) & ... 115 \\
\hline " & \(\longleftrightarrow \mathrm{pc}(\mathrm{s})\) & ... 116 \\
\hline " & \(\longleftrightarrow \mathrm{pdg}(\mathrm{t})\) & ... 117 \\
\hline " & \(\longleftrightarrow \operatorname{pex}(\mathrm{a})\) & ... 118 \\
\hline
\end{tabular}

Thus from 95. 96, 114-118 we derive the following rules for configuration v):-

2.6

The principal configurations attaching to Xf are:-
i) AAs (Prog) \(+\mathrm{DAkp}(\) Seek \()+\mathrm{DCmq}(E-I-S)\)
ii) \(\mathrm{AAs}(\) Prog \()+\mathrm{DAkp}^{(\mathbb{E s t})}+\mathrm{DCma}(\) D-I-S \()\)
iii) AAs (Prog) + DCmp \((\) Causn \()+\) DCmq(E-I-S)

Associates of AAs (Prog) are given by contrasting \(X d\) when varying only on the assignment of AAs (Dur). Hence:-
\[
\begin{aligned}
& \mathrm{m} u s t a F^{\prime} a L \\
& u s t a F \cdot a L
\end{aligned}
\]
which gives:-
\[
\operatorname{AAs} \text { (Prog) } \longleftrightarrow \operatorname{pay}(m) \quad . . .119
\]

Condition i) for the investigation of DAkp(Seek) is fulfilled by mar'ul, but since the latter is regarded as unsuitable (compare 1.6) the associates of this sememe are best inferred by analogy with the equivalent associations of Xd , this being the measure closest in structure to Xf . Hence expressions \(84-86\) of 2.4 are taken to be valid here also.

Associates of DCma( E-I-S) are given by contrasting Xe, when varying only on the assignment of \(\mathrm{DCm}(\mathrm{Dyn})\). Hence from figure 23 we get:-
\[
\operatorname{DCmq}(\text { I-I-S }) \longleftrightarrow \text { iox }(a) \quad \ldots 120
\]

Thus from \(84-86,119,120\) we derive the following rules for configunation i):-


The situation in respect of DAkp(Est) is similar to that of DAkp(Seek), and its associates are hence inferred by analogy with those of Xd in 2.4. Hence expressions 77-79 are taken to be valid for \(X f\).

Thus from \(77-79,119,120\) we derive the following rules for configuration ii):-


The associates of DCmp(Causn) are also to be inferred by analogy with Xd and therefore expressions 89-91 are appropriate here.

Thus from 89-91, 119,120 we derive the following rules for configuration iii):-
\[
\begin{array}{ll}
\operatorname{DCmp}(\text { Causn }) & \longleftrightarrow\left\{\begin{array}{l}
\operatorname{pc}(\mathrm{s}) \\
\operatorname{pdg}(\mathrm{t}) \\
\operatorname{pex}(\mathrm{a})
\end{array}\right.
\end{array} \quad \text {...(in 520) }
\]
3.0 The second measure may be defined thus:-
\(V(\operatorname{pay}(m)):(p b x(u)): A: i a(a, u): B B: i c x(a, i): c)\)
The relevant second degree measures are:-
\begin{tabular}{|c|c|c|c|c|c|c|c|}
\hline & pay & pbx & A & ia & BB & icx & C \\
\hline IIa & & & F & a & \({ }^{\prime \prime}\) & a & L \\
\hline IIb & & & F & u & ' & \(i\) & L \\
\hline IIc & & u & \(p\) & a & ' & \(i\) & L \\
\hline IId & & u & P & a & ' \({ }^{\prime}\) & a & L \\
\hline IIe & m & u & F & a & '' & i & L \\
\hline IIf & m & u & F & a & ' & 1 & L \\
\hline
\end{tabular}

The configurations to be studied are based on those given in part 7 of appendix A.

The principal configurations attaching to IIa are:-
i) \(A A s h(C o m p)+D C m p(C a u s n)\)
ii) \(A A s h(C o m p)+D C m(D y n)\)

Associates of AAsh(Comp) are given by contrasting IIc, when varying only on the assigment of AAs(Dur). Hence:-
which gives:-
\[
\operatorname{AAsh}(\operatorname{Comp}) \longleftrightarrow i \operatorname{cox}(\mathrm{a}) \quad . .121
\]

Associates of DCmp(Causn) are given by contrasting Fa'il of \(\mathbf{I}_{\text {, }}\) when varying only on the assigment of \(\mathrm{DCm}(\mathbb{B f f})\), as for instance:-
kaḍir: was green vs kaḍar: made ereen (1)
Hence:-
\[
\begin{array}{ll}
\mathrm{F} \mathrm{a}^{\prime} \\
\mathrm{F} \mathrm{a}^{\prime}, & \mathrm{a} \\
\mathrm{i}
\end{array} \mathrm{~L}_{\mathrm{L}}^{\mathrm{L}} \begin{aligned}
& \\
& 27
\end{aligned}
\]
which gives:-
(1) It would also be possible to use Pa'al for contrast, as for instance kasa': was humble vs kasta': made humble, but Fa'iL gives the stronger set of associations.


Thus from 121-123 we derive the following rules for configuration 1):-
\begin{tabular}{|c|c|}
\hline \multicolumn{2}{|l|}{AAsh(Comp)} \\
\hline \(\} \longleftrightarrow\) icx(a) & ... 547 \\
\hline DCmp(Causn) & \\
\hline DCmp (Causn) \(\longleftrightarrow\) ( \({ }^{\text {B }}\) ) & . . 548 \\
\hline
\end{tabular}

Associates of \(\mathrm{DCm}(\mathrm{Dyn})\) are given by contrasting IIb, when varying only on the assignment of DCmq(E-I-S). Hence:-
which gives:-
\[
\begin{array}{lll}
\mathrm{DCm}(\operatorname{Dyn}) & \longleftrightarrow i a(a) & \ldots 124 \\
" & \longleftrightarrow \operatorname{icx}(a) & \ldots 125
\end{array}
\]

Thus from 121, 124, 125 we derive the following rules for configuration 1i):-

\(\mathrm{DCm}(\mathrm{Dyn}) \longleftrightarrow \mathrm{ia}(\mathrm{a})\)

The principal configurations attaching to IIb are:
i) \(A A s h(C o m p)+D C m p(C a u s n)+D C m q(E-I-S)\)
ii) \(A A s h(C o m p)+D C m q(E-I-S)\)

Associates of AAsh (Comp) are given by contrasting IId, when varying only on the assignment of AAs (Dur). Hence:-
which gives:-
\[
\begin{aligned}
\operatorname{AAsh}(\text { Comp }) & \longmapsto i a(u) & \ldots .126 \\
" & \longleftrightarrow i \operatorname{cx}(i) & \ldots .127
\end{aligned}
\]
(1) That is, the optional dummy symbol. See para. 1.1 .4 of chapter 11.

Associates of DCmp(Causn) must be inferred by analogy with those of IIa, since there is no configuration fulfilling condition i) of 0.1 .0 expressions 122 and 123 of 3.1 only the former is valid here.

Associates of \(\mathrm{DCmq}(\mathrm{F}-\mathrm{I}-\mathrm{S})\) are given by contrasting IIa, when varying only on the non-assignment of this sememe. Hence from figure 28 we get:-
\[
\begin{aligned}
D_{\operatorname{mq}}(E-I-S) & \longleftrightarrow i a(u) & \ldots .128 \\
n & \longleftrightarrow i \operatorname{cx}(i) & \ldots .129
\end{aligned}
\]

Thus from 122, 126-129 we derive the following rules for configuration i):-
\[
\begin{aligned}
& \left.\begin{array}{l}
\text { AAsh(Comp) } \\
\text { DCmq( E-I-S }
\end{array}\right\} \leftrightarrow\left\{\begin{array}{l}
\text { ia(u) } \\
\text { icx(i) }
\end{array} \quad 550\right. \\
& \text { DCmp (Causn) } \longleftrightarrow \text { (B) } \quad \text {... (in 548) }
\end{aligned}
\]

And for configuration ii) from 126-129 we have:-
\(\left.\begin{array}{l}\text { AAsh(Comp) } \\ \text { DCmq(E-I-S })\end{array}\right\} \leftrightarrow\left\{\begin{array}{l}\text { ia(u) } \\ \text { icx(i) }\end{array} \quad\right.\)... (in 550)
The principal configurations attaching to IIc are:-
i) \(\mathrm{AAs}(\mathrm{Dur})+\mathrm{DCmp}\) (Causn)
ii) \(\mathrm{AAs}(\mathrm{Dur})+\mathrm{DCm}(\mathrm{Dyn})\)

Associates of \(\mathrm{AAs}(\mathrm{Dur})\) are given by contrasting IIa, when varying only on the assignment of AAsh(Comp). Hence from figure 26 we get:-
```

$\mathrm{AAs}(\mathrm{Dur}) \longleftrightarrow$ pbx(u) ... 130
" $\longleftrightarrow$ icx(1) .... 131

```

Associates of DCmp(Causn) are given by contrasting ar'al of I when vaxying only on the assignment of \(\mathrm{DCm}(\mathrm{Dyn})\), as for instance:-

\section*{aksar: 공es ve ukassir: causes loss}

Hence:-
which gives:-
\begin{tabular}{cll} 
DCmp(Causn) & \(\longleftrightarrow\) pbx(u) & \(\ldots .132\) \\
\("\) & \(\longleftrightarrow\) ia(a) & \(\ldots .133\) \\
\("\) & \(\longleftrightarrow\) (B) & \(\ldots .134\) \\
\("\) & \(\longleftrightarrow\) icx (a) & \(\ldots .135\)
\end{tabular}

Thus from 130-135 we derive the following rules for configuration i):-


Associates of \(\operatorname{DCra}(\) Dyn ) are given by contrasting IId, when varying only on the assigninent of \(\mathrm{DCmq}(E-I \pi S)\).Hence:-
\[
\begin{array}{ll}
\text { uFa! } & 1 \\
\text { uFa! } & \\
a & 31
\end{array}
\]

Which gives:-
\[
\operatorname{DCm}(\operatorname{Dyn}) \longleftrightarrow \operatorname{icx}(1) \quad \ldots .136
\]

Thus from 130, 131, and 136 we derive the following rules for configuration ii):-
\[
\begin{aligned}
& \left.\begin{array}{l}
A A s(D u r) \\
\operatorname{DCm}(D y n)
\end{array}\right\} \longleftrightarrow \text { icx(i) } \\
& \mathrm{AAs} \text { (Dux) } \longleftrightarrow \mathrm{pbx}(\mathrm{u}) \quad . . .553
\end{aligned}
\]

The principal configurations attaching to IId are:-
\[
\begin{aligned}
& \text { i) } \mathrm{AAs}(\text { Dur })+\underset{\mathrm{DCmp}}{\text { ii) (Causn })}+\mathrm{DAs}(\mathrm{Duq})+\text { DCmq }(\mathrm{E}-\mathrm{I}-\mathrm{S})
\end{aligned}
\]
(1) This configuration is perhaps more commonly expressed by aF'uL of \(I\), but since the result of the anslysis is the same in either case it is of no importa nce.

Associates of AAs (Dur) are given by contrasting ITb, when varying only on the assignment of AAsh(Comp). Hence from figure 29 we get:-
\[
\begin{aligned}
\operatorname{AAsh}(\text { Coan }) & \longleftrightarrow p b x(u) & \ldots .137 \\
" & \longleftrightarrow \operatorname{ia(a)} & \ldots .138 \\
" & \longleftrightarrow \operatorname{lox}(a) & \ldots .139
\end{aligned}
\]

Associates of DCmp(Causn) are given by contrasting u'al of \(I\), when varying only on the non-assigment of this sememe, as for instance:-
uksar: is lost vs ukassar: is caused to be lost
Hence:-
which gives:-
\[
\begin{array}{lll}
\mathrm{DCmp}(\text { Causn }) & \leftrightarrow i a(a) & \ldots 140 \\
" & \longleftrightarrow(B) & \ldots 141
\end{array}
\]

Associates of DCmq ( E -I-S) are given by contrasting IIc when varying only on the non-assignment of this sememe. Hence from figure 31 we get:-
\[
\mathrm{DCmo}(\mathrm{E}-\mathrm{I}-\mathrm{S}) \leftrightarrow \operatorname{icx}(\mathrm{a}) \quad . . .142
\]

Thus from 137-142 we derive the following mules for configuration 1):-
\(\left.\begin{array}{l}\mathrm{AAs}(\text { Dur }) \\ \mathrm{DCmp}(\text { Causn })\end{array}\right\} \leftrightarrow \mathrm{is}(\mathrm{a}) \quad \ldots .554\)
\begin{tabular}{|c|c|}
\hline \[
\left.\begin{array}{l}
\mathrm{AAs} \text { (Dur) } \\
\mathrm{DCmq}(\mathrm{E}-\mathrm{I}-\mathrm{S})
\end{array}\right\} \longleftrightarrow \operatorname{icx}(\mathrm{a})
\] & (in 506) \\
\hline AAs (Dur) \(\longleftrightarrow \mathrm{pbx}(\mathrm{u})\) & ...(in 553) \\
\hline DCmp (Causn) \(\leftrightarrow\) (B) & ...(in 548) \\
\hline
\end{tabular}

From 137-139, and 142 we derive the following rules for configuration ii):-
\[
\begin{align*}
& \left.\begin{array}{l}
\mathrm{AAs} \text { (Dur) } \\
\text { DCmq(D-I-S) }
\end{array}\right\} \longleftrightarrow \operatorname{iox}(\mathrm{a})  \tag{in506}\\
& \mathrm{AAs} \text { (Dur) } \longleftrightarrow\left\{\begin{array}{l}
\mathrm{pbx}(\mathrm{u}) \\
\mathrm{fa}(\mathrm{a})
\end{array}\right. \\
& .555
\end{align*}
\]
i) AAs (Prog) +DCmp (Causn)
ii) AAs (Prog) \(+\mathrm{DCm}(\mathrm{Dyn})\)

Associates of AAs (Prog) are given by contrasting IIc, when varying only on the assignment of AAs (Dur). Hence:-
\begin{tabular}{|c|c|}
\hline \multicolumn{2}{|l|}{mura' m (} \\
\hline
\end{tabular}
which gives:-
\[
\text { AAs(Prog) } \longleftrightarrow \operatorname{pay}(m) \quad . . .143
\]

Associates of DCmp (Causn) are given by contrasting Fa'il of I, as for instance:-
käsi: humble vs mukaisinit making humble
Hence:-
which gives:-
\[
\begin{aligned}
& \text { DCmp (Causn) } \longleftrightarrow \operatorname{pay}(m) \quad . . .144 \\
& \text { " } \quad \longleftrightarrow \mathrm{pbx}(\mathrm{u}) \\
& .145
\end{aligned}
\]

Thus from 143-145 we derive the following rules for configuration i):-
\[
\begin{aligned}
& \left.\begin{array}{l}
\begin{array}{l}
\mathrm{AAs} \text { (Prog) } \\
\text { DCmp (Causn) }
\end{array}
\end{array}\right\} \leftrightarrow \text { pay (m) } \quad \ldots \text { (in 507) } \\
& \mathrm{DCmp}(\text { Causn }) \longleftrightarrow \mathrm{pbx}(\mathrm{u}) \quad \ldots \text { (in508) }
\end{aligned}
\]

Associates of \(\underline{D C m}(D y n)\) are given by contrasting IIf when varying only on the assignment of DCmq(E-I-S). Hence:-

which gives:-


Thus from 143 and 146 we derive the following rules for configuration ii):-
\begin{tabular}{ll}
\(\mathrm{AAs}(\) Prog \() \longleftrightarrow\) pay \((\mathrm{m})\) & \(\ldots\) (in 509) \\
\(\mathrm{DCm}(\mathrm{Dyn}) \longleftrightarrow\) icx \((i)\) & \(\ldots(\) in 544\()\)
\end{tabular}

The principal configurations attaching to IIf are:-
i) \(\mathrm{AAs}(\) Prog \()+D \mathrm{Cmp}\) (Causn) +DCmq (E-I-S)
ii) \(\mathrm{AAs}(\) Prog \()+\mathrm{DCmq}\) (ErI-S)

Associates of AAs(Prog) are given by contrasting IId, when varying only on the assignment of AAs(Dur). Hence:-
which gives:-
\[
\text { Aas (Prog) } \longleftrightarrow \operatorname{pay}(m) \quad . . .147
\]

Associates of DCmp(Causn) must be inferred by analogy with those of IId. (compare 1.6 and 2.6). Hence, expressions 140 and 141 are taken to be valid for this measure also.

Associates of DCmq(E-I-S) are given by contrasting IIe, when varying only on the non-assignment of this sememe. Hence from figure 35 we get:-
\[
\text { DCmq }(\mathrm{E}-\mathrm{I}-\mathrm{S}) \longleftrightarrow \text { icx }(\mathrm{a}) \quad . . .148
\]

Thus from \(140,141,147\) and 148 we derive the following rules for configuration 1):-
\begin{tabular}{|c|c|}
\hline AAs(Prog) \(\longleftrightarrow\) pay \((m)\) & ...(in 509) \\
\hline \(\mathrm{DCmp}(\) Causn \() \longleftrightarrow\left\{\begin{array}{l}\mathrm{ia}(\mathrm{a}) \\ (B)\end{array}\right.\) & ...(in 551) \\
\hline \(\mathrm{DCmg}(\mathrm{E}-\mathrm{I}-\mathrm{S}) \leftrightarrow \mathrm{icx}(\mathrm{a})\) & ...(in 510) \\
\hline
\end{tabular}

From 147 and 148 we derive the following rules for configuration ii):-
\[
\begin{array}{ll}
\mathrm{AAs}(\text { Prog }) \longleftrightarrow \text { pay }(\mathrm{m}) & \ldots(\text { in } 509) \\
\mathrm{DCmq}(\text { E-I-S }) \longleftrightarrow \operatorname{icx}(\mathrm{a}) & \ldots(\text { in } 510)
\end{array}
\]

The Vth measure
The fifth measure may be defined thus:-
\(V\) (pay \((m)):(p b x):\) pdg: pex: A: \(i a(a, u): B B: 1 c x(a, i): C)\)
The relevant second degree measures are:-
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|}
\hline & pay & pbx & pds & pex & A & ia & BB & 10x & C \\
\hline Va & & & \(t\) & a & \(F\) & a & ' \({ }^{\prime}\) & a & L \\
\hline Vb & & & \(t\) & u & F & u & - & 1 & L \\
\hline Vc & & a & \(t\) & a & \(F\) & a & '' & a & L \\
\hline Vd & & u & \(t\) & a & F & a & - & a & L \\
\hline Ve & m & u & \(t\) & a & F & a & ' & 1 & L \\
\hline vf & m & u & \(t\) & a & F & a & -' & a & L \\
\hline
\end{tabular}

The configurations to be studied are based on those given in part ICof appendix \(A\).

The principal configurations attaching to Va are:-
i) \(\mathrm{AAsh}(\) Comp \()+\mathrm{DCm}(0-E)\)
ii) AAs \(h\) (Comp) \(+D C m\) (Eff)
iii) AAs \(h(\) Comp \()+\) DAkg (Refl)

Associates of AAsh(Comp) are given by contrasting Vo, when varying only on the assignment of AAs (Dur). Hence:-
\[
\prod \begin{aligned}
& t a F a \cdot 1 a L \\
& t a F a \cdot 1 a L
\end{aligned}
\]

It will be seen that the second degree measure gives no associates for this sememe. Functional load in this case is borne entirely by the (pronominal) morphemes of system aVs. Associates of \(\mathrm{DCm}(0-\mathrm{E})\) are given by contrasting Fa''al of II, when varying only on the assignment of DCmp(Causn), as for instance:-
tarattab: was moistened vs rattab: moistened
Hence:-
which gives:-
\[
\begin{aligned}
& \mathrm{DCm}(0 \sim \mathrm{E}) \longleftrightarrow \operatorname{pdg}(\mathrm{t}) \quad . . .149 \\
& \text { " } \longleftrightarrow \operatorname{pex}(a) \quad . . .150
\end{aligned}
\]

Thus from 149 and 150 we derive the following rules for configuration i):-
\[
\underline{\operatorname{DCm}(0-E)} \longleftrightarrow\left\{\begin{array}{l}
\operatorname{pdg}(t) \\
\operatorname{pex}(a)
\end{array} \quad \ldots .556\right.
\]

Associates of \(\overline{D C m}\) (fff) are given by contrasting either Vb , when varying only on the assignment of \(\mathrm{DCmq}(\mathrm{E}-\mathrm{I}-\mathrm{S})\), or \(\mathrm{Fa}{ }^{\prime}\) 'al of II, when varying on the assignment of \(\operatorname{DCmp}\) (Causn). Since both of these give associates of equivalent strength both analyses are included - which in most respects overlap. Hence:-
which gives:-
\[
\begin{aligned}
\operatorname{DCm}(E f f) & \longleftrightarrow \operatorname{pex}(\mathrm{a}) & \ldots .151 \\
" & \longleftrightarrow \operatorname{ia}(\mathrm{a}) & \ldots .152 \\
" & \longleftrightarrow \operatorname{icx}(\mathrm{a}) & \ldots .153
\end{aligned}
\]

From figure 38 we also get:-
\[
\operatorname{BCm}(E f f) \longleftrightarrow \operatorname{pdg}(t) \quad \ldots .
\]

Thus from 151-154 we derive the following rules for configuration ii): 8
\[
\underline{\operatorname{DCm}(\mathbb{E f f})} \longleftrightarrow\left\{\begin{array}{l}
\operatorname{pex}(a) \\
\operatorname{pdg}(t) \\
\operatorname{ia}(a) \\
\operatorname{icx}(a)
\end{array} \quad \ldots .557\right.
\]

Associates of DAkq(Refl) are given by contrasting Fa''al of II when varying only on the assignment of DCmp(Causn), as for instance:-
sammam: poisoned vs tasammam: poisoned himself
Hence from figure 38 we get:-
\[
\begin{aligned}
\text { DAkq }(\text { Refl }) & \hookrightarrow \operatorname{pdg}(t) & \ldots .155 \\
n & \longmapsto \operatorname{pex}(a) & \ldots .156
\end{aligned}
\]

Thus from 155 and 156 we derive the following rules for configuration iii):-
\[
\underline{\operatorname{DAkg}(R e f l)} \longleftrightarrow\left\{\begin{array}{l}
\operatorname{pdg}(t) \\
\operatorname{pex}(\mathrm{a})
\end{array} \quad \ldots .558\right.
\]
which gives:-
\begin{tabular}{|c|c|c|}
\hline AAsh( & \(\square\) pex(u) & ... 157 \\
\hline " & \(\longleftrightarrow \mathrm{ia}(\mathrm{u})\) & ... 158 \\
\hline " & \(\longleftrightarrow\) icx(i) & ... 159 \\
\hline
\end{tabular}

Associates of \(\mathrm{DCmq}(\mathrm{B}-\mathrm{I}-\mathrm{S})\) are given by contrasting Va , when varying only on the assignment of \(\mathrm{DCr}(\mathrm{Eff})\). Hence from figuxe 39 we get:-
\[
\begin{aligned}
\text { DCmq( } \mathrm{B}-\mathrm{I}-S) & & \leftrightarrow \operatorname{pex}(u) & \ldots .160 \\
" & & \longleftrightarrow \mathrm{ia}(u) & \ldots .161 \\
" & & \longleftrightarrow \operatorname{iex}(i) & \ldots .162
\end{aligned}
\]

Thus from 157-162 we derive the following rules for the configuration:-
\[
\left.\begin{array}{l}
\text { AAsh(Comp) }  \tag{559}\\
\text { DCing }(E-I-S)
\end{array}\right\} \leftrightarrow\left\{\begin{array}{l}
\operatorname{pex}(y) \\
\operatorname{iex}(1)
\end{array}\right.
\]

The principal configurations attaohing to Vo are:-
i) \(\mathrm{AAs}(\mathrm{Dur})+\mathrm{DCm}(\mathrm{O}-\mathrm{E})\)
ii) \(\mathrm{AAs}(\mathrm{Dur})+\mathrm{DAkq}(\operatorname{RefI})\)
iii) AAs (Prog) +DCm (Eff)

Associates of \(\mathrm{AAs}(\mathrm{Dur})\) are given by contrasting Va , when varying only on the assignment of AAsh(Comp). Hence from figure 37 we get:-
\[
\operatorname{AAs}(\operatorname{Dux}) \longleftrightarrow p b x(a) \quad . . .163
\]

Associates of \(\mathrm{DCm}(\mathrm{O}-\mathrm{E})\) are given by contrasting uFa' iL of II when varying only on the assignment of DCmp(Causn). Hence:-
which gives:-
\begin{tabular}{rlr}
\(\mathrm{DCm}(0-\mathrm{B})\) & \(\longleftrightarrow \operatorname{pbx}(\mathrm{a})\) & \(\ldots .164\) \\
\("\) & \(\longleftrightarrow \operatorname{pdg}(t)\) & \(\ldots .165\) \\
\("\) & \(\longleftrightarrow \operatorname{pex}(a)\) & \(\ldots .166\) \\
\("\) & \(\longleftrightarrow \operatorname{icx}(\mathrm{a})\) & \(\ldots .167\)
\end{tabular}

Thus from 163-167 we derive the following rules for configuration i):-


Associates of DAkq(Refl) are given by contrasting uFa' il of II, when varying only on the assignment of DCmp(Causn), as for instance:-
usammim: poisons vs atasammam: poisons himself
Hence from figure 41 we get:-


Thus from 163, 168-171 we derive the following rules for configuration ii):-


Associates of AAs (Prog) are given by contrasting Va, when varying only on the assignment of AAsh(Comp). Hence from figure 37 we get:
\[
\mathrm{AAs}(\text { Prog }) \longleftrightarrow \operatorname{pbx}(\mathrm{a}) \quad \bullet . .172
\]

Associates of \(\operatorname{DCm}(E f f)\) are given by contrasting Vd, when varying only on the assignment of \(\mathrm{DCmg}(\mathrm{B}-\mathrm{I}-\mathrm{S})\). Hencese
which gives:-
\[
\mathrm{DCm}(\text { Rff }) \longleftrightarrow \mathrm{pbx}(\mathrm{a}) \quad \ldots . .173
\]

Thus from 172 and 173 we derive the following mule for configuration iii):-


The principal configuration attaching to Vd is:-
\[
\mathrm{AAs}(\text { Dur })+\operatorname{DCmg}(\mathrm{E}-\mathrm{I}-\mathrm{S})
\]

Associates of \(\mathrm{AAs}(\mathrm{Dur})\) are given by contrasting Vb , when varying only on the assignment of AAsh(Comp). Hence from figure 40 we get:-
\[
\begin{aligned}
& \mathrm{AAs} \text { (Drax) } \longleftrightarrow \operatorname{pbx}(u) \quad . .174 \\
& \text { " } \longleftrightarrow \operatorname{pex}(\mathrm{a}) \quad . . .175 \\
& n \longrightarrow \mathrm{ia}(\mathrm{a}) \quad . . .176 \\
& \text { " } \quad \text { icx(a) ... } 177
\end{aligned}
\]

Associates of \(\mathrm{DCmg}(\mathrm{E}-\mathrm{I}-\mathrm{S})\) are given by contrasting Vc, when varying only on the assignment of \(\mathrm{DCm}(\mathrm{Eff})\). Honce from figure 42 we get:-
\[
\operatorname{DCma}(\mathrm{E}-\mathrm{I}-\mathrm{S}) \longleftrightarrow \operatorname{pbx}(\mathbf{u}) \quad \bullet . .178
\]

Thus from 174-178 we derive the following rules for the configuration:-
\[
\begin{aligned}
& \left.\begin{array}{l}
\mathrm{AAs}(\text { Dur }) \\
\mathrm{DCmq}(\mathrm{Em}-\mathrm{I}-\mathrm{S})
\end{array}\right\} \leftrightarrow \mathrm{pbx}(\mathrm{u}) \quad \ldots . .564 \\
& \mathrm{AAs}(\text { Dur }) \longleftrightarrow \begin{array}{l}
\text { pex (a) } \\
\text { is(a) } \\
\text { iex(a) }
\end{array} \quad \ldots .565
\end{aligned}
\]
4.5 The principal configurations attaching to Ve are:-
i) AAs (Prog) \(+\mathrm{DCm}(0-\mathrm{E})\)
ii) AAs (Prog \()+\mathrm{DCm}\) (Eff)
iii) AAs (Prog) + DAkq (Refl)

Associates of AAs (Prog) are given by contrasting Vc, when varying only on the assignment of AAs (Dur). Hence:-
which gives:-
\[
\begin{aligned}
\operatorname{AAs}(\text { Prog }) & \longleftrightarrow & \longleftrightarrow \operatorname{pay}(m) & \ldots 179 \\
n & & \longleftrightarrow \operatorname{pbx}(u) & \ldots . .180 \\
n & & \longleftrightarrow \text { icx }(i) & \ldots .181
\end{aligned}
\]

Associates of \(D C m(0-E)\) are given by contrasting muFa' \({ }^{\prime}\) iL of II, when varying only on the assignment of DCmp (Causn). Hence:-
which gives:-
\[
\begin{array}{rll}
\mathrm{DCm}(0-\mathrm{E}) & \longleftrightarrow \operatorname{pdg}(\mathrm{t}) & \ldots .182 \\
n & \longleftrightarrow \operatorname{pex}(\mathrm{a}) & \ldots . .183
\end{array}
\]

Thus from 179-183 we derive the following rules for configuration i):-


Associates of \(\operatorname{DCm}(\) Eff \()\) are given by contrasting \(V f\), when varying only on the assignment of \(\operatorname{DCmq}(E-I-S)\). Hence:-

which gives:-
\[
\operatorname{DCm}(B f f) \longleftrightarrow \operatorname{icx}(i) \quad \ldots 184
\]

Thus from 179-181 and 184 we derive the following rules for configuration ii):-



Associates of DAkg(Refl) are given by contrasting muFa'ill of II, when varying only on the assignment of DCmp(Causn). Hence from 44 we get:-
\[
\begin{aligned}
\mathrm{DAkg}(\text { Refl }) & \longleftrightarrow \operatorname{pdg}(t) \\
& \ldots \operatorname{pex}(\mathrm{a})
\end{aligned} \quad \ldots 185
\]

Thus from 179-181 and 185, 186 we derive the following rules for configuration iii):-

\(\mathrm{DAkg}(\) Ref \() \longleftrightarrow\left\{\begin{array}{l}\text { pdg ( } t \text { ) } \\ \text { pex (a) }\end{array}\right.\)
The principal configuration attaching to \(V f\) is:-
\[
\mathrm{AAs}(\text { Prog })+D C \mathrm{mq}(\mathrm{D}-\mathrm{I}-\mathrm{S})
\]

Associates of AAs (Prog) are given by contrasting Vd, when varying only on the assignment of AAs(Dur). Hence:-
which gives:-
\[
\begin{gathered}
-290- \\
\operatorname{AAs}(\text { Prog }) \leftrightarrow \operatorname{pay}(m) \quad \text {... } 187
\end{gathered}
\]

Associates of \(\mathrm{DCmg}(\mathrm{E}-\mathrm{I}-\mathrm{S})\) are given by contrasting Ve, when varying only on the assignment of \(D C_{m}\) (Rff). Hence from figure 45 we get:-

DCmg (E-I-S) \(\leftrightarrow \operatorname{iox}(\mathrm{a}) \quad\)... 188
Thus from 187 and 188 we derive the following rules for the configuration:-
\[
\begin{array}{ll}
\mathrm{AAs}(\text { Prog }) \longleftrightarrow \operatorname{pay}(\mathrm{m}) & \ldots(\text { in 509 }) \\
\mathrm{DCmq}(\mathrm{E}-\mathrm{I}-\mathrm{S}) \longleftrightarrow \operatorname{iox}(\mathrm{a}) & \ldots(\text { in } 510)
\end{array}
\]

Chapter 13

\section*{The Systems of Syntactic Templates}
0.0

\section*{Introductory}

This chapter complements the theoretical discussion in section 4 of chapter 3.

As an account of the syntactic systems it is for the most part rather less precise than are the accounts of the majority of systems discussed in this study.

It is less precise for this reason. Our analysis of the morphological component of the expression code was for the most part taxonomic. That this is so is evident from the largely Structuralist methodology employed in setting up the various systems and series.

The situation in respect of the systens of syntactic templates is rather different. By relying on substitution and other essentially classificatory techniques we may identify a perfectly respectable set of teraplates, bearing a fairly close resemblance to those which might be isolated by other phrase structure models.

However it seems not unlikely that the acceptance of these more traditional analyses would lead to unnecessary complexity in the rule scheme, and perhaps - although this cannot be ascertained at the present tine, a diminution of predictive power in the grammar.

Now in this study no attempt has been made to provide an exhaustive account of the rule system - even assuming that such a thing were posaible, and it follows therefore that the classifioation of syntactic templates provided in the following pages cannot be but highly tentative, since we lack the apparatus
(i.e. mule system) necessary to justify or invalidate our analysis.

\section*{1}

In para. 4.2 of chapter 3 we distinguished two types of syntactic template to which were attached the designations 'primaxy' and 'secondary' . Secondary templates are taken to be permissible combinations of forn classes without exception, being composed as they are of units below the size of the phrase. Primary templates are rather different. Certain of their dummy symbols are found to be replaced directly by forms generated in the morphological component, while the majority are replaced by secondary templates and the forms inserted into them.

It will be apparent therefore that prior to giving an account of the templates \(\mathbf{\varphi} \hat{f}\) Arabic we must offer some characterisation of the set of form classes.

Each of these classes would in a more thoroughgoing analysis be set up on strict distributional oriteria (see Lyons 1968 4.2 .8 and 4.2 .9 ) but it will suffice for our present purposes to rely on intuition, in the belief that the classification so produced would be validated by/a formal distributional analysis.

First we identify a class:-
\(F=\{\) rajul, nisä', kabar, wuzarā', madina, hujra,....walad \(\}\)
Translated, these are respectively:- man, women, news,
ministers, city, roon, boy.
Note that in Arabic, "singular", "plural", "masculine" and "feminine" nouns may appear in the same substitution frame far more readily than in Finglish. Soreover for the limited purpose of setting up syntactic templates a broader rather than narrower classification is to be desired.
1.1.1 Totally distinct in all environnents from class \(F\) is the
class:-
\(G=\{\) sami'at, labisna, hazinna, kāna, 'akada, ....takūnu \(\}\)
Translated:- she heard, they \((f)\) dressed, they \((f)\) were sad, he was, he took, you will (ms)

Once again the Structuralist would require a naxrower classification.

Classes \(F\) and \(G\) do of course correspond to the traditional classes of "noun" and "verb". A dumy symbol \(F\) may be replaced either by a form generated in series \(N\) (see section 2 of chapter 11) or, less commonly, out of series \(V\) (see section 1 of chapter 11), In traditional tems these latter are "participles" become "nouns". A dummy symbol \(G\) may be replaced only by a form generated in series \(V\).
1.1.2 Having a distribution partly overlapping those of classes \(P\) and \(G\) is the class:-
\(H=\{\) katira, jadida, duwaliya, täbit,...., sawdã"
Translateds- many \((f)\), new \((f)\), international ( \(f\) ), firm (m), black (f).

The members of this class are in the limit distinguishable from those of classes \(F\) and \(G\) by their appearing in an attributive position, as for instances-
1) waqa'a 1-hajaru t-taqil \(u\)
where no member of \(F\) or \(G\) could substitute for taqil.
A dunmy symbol Inay - as is the case with \(F\), be replaced by foms generated in series \(\mathbb{N}\) and \(V\). More or less exactly the same range of measures is found in both classes, which is of course one of the reasons that prompted the Bastern gremrarians
(1) fall (3fs-act-comp): the - stonea the - heavy: "The heavy stone fell".
to place both types under the one classification. (Note that each of the classes F, G and H are closed sets (Lyons 1968 9.5.2). The number of forms - both actual and theoretical, is finite).
1.1.3 Also having a distribution partly overlapping that of \(F\) is the class:-
\(I=\left\{\right.\) 'ana, \(^{\prime}\) anta,\(\ldots\)...hunna \(\}\)
They are distinct from \(P\) in that they cannot be substituted for the F -class form in such constructions as:

1-bābu t-tālitu: the chapter the third
1.1.4 Associate with more or less exactly the same set of sememes as the forms of I but distributionally distinct from them is the class:-
\(J=\left\{h u, h \bar{a}, \ldots . h_{n} n a\right\}\)
Class I is the set of independent pronominal forms associate with \(\operatorname{AGr}\left(\mathrm{Suj}_{\mathrm{j}}\right)\) while class J associate with \(\operatorname{Agr}(\mathrm{Oj})\) (On both of these sememes see section 3 of chapter 8. Traditionally the "subject" and "object" pronouns).
1.1.5 Next we have the class which is in tradition that of
"demonstrative pronouns". This we designate
\(X=\{\) hādea, hādih \(\mathfrak{i}, \ldots\) '. ulà'ika \(\}\)
The distinctness of their distribution derives from the existence of such constructions as:-
iia) hādihi l-buyūt:
iib) buyūtu 1-wazIri hādihi
1.1.6 Finally we set up the olasses:-
a) \(L=\left\{\operatorname{man}^{2}\right.\), law, l-ladI,....hal \(\}\)
(1) a) this (fs): the-houses. "These houses".
b) houses: the-minister: this(fs) "The houses of the minister".

In terms of their associations this is a rather eclectic set. They are defined by their capacity for substitution in frames such as:-
'aṣdara manŝūran
For instance:-
iiia) man 'aṣdara mans̄ūran:
iiib) law 'aṣdara mansüruan:
iiic) hal 'aṣdara mansüran:
b) \(M=\{f I\), 'ala, bi,....min \(\}\) of prepositions
1.1.7 Given this reasonably complete classification we next consider the templates into which they may be formed- in the case of secondary templates, and those in which these secondary templates may be set.
2. The System of Primaxy Templates
2.0 Among the simplest and unmarked syntactic structures of Arabic is that instanced by:-
iv) 'aṣdara 1-wazİru manßūran (2)

In terms of the classification introduced above it has the structure:-

\section*{( \(G: F: F\) )}

Note first that the F-form l-waziru may be interchanged not only with another P -form but also say, with such oonstructions as:-
va) 1-wazIru l- jadidu:
vb) waziru z-zirā'ati:
(1) a) who:issue(3ms-act-com): circular. Meaning either "Who issued a circular" or "Whoever issues a circular"
b) If (hyp): (remainder as above). Meaning either "If he were to issue..." or "If he had issued..."
c) (int): (remainder as for a)). "Did he issue..." Issue(3ms-act-com): the-minister:circular. "The minister issued a circular".
(3) a) the-minister: the-new. "The new minister".
b) minister:the-agriculture. "The minister of agriculture".

Wuoh the same is true for the second F-fom mantsuran. It is obvious therefore that the template into which these forms are replaced is rather more abstract than is suggested by the above formula. Expressed more traditionally, the relationship is not merely between the noun-subject and the verb, but between the noun-phrase-subject and verb.

Let the noun-phrase dumry symbol be then designated \(A\). The structure given above is now rewritten:- (G:A:A)

The majority of "constituent structure" analyses would agree in complementing the noun-phrase dumy or "slot" by a corresponding verb-phrase dummy. Such an analysis is not adopted here for the following reasons.

Pirst, in the light of the (ummarked) oxdering: Verb-SubjectObject the distinction "subject vs predicate" is taken to be, grammatically if not philosophically, irrelevant to Arabic.

Second, such a dumsy even so might be duatified on the grounds that "adverbial" phrases should be seen as more closely associated with the verb. Semantically this is of course true. However against this is the fact that Arabic is for the most part devoid of adverbs as the term is usually understood. Adverbial notions are expressed - in pre-theoretical tems, either by placing some indefinite abstract noun in the "accusative" case or by prefixing 㐘 it an appropriate preposition.

For instance the Inglish "The minister isEued a circular quickly" might be rendered in either of the following ways:-
via) 'asdara 1-wezIru mansūran eukten sarit'an
vib) 'aşdara l-wazirru mansūran bisur'atin (1)
(1) a) (First three items as per (iv)): quickneg(fsa). \(\quad\) (First three items as per (iv)): with: quickness(fsg)

On the evidence of such pairs (vi) we might then argue that approximately "adverbial" constructions in Arabic have - once again on a 'broad' analysis, a distribution much the same as that of preposition-phrases, and so lon as the latter are not incorporated in a "verb-phrase" neither should the former.

In "interpretative" T-G studies it has been customary to develop preposition phrases from the VP symbol, a procedure which is taken to have certain advantages for the sub-categorisation of verbs. (see Chomsky 1965 p101 ff). However since this subcategorisation is conceived on the premuse of a "syntactic" or "grammatical"level of description, and since we have assumed from the outset that this is not to be our concern, it is clear that it cannot constitute a sufficient argument for the adoption of a "verb phrase" dummy in the present case.

Therefore, given our first point and the fact that the "subject-predicate" dichotomy has also been rejected by such Grammarians as Fillmore(1968) we assume that there will be no dummy symbol of this nature.

The necessity for a dummy symbol equivalent to the traditional preposition-phrase has not been in question in the foregoing discussion, rather, we have been concerned merely to decide whether it should be incorporated as a component of a primary template.

Having decided that it should form part of primary templates it must now be established what form its incorporation should take.

Let the duramy symbol corresponding to"preposition-phrase" be denoted by B. Then, since the number of preposition phrases in any utterance is fairly flexible, it follows that we must make provision for recursive assignment of \(B\) to various primary templates.

Fuxthermore, not only is the number of such appearances liable to quite wide variation but so also is the position in the template in which they occur, these being in practice determined by a variety of factors including thematic structure, style and anaphora.

There are thus two descriptive possibilities open to us. On the one hand we might attempt to state every possible combination of \(B\) symbols. Alternatively we might introduce a generalised B symbol, with recursive properties and capable of being inserted at various poijits in the template.

Since we assume that there can be no "longest representation", and hence no longest sentence, it follows that there can be no set of primary templates since, for example, there is no limit to the number of preposition phrases which can occur. Moreover, even if the reverse were to be shown it is to be doubted that a mere listing of all possible templates would prove particularly illuminating.

Thus it would appear that the second solution offered is to be preferred, even though in adopting it we rather tend to breach the notion 'syntactic template' and incline somewhat to a 'transformational' solution.

Let us therefore introduce two further conventions. Let any dumy symbol having the property of recursion be denoted thus:- B...

Further, let any symbol - recursive or otherwise, which is variable as to position be placed behind the brackets enclosing the 'kernel' template.

Hence our tentative template (G:A:A) will be modified thus:(G:A:A)B...

The number of appearances of \(B\) will be governed by the composition of the encoding. Their position will be dictated by a. variety of parameters such as thematic structure and style.

Examples (vi) then are taken to be based on an actual template ( \(G: A: A: B\) ), while an expression such as:-
vii) tailaba minhumíl 1 -wazImu manşūran (1) vould be based on:- ( \(G: B: A: A:\) )

Example (iv) may be contrasted with:
viii) hal/'aṣdaxa 1-wazIrru manŝūran which varies from the fomer only on the assignment of the initial interrogative morpheme hal. Syntactically there are two ways of viewing (viii). First we may assume that it instances a primary template distinct from that of (iv) or on the other hand, we might choose to regard them as instances of the one template where the latter reflects the assignment of an optional dummy symbol into which are inserted such particles as hal, law, etc.

Since the former solution appears to offer no advantage over the latter it will not be adopted.

However since it would appear that any dumy symbol, or template may in certain contexts be replaced by a member of the appropriate form class plus a particle of some kind, rather than assign optional dummy symbols to all of these, it will be assumed by convention that any such particle will appear as the first item in the replacenent of some template or individual symbol.

As a final modification to our notation any two or more instances of the same dummy symbol in some template are distingw uished by attaching subscripts.

Therefore the template standing behind example (iv) has the form:- (G:Aa:Ab)B...

Given an appropriate descriptive apparatus we may now proceed to enumerate other primary templates.

Consider the following examples:-
ixa) karaja
ixb) karaja 1 -wazIru
ixc) 'asdara mans̄ūran
ixd) 'aṣdarahu 1-wazĩru (1)
That standing behind (ixa) is the simplest primary template, and is presumed to have the structure:-
(G)B... (a)

Notwithstanding the fact that the nouns of (ixb) and (ixc) are functionally distinct both are taken to instance the one template:
\[
(G: A) B \ldots(b)
\]

Similarly, although the order of subject and object in (ixd) is the reverse of that of (iv) the template instanced by both is taken to be:
\[
(\mathrm{G}: \mathrm{A}: \mathrm{A}) \mathrm{B} \ldots(\mathrm{c})
\]

However note that from a formal point of view template (c) can be regarded as the 'sum' of two instances of template (b), since the latter is taken to be valid both for the verb-subject and for the verb-object relationship, and the former is incorporated in a string comprising both of these.

In addition to the reduction in the number of templates permitted by this assumption it has the additional advantage that the statement of associations between the sememes \(\operatorname{AGr}\left(\operatorname{Suj}_{j}, 0 j\right)\) and syntactic templates is somewhat simplified. (See for instance para. 3.1.0 of chapter 14).

The ordering of the strings inserted into these dumny symbols A will then be constrained principally by considerations of (1) a) go out (3mseact-com). "He went out".
b) " " " ": the-minister."The minister went out".
c) issue " " : circular. "He issued a circular".
d) " " " - himatheminister."The minister issued it."
thematic structure (See table 7 in para. 3.1 .6 of chapter 14).
Slightly more complex are the templates lying behind the

\section*{following:-}
xa) kāna l-waziru yuṣdiru mans̈ūran
xb) kāna yakruju
Behind (xa) and by analogy with templates (b) and (c) above, we take to be the two templates
\[
m(G a: A: G) B \ldots \quad \ldots(d)
\]
and
\[
m(G a: G: A) B \ldots \quad \ldots(e)
\]

Similarly behind example (xb) we assume a template
\[
m(G a: G) B \ldots \quad \ldots(f)
\]

Parallel to the templates listed above is a further group characterised in general by the setting of symbol A as the first element in the template. The commonest of these are instanced by the following examples:-
xia) 'inna l-wazİra yuṣdiru mansüran
xib) 'inna 1-wazira yakruju
xic) al-wazIru maridun
Bxample (xia) may be analysed as an instance of the template (G:A)B... introduced above plus a further having the structure: (A:G)B...

By inspection it will be seen that examples (xib) and (xic) are also based on this latter template. Arguments for the equivalence of these last two will be found in1. 6 of chapter 10.
(1) a) be(3ms-act-comp): theminister: issue(3nsmact-incom):circular. "The minister used to issue a circular".
b) be(3ms-act-comp): go out(3ms-act-incom). "He used to go out"
(2) a) \((n-f):\) the-minister: issue(3ms-act-incomi):circular. "The
minister issues a circular".
b) ( \(n-f\) ): the-minister: go out (3ms-act-incom) "The minister goes out".
c) the-minister:sick. "The minister is sick".

Analogous both to the examples given above and those discussed in pare. 2.5 are the following:-
xiia) 'inna l-wazira lam yakn yakruju
xiib) 'inna 1-wazixa lam yokun yascuun mansixuan
Behind both of these in presumed to lie a template (A:Ca:G)B...., where (xiib) also instances template (c) of 2.5.
2.7 The series of terplates introduced above is not intended to be comprehensive but rather as illustrative of the form a nore thoroughegoing syntax might take.

Let this set of primaxy templates be denoted Sa. Then, assuming for the system a stable structure it will have a composition something after that show lelow.
\begin{tabular}{|c|c|}
\hline \multicolumn{2}{|l|}{Sa} \\
\hline \multicolumn{2}{|l|}{\multirow[t]{2}{*}{(G)B...}} \\
\hline & \\
\hline (Ga: A: G)B... & \\
\hline (Ga: G: A) B... & Fig. 1 \\
\hline (Ga:G)B... & \\
\hline (A:G)B... & \\
\hline (A: Ca: G) B... & \\
\hline
\end{tabular}

\section*{3 Secondary Momplates}

Secondary teapletes are those which, with their accompanying strings of morphemes replace the duany symbols of prinary templates. They are apparently rather fewer in numer than the latter (See the discussion in 4.2 of chapter 3).
3.1.0 Consider the following exaraples:xizia)'aṣdara 1-wasinu 1-jadidu mansixuan xifilb)'aạdaxa wazImu z-zirā'ati mans̊uran
(1) \(a(n-f)\) the-minister: (neg): be(3manapx):gomout(3ns-act-incom). "The minister did not use to go out". \(b(n-f)\) the-ninistex: (neg) :bc(3mg-apx) : issue (3ns-act-incom): circular: "The minister did not use to issue a circular".
(2) a) issue ( 3 nsmact-com): the-minister: the-nev: circular. "The nev rinisister issued a circular".
(b) issue (3ns-act-com): minister; the-agriculture: circular "The minister of acriculture issued a eircular".

Behind both of these stand a sumation of two instances of the primary template \(\mathrm{Sa}(\mathrm{G}: \mathrm{A}) \mathrm{B} . \ldots\). (See para. 2.3 above). The first symbol \(A\) is replaced by the strings l-waziru l-jadidu and wazIru z-ziràati.

These latter have an intermal structure of extremely coman occurrence (compare paras. 3.2 of chapter 8 ). In the first the item l-waziru is an example of form class \(F\), and l-jadidu of form class H. In the second both itens are of class \(\mathbb{F}\).

From this we may infer that anong the secondary templates of Arabic are ( \(\mathrm{F}: \mathrm{H}\) ) and (Fa:Fb).
3.1.1 These formulae as they atand are in no way adequate for the reason that there is no theoretical restriction either on the number of \(H\) forns which may appear in the first template, or in the number of \(F\) forms which may occur in the second.

Among constructions of the fomer kind we might for instance find
xiva) 1-waziru 1-jadidu 1-'atradu
and of the latter:-
 1-mahalliyati (1)

Note in passing that constmuctions involving extension of the first tem of these templates are not permitted.

Examples (xiv) make it clear then that we must allow the second symbol in each of the above templates to be recursive. However since they are restricted as to position of occurrence they may be kept within the bracket, unlike the \(B\) symbol of the primary templates.
(1) (a) theminister: the-new: the-deaf: "The deaf new minister"
(b) complete(3ms-act-com): set up(mas): project: organise(mas) ministry: the-administration: the-local. "The setting up of the project for organising the ministry of local administration has been completed". Example (xivb) is cited in Nahnad's grammar out of al-'ahram

Thus our two templates will have the form:- (F:H....) and (FasFb....)
3.1.2 As is the case with primary templates the secondary templates may be combined into the one structure, as for instance:-
xv) karaja 1-waziru 1-qaifiu 1-'aqli (1)

But the distinguishing feature of this particular construction is that the two templates are not strictly speaking combined. Rather, the construction containing the template (Fa:Fb...) stands in its entirety as an "attribute" of the string 1-waziru.

This suggests that it is not correct merely to see the first template as a combination of F and H classes, but that the second component should be understood as something more abstract - as a general dumny symbol of attribution that is, for which the fom class \(H\) is only one possible replacement (Compare the discussion of the \(A\) symbol in para. 2.0 above).

If then this more \(\mathrm{ab}_{\mathrm{s}}\) tract symbol be designated C our first secondary template will have the structure (F:C...). The symbol of recursion remains because it is the attribution rather than the actual mode of attribution which is recursive.

Examples (iv) and (xiiia) should be contrasted vith:
xvi) 'ag̣aza hādã 1-wazIru 1-jadidu manßßūxan The string hädā is a member of class \(K\) (see para. 1.1.5) the distinctness of wich resides precisely in the ability of its elements to occur in the position occupied by häda in this example. Since (xvi) also contrasts with:
xvii) 'aṣdara hādā 1-wazIru mansūran
we infer that the subject phrase of (xvi) reflects a summation of (F:C...) and a further tamplate (K:F), Giving in this case the compound template ( \(\mathrm{K}: \mathrm{F}: \mathrm{C}\) ).
(1) go out (3ms-act-comp) : the-minister: the-little: the-intelligence. "The minister of little intellect went out"
3.2.0 On the basis of the foregoing discusaion let us then set up a system Sb of secondary templates. Like those of Sa each member of Sb may either stand in direct paradigmatic contrast with the others or may blend with thea to form a compound template.

In view of the fact that (Fa:Fb)...) is taken to replace the symbol \(C\) of ( \(F: C, \ldots\) ) in (xv) one might argue that the relationship between them should be seen as 'secondary' to 'textiary'. However the situation is not quite the same as that of primaxy and secondary templates since the fomer in all other respects behaves like the remaining templates.

The system therefore is understood to have the structure shown below:-
\(\frac{\mathrm{Sb}}{}\)\begin{tabular}{l} 
(F:C...) \\
(Fa:Pb...) Fig. 2 \\
(K:F) \\
\hline
\end{tabular}\(\quad\).
3.2.1 Example (xiiia) should be contrasted with:-
xviii) 'asdara 1-mazIru 1-ladi 'alqā kiṭāban mansuuxan \({ }^{(1)}\)

In this case the symbol \(C\) is replaced by the primary template \(\mathrm{Sa}(\) (G:A)B...). The overall structure of this particular syntax will then be as ahown below:-
\[
[\mathrm{Sa}(\mathrm{G}: \mathrm{A}) \mathrm{B} \ldots)-\mathrm{Sa}((\mathrm{G}: \mathrm{A}) \mathrm{B} \cdot \ldots)]
\]

where the structure ( \(G: \hat{A}_{a}: A b\) ) is the sum of the pair of structures listed immediately above.
(1) issue (3ns-act-comp: the-minister: who: sive(3ns-act-comp): speech: circular "The minister who gave a speech issued a circular".

To this extent then our dichotomy of prinary and secondary structures is somewhat misleading. However since recursion of this kind has received attention from T-G theoreticians there seens little need to discuss the question in depth.

\section*{An illustrative example}

By way of complementing the discussion in sections 2 and 3 the structure of a rather more complex and more typical utterance is given below.

The example is:-
1 'a'lana waziru l-kārijIyati fI 1-mu'tanari s-suikfyi l-laḍ
8 'aqadahu 1-yama bil-'iBtirāki ma'a wazIri 1-kãrijIyati l-'almānI yi
15 ba'da tawgi'i 1-'ittifäqiyāti l-lati ' "áqádat bayna misca
22 wa'almānİya 1-JarbIyati 'anna miṣa ta'malu min 'ajli smsaläni
30 1-mus̉arrifi wal-'ādili wa'anna miṣra lam tataraddad fi du-dahābi
38 'ila Geneve.
The following is a word by word analysis of this sentence.
1) announce (3ms-act-com:main verb)
2) minister (part subject)
3) the-external affairs (part suj)
4) in
5) the-conference (governed by 4)
6) the-press (qualifying 4)
7) which (governed by 4)
8) give (here) (3msmact-com): verb of relative clause, plus; it(object of verb)
9) to-day
10) in-unison (comprising a preposition bi and a maṣdar 'istirak)
11) with
12) minister
13) as 3)
14) the-German (qualifying 12 and 13)
15) after
16) signing
17) the-coamuniques (Logical object of 16)
18) which
19) agree(here)(3fs-act-com)
20) between 1
21) Eeypt
22) and Germany
23) the-West (qualifying 22)
24) that (introducing complement of 1)
26) work (3fs-act-incom)
27) from (1iterally)
28) sake
29) the-peace
30) the-honourable (qualifying 29)
31) and-the-just (qualifying 29)
32) and-that (second part of complement)
34) neg
35) hesitate (3fs-cap )
36) in
37) the-going(masdar)
38) to

That is:- "The minister of foreign affairs announced in the new conference which he held to-day jointly with the German foreign minister, after the signing of agreements concluded between Egypt and West Germany, that Egypt would work for an honourable and just peace, and that she had not hesitated in going to Geneva..."

There are four main components of this sentence, namely, the main verb (item1), the subject (items 2) and 3), a prepositional phrase (items 4 to 23) and a two-part complement (itens 24 to 31) and 32 to 39).

Since the oxdering of the first, second and fourth of these is verb-subject-complement it is apparent that the sentence is based on two occurrences of the primary template \(\mathrm{Sa}(\) ( \(\mathrm{G}: \mathrm{A}) \mathrm{B} . .\).

As we remarked above at para. 2.1 the factors governing the location of any B-symbol in a structure are varied. Certain of these (e.8. thematic structuring) are presumed to be semenically governed, others are taken to be syntactically constrained. A third factor, namely location dictated by stylistic criteria is of influence only late in the generative procese.

Now in the present instance what we are concerned to illustrate is syntactic structure prior to phonemicicisation and oraitting the complexities of syntactic and stylistically governed postioning. Thus for present purposes ve will assume that the location of every B-symbol is thematically - i.e. sememically, conditioned.

Therefore, 'subing' the two templates given above and inserting the B-symbol appropriately between the two A symbols we have:
(G:Aa:B:Ab) ....(a)
Fach of the constructions replacing the symbols \(\mathrm{Aa}, \mathrm{B}\), and Ab is complex and therefore is based on one or more secondary templates.

Consider first the Aa-symbol. The unit wazIru l-kārijIyati is clearly based on \(5 b\) ( (Fa:Pb...)) (compare xilib above) in thike precise form:
( \(\mathrm{Fa}: \mathrm{Fb}\) )

The construction replacing the B-symbol is the most complex in terms of length but has a comparatively simple basic structure, comprising in fact an \(F\) and two C-symbols. It is therefore an instance of Sb (F:C...) in the precise form
(F:Ca:Cb)
(Compare examples (xiiia) and (xviii).
As was noted above the Ab-symbol is replaced by a two-part structure. An inspection of these (items 24 to 31 and 32 to 39) shows that at this level they each have exactly the same structure, which derives from the template \(\mathrm{Sa}(\mathrm{A}: \mathrm{G}) \mathrm{B} . .\). (compare example (xib). The first of these has the precise form:
\[
(A: G: B) \quad \ldots(d)
\]
and the second:
\[
(\mathrm{A}: \mathrm{G}: \mathrm{Ba}: \mathrm{Bb}) \quad \ldots(\mathrm{e})
\]

The complexity of the B-symbol in a derives from the structure of the constitutents of the \(\mathrm{Cb}-\mathrm{symbol}\) of c . The construction replacing this symbol is based on \(\mathrm{Sa}(\mathrm{G}: \mathrm{A}) \mathrm{B} . .\). ) and in the precise form:
\[
(\mathrm{G}: \mathrm{A}: \mathrm{Ba}: \mathrm{Bb}: \mathrm{Bc}: \mathrm{Bd}) \quad \ldots(\mathrm{f})
\]

Replacing Bc of f is the construction "ma'a waziri lkārijIyati l-'almānIyi" which derives from the pair of secondary templates \(\mathrm{Sb}((\mathrm{Fa}: \mathrm{Fb} . .\).\() and \mathrm{Sb}(\mathrm{F}: \mathrm{C} . .\).\() in the precise form:-\) (Fa:Fb:C)
... (g)
Replacing \(B d\) of \(f\) are items 15 to 23 which are also based on the termplates \(\mathrm{Sb}(\mathrm{Fa}: \mathrm{Fb})\) and \(\mathrm{Sb}(\) ( \(\mathrm{F}: \mathrm{C} . . . \mathrm{)}\) ), and once again in the precise form:-
\[
\text { (Fa:Fb:C) } \quad \ldots(h)
\]

The C-symbol of \(h\) is constituted by the "relative clause" comprising items 18 to 23 which is based on \(\mathrm{Sa}(\mathrm{G}) \mathrm{B} . .\). ) in the
precise form:-
( \(G: B\) ) \(\quad \ldots\) (i)
The B-symbol of \(i\) is constituted by a simple F -form (item 21) and a further structure based on \(\mathrm{Sb}(\) ( F:C...) in the precise form:-
\[
(F: C) \quad \ldots(j)
\]
4.3

The B-symbol of \(d\) (constituted by items 27 to 31 ) is replaced by a construction deriving from Sb (Fa:Fb...) plus Sb ( (F:C...) in the precise form:-
(Fa: \(\mathrm{Fb}: \mathrm{Ca}: \mathrm{Cb}\) ) \(\ldots(\mathrm{k})\)
4.4

Diagramatically this structure will have the form:-


\section*{Some Generative Properties of Arabic}

\section*{Introductory}

In this chapter we exarine, albeit in preliminary fashion, some of the different ways Arabic may express a given representation.

The sum of these different modes of expression taken together will be termed the 'generative properties' of the language with respect to the representation concerned.

Such a concept does of course broadly correspond to the notion of the various "uses" of forms and constructions identified by the traditional gramarian. (See briefly 4.0 of chapter 3 ).

It will be obvious that the study of the generative properties of any language is an enomous if not endless task, and that the few observations offered below do not even scratch the surface of the topic. Our justification for its inclusion is merely that any model of description - whether in the final analysis adequate or inadequate, should at least be shown able to describe the imited corpus to which it has been exposed, and from which it has been developed.

The chapter comprises the following components. In section 1 we outline the representation, and then, in section 2 we assign various encodings to this. Finally in section 3 these encodings are expanded to give a selection of utterances appropriate to the representation.

\section*{1 The ropresentation}

The gituation envisaged is of a hungry man - by profession a perhaps not very successful beggar, picking up the remains of a
loaf of bread which a woman has thrown away, and eating it.
There are thus two main components of the situation - a woman throwing away a loaf of bread, and a man eating same. The representation of this event will therefore comprise two main components - a more recent event and an earlier event which stands as an attribute of a participant in the later.

Let us further assume that - not having occasion to observe the manners of polite society, he is inclined to gnaw at this loaf and to employ in doing so a set of teeth rather the worse for wear.

Thus as participants in the 'superordinate' representation we have a man, a loaf and the teeth viewed separately from the man. As attribute to the loaf stands a subordinate representation whose participants are this same loaf and a woman.

Hence the first representation will be of the form:-
\[
R_{1}(P \cdot A): R_{2}\left(P_{\bullet} A\right): R_{3}(P \cdot A): C \quad \ldots 1
\]
and the second:-
\[
R_{1}\left(P \cdot A_{\bullet}\right): R_{2}(P \cdot A): C \quad \not . .2
\]

Then since being a beggar is an alienable attribute (see para.1.2 of chapter 4) we should envisage a second subordinate representation of the fom:
\[
R_{1}(\text { P.A. }): C \quad \ldots 3
\]

Taken together we will have the composite representation:-

(see expressions 5 and 6 of chapter 4, para. 1.4 and also 1.7).

To these elements are assigned the following values:-


The relationships of these participants to their circumetances are as follows:-

Since the man is gnawing the loaf he is the agent of the event and hence \(R_{1}\) of the superondinate representation will have the value [agentive] Since the loaf is the loous of the action and the teeth the instrument through which the action is camriod out \(R_{3}\) of this representation will have the value [objective] and \(R_{2}\) instrument.

In the laxger subordinate representation the wonan is the agent and the loaf once again the locus of the event. \(R_{p}\) of (2) therefore has the value [agentive] and \(r_{2}\) [objective.]

In reprosentation (3) the man is again the agent and hence \(\mathrm{R}_{1}\) hes the value [agentive]

As was mentioned in para. 1.5 of chapter 4 it is not clained that these feature bundles constitute an adequate representation of the objects and events they purport to describe. They should however be adequate to our gramatical concerns. Some possible encodings

The structure of any encoding assigned to this representation will be a function of two variables, namely, the particular features of the bundles selected for encoding, and any 'judgements' imposed on the representation as a whole. The range of possible judgements is taken to be constrained by the nature of the particular systems of content available to the user and their membership.

The types of judgement which will be taken into consideration in this chapter are those made available by the systems ADt (see the footnote to para. 2.4.2.6 of chappter 11), DCm and the system(s) of thematic sememes.

This latter is a most important system for our presant purposes. However since the detemination of its structure is a patter of much complexity, the better course seened to be to omit it completely from a study of this kind. Therefore for present purposes only we will assume without argument that, save for the case where AAs(Prog) is assigned as part of the encoding of the circumstance, (i.e. where the verb is a participle having 'progressive' function - see para. 1.5 of Chapter 10) the 'unnarked theme' ( \(\mathrm{J}-\mathrm{T}\) ) of any utterance will be that component which imediately follows the verb. Any component which precedes the verb when the latter does not express AAs(Prog) - be it subject or no, will be termed the 'marked thene' ( \(\mathrm{N}-\mathrm{T}\) ). in our terns such structures will be understood to express the sememes ( \(\mathrm{V}-\mathrm{T}\) ) and ( \(\mathrm{V}-\mathrm{T}\) ). \({ }^{(1)}\)
(1) On 'theme' generally see Halliday 1967 section 5 - especially p213. On theme in Arebic see Beeston 1970 chapters 9 and 15, and 1974.

Te will further assume that any participant of a superordinate representation may express ( \(\mathrm{N}-\mathrm{T}\) ), al though it is not clear that any participant may express (U-T). (Nefther is it clear whether the verb may be the thene).

Let us now investicate the consequences of assigning to one or other of the participants of expression 1 the sememes ( \(\%-\mathbb{T}\) ) and ( \(\mathrm{U}-\mathrm{T}\) ).
2.1.0 If \(P\left(R_{1}\right)\) is selected - i.e. the beggar, there are no problems. If ( \(N-T\) ) is assigned the expression of \(P\left(R_{1}\right)\) will precede that of the circumstance "gnawing". If ( \(\mathrm{U}-\mathrm{T}\) ) the reverse will be the case. Thus we might have in the fomer case:
ia) 'inna l-mutasavvila qadema r-rağifa bi'asnānihi and in the latter:
ib) qaḍana I-mutasamvilu r-mḡifa
2.1.1 The most conplicated case is that where \(P\left(R_{2}\right)\) is assigned (M-T). A typical expression might then be:
iiia) 'armā 'asnānuhu fasta'malahā liqadmi nwağifi If assigned (U-T) we might have:
iiib) stu'nilat 'asnānuhu 1iqac̣mi nmağifi \({ }^{(2)}\)
The following points should be noted in regard to these:
a) The assignent of a thematic semme to a participant having \(R[\) instrument \(]\) requires the addition to the encoding of the lexene Lp ( \(10^{\circ} \mathrm{ml}\) : use) or sone similar.
b) The encoding of the feature [past time] of \(C\) is assigned to this element rather than to the segrent encoding C.
(1) a) \((n-T)\) : the-beggar: \(\operatorname{gnaw}(3\) ms-act-con): the-loaf: with teeth-him. "The beggar gnawed the loaf with his teeth."
b) "The beggax gnawed the loaf".
(2) a) as for: teeth-him: use(3nstact-com)-thom: toman(mas): the-loaf: "His teeth he used to gnaw the loaf".
b) use(3fs-pass-com): (as a). "His teeth were used to gnaw the loaf".
c) Causal modality is in general assigned to any predicate in configuration with a sememe from AAs and hence also attaches to \(\mathrm{Lp}\left(10^{\prime} \mathrm{ml}\right)\).
d) This lexeme is compatible only with \(\mathrm{DCm}(\mathrm{Dyn})\) and DCmq(E-I-S).
e) The circumstance and the participant having R [ objective] are encoded under the government of \(\operatorname{DAr}\) (Purp).
f) \(R_{3}\) [objective] is encoded by \(\operatorname{AGr}(\mathrm{Ann})\).

If \(P\left(R_{3}\right)\) - the loaf, is assigned ( \(M-\mathbb{T}\) ) the ensuing construction is much the same as (ia), the only difference being that it will have an anaphoric "copy" suffixed to the verb. The beggar is assumed to be assigned (U-T). Thus:
iia) 'inna n-raḡīfa qadamahu l-mutasawwilu
If on the other hand this participant is assigned (U-T ) the consequences are rather different. Let us assume that the predicate sememe assigned to \(C\) is \(\overline{D B p}\) ( \(q d y m\) gnaw) then, within the system DCm it is compatible only with DCm(Dyn) and DCmg(E-I-S). In traditional terms the verb may be active or passive but not for instance inchoative.

If ( \(U-T\) ) is assigned the circumstance \(C\) will be assigned, by rule of addition, DCmq(E-I-S) However if this latter is present any participant having \(R\) [agentive] - i.e. \(P\left(R_{1}\right)\), is commonly given no encoding. Thus we might have the string:
iib) quạima r-rag̈ifu (1)
This implies that there must be at least some ordering of the encoding rules (compare para. 3.9 of chapter 4). In particular, the assignment of thematic sememes should precede all other , and that of members of \(D C m\) should precede the encoding of participants.
(1) gnaw( 3 ms -pass-com): the-loaf. "The loaf was gnawed".

This latter entails that the circumstance should also be encoded before the participants.
2.2 .0

Let us now work through these various possibilities in rather more dotail, beginning with \(P\left(R_{1}\right)\). Thematic senemes are assigned by the rules:
\[
\begin{array}{lll}
\left((\mathrm{P} \cdot \mathrm{~A}) R_{x}\right) \\
\left((\mathrm{P} \cdot \mathrm{~A}) R_{\mathrm{x}}\right) \xrightarrow{[\mathrm{y}]} \xrightarrow{[\mathrm{y}]} & \begin{array}{l}
(\mathbb{H}-\mathrm{T}) \\
(\mathrm{U}-\mathbb{R})
\end{array} & \ldots \cdot 5
\end{array}
\]

That is, in sone (discourse) context ' \(y\) ' thematic semenes are added to the item given on the left.
2.2.1 Assigment of either of these to \((P, A) R_{1}\) sives the expressions:


That is, if a participant in an agentive relationship is assigned a thematic semene it is encoded as \(\operatorname{AGr}(\operatorname{Suj})\) and eventually becomes the subject of the sentence. Expressions 8 and 9 are not in fact the only possibilities but they are the ones which will be considered here. ( \(T=\) theme).
2.2.2 The assignment of thematic sememes to an asentive participant also has consequences for the value of the element assigned from the system of causal modality. However since this value depends in addition on the predicate assigned to the circumstance the latter should be dealt with first.

Maintaining the assumption that it is the gnawing of the loaf rather than its mere consumption that is highlighted we will have:
\[
\mathrm{C}[\text { past time }] \rightarrow \text { DBp (qdm: gnam) } \quad . . .10
\]

That is, all features of C except past time are encoded hy DBp(qdm). Then:
\[
\mathrm{c}[\text { past tine }] \rightarrow \mathrm{AAsh} \text { (Comp) }
\]

Since DBp (qdan) is compatible only with DCm(Dyn) and DCmo(E-I-S)
of the system 'causal modality' we now get:
\[
\text { (c) } l^{\left[\begin{array}{l}
5,6 \\
10
\end{array}\right]} \text { DCm }(\operatorname{Dyn}) \quad \ldots 12
\]

That is, in the context of an agentive participant as theme (expressions 5 and 6) and the predicate \(\mathrm{gip}(q d m)(\operatorname{expn} .10)\) the sememe DCm (Dyn) is added to the encoding of \(C\).

Since this predicate is but one of many that would impose the same restriction, 12 could clearly be made more general. Expressions 10-12 then give the encoding segment:
\[
\mathrm{DBp}(\mathrm{qdm})+\mathrm{DCm}(\mathrm{Dyn})+\mathrm{AAsh}(\mathrm{Comp}) \quad \ldots 13
\]

The next case is that where \((P, A) R_{2}\) is assigned thematic semenes. If assigned ( \(\mathrm{M}-\mathrm{T}\) ) we have:


That is, an 'instrument' participant assigned ( \(\mathbb{M}-T\) ) will appear first in the sentence, typically preceded by the particle 'anmā, and is taken to be neither subject nor object. (1)

If (U-T) is assigned we get:
\[
R[\text { instrument }] \xrightarrow{[(\mathrm{J}-T)]} \quad \operatorname{AGr}(\mathrm{Suj}) \quad \ldots 15
\]

It vas noted above (para. 2.1.2 point a) that where an instrmentel participant is theratised a predicate such as Lp ( \(10^{\circ} \mathrm{ml}\) : use) must be added. Hence:
\[
\xrightarrow{\left[\mathrm{R}\left[\mathrm{in}^{-}\right] \rightarrow \mathrm{T}\right]} \mathrm{Lp}\left(10^{\circ} \mathrm{ml}\right) \quad \ldots 16
\]

Then (point b) the feature C [past time-] is encoded as per expn. 11 but is assigned to the segnent of the encoding containing \(\mathrm{Lo}\left(10^{\circ} \mathrm{ml}\right)\) by:
\[
\left(\mathrm{Lp}\left(10^{\circ} \mathrm{ml}\right)\right) \xrightarrow{[\mathrm{R}[\mathrm{in}] \rightarrow \mathrm{T}]} \text { AAsh(Comp) } \quad \ldots .17
\]

As in the case of \(\operatorname{DBp}(q d M)\), only \(\mathrm{DCm}(\mathrm{Dyn})\) and \(\mathrm{DCmq}(\mathrm{E}-\mathrm{I}-\mathrm{S})\) of system
(1) In this respect we may perhaps be accused of inconsistency. If (M-T) is assigned to (P.A)R (expn.7) either of the constructions 'inna l-mutasawwila...or al-mutasawwilu...is possibie. By analogy with the latter it seems better to regard the former as subject - despite being in the "accusative case". Since the latter construction seems inappropriate in the present case 'anmā , asnānuhu... or 'inna 'asnānahu... are not regarded as subject.

MCm are compatible with \(\mathrm{Lg}\left(10^{\circ} \mathrm{ml}\right)\). If ( Hm T ) is assigned either of those sememes may be added. (That is, we nay have either 'anna 'asnānuhu Pasta' \(M_{\mathrm{g}} 1\) lahā...(active) or 'anna 'asnānahu stu'nilat... (passive). If ( \(\mathrm{J}-\mathrm{T}\) ) is assigned then only the latter semerae is admissible (i.e. stu'milat 'asnānuhu...). Hence:
\[
\text { (c) } \xrightarrow{\left[\begin{array}{l}
\mathrm{R}[\mathrm{in}] \rightarrow(\mathrm{H}-\mathrm{T}) \\
\mathrm{Lg}\left(10^{\circ} \mathrm{ml}\right)
\end{array}\right.} \xrightarrow{ } \quad \begin{cases}\mathrm{DCm}(\mathrm{Dyn}) \\
\underline{\mathrm{DCmq}}(\mathrm{BmI}-\mathrm{S}) & \ldots 18\end{cases}
\]
(c) \(\xrightarrow{\left[\begin{array}{l}{[\operatorname{in}] \rightarrow(U-T)} \\ \mathrm{Lg}\left(10^{\circ} \mathrm{ml}\right)\end{array}\right]}\)

If \(\operatorname{DCm}\) (DyE) is assigned then, in the case where the agentive participant beconespanarked theme, we have:


If DCmq(E-I-S) is assigned


That is, if exp. 20 applies we would get "'ama 'asnannuhu fasta'malahe 1-mutasawnilu...", but if expn. 21 the agentive participant receives no encoding (compare para. 2.1.1). If expn. 17 applies then, to take the simplest case, we will have:
\[
\left(C:(P \cdot A) R_{3}\right) \xrightarrow{[\operatorname{Lp}(10 \cdot m D)]} \operatorname{DAx}(\text { Pump }) \quad \ldots .22
\]

Then:
\[
\mathrm{R} \text { [objective] } \xrightarrow{\left[(P . A) R_{3} \rightarrow \mathrm{DAr}(\text { Pup })\right]} \operatorname{AGr}(\mathrm{Ann}) \ldots 23
\]

See points (e) and (f) of para. 2.1.2. In other words we will get something of the order of "...liqadni r-ragifi".

The third case is where (P.A) \(\mathbb{R}_{3}\) is assigned thematic semenes. This part of the encoding differs from that of \((P \cdot A) R_{2}\) principally
in the non-assignnent of \(\mathrm{Lp}\left(10^{\circ} \mathrm{ml}\right)\). If therefore in expns. 14, 15, 18-20 we substitute 'objective' for 'instmment' and \(\mathrm{DBp}\left(q \mathrm{qdm}^{\mathrm{m}}\right.\) ) for \(\underline{L p}\left(10^{\circ} \mathrm{ml}\right)\), expressions for the encoding of \((\mathrm{P}, \mathrm{A}) \mathrm{R}_{3}\) will be given. To these should then be added:
\[
\mathrm{R} \text { [instrument] } \underset{[\mathrm{R}[0 \bar{j}] \rightarrow T]}{[\mathrm{mln}(\text { Inst })} \quad \ldots 24
\]
(See the remark in 2.2.1 regarding expn. 9).
2.5 In sumnamy there will be (in addition to that of expn.13) the following encodings of \(C\) and \(\mathrm{Lp}\left(10^{\circ} \mathrm{ml}\right)\) :
\begin{tabular}{|c|c|c|}
\hline DRp ( gdm ) & DCmq ( \(\mathrm{m}-\mathrm{I}-\mathrm{S}\) ) +AAsh (Comp) & 25 \\
\hline D8p(adm) & DAr(Pump) & . 26 \\
\hline \(\underline{\mathrm{Lm}}\left(10^{\circ} \mathrm{ml}\right)+\) & DCm ( yy ) +AAsh (Comp) & . 27 \\
\hline \(\underline{\mathrm{mp}}\left(10^{\mathrm{m} \mathrm{ml})}+\right.\) & DCmq(EmI-S) + AAsh(Corap) & . 28 \\
\hline
\end{tabular}

Wote finally that to the whole of this network of relational and thematic sememes will be added - in the present case, the seneme Cm (Dec); (See expression 42 of chapter 4, para. 2.4).
2.6.0 We turn next to the encoding of the three participants of this representation and we will assume first of all that none of these receives an anaphoric encoding.
2.6.1 Consider first the items ( \(P \cdot A\) ) \(R_{1}\). If in the judgement of the user the attribute of some participant is 'habitual' or in the nature of an 'occupation' - and yet cannot properly be regarded as inalienable, the attribute is encoded by a sememe which is commonly included within a lexeme. If he does not so judge then participant and attribute are encoded separately.

If we assume that the former is the case we have:
where:
\[
(P . A) R_{1}\left[\frac{o n e}{m a l_{e}}\right] \rightarrow L \text { Lsp (nutasawviL: beggar) ... } 29
\]
\[
\begin{array}{ll}
\mathrm{P}\left(\mathrm{R}_{1}\right) \\
\mathrm{P}\left(\mathrm{~A}\left(\mathrm{R}_{1}\right)\right) & \rightarrow / \mathrm{DSu}(\text { Indiv }) /  \tag{1}\\
\mathrm{C}\left(\mathrm{~A}\left(\mathrm{R}_{1}\right)\right) \longrightarrow / \mathrm{DBp}(5 \mathrm{swl}: \text { beg }) / & \ldots 30 \\
/ \mathrm{DAk}(\text { (ocpn }) / & \ldots 31
\end{array}
\]
(1) 1) For lexemes of this type see pera. 3.2 .1 .1 of chapter 9
ii) The verb ( \(5 s w 1\) ) is diachronically related to ( \(5 s^{\prime} 1\) ) but for present purposes is pxesumed to be syncheonically distinct.
(iii) For mules of the type of 30 and 31 see paxa.2.3 of chapter 4 .

Where the above encoding is applied so also will be:
\[
\begin{array}{ll}
P\left(R_{1}\right)[\text { male }] \xrightarrow{[\text { Isp (mutasawnil) }]} & \text { DHs (Maie) } \\
P\left(R_{1}\right)[\text { one }] \rightarrow \text { ANu(Sing) } & \ldots 32
\end{array}
\]

By rule of addition we will have:
\[
\binom{P\left(R_{1}\right)}{A\left(R_{1}\right)} \xrightarrow{\underline{\operatorname{Lsp}}]} \operatorname{ADt}(D e \rho) \quad \ldots 34
\]

Ignoring relational sememes we now have the following encoding segrent:
\[
\text { Lsp (mutasawwil) + } \mathrm{DHa} \text { (1rale) }+\mathrm{Aru} \text { (Sing) }+\mathrm{ADt} \text { (Def) } . . .35
\]
2.6.2 (P.A) \(R_{2}\) may be encoded in a variety of ways. Let us assume first of all that its ultimate expression mode will be those of examplea iii) and iva). Hence:
\[
\begin{align*}
& P\left(R_{2}\right)\left[\begin{array}{l}
\text { belonging to } \\
{\left[\text { as per } P\left(R_{1}\right)\right.}
\end{array}\right] \rightarrow \text { PBs(sinn: tooth) } \\
& \begin{array}{cc}
P\left(R_{2}\right) & \left.\begin{array}{l}
\text { animate } \\
\text { human } \\
\text { adult }
\end{array}\right] \xrightarrow{[\mathbf{x}]}
\end{array} \quad \text { DSu(Indiv) } \quad \ldots 37  \tag{1}\\
& P\left(R_{2}\right)[\text { one }] \xrightarrow{[x]} \text { Alru (Sing) ... } 39
\end{align*}
\]

Since rules \(37-9\) relate to features encoded outside the main bundle, and since mule 37 assigns a member of DSu, the feature [belonging to] is encoded as 'annexation' (Compare expression 35 of chapter 4, para. 2.4). Hence:
\[
\left.P\left(R_{2}\right) \text { [belonging to }\right][P[\mathrm{f}] \rightarrow D S u] ~ A G r(A m n) \quad \ldots 40
\]

Since DSu(Indiv) is a substentive sememe there will be the rule of addition:
\[
\begin{equation*}
\left(\mathrm{P}\left(\mathrm{R}_{2}\right)\right) \xrightarrow{[\mathrm{DSu}]} \mathrm{ADt}(\mathrm{Def}) \quad \ldots \ldots 41 \tag{2}
\end{equation*}
\]
(1) A consideration of the oircumstances governing the assignment of anaphoric encodings is omitted from this study.
(2) Expressions 37-9, 41 constitute an anaphoric encoding and in particular one having expansion as a "personal pronoun". These are considered to comprise a deictic elenent (DSu(Indiv)) a sememe of detemination (ADt), of hunan aninacy (DHa) here, and one of number (Alru).

Pinally for the perticipant:
\[
\begin{aligned}
& P\left(R_{2}\right)[\text { twelve }] \longrightarrow A M u(P l u r a l) \quad \ldots 42 \\
& \left(P\left(r_{2}\right)\right) \xrightarrow{[D B s]} A D t(\operatorname{DeP}) \quad \ldots 43
\end{aligned}
\]

Rules \(36-43\) then give the followins encoding segnents - once again omittine relational sememes (vith the exception of \(\operatorname{AGr}(A n n)\) ).

2.6.3 Perticipant \(\mathbb{P}\left(\mathrm{R}_{3}\right)\) may also be encoded in a variety of mays. Assuming the siaplest of these we will have:
\[
\begin{aligned}
& P\left(R_{3}\right) \quad[\text { one }] \longrightarrow \operatorname{DRs}\left(r \text { a } \bar{E} I I_{:} \text {loaf }\right) \quad \ldots 45 \\
& P\left(\mathrm{R}_{3}\right) \quad[\text { one }] \longrightarrow \mathrm{Aru}(\text { Sing }) \longrightarrow . . .46 \\
& \left(\mathrm{P}\left(\mathrm{R}_{3}\right)\right) \xrightarrow{[\mathrm{DBs}]} \operatorname{ADt}(\mathrm{Def}) \quad \ldots 47
\end{aligned}
\]
2.7.0 Ne now have materials adequate to the construction of complete encodings for the expressions of examples i) to iii) of pare.2.1. Consider first that of example 1a), where the agentive participant is assigned ( \(M \mathrm{~T}\) ). From 5,7 and 35 comes the segment:
\begin{tabular}{|l|l|l|l|}
\hline 1 & I.sp \((\) mutasamil \()+\mathrm{DHa}(\mathrm{Vale})+\mathrm{Aru}(\) Sine \()+\mathrm{ADt}\) (Def) & \(\mathrm{AGr}(\) Suj \()+(\mathrm{K}-\mathrm{T})\) \\
\hline
\end{tabular}

From 9 and 44 comes:


Expressions 8, 45-7 give:
\begin{tabular}{|l|l|l|}
\hline 3 & DBs \((\) ras̄if \()+A M u(\) Sing \()+A D t(D e f)\) & \(A G r(0 j)\) \\
\hline
\end{tabular}
Encoding of the circumstance will be as per 13.
2.7.1 The encoding underlying example ib) is exactly the same as that tiven above save that sememe ( \(H-T\) ) of segment 1 is replaced by ( \(\mathrm{U}=\mathrm{T}\) ).

The next encoding is that underlying example iia), nanely:
\begin{tabular}{|c|c|c|c|}
\hline \multirow[t]{3}{*}{} & \multicolumn{2}{|l|}{Isp (mutasawril \()+\mathrm{DHa}(\mathrm{Male})+\mathrm{ANu}\) (Sing) +ADt ( Def )} & \(\operatorname{AGr}(\mathrm{Suj})+(\mathrm{U}-\mathrm{T})\) \\
\hline &  & ( \(\mathbb{I}-1)\) & \\
\hline & \(\mathrm{DBp}\left(\mathrm{q} \mathrm{c}_{\text {a }}\right)+\mathrm{AAsh}\) (Coap \()+\mathrm{DCm}(\mathrm{Dyn})\) & & \\
\hline
\end{tabular}

Segnent 1 derives from 20 and 35 , segment 2 from \(5,45-7\), and segnent 3 from 10, 11 and 18.
2.7.2 Wext, the encoding underlying example iiia) - that is, the case where ( \(\mathrm{P} \cdot \mathrm{A}) \mathrm{R}_{2}\) of expression 4 is assigned \((\mathrm{H}-\mathrm{T})\).
\begin{tabular}{|c|c|c|c|c|c|c|}
\hline \multirow[t]{6}{*}{} & \multicolumn{4}{|l|}{\(\mathrm{DPS}(\mathrm{sinn})+\mathrm{ANu}(\) Plumal \()+\mathrm{ADt}(\mathrm{Def})\)} & \multirow[t]{2}{*}{\((\mathrm{R}-\mathrm{T})\)} & \multirow{6}{*}{\(\mathrm{Cm}(\mathrm{Dec})\)} \\
\hline & DSu(Indiv) \(+\mathrm{DHa}(\) Vale \()+\mathrm{Alu}(\) Sing \()\) & + \(A D t\) ( Def ) & AGI & m) & & \\
\hline & Lsp (mitasawnil) + DHa (Male) + ANu & ing) + AD & Def) & & aj) + & \\
\hline & \(\mathrm{Lg}\left(10^{\circ} \mathrm{ml}\right)+\mathrm{AAsh}(\mathrm{Comp})+\mathrm{DCm}(\mathrm{Iyn})\) & & & & & \\
\hline & DBp (qdm) & & & & & \\
\hline &  & AGr (Ann) & & & & \\
\hline
\end{tabular}
2.7.3 Finally, the encoding which underlies the expression:
(iv) qựima 2-raḡIfu bi'asnānihi (1)

This of course is the case where \((P \cdot A) R_{3}\) of expression 4 is assiened ( \(\mathrm{J} \cdot \mathrm{T}\) T). Hence:-

.53
Secment 1 derives from 6, 15: 45-7, and segment 3 from 10,11, and 19. Segnents 1 a and 1b derive from 5 and 44 (inturn deriving from expressions \(36-43\) ), segment 2 from 24 (see para.2.4) and 35 , segnent 3 instances 27, and segnents 4 a and 4 b from 26 and \(45-7\) respectively.
2.8.0 In this paragraph eertain other anaphoric encodints are exanined. Finst, however, it is necessary \(t\) repeat that the simple pattem of thenatisation assumed for the puxposes of this chapter is not claimed as a satisfactory account of the phenomena. (Consider acain example iiia) (para. 2.1.2):
'ambā 'asnāmuhu fasta'malahē liqadmi noragifi
That we appear to have here is a marked theme 'asnämuhu and as unariced thene the third masculine singular pronoun incorporated in the verb sta mala. The question then axises, since the
(1) gnaw(3ns-passmcorp): the-loaf: with-teeth-him. "IMe loaf was/ had been gnawed by his teeth".
referent of the pronoun of the verb and of the -hu of 'asnānuhu is the same does it make sense to regard the relevant participant as assigned ( \(\mathrm{N}-\mathrm{T}\) ) and ( \(\mathrm{J}-\mathrm{T}\) ) in the one utterance ?

The nature of such phenomena being not at all clear the following discussion will be confined to those cases where as single theme is encoded anaphorically. (The pronoun thā of sta'malahā we take to be syntactically conditioned and hence without functional load).
2.8.1.0 Let us then consider the encodings underlying the following expressions:
va) quạina bi'asnānihi
vb) qadana ras̄ifan bi'asnānihi (1)
Example va) should be compared with iv) of para. 2.7.3 and vb) with \(i b)\) of para. 2.1.0.
2.8.1.1 In va) the loaf- (P.A) \(R_{3}\) is assigned ( \(\mathrm{U}-\mathrm{T}\) ) and hence its encoding will be:
\[
\begin{array}{ll}
P\left(R_{3}\right)[\text { one }][\mathrm{x}] & \mathrm{DSu}(\text { Indiv }) \\
\left(P\left(R_{3}\right)\right)[\mathrm{DSu}] \\
\mathrm{ADt}(\mathrm{Def}) & \ldots .54 \\
\longrightarrow .55
\end{array}
\]

The feature \(P\left(R_{3}\right)\) [one] is encoded as per 46. The encoding otherwise conforms to that of 53.
2.8.1.2 In \(v b\) ) the beggar - ( \(\mathrm{P} \cdot \mathrm{A}) \mathrm{R}_{1}\), is assigned ( \(\mathrm{J}-\mathrm{T}\) ) but since the participant is a human animate we have:-
\[
P\left(R_{1}\right)\left[\begin{array}{c}
\text { object } \\
\text { adult } \\
\vdots
\end{array}\right] \xrightarrow{[\mathrm{x}]} \xrightarrow{\text { DSu (Indiv) }} \quad \ldots 56
\]
(1) a) gnaw(3ms-pass-comp) - it: by-teeth-him. "It was gnawed by his teeth".
b) gnaw(3ms-act-comp)-he: loaf: with-teeth-him. "He gnawed a loai with his teeth.
\begin{tabular}{|c|c|c|}
\hline \(P\left(R_{1}\right)\) & \[
\left[\begin{array}{l}
\text { animate } \\
\text { munan } \\
\text { male }
\end{array}\right] \xrightarrow{[x]}
\] & BHa ( Vale \\
\hline \(P\left(R_{1}\right)\) & [one] \(\rightarrow \mathrm{ANu}(\) Sinc \()\) & \\
\hline
\end{tabular}
and:
\(\left.\left(P\left(R_{1}\right)\right) \xrightarrow{[D S u}\right] ~ A D t(D e f) \quad \ldots 59\)
These expressions should be compared with \(37-9,41\) which encode precisely the same features in a different context. (For discussion of the difference between anaphoric encoding of human animates and othors see section 2 of chspter 7).

To conclude this section let us exanine two cases of encoding as an attribute, axising from (P. A) R \(3^{*}\). The first of these will concern an attribute as part of the encoding of \(P\left(r_{3}\right)\) and the other the case where \(A\left(R_{3}\right)\) of the representation set out as 4 is assigned an encoding. In the first case the resulting expression might be:
v1) qadama rag̈Ifa 1-kubzi (1)
The "object" of vi) is taken to expand the enoodings:
\(P\left(R_{3}\right)\left[\begin{array}{l}\text { one } \\ \text { bread }\end{array}\right] \rightarrow\) DBs(raĒIf: Loaf) \(\quad\)... 60
\(\begin{array}{ll}P\left(R_{3}\right)[\text { bread }] \rightarrow\left\{\frac{D B s}{A M u}\left(\frac{\text { kubz: bread })}{\text { Sing })}\right.\right. & \ldots . .61 \\ \left.P\left(R_{3}\right) \text { [one } \rightarrow \text { Alu(Sing }\right) & \ldots .62\end{array}\)
\(\left(\mathrm{DBS}_{2}\right)\left[\mathrm{P} \rightarrow \mathrm{IBS}_{1}+\mathrm{DBs}_{2}\right]\left\{\begin{array}{l}\mathrm{ACr}(\mathrm{Amn}) \\ \mathrm{ADt}(\mathrm{DeS})\end{array}\right.\)
Fith 63 compare expression 35 of chapter 4 para. 2.4. The present case is of course one of an attribute in the form of a substantive.
2.9.1 A typical expression reaulting from the second ase of attribution might be (See the representation a ttached to \(A\left(R_{3}\right)\) in expreseion 4):
vii) qedpana l- nutasamwilu x-rastifa l-ladI ranat bihi lmax'atu
(1) Enaw(3mo-act-comp): loaf: the-bread "He gnawed the loaf of bread" comp):it: themoman. "The beggar gnawed the loaf wich the wowan had thrown away".

The theme of any "relative clause" will obviously be the material to which it is attributed, in this case the loaf, which is moreover the marked theme with respect to this clause. Hence the encoding will proceed as per the case where \(\mathbb{R}\) [objective] in the superordinate representation is assigned (M-T), with the difference that the constraining factor is the relationship of attribution, rather than the assigment of this sememe. Thus:
\[
\mathrm{R}_{2}\left(\mathrm{~A}\left(\mathrm{R}_{3}\right) \text { [objective } \xrightarrow{\left[P \left(R_{2}\left(A\left(R_{3}\right)=P\left(R_{3}\right)\right]\right.\right.} \varnothing\right.
\]

With this compare expression 14. lext the circumstance \(C\left(A\left(R_{3}\right)\right.\) is encoded:
\[
\begin{array}{ll}
C\left(A\left(R_{3}\right)[\text { past time }] \rightarrow \underline{D B p} \quad(1 \text { xny: throw })\right. & \ldots .65 \\
C\left(A\left(R_{3}\right)[\text { past time }] \rightarrow A \operatorname{shh}(\text { Comp })\right. & \ldots .66
\end{array}
\]

With these compare expressions 10 and 11. This predicate also is one of those compatible only with \(\operatorname{DCm}(\operatorname{Dyn})\) and \(D C m q(E-I-S)\). It will be recalled (see expression 18) that either of these may be assigned if an 'objective' participant is assigned (N-T). Since as we have noted the situation here is analogous we may write:
\[
\left(\xrightarrow { ( D B ) } \left[\begin{array}{l}
P\left(R_{2}\left(A\left(R_{3}\right)=P\left(R_{3}\right)\right]\right.
\end{array}\left\{\begin{array}{l}
\frac{D C m}{}(D y n) \\
D C_{\text {ma }}(B-I-S)
\end{array}\right\} \quad \ldots 67\right.\right.
\]

Example vii) presupposes the assignment of \(\mathrm{DCm}(\mathrm{Dyn})\) and hence:

That is, in the context where \(R_{2}\left(A\left(R_{3}\right)\right.\) has the value [objective, the particpants \(P\left(R_{2}\left(A\left(R_{3}\right)\right.\right.\) and \(P\left(R_{3}\right)\) have the same value, and DCm (Dyn) is assigned, a participant in an 'agentive' relationship is assigned \(A G r(S u, i)\). Finally, encoding \(P\left(R_{1}\left(A\left(R_{2}\right)\right.\right.\) we get:
\[
\begin{aligned}
& \text { - } 327 \text { - }
\end{aligned}
\]

Expressions 69 and 70 should be compared with 26 of chapter 4, para. 2.4. In the present example we have the case where [female] is encoded separately from the main bundle, and in the latter a case where [male]is encoded in the substantive \(\overline{D B s}\) (rajul). We will also have the expression:
\[
\text { (A) } \underset{\sim}{\left[\mathrm{C}(\mathrm{~A}) \rightarrow D \mathrm{DBP}^{-}\right]} \operatorname{AGr}(\mathrm{A} t \mathrm{t}) \quad \ldots 73
\]

That is, wherever some term \(A\) of a representation is given a distinct encoding (compare 29) the sememe \(\operatorname{AGr}\) (Att) is assigned automatically. Thus the encodings underlying the attributive portion of examples vi) and vii) will be:

deriving from \(60-63\), and:


Segment 1a derives from 45-7, segment lba from 69-72 and segment ibb from 65-7. Relational sememes are given by 8 and 73. Note that in 74 the assignment of \(\operatorname{AGr}(\operatorname{Ann})\) implies the definiteness of sub-segment \(1 a\), thus rendering the assignment of ADt (Def) unnecessary.

The process of expansion follows closely that outlined in section 3 ofehepter 4, save that expansion of the relational sememes
will precede that of other elements.
3.1.0 Let us first of all consider the encoding segments 13, 48-50,
i.e. that underlying example ia). Taken together these give:
\begin{tabular}{|c|c|c|c|}
\hline 1 & Lsp (mutasawwil) + \(\mathrm{DHa}(\mathrm{Male})+\mathrm{ANu}\) (Sing) +ADt ( Def & \multicolumn{2}{|l|}{\(\operatorname{AGr}\left(\mathrm{Suj}_{j}\right)+(\mathrm{M}-\mathrm{T})\)} \\
\hline 2a & \(\mathrm{PBs}(\) sinn \()+\mathrm{Alpu}(\) Plunal \()+\mathrm{ADt}\) (Def) & \multicolumn{2}{|l|}{Mmx (Inst)} \\
\hline 2b &  & \(A G r(A n n)\) - & \\
\hline 3 & \(\mathrm{DBs}(\) rağif \()+\mathrm{ANu}\) (Sing \()+\mathrm{ADt}\) ( Def ) & AGx(0j) & \\
\hline 4 & \(\mathrm{DPp}(q \mathrm{dm})+\mathrm{A} 4 \mathrm{sh}(\) Comp \()+\mathrm{DCm}(\mathrm{Dyn})\) & & \\
\hline
\end{tabular}

Among syntactic associates of \(\operatorname{AGr}(S u j)\) are
\[
\mathrm{Sa}((\mathrm{G}: \mathrm{A}) \mathrm{B} . . .) \text { and } \mathrm{Sa}((\mathrm{~A}: \mathrm{G}) \mathrm{B} . . .) \text { (see paras. } 2.4 \text {... } 76
\]
and 2.6 of chapter 13). Wich of these is appropriate in any particular case depends on the one hand on whether a thematic sememe is assigned to the segment under consideration, and on the other on the value of this sememe.

In this case ( \(K-T\) ) is assigned to segment 1 which detemines that the relevant association is
\[
\operatorname{AGr}(S u j) \underbrace{[(U-T)]} \mathrm{Sa}((A: G) \mathrm{B} . . .) \quad \quad \ldots 77
\]

Since \(\operatorname{Agr}(0 j)\) of segment 3 configures with no thematic sememe, which is in effect the 'unnarked' case, we will have:
\[
\mathrm{AGr}(\mathrm{Oj}) \longleftrightarrow \mathrm{Sa}((\mathrm{G}: \mathrm{A}) \mathrm{B} \ldots) \quad \ldots 78
\]
\(\operatorname{AGr}(\mathrm{Ann})\) of segment 2 b is associate only with Sb (Fa:Tb....) (see paras. 3.1.0 and 3.1.1 of chapter 13). Hence:-
\[
\operatorname{AGr}(\mathrm{Ann}) \longleftrightarrow S b(\mathrm{Fa}: \mathrm{Fb} \ldots) \quad \quad . . .79
\]

DMIr (Inst) has no discrete syntactic expansion: the whole of the expansion of segrent 2 simply replaces a durny symbol \(B\) (see para. 2.1 of chapter 13). The sememe Cm (Dec) sinilarly has no associate anong syntactic templates - and neither, unless we accept the claim of the particle 'inna, anong the morphological systems. Its presence in the encoding is inferred from the structuxal unnarkedness of the expression.

Having exhausted all alements having syntactic associate the templates of 77-79 may be 'sumed'. Taking first 77 and 78 we get (compare table 5 of chapter 4, paxa. 3.6):


Which gives the compound tonplate (Aa:G:Ab:B...). Adding 79 to this:


Giving (Aa:G:Ab:(Fa:I...)B...) Note that since the symbol B is recursive it is not simply replaced by 79. The structure (FasFb...) is merely an instance of \(B\).

Tuming next to the morphological section of this expansion, we see that segruent 1 contains a lexeme, and as noted in para. 3.8 of chapter 4 these associate typically both with a root and a morphological terplate. Hence:

\(\operatorname{Isp}\left(\right.\) mutasawwil \(\longleftrightarrow \nabla\left\{\begin{array}{l}\operatorname{pay}(\mathrm{ni}) \\ \operatorname{pbx}(u) \\ \operatorname{pdec}(t) \\ \operatorname{pex}(a) \\ \operatorname{ia}(\mathrm{a}) \\ i \operatorname{cx}(i)\end{array}\right.\)
Since the contrast Alru(Sing) vs ANu(Plural) is expressed in this measure by the morphological contrast mutasawnilun vs mutasawwiluna, it follows that the fomer in this case has no expansion. Similarly, the contrast DHa (Nale) vs \(\mathrm{DHa}(\mathrm{Fem})\) is reflected by the pair mutasawvil vs mutasawwilat, and hence here again the former has no expansion.

The other segrent 1 semenes are expanded:
\(\operatorname{ADt}(D e f) \longleftrightarrow \operatorname{lpp}(1)\)
82
(1) We assune without argument a set of triliteral roots R .


Expression 83 states in effect that \(\operatorname{AGr}(\mathrm{Suj})\) is also expressed by the "agreement" for nuaber, gender, and person between verb and subject. In Arabic these patterns of agreenent are constrained by whether the subject precedes or follows the verb (reflecting assignment of thenatic somenes), and by the human ani acy of the subject or otherwise (compare para.1.1. of chapter 9).

For the morphological systems concerned in these aasociations see for expression 81 paras. 1.1 and 1.2 of chapter 11. For those concermed in 82 and 83 see paras. 2.5 and 1.3 respectively of chapter 11.

Since the sumation of \(80-2\) is self-evident we may simply write:
\[
\begin{equation*}
1 \text { mutasawwil } \tag{84}
\end{equation*}
\]
3.1 .2

Segnent \(2 a\) has the following expansions:
\[
\begin{align*}
& \mathrm{DBs}(\mathrm{sin} \mathrm{~m}) \longleftrightarrow \mathrm{R}(\mathrm{smn})
\end{align*}
\]
and segment 2b:
\[
\begin{align*}
& \left.\begin{array}{l}
\mathrm{DSu}(\text { Indiv }) \\
A D t(D e f)
\end{array}\right\} \leftrightarrow \mathrm{Pa}(\mathrm{~h})  \tag{1}\\
& \mathrm{DHa}(\text { Taale }) \longleftrightarrow \mathrm{Pb}(\mathrm{u}) \\
& .88 \\
& \left.\begin{array}{l}
\operatorname{Alfu}(\text { Sing }) \\
\operatorname{AGr}(\operatorname{Ann})
\end{array}\right\} \leftrightarrow \mathrm{P}\left\{\begin{array}{l}
\mathrm{a}(\mathrm{~h}) \\
\mathrm{b}(\mathrm{u})
\end{array}\right.
\end{align*}
\]
(1) The structure of the systons giving pronouns of various kinds is rather complex. Since these are not dealt with in this study the designations Pa and Pb are pre-theoretical only.

There are in fact two possible associations of ANu(Sing) here. Either by analogy with the "feminine" form -hā we may regard the sememe as being directly expressed by the whole suffix or, by analogy with the "masculine plural" form -hum we may see -hu as the unmarked partner in the contrast and hence - from the point of view of 'strong association', assume no expansion for ANu (Sing). The former solution is the one preferred here.
\(\operatorname{AGr}(\mathrm{Ann})\) is expressed by the selection of a pronominal suffix rather than an independent pronoun.

The expansion of DT1r (Inst) is given by the association:
\[
\mathrm{pmlr}(\text { Inst }) \longleftrightarrow \mathrm{Ma}(\mathrm{bi}) \quad \ldots 90
\]
assuming a pre-theoretical system Ma, of prepositions standing outside the root system.

On the morphemes of 86 see paras. 2.1 and 2.2 of chapter 11.
3.1.3 The expansion of segment 3 is given by association 82 plus:


The context of rule 94 indicates that we are dealing with a
nunnating tri-casal measure. (See para.2.4.2.6 of chapter 11).
That of segment 4 is given by
\[
\begin{aligned}
& \mathrm{DBp}(q d \mathrm{~m}) \longleftrightarrow \mathrm{R}(q d \mathrm{~m}) \longleftrightarrow \ldots 95 \\
& \left.\begin{array}{l}
\operatorname{AAsh}(\operatorname{Comp}) \\
D \operatorname{Cm}(\operatorname{Dyn})
\end{array}\right\} \stackrel{D B p(q d m)]}{\rightleftarrows} \mathrm{V}\left\{\begin{array}{l}
\mathrm{ia}(\mathrm{a} .) \\
\mathrm{ic}(\mathrm{a})
\end{array} \quad \ldots .96\right.
\end{aligned}
\]
3.1.4 From 85-96 the following tables may be constructed:


Table 3
(87)
(88)
(89)

- \(332-\)

(96)
(95)


Table 6

Sumnation of Tables 3-6 gives the strings:
i) Table 3:
1
a \(s\)
n
a
ii) Table 4:
h u
iii) Table 5:
\(1 \quad \mathrm{a} \overline{\mathrm{s}} \mathrm{i}: \quad \mathrm{f}\) a
iv) Table 6:
q a \(\quad\) a
a m a

Substitution of these for the dunny symbols of the compound syntactic template given by Table 2 proceeds thus:


With 97-102 should be compared the expressions of chapter 4, para. 3.7. Although not explicitly stated each string is presumed to be a member of the class represented by the dumy symbol. This point is stressed since the syntactic associate of \(\operatorname{AGr}\left(\operatorname{Suj}_{j}\right)\) say,
contains two symbols \(A\) and \(G\), and without the assumption of such a correspondence we lack a formal means of repmacing the right symbol by the right string.

Closing the gaps between the phonemes we get:
1-mutasawvil qadama l-rağTfa bi'asna:n hu .103
3.1.5 It will be seen that in particular this expression is deficient in "case" suffixes. These must be introduced by rule of addition. In the case of 'asnān there is no problem since, when preceded by bi or any other member of the system Ma, all forms on the measure 'ar' \(\overline{\mathrm{a}} \mathrm{L}\) are assigned Nsey(i):

The conditions goveming the assignment of a case suffix to mutasawnil are more elusive. Either the morpheme Nse(u) may be added or we may preface the whole utterance by the particle 'inna, in which case Nsex(a) is added. For present purposes let us assume first, that 'inna is to be assigned, second, that the factors goveming its assignment are stylistic - and hence beyond our terms of reference, and third, that \({ }^{\text {inna }}\) is a member of a further pre-theoretical system of particles lh. Then:


Context 'x' of 104 represents unstated stylistic criteria. The symbol \(\mathbb{N}-T / B\) of 105 signifies the context of a nominal measure which is numating and both bi - and tri-casal. (The presence of ANu (Sing) in the encoding determines that the measure is in fact tri-casal). The symbol N-T of 106 indicates a measure which is
(1) Traditionally, all nouns governed by a preposition are in the genitive case. The rather tortuous specification given above is necessary since not all nouns have a genitive form.
nunnating tricasal. (See para. 2./ of chapter 11).
The utterance is now ready for phonemicisation. Note that the \(u\) of hu becomes \(i\) by vowel harmony with the preceding Nsey(i). 3.1.6 If ( \(\mathrm{U}-\mathrm{T}\) ) were present in segment 1 rather than ( \(\mathrm{M}-\mathrm{T}\) ) - that is, if the output desired had been analogous to example ib) rather than ia), the expansion would vary in the following ways. Instead of expression 77 we would have:


Suming of the primary templates would then given the compound template (G:Aa:Ab:B...).

Then, in addition to the association of 83 , expansion of this sememe would also be given by:
 Replacement of the dumsy symbol iva would then be given by:

1 mutas awwilu \(\underset{-\mathrm{F}, \mathrm{T})}{[(\mathrm{J} \mathrm{T})} \mathrm{Aa} \quad\)...109
3.2.0 Tuming next to the expansion of encoding 51 (example iia) we note that only segnent 1 is assigned a relational sememe ( \(\operatorname{AGr}(\operatorname{Suj}))\), the expansion of which is given by the associations of 107,83 , and 108.

The remainder of the expansion is given by the following associations:
Semment 1: 80, 81, 82
Segment 2: 82, 91, 92, 93
Segraent 3: 95, 96
Substituting the strings given by these expansions into the template of 107 and closing gaps we get:
\[
\text { q a d a ma } 1 \text { - mutasawwilu ... } 110
\]

Then, it is assumed that where a segment containing (I-T) has no relational semene the string expanding that segment is located in
front of the remainder of the expression. Therefore, locating the string of segment 2 we get:-

1-raḡif qaḍama I-mutasawwilu
.111
In this case the addition of Mb ('inna) is obligatory (compare 104). Hence:
and


That is, \(M \mathrm{~B}\) ("inna) is added where (M-T) is not in configuration with AGr(Suj). Expression 113 appears since Fa'iL(ragif) is a numating tricasal measure.

Finally, where a segment having ( \(1-T\) ) does not also have AGr(Suj) a suffix, corresponding to the class ( \(x\) or \(y\) ) of the measure (see para. 3.4 of chapter 4) is added to the verb form. This classification may of course be overridden by sememes of DHFa. Thus:
\[
\left[\begin{array}{c}
(M-T) \\
\frac{A G r(S u j)}{N x}
\end{array}\right] P \begin{aligned}
& a(h) \\
& b(u)
\end{aligned}
\]

However, since we require a dummy symbol into which to repla ce the string of 113 we shall also require the mule of addition:
\[
\xrightarrow{\left[\begin{array}{c}
(N-T) \\
A G r(S u, j)
\end{array}\right]} \operatorname{Sa}((G: A) B \ldots)
\]
giving the prephonemicised utterance:
'inna I-ragififa qaḍanahu 1-mutasawwilu
is again the only one containing arelational sememe. Since ( \(U-T\) ) is also assigned the syntactic expansion of \(\operatorname{AGr}\left(\mathrm{Suj}_{\mathrm{j}}\right)\) is given by 107 and the morphological by 83 and 108. The remainder of the expansion is given by the following associations:

Segment 1: \(\quad 82,91,92,93\)
Segment 2: \(\quad 85-90\)
Segment 3 is given by 95 plus:
\(\underset{\mathrm{DCmq}(\mathrm{B}-\mathrm{I}-\mathrm{S})}{\mathrm{AAsh}(\operatorname{Comp})}\} \underset{\sim}{[\underline{\mathrm{DBp}}(q \mathrm{qm})]} \underset{\sim}{\rightleftarrows} \quad \mathrm{V}\left\{\begin{array}{l}\mathrm{ia}(\mathrm{u}) \\ \mathrm{icy}(\mathrm{i})\end{array} \quad \ldots .116\right.\)
Replacement of the dunny symbols is quite straightforwand.
3.3.0 We turn now to encoding 52 (para. 2.7.2 and example iiia)). The syntactic expansions of the relational sememes of segments \(\mathbf{1 b}\), 2 and 4b are as follows:
\(\operatorname{AGr}(\operatorname{Suj}): 107 \operatorname{AGr}(\mathrm{Ann}): 79\) (two instances)
Since one of the instances of \(\operatorname{AGr}(A n n)\) - that of 1 b , forms part of a segment having ( \(M-T\) ) not in configuration with a relational sememe, its expansion is set at the head of the utterance (compare expression 111). Therefore, replacing one of the dummy symbols B of 107 by the second instance of 79 we get the compound template:
( \(\mathrm{Fa}: \mathrm{Fb} \ldots \mathrm{A}) \mathrm{G}: \mathrm{A}:(\mathrm{Fa}: \mathrm{Fb} \ldots\)...) \(\mathrm{b}: \mathrm{B} \ldots\)...)
The remaining expansions are given by the following associations:
Segment 1: 85-89
Segment 2: \(\quad 80-83,108\)
Segment 3:



Segnent 4a: 95,plus:


Segment 4b: 82, 91-3, plus:


The expansion of \(\operatorname{DAr}\) (Pump) of segment 4 is given by the association
\[
\underline{D A r}(\text { Purp }) \longleftrightarrow \operatorname{Ma}(l i) \quad . . .123
\]

Suming of the expansions relating to the root 'ml is as follows:


Replacement of the strings into the syntactic dummies proceeds thus:

(Segment 2) 1 mutasawwilu \([\operatorname{AGr}(\operatorname{Suj})]\) A ... 126
(Segment 3) sta'mala-->G ... 127

from which we get:

> 'asna:n hu sta!malal-mutasawwil liqacm l-raEIfi

The case sufitix of qaḍ is given by the association of expression 106. Since segnent 1 has no relational sememe in configuration with ( \(14-\mathrm{T}\) ) the following rules will also be relevant:


Note that we make no atternpt to establish the conditions under which 131 is applicable rather than 112.

Also:
\[
\mathrm{fa}[(\mathrm{~K}-\mathrm{T}) \rightarrow(\mathrm{Fa}: \mathrm{Fb} \ldots) \mathrm{a}] \quad \mathrm{G}: \mathrm{A}:(\text { Fa:Fb...) } \mathrm{B}: \mathrm{B} . \ldots) \ldots 133
\]

That is, fa is inserted at the head of the material not expressing ( \(\mathrm{N}-\mathrm{T}\) )

Analogous to the situation in respect of encoding 51 we require a suffix to be attached to sta'mala (compare 114). This is introduced by the rule:


Then, given a further application of the association of 115 we get the pre-phonemicised utterance:
'anmē 'asna:nuhu fasta'malahē liqadmi 1-rā̄ifi
3.4.0 The most noteworthy feature of the 'anaphoric' encoding segments introduced by the group of expressions \(54-59\) (paras. 2.8.1, example v)) is that in both cases the segrents concerned also contain \(\operatorname{AGx}\left(S u_{j}\right)\), but beeause of their context neither is given a syntactic expansion.

This of course is because in Semitic if the subject of a verb is a pronoun it is incorporated in the verb form itself, and hence no syntactic dumny corresponding to the subject position is required. This restriction is expressed in the rule:

of which the rules of 77 and 107 are particular instances. In other words these rules may apply only when a lexeme or base substantive is present in the encoding segment. In consequence of this the appropriate syntactic template must be introduced by rule of addition. Thus:

3.4.1 The encoding of example va) is as per encoding 53 save that segment 1 of the latter is replaced by:
\begin{tabular}{|l|l|l|l|}
\hline 1 & DSu (Indiv) + ANu(Sing) + ADt(Def) & \(\mathrm{AGr}(\) Suj + (U-T) \\
\hline
\end{tabular}

All of these sememes are surjectively associate with the morpheme \(\mathrm{aVs}(\mathrm{a})\), hence:


Note that the application of this rule presupposes the possibility of examining the full encoding of \(P\left(R_{3}\right)\) - that is access to the rules of expressions 45, 91-3. Bearing in mind that an anaphoric encoding must presuppose a full encoding such an operation would not be formally difficult.
3.4 .2

The anaphoric encoding underlying example vb) of para. 2.8.1.0 differs from that of va) only in the assignment of DHa (Male).

Hence analogous to 137 the following rule will apply:


The encoding segment underlying rajifan is given by expressions 45 and 46 plus:

Then:



Compare expression 94 etc.
3.5.0 Finally we consider the expansion of the encodings derived in para. 2.9, and taken to underlie examples vi) and vii). The complete encoding underlying the former is (see encoding 74):
\begin{tabular}{|c|c|c|c|c|c|}
\hline 1 & \multicolumn{2}{|l|}{DSu(Indiv) + DHa(liale) + ANu(Sing \()+\mathrm{ADt}\) (Def)} & \multicolumn{3}{|l|}{\(\operatorname{AGr}\left(\mathrm{Suj}_{\mathrm{j}}\right)+(\mathrm{J}-\mathrm{T})\)} \\
\hline 2 a & \multicolumn{2}{|l|}{DBs (ragIf \()+\mathrm{AMu}\) (Sing)} & \multirow{2}{*}{\(\operatorname{AGr}(0 \mathrm{Oj})\)} & \multicolumn{2}{|l|}{\multirow[b]{2}{*}{Cm ( Dec)}} \\
\hline 2b & DBs \(\left(\underline{\text { kubz }}\right.\) ) +ANu (Sing) +ADt ( \(\mathrm{Def}^{\text {f }}\) ) & \(\operatorname{AGI}(\mathrm{Ann})\) & & & \\
\hline 3 & \multicolumn{5}{|l|}{\(D \mathrm{DP} p(q d \mathrm{n})+\mathrm{AAsh}(\operatorname{Comp})+\mathrm{DCm}(\mathrm{Dyn})\)} \\
\hline
\end{tabular}

The syntactic expansion is deternined by the relational sememes \(\operatorname{AGr}(0 j)\) and \(\operatorname{AGr}(\mathrm{Ann})\) alone since, in the absence from segnent 1 of a lexeme or member of DBs, \(\operatorname{AGr}\left(\mathrm{Su}_{j}\right)\) has no syntactic expansion (compare 135). Hence, the syntactic expansions are given by the associations:
\[
\operatorname{AGr}(0 j): 78 \quad \operatorname{AGr}(\operatorname{Ann}): 79
\]
which when sumaed give the compound template:
\[
\text { (G: (Fa:Fb...): B...) } \quad . .142
\]

Morphological expansions are given by:
Segment 1: 138
Segment 2: \((\operatorname{AGr}(0 j)): 94\)
Segment 2a: 91-93
Segment 2b: 82 and,


Replacement of these strings into the template of 142 is fairly straightformard.
3.5.1.0 The complete encoding underlying exaraple vii) is (see encoding 75):
\begin{tabular}{|c|c|c|c|c|}
\hline 1 & Lsp \((\) mutasawnil \()+\mathrm{DHa}(1 / \mathrm{ale}\) ) \(+\mathrm{ANu}(\) Sing \()+\) & tet (Def) & \(A G x(S u j)\) & U-T) \\
\hline 2a & \multicolumn{3}{|l|}{\(\mathrm{DBs}(\mathrm{ras} \mathrm{S} \mathrm{f})+\mathrm{Alu}(\operatorname{Sin}(\mathrm{S})+\mathrm{ADt}(\mathrm{Def})\)} & \multirow{3}{*}{AGE( 03} \\
\hline 2 ba & \(\mathrm{DBs}\left(\mathrm{Mr}{ }^{\prime}\right)+\mathrm{DHa}(\mathrm{Fem})+\mathrm{AHu}(\) Sing \()+\mathrm{ADt}\) ( Def\()\) & \(\operatorname{AGI}(\mathrm{Suj})\) & \multirow{2}{*}{\(\mathrm{Gr}(\mathrm{SHzj})\)} & \\
\hline 2 bb & \multicolumn{2}{|l|}{\(D B p(1 \mathrm{myy})+\mathrm{AAsh}(\mathrm{Comp})+\mathrm{Cm}(\mathrm{Dyn})\)} & & \\
\hline 3 & \multicolumn{3}{|l|}{\(\underline{D} \mathrm{p}(\mathrm{qdm})+\mathrm{AAsh}(\mathrm{Comp})+\mathrm{DCm}(\mathrm{Dyn})\)} & \\
\hline
\end{tabular}
... 146
Syntactic expansions of 146 are given by the associations in the following expressions:

Segment 1: 107
\(\operatorname{AGr}(\mathrm{Suj})\)
Segrent 2ba:
\[
\mathrm{AGr}(\operatorname{Suj})[\mathrm{AAs}(\text { Pros })] ~ \mathrm{Sa}((\mathrm{G}: \mathrm{A}) \mathrm{B} . . .) \quad \ldots 147
\]

That is, if the segment containing \(\operatorname{AGr}\) (Suj) is not also assigned a thematic sememe, and if AAs(Prog) is not assigned, the former is expanded by the template shown:
\(\operatorname{AGr}(0 \mathrm{O}): 78\)
The expansion of \(\operatorname{AGr}\) (Att) is given by the rule:
\(\operatorname{AGr}(\mathrm{Att}) \longleftrightarrow \mathrm{Sb}(\mathrm{F}: \mathrm{C} \ldots)\)

Summing 78 and 107 we get the compound template ( \(G: A a: A b: B . .\). ). Adding 148 we get (G:A:(F:C....):B...), and finally, with the addition of 147 we have:
\[
\text { (G:Aa:(F:(G:Ab:Ba...)C...): Bb...) .... } 149
\]
3.5.1.1 Morphological expansions are given by:

Segment 1: \(\quad 80-3,108\)
Segment 2: \(\quad(\operatorname{Agr}(0 j)): 94\)
Segment 2a: 82, 91-3
Segment 2b: Assuming a pre-theoretical series "D" of demonstrative pronouns we get:


Segment 2ba:
\[
\begin{aligned}
& \mathrm{DHa}(\mathrm{Fem}) \longleftrightarrow \mathrm{Nsd}(\mathrm{at}) \\
& \text {... } 154
\end{aligned}
\]
plus an instance of the association given by 82. The rule of 155 states that if the segment governed by \(\operatorname{AGr}(\operatorname{Suj})\) itself forms part of a group governed by \(\operatorname{AGr}(\mathrm{Att})\), the subject willpe marked by
(1) Nete that the expansion of these sememes is mar' in the context ADt (Def) and 'imra' in the context ADt (Indef).
the nominative case (i.e. 'inn or some such particle cannot be added).

Segment Lb:


From 150-8 the following tables may be constructed:



Table 8

3.5.2.0 Following on summation of the various morphological expansions and replacement of the syntactic dummies of 149 by the resulting strings we derive:
qaḍama 1-mutasawwilu 1-rā̄̄ifa 1-laḍi ramayat \({ }^{(1)} 1\)-mar'atu This is an acceptable pre-phonemicised expression save for a pronoun which, in the case of "thematisation" of some \(R\) objective in a subordinate representation, must be added to the verb of the resulting subordinate clause.
\[
\underbrace{\left[\begin{array}{l}
P\left(R _ { 2 } [ 0 j ] \left(A\left(R_{3}\right)\right.\right. \\
N x(\text { ragi })
\end{array}\right.} P P\left\{\begin{array}{l}
a\left(R_{3}\right) \\
b(u)
\end{array}\right.
\]
(i) Note that ramgyat becomes ramat on phonemicisation.

There are many predicate semenes, of which DBP ( 1 rays: throw) is one, which require a preposition as part of the expansion of any \(\operatorname{AGr}(0 j)\) occurring in the same encoding or sub-encoding (e.g.segment 2 b of 146). Since our pronoun -hu appears in the position which would nornally be occupied by a string expanding a segnent containing \(\operatorname{AGx}(0 \mathrm{j})\) the appropriate preposition must be added - although in this case it is of course syntactically conditioned. Hence:

hu \([160] \mathrm{Ba}\)
bi \(-\ldots(\mathrm{Ba})\)
162
Bxpression 161 states that since a preposition has been assigned in conjunction with the pronoun, the latter replaces Ba of template 149. (This of course implies that unfilled positions in a template are discarded when phonemicisation begins). Had 160 not applied the pronoun would have occurred in "direct object" position, thus requiring the addition of a further primaxy syntactic template.
3.5.2.1 The structure of template 149 requires that bihu appear after l-mar'atu, which would not give an acceptable utterance. To be acceptable it should occur after ramayats

Since the string bihu is syntactically conditioned its position in the utterance will likewise be syntactically conditioned and therefore we require a further rule something like:
\[
(\mathrm{M}: \mathrm{J}) \xrightarrow{\left[\begin{array}{l}
159 \\
160
\end{array}\right] G} \xrightarrow{\ldots .163}
\]

That is, any string consisting only of a member of form class M and one of form class \(J\) is located inmediately behind the verb in the case where their introduction is syntactically conditioned (see paras. 1.1.4 and 1.1 .6 of chapter 13). necessary if we are to indicate in a reasonable space how the model handles a variety of descriptive phenomena. However, one would anticipate that investigations carried out within this fra mework - as any other, would normally concentrate on one particular group of generative properties while holding other phenomena constant. While this would make for a certain simplification, it must nonetheless be recognized that in the limit grammatical rule schema are highly complex and therefore resistant to generalisation.

The analyses given in these appendices are compiled on the basis of a largely impressionistic methodology. Since this is consistent with our assumption of ill-definedness in the structure of language it is taken to be theoretically respectable even though it seems clear that a greater precision would be possible.

Any particular analysis is considered to have validity to the extent that it is supported by similar analyses of the same measure. Conversely given some analysis of a fairly clear case this may on occasion be permitted to sway the analysis of a less clear case on the same measure. While this latter procedure at times has the result of legitimising a sememe which would otherwise not have the necessary degree of significance this is in practice exceptionally the case.

The samples of verbs collocating with prepositions given in appendix \(C\) are exceptional in that the senses expressed by these prepositions are rather elusive - especially in regard to the distinction between abstract local senses and abstract sense proper and also in their tendency to function as part of a phrasal verb.

In addition to those mentioned above the following principles have been loosely adhered to in compiling these latter analyses. First if a verb may collocate with a pair of prepositions distinct as to local sense we may suspect - but cannot be certain, that we are dealing with a third sense distinct from the local senses.

Similarly if the object of a verb may either be direct or governed by a preposition it may be suspected that the local sense has withered and been replaced simply by the sense 'objective' ( \(\operatorname{AGr}(0 j)\) ).

Note that aspectual sememes are omitted from these analyses, oven where appropriate.

Part 1. A sample of verbs on the measure Fatal
Table a
Forms analysable into the configuration: \(\mathrm{DBp}(\mathrm{x})+\mathrm{DCm}(\mathrm{Dyn})\)
\begin{tabular}{|c|c|c|c|}
\hline Root \(x\) & Root x & Root \(x\) & Root x \\
\hline htm (i) Decree(t) & htw(u) Strew(t) & h.jb(u) Veil(t) & hjpr(u) Deny access \\
\hline hjzz(ui) Restrain(t) & hjll (ui) Hop(i) & \(h \mathrm{j} m\) (u) \(\quad \operatorname{Cup}(\mathrm{t})\) & h.jn(i) Bend (t) (i) \\
\hline hdt (u) Happen(i) & hd (i) Stare ( \(t\) ) & hdr(ui)Lower( \(t\) ) & hids(ui)Surnise(t) \\
\hline hidq(i) Surround (i) & hdl (i) Flatten(t) & hdw(u) & Urge(t) \\
\hline hdf (i) Shorten(t) & hidq(u) Tum sour (i) & hdw (u) & Imitate(t) \\
\hline hrit (ui) Plough ( \(t\) ) & \(h_{i x z}\) (u) Protect(t) & hrs (u) & Oversee (t) \\
\hline hrsis i) Scratch(t) & hrse (i) Desire(i) (2) & hra(i) & Burn(ti) \\
\hline \(\mathrm{hzb}(\mathrm{u})\) Befall (t) & hzr (ui)Assess( \(t\) ) & hzm(i) & Tie up( \(t\) ) \\
\hline hzn(u) Sadden(t) (3) & hsb (u) Calculate(i) & hsd(u) & Envy ( \(t\) ) \\
\hline hssr (ui) Pull away ( \(t\) ) & hism(i) Cut(t) & hsd (ui) & Gather ( t ) \\
\hline hism (ui) Gather (t) & h3sk (i) Crann(t) & hism(1) & Shame( \(t\) ) \\
\hline hHws(u) Sturf (t) & hșd (ui) Harvest( \(t\) ) & hṣr (ui) & Surround \\
\hline hald(u) Come about(i) & hadr \(\mathrm{r}(\mathrm{u})\) Attend (t) & ḥạn(u) & Erabrace(t) \\
\hline
\end{tabular}

\section*{Table b}

Forms analysable into the configuration: \(\mathrm{DBp}(x)+\mathrm{DCm}\) (Eff)
\begin{tabular}{|c|c|c|}
\hline Root x & Root x & Root x \\
\hline hadr(u) Thickness(1) & hdiq(i) Skilful(ti)(2) & hron(u) Obstinate(1) \\
\hline
\end{tabular}

\section*{Table c}

Forms analysable into the configuration: \(\operatorname{Lps}(x) / \ldots . .1+\operatorname{DCm}(\operatorname{Dyn})\) \(\mathrm{h} / \mathrm{DBs}(\mathrm{x}) /\)

Note that where, as in this table, two values axe given for ' \(x\) ', xa refers to the superordinate lexeme and \(\mathrm{xb}, \mathrm{xc}\), etc. to included lexemes or sememes.
\begin{tabular}{|ccc|cccc|}
\hline Root & xa & xb & Root & xa & xb \\
\hline hsb(iu) & \begin{tabular}{l} 
Strew \\
pebbles \((t)\)
\end{tabular} & \begin{tabular}{l} 
Pebbles \\
(hasbà')
\end{tabular} & htb(i) & Gather firewood & (i) & \begin{tabular}{l} 
Firewood \\
(hatab)
\end{tabular} \\
\hline
\end{tabular}

This, which is morphologically the simplest of the verbal measures, serves ovexwhelmingly to indicate an event or emotion vieved 'dynamically' (91.1\%).(For a discussion of altemative analyses see para. 2.1.0 of chapter 6).

Largely by virtue of the fact that there is in the limit no boundary between dynamism when taking the form of a process as for instance \(h_{\mathrm{m}}^{\mathrm{h} q} \mathrm{q}\) or hsd in table (a) above, we tentatively suggest a barely significant incidence of \(\mathrm{DCm}(\mathrm{Eff})\). ( \(6.6 \%-\) table b).

Not, strictly speaking, significant at \(4.4 \%\) is a 'p redicatising' function (table c), which is of course more typical of the IInd and IVth measures. (See parts 7 and 9 of this appendix).
"Transitive" verbs are mexiced ( \(t\) ) and comprise 78.2\% of the sample. "Intransitive" verbs are marked (i) and comprise \(28.2 \%\). This result is somewhat against Mleisch 1957, p156.

Forms marked (1) have an alternative in Fa'ul
```

" " (2) " " " "Pa'iL
" " (3) " " 'effective' counterpary in Fa'iL

``` Of forms whose mudāri'counterpart is on the measure ar'il some \(88.8 \%\) are taken to express \(D C m(D y n)\).

\section*{Part 2. A sample of forms on the measure Fa'iL}

\section*{Table a}

Forms analysable into the configuration: \(\mathrm{DBp}(x)+\underline{D C m}(\mathrm{Eff})\)
\begin{tabular}{|c|c|c|c|c|}
\hline Root x & & Root \(\mathbf{x}\) & \multicolumn{2}{|r|}{Root x} \\
\hline 'tm Sin & 'wd & Bentness & \(t{ }^{\prime}\) & Follow \\
\hline 'hn Hate & bkI & Miggardliness & tlkm & (Indigestion) \\
\hline 'dn Hear & brss & Leprous (2) & trb & Dust covered \\
\hline 'dy Harm & bs \({ }^{\circ}\) & Ugliness & trih & Sadness \\
\hline 'rb Skilfulness & bspr & See(2) & trf & Luxury \\
\hline 'rj Fragrance & btr & Wildness & trh & Concerned with \\
\hline 'rq Sleeplessness & bğd & Odious(2) & & trifles \\
\hline 'sf Regret & bqy & Stay & br' & Preedom \\
\hline 'sy Sadness & bkn & Dumbness & brm & Weariness \\
\hline 'lf Faniliarity & blh & Stupidity & bly & Worn \\
\hline \({ }^{1} \mathrm{~m}\) Pain & bht & Astonishment & tr' & Fulness \\
\hline 'ns Sociability(2) & bhj & Gladness \({ }^{\text {(2) }}\) & t'b & Tiredness \\
\hline 'nf Disdain & bhy & Beauty( 1 ) & b's & Misery \\
\hline 'nq Neatness & & & bjh & Rejoice \\
\hline
\end{tabular}

Table b
Forms analysable into the configuration: \(\mathrm{DBp}(x)+\mathrm{DCm}(\mathrm{Dyn})\)
\begin{tabular}{|c|c|c|c|c|c|c|c|}
\hline & Root & x & \multicolumn{2}{|c|}{Root} & x & Root & x \\
\hline 'zf & approach & & 'fk & Lie & & bl' & Swallow(1) \\
\hline \({ }^{\prime} \mathrm{H}\) r & File & & brh & Leave & & t's & Misery (1) \\
\hline
\end{tabular}

As table (a) shows this measure serves mainly to express a state or event in an 'effective' rather than a 'causative' mode, and should be compared with the sample of forms on the IInd measure given in part 7 of this appendix.

In addition to the \(86.9 \%\) of the sample taken to express DCm (Eff) a \(13.1 \%\) incidence of DCm ( Dyn ) may also be detected. In this connection the forms ba'is and ta'is are of interest. Despite having the same value for \(\underline{\mathrm{DB}} \mathrm{p}(\mathrm{x})\) they are analysed differently. This is because the former may be translated into English either as "be" or as "become" "miserable", whereas - according to Wehr, ta'is has only the latter sense. For argument in support of this analysis see para. 1.3 of chapter 10. (Note that ta'is has an equivalent on the measure \(\left.\mathrm{Fa} \mathrm{a}^{\prime} \mathrm{a}\right)\).

Forns marked (1) have an alternative in Fa 'aL
\("\)
(2)
" " Fa'uL

Part 3. A sample of forms on the measure Fa'uI
Table a
Forms analysable into the configuration: \(\mathrm{DBp}(x)+\mathrm{DCm}(\mathrm{Bff})\)
\begin{tabular}{|c|c|c|c|c|c|}
\hline & Root x & \multicolumn{2}{|c|}{Poot} & \multicolumn{2}{|l|}{Root x} \\
\hline ' db & Sophistication & bĒ¢ & Odious(1) & jhr & Loudness \\
\hline 'sl & Firmly rooted & bkm & Silence & jhrm & Frown \\
\hline 'mn & Faithfulness & bld & Stupidity & hdr & Thickness(2) \\
\hline 'nt & Femininity & bht & Astonishment(1) & hrz & Impregnability \\
\hline 'ns & Sociability(1) & bhj & Beauty & hirm & Forbidden(1) \\
\hline \(\mathrm{b}^{\prime} \mathrm{s}\) & Strength & tkn & Thickness & hrn & Obstinacy(2) \\
\hline bkl & Niggardliness(1) & tql & Heaviness & hsn & Handsomness \\
\hline bdn & Fatness(2) & jbn & Cowardice & \(h_{\text {Sf }}{ }^{\text {f }}\) & Judicious \\
\hline brd & Coldness(2) & jdb & Dryness & hisn & Inaccessability \\
\hline bsl & Bravery & jdr & Suitability & biw & Sweetness(12) \\
\hline bss & See(1) & jzl & Abundance & hmạ & Sourness \\
\hline bt' & Slowness & jsm & Bulkiness & hmq & Stupidity(1) \\
\hline btl & Bravery & j'd & Curliness & kbt & Badness \\
\hline btn & Paunchiness & jmd & Freeze(2) & kbr & Know thoroughly \\
\hline b/d & Distance & jml & Beauty & kr' & Limpness(1) \\
\hline
\end{tabular}

Table b
Forms analysable into the configuration: \(\overline{D B p}(x)+D C m(D y n)\)
\begin{tabular}{|lc|}
\hline Root & \(x\) \\
\hline\(j r^{\prime}\) & dare \\
\hline
\end{tabular}

Functionally this measure differs from Fa'il mainly in the non-significance of the sememe \(\mathrm{DCm}(\mathrm{Dyn})\). To this extent the clain that Fa'uL expresses "a permanent state, or a naturally inherent quality" (Vright, 1.38) finds some support. Otherwise there appears to be no principled basis for distinguishing the functions of the two in a synchronic description.

Forms marked (1) have an alternative in \(\mathrm{Fa}^{\prime} \mathrm{aL}\)
" \(\quad\) (2) " \(\quad\) " \(\quad\) " Fa'iL

Part 4. A sample of foms on the measures aral and arfiL

\section*{Table a}

Forms analysable into the configuration: \(\operatorname{DBp}(x)+D C m(D y n)\)
\begin{tabular}{|c|c|c|}
\hline Root x & Root x & Root x \\
\hline \(\overline{\text { gwr }}\) Penetrate deeply & fwh Utter & qys Measure \\
\hline gwr (ua) Sink in & fy' Retum & qya Split \\
\hline \(\overline{\text { gxw }}\) Plunge into & fyḍ Overflow & qy1 Take a siesta \\
\hline ¢\%1 Grab & qwib Dig & kyd Dupe \\
\hline Eyt Water with rain & qut Feed & kyl Measure \\
\hline Ēyḍ Diminish & qwh Fester & 1wt Stain \\
\hline Ėy? Anger & qwi Lead & 1wh Emerge \\
\hline Eyya Cloudiness & qwd. Demolish & 1wd Take refuge \\
\hline fut Vanish & qw1 Say & Iws Peep \\
\hline fwh Diffuse an aroma & qwm Stand up & Iwt Stick \\
\hline fwr Boil & qy' Vomit & 1wf Chew \\
\hline fwz Triumph & quy Fester & 1求 Chew \\
\hline fwq Surpass & & \\
\hline
\end{tabular}

Table b
Forms analysable into the configuration: \(\mathrm{DBp}(\mathrm{x})+\underline{\mathrm{DCm}(E f f)}\)
\begin{tabular}{|c|c|c|}
\hline Foot x & Root x & Root \(\mathbf{x}\) \\
\hline \begin{tabular}{l}
Ėyb absence \\
Ēyr Jealousy \\
fyl Error
\end{tabular} & kwd(a) On the point of kwn Existence & \begin{tabular}{l}
kys Smartness \\
Iw' Restive
\end{tabular} \\
\hline
\end{tabular}

\section*{Table c}

Form analysable into the configuration: \(\underline{D B p}(x)+\underline{D A k q}(\) Refl \()\)
\begin{tabular}{|lc|}
\hline Root & \(\mathbf{x}\) \\
\hline kyn & Humility \\
\hline
\end{tabular}

This sample is listed merely by way of contrast with those on the measures apull and aFiLL in parts 5 and 6 of this appendix, and is intended to show that the medial vowel of these form like those of the measures aF'ul and aF'iL (see part 1), has no semantic significance. (See the discussion in para. 2.4.1 of chapter 6).

Of the forms on arüd 24 are taken to express the sememe \(\operatorname{DCm}(D y n)\), and of those on aFiL thirteen ( \(88.8 \%\) and \(72.2 \%\) respectively). Part 5. A sample of forms on the measure apulf

\section*{Table a}

Forms analysable into the configuration: \(\mathrm{DBp}(\mathrm{x})+\mathrm{DCm}(\mathrm{Dyn})\)
\begin{tabular}{|c|c|c|c|c|c|}
\hline Root & x & Root & x & Foot & x \\
\hline qbb & Cut off & krr & Return & \multicolumn{2}{|l|}{\multirow[t]{12}{*}{\begin{tabular}{ll} 
Ikk & Buffet \\
Imin & Gather \\
mtt & Spread \\
mjj & Spit out \\
mdd & Extend \\
mrr & Pass \\
mzz & Suck \\
ms̈ś & Macerate \\
mss & Absorb \\
mḍd & Hurt \\
mtt & Stretch
\end{tabular}}} \\
\hline qtt & Misrepresent & kzz & Shrivel & & \\
\hline qdad & Cut off & kzz & Overfill & & \\
\hline qzz & Loathe & kff & Desist & & \\
\hline qss & Pursue & knm & Conceal & & \\
\hline qร̇Ẻ & Collect(1) & knn & Conceal & & \\
\hline qgs & Cut off & lbb & Remain & & \\
\hline qạd & Pierce & 1tt & Crush & & \\
\hline qtt & Cut & 1dd & Dispute violently & & \\
\hline qmm & Sweep & 1zz & Tie & & \\
\hline kbb & Topple & 1ṣ & Do stealthily & & \\
\hline kdd & Work hard & Iff & Wrap up & & \\
\hline
\end{tabular}

Table b
Fom analysable into the configuration: DBp \((x)+D C m\) (Eff)
\begin{tabular}{|lc|}
\hline Root & \(x\) \\
\hline qff & Dryness \\
\hline
\end{tabular}

This sample is intended to show the correlation between aruLl and the sememe DCra(Dyn). It should be compared on the one hand with the sample on apill in part 6 and on the other with that on arid and aPIL in part 4, and the reference to ap'iL in part 1.

The incidence of the 'dynaric' sense is here \(94.4 \%\). The fom narked (1) has an alternative in apilin.

\section*{part 6. A sample of forms on the measure aFill}

\section*{Table a}

Forms analysable into the configuration: \(\overline{\mathrm{DBp}}(\mathbf{x})+\mathrm{DCm}(\mathrm{Eff})\)
\begin{tabular}{|c|c|c|c|c|c|}
\hline Root & x & Root & x & Root & x \\
\hline q7x & Settled & & Reverence(1) & hqq & Truth(1) \\
\hline q11 & Littleness & & Glow & h11 & Admissibility \\
\hline ktt & Hum softly & & Destruction & hnn & Crave \\
\hline & Thickness(2) & & Completion & \(\underline{k r m}\) & Murmur (1) \\
\hline kll & Tiredness & & Newness & kff & Lightness \\
\hline & Luxuriant(12) & & Greatness & & Snell foul (1) \\
\hline 'sj & \(\operatorname{Bum}(1)\) & & Love & 2 ja & Stubbornness(2) \\
\hline 'zz & Sinmer(1) & & Heat(1) & & \\
\hline
\end{tabular}

Table b
Forms analysable into the configuration: \(\mathrm{DBp}(x)+\mathrm{DCm}(\mathrm{Dyn})\)
\begin{tabular}{|c|c|c|c|c|c|c|}
\hline Root & & x & Root & \(\mathbf{x}\) & Root & \(x\) \\
\hline  & Collect & & btt & Sever & jmm & Gather \\
\hline & Recoil & & bll & Recover & h11. & Dismount \\
\hline 'dd & Befall & & jff & Dryness & & \\
\hline
\end{tabular}

A comparison of this sample with that given in part 5 shows clearly their tendency towards distinct functions. Some \(74.2 \%\) of this sample may be regarded as expressing an 'effective' sense,
compared with only one form (qif) in part 5. This does of course leave a not insignificant incidence of \(25.6 \%\) of forms taken to express the sememe \(\operatorname{DCm}(D y n)\).

However the difference in distribution of functions between this measure and the measures aFur, and anin (parts 1 and 4) is still striking, and is more comparable to that between Fa'al and Pa'iJ (parts 1 and 2).

Foms marked (1) have an altemative in aFuls
"
(2)
"
" apabla

Part 7. A sample of forms on the IInd measure

\section*{Table a}

Forns analysable into the configuxation: DBp( \(x\) ) + DCm (Dyn)
\begin{tabular}{|c|c|c|c|c|c|}
\hline Root & X & Root & K & Root & x \\
\hline \(\underline{k d b}\) & Colour(1) & & Scratch(1) & dbr & Make plans \\
\hline \(\underline{k r}\) & Protect(1) & & Grant & & Deceive(1) \\
\hline kl' & Remove(1) & dbj & Embellish & kzn & Stock \\
\hline
\end{tabular}

Table b
Foms analysable into the configurations \(\operatorname{DBp}(x)+\operatorname{DCmp}\) (Causn)
\begin{tabular}{|c|c|c|c|c|c|}
\hline Root & \(x\) & Root & \(x\) & Root & X \\
\hline kss & Lose & kdl & Wetness & kwr & Feas \\
\hline k'st & Humbleness & kld & Eternal & djn & Domesticate \\
\hline k"sn & Roughness & kls & Puxity & kyb & Failure \\
\hline ksty & Fear & klt & Mix(1) & kyr & Choose \\
\hline ksb & Fextility & klf & Appoint as successor & & \\
\hline kdr & Greenness & glw & Emptiness & ky2 & Belief \\
\hline kd. & Fumbleness & \(\underline{\mathrm{kJas}}\) & Five & dbb & Sharpness \\
\hline
\end{tabular}

Mable
Forns analysable into the configuration: \(\operatorname{Lps}(x) / \ldots \cdot /+\operatorname{DCm}(\operatorname{Dyn})\)
\begin{tabular}{|c|c|c|c|c|c|}
\hline Root & xa & \(x\) ¢ & Root & za & xb \\
\hline kSb & Panel & Wood & k21 & Soumness & Vinegar \\
\hline dbq & Catch vith & & Eyt & Sew & Threed \\
\hline & birdlime & Birdline & kyi & Gallop & Horses \\
\hline kfq & Plaster & Plaster & Kym & Pitch a tent & Tent \\
\hline
\end{tabular}

Table a
Torms heving other configurations, namely:
a) \(\quad \operatorname{Lps}(x) / \ldots /+\operatorname{DCm}(\operatorname{Dyn})\) \(\mathrm{h} / \mathrm{DBs}(\mathrm{x})\) - DCmp \((C a u s n) /\)
b) \(\quad \operatorname{Lpp}(x) / . . .0 /+\operatorname{DCm}(\operatorname{Dyn})\)
\(\bar{h} / \underline{D B p}(x)\) - DCmp (Causn)/
c) \(\quad \operatorname{Ln}(\pi) / \ldots \cdot /+\operatorname{DCm}(D y n)\) \(h / D B p(x) /\)
d) \(\quad \operatorname{Imp}(x) / \ldots \cdot /+\operatorname{DCm}(\operatorname{Dyn})\)
\(h / B B p(x)-\overline{D A K}(\) Exten \() /\)
\begin{tabular}{|c|c|c|c|c|c|}
\hline Root & xa & xb & Root & xa & xb \\
\hline kl1(a) & Soumess & Vinegar & \(\underline{k r r a}(\mathrm{a})\) & Ferment & Wine \\
\hline kıb \({ }^{\text {a }}\) (a) & Lignify & Food & kfd. \({ }^{\text {d }}\) & Make lower & Lowness \\
\hline \(\underline{k f f(b)}\) & Make ligh & Lishtness & \(d t r(b)\) & Destroy & Forgotten \\
\hline \(\underline{k t}{ }^{\prime}(\mathrm{c})\) & \[
\begin{aligned}
& \text { Declare } \\
& \text { Euilty }
\end{aligned}
\] & Error & \begin{tabular}{l}
\(\mathrm{kmn}(\mathrm{c})\) \\
ktm(a)
\end{tabular} & Declare faithless overstep & Paithlessness Step \\
\hline
\end{tabular}

Some \(57.7 \%\) of the sample are taken to express a 'causative' sense, either in an adherent relationship with the predicate (table b), or included in some lexene (table d configurations a and b).

Also strongly significant is a 'dynanic' sense where 'causation' is not also present ( \(42.4 \%\) - see tables a,c and table \(d\) configurations \(c\) and \(d\) ). Certain of these (i.e. those formes maxked (1) in table a)heve an alternative on the measure Fa'al.

Note also the significance of the "predicatising' function of this measure ( \(24.4 \%\) - see tables \(c\) and \(d\) configuxation a).

Note also that the analysis lying behind table d configuration \(d\) and especially the introduction of the element DAk(Bxten), is justified by analogy with analyses of forms on the
measure \(\mathrm{Fa}{ }^{\prime \prime}\) 'al. (See part 1 of Appendix B and para. 1.0 of chapter 6).

Part 8. Sargle of forms on the 3nd measure
Table a
Forms having the configuration: \(\operatorname{Lpp}(x) / \ldots /+\operatorname{DCm}(D y n)\)
\(\mathrm{h} / \mathrm{DBp}(\mathrm{x})\) ~ DAkp(Dir)/
\begin{tabular}{|c|c|c|c|c|c|}
\hline Root & xa & xb & Root & xa & xb \\
\hline nzr & Dispute & Consider(1) & nvo & Al ternate & Substitute \\
\hline nfr & Avoid & Flee & nw1 & Pass & Give \\
\hline nfw & Fursue & Expel & nvry & Fallout & Go amy \\
\hline nqd & Call to account & Criticize & & & \\
\hline nq \% & Quarrel & Insult & hjr & Finigrate & Part \\
\hline nqu & Dispute & Argue & hivy & Flatter & Like \\
\hline nq1 & Direct & Transmit & wtb & Pounce & Leap \\
\hline & & & wtq & Make treaty & Faith \\
\hline nkd & Pester & Difficult & wdd & Make friends & Priendliness \\
\hline nkr & Disapprove & Not-know & & & \\
\hline nms & Confide a secret & Conceal & mre & Dupe & Obliqueness \\
\hline nhẹ & Oppose & Rise-up & wzr & Aid & Take upon os. \\
\hline
\end{tabular}

\section*{Table b}

Forns having the configuration: \(\operatorname{Lp}(x) / \ldots /+D C_{m}(D y n)\)
h/DAkp(Dir)/
\begin{tabular}{|c|c|c|c|c|c|}
\hline Root & x & Root & x & Root & x \\
\hline n?r & Compete & nws' & Skimish & hr3 & Quarrel \\
\hline nḡs & Tease & htr & Insult & " & Joke \\
\hline nft & Defend & hjm & Attack & hnf & Sneer \\
\hline nfs & Compete & hjw & Lampoon & hwd & Considerateness(2) \\
\hline nqb & Vie in virtue & & Make truce & hws & Annoy by barking \\
\hline nw' & Oppose & & Agree & hy' & Agree(2) \\
\hline wty & Favourable (2) & & Pester & & \\
\hline
\end{tabular}

Table c
Pomas having the configuration: \(D B p(x)+D C m(D y n)\)
\begin{tabular}{|c|c|c|c|c|c|c|c|}
\hline \multicolumn{2}{|l|}{Root} & x & Root & \(x\) & Root & & \(x\) \\
\hline n \%r & Make equal & & nqs & Invite bids & & & \\
\hline nfq & Dissemble & & & Related by mamiage & hnf & Sob & \\
\hline
\end{tabular}

Forms having the configuration: \(D B p(x)+D A k p(D i r)+D G m(E f f)\)
\begin{tabular}{|ll|l|l|}
\hline Root & \multicolumn{1}{c|}{x} & Root & \multicolumn{1}{c|}{x} \\
\hline nar & Equality & nqd Contrariness & wzn Equality in weight \\
nfiv & Contrewiness & & \\
\hline
\end{tabular}

\section*{Table 8}

Foms having other configurations, namely:
a) \(\operatorname{DBp}(x)+\underline{D A k q}(\operatorname{Refl})\)
b) \(\operatorname{Ipgr}(x) / \ldots /+\operatorname{DAkg}(\) Recip \()\) h/Lsp( \(x\) )/
c) \(\operatorname{Ip}(x) / \ldots /+\operatorname{DCm}(D y n)\) h/DAk (Itn) /
d) \(\underline{D B p}(x)+\underline{D A k p}(\) Seek \()+D C m(D y n)\)
e) \(L \mathrm{Lp}(x)+\mathrm{DAkp}^{(\text {Seek })}+\mathrm{DCin}(\mathrm{Dyn})\)
i) \(\quad \operatorname{Lps}(x) / \ldots \cdot /+\operatorname{DCm}_{\mathrm{m}}(\mathrm{Dyn})\) h/DBs(x) ~DAkp(Dir)/
c) \(\operatorname{Lp}(x) / \ldots /+\operatorname{DCm}(D y n)\)
h/DS1mx \((x) /\)
\begin{tabular}{|c|c|c|c|}
\hline Root & xa xb & Root xa & xb \\
\hline nfs(d) & Obtain & \multicolumn{2}{|l|}{\(\mathrm{ytr}(\mathrm{c})\) Do intemittenti.y} \\
\hline nvry( a ) & Declare enmity & \[
\text { wjh(f) Face }(p)
\] & Face(s) \\
\hline hdy (b) & Exchange presents & wry(g) Conceal & Behind \\
\hline & Gift & wry(e) & \\
\hline
\end{tabular}

The patterns of sense typically expressed by this measure are not easily deternined. A trailitional account, such as that of Wright 1.43 offers li.ttle sssistance since, where the generalisations made are not at odds with the evidence provided by this sample - as for instance at 1.438 , they are inclined to be secondery.

In lwight 1.43b we read "When the firet or fourth form denotes an act, the relation of phich to an object is expressed by neans of a preposition (indirect object), the third fom corverts that indirect object into the immediate or direct object
of the act". Then (1.43c) "When Fa'aja denotes a quality or state, Fa'ala indicates that one person makes use of that quality towards another and affects him thereby..."

These two statements provide the basis for a possible solution to our problem. First, if we may assume that in sone cases at least the above mentioned prepositions express local relational sememes (see section 1 of chapter 8) then the equivalence of the two expression modes is perhaps best understood by postulating the incorporation of what might be temed a sememe of 'directionality' into the appropria te configuration, the external logical value of which must be learned or inferred from context.

The quotation from 1.43 c supports this interpretation since the notion of using a quality towards some person is clearly consistent with the more general sense of directionality.

From this we would argue that the phenomenon of "transivity" highlighted by Wright (See also Beeston 1970, p74) is in fact secondary to and contingent upon directionality.

Note that on the basis of the sample offered here the sense of 'trying' to do something is less common that might be supposed from Wright, 1.43a(3.5). For a justification of its inclusion see para. 1.3 of chapter 6 .

Forns marked (1) in table (a) are those where \(\mathrm{Lp}(x)\) should be read for \(\underline{D B P}(x)\). Forms marked (2) in teble (b) are those where DBP( \(x\) ) should be read for \(L p(x)\).

Part 9. A sample of foms on the 4th measure
Table a
Forms having the configuration \(\operatorname{DBp}(x)+D C m p(C a u s n):\)
\begin{tabular}{|c|c|c|c|c|c|}
\hline Root & x & Root & x & Root & x \\
\hline dkn & Smokiness & dwl & Ascendency & dhl & Bafflement \\
\hline \(d x r\) & Flow & dwm & Endure & dwb & Dissolve \\
\hline dif \({ }^{\text {P }}\) & Warmness & dyn & Indebtedness & dwq & Taste \\
\hline dqq & Fineness & \(\mathrm{d}^{\prime} \mathrm{r}\) & Fear & r'y & See \\
\hline dmj & Enter & dkr & Remember & rbh & Profit \\
\hline dmy & Bleed & d.kw & Blaze & rbw & Grow \\
\hline dny & Nearness & ญ11 & Lowness & rt' & Pasture \\
\hline dhs' & Astonishrnent & & Go away & & \\
\hline
\end{tabular}

Table b
Foms having the configuration: \(D B p(x)+D C m(D y n)\)
\begin{tabular}{|c|c|c|c|c|c|}
\hline Root & & Root & x & Root & x \\
\hline drj & Include & dgm & Incorporate & dmm & Devote os. \\
\hline drk & Attain & dlj & Set out at nightfall & dxw & Scatter \\
\hline & darkness & dyn & Convict & \[
\frac{d ' n}{d 11}
\] & Submit Free \\
\hline
\end{tabular}

Table c
Forms having the configuxation: \(\operatorname{Lps}(x) / \ldots /+\mathrm{DCm}(\mathrm{Dyn})\) h/DBs(x) - DCmp(Causn)/
\begin{tabular}{|lll|lll|}
\hline Root & xa & xb & Root & \multicolumn{1}{c|}{ xa } & xb \\
\hline dlw & Lower & Bucket & dm' & Cause to weep & Tears \\
dnb & Do wrong & Sin(s) & ds1 & Trample underfoot & Dust \\
\hline
\end{tabular}

\section*{Table d}

Forms having other configurations, namely:
a) \(\operatorname{Lpp}(x) / \cdot . \cdot /+\operatorname{DCm}(D y n)\)
\(\mathrm{h} / \mathrm{DBp}(\mathrm{x})\) - DCmp\((\) Causn \() /\)
b) \(\mathrm{DBp}(\mathrm{x})+\mathrm{DC} \mathrm{m}\) ( Fff )
\begin{tabular}{|ll|ll|}
\hline Root xa \(\quad\) xb & Root & \multicolumn{1}{c|}{ x } \\
\hline dry Let know Know & dq' & Misery \\
dy' Disseminate Spread & dnf & Very ill \\
& & dnw & Nearness \\
\hline
\end{tabular}

Along with the 2 nd measure the 4th bears a major part of the buxden of expressing 'causation' in Arabic. In this case we detect an incidence of \(69.9 \%\) compared with \(57.7 \%\) in the former. However 'dynanism' unaccompanied by 'causation' is here not so prominent, comprising 23.5 of the sample as against \(42.4 \%\) in the 2nd measure.

Significant also at \(9.3 \%\) is the 'predicatising' function, although this again is less prominent than for the and measure.

Barely significant (at \(6.9 \%\) ) is the incidence of DCm (周f).

Paxt 10. A somple of fomas on the 5th neasure
Table a
Fomas expressing the configurations \(D B p(x)+D C n(0-E)\)
\begin{tabular}{|c|c|c|c|c|c|}
\hline Foot & & Root & \(x\) & Root & x \\
\hline & Mend & \(x \mathrm{gq}\) & Softness & zhd & Withdrew \\
\hline & Decline & man & Repair & 2 zaj & Taxay \\
\hline nsb & Settle & IW* & Fear & zyd & Increase \\
\hline rah & Bring up & zicr & Swell & & \\
\hline \(x\) etb & Moisten & zkw & Puxify & & \\
\hline
\end{tabular}

Table b
Town expreasing the conficuration: \(\operatorname{DBp}(x)+\operatorname{DCn}(E f f)\)
\begin{tabular}{|c|c|c|c|c|c|}
\hline Foot & z & Root & x & Root & x \\
\hline rsl. & Length & mmq & Tait & xwy & Ponder \\
\hline rsm & Follow & mmh & Stagger & xyb & Doubt \\
\hline \(x^{2} \mathrm{~s}\) & Writhe & mon & Sing & xy' & Hesitate \\
\hline mqb & Avait & xil & Mabbiness & zlq & Slide \\
\hline nkb & Compose & zint & Primness & zyn & Adorm \\
\hline
\end{tabular}

\section*{Tablec}

Foms expressing the configuration: \(\mathrm{BBp}(\mathrm{x})+\mathrm{DCm}(\mathrm{Dyn})\)
\begin{tabular}{|c|c|c|c|c|c|}
\hline Root & \(x\) & Root & x & Root & \(x\) \\
\hline ratn & Yend & & Sip & 2 yy & Rebuike \\
\hline may & Asoend. & rikz & Concentrate & zwy & Obtain \\
\hline
\end{tabular}

Table d
Forns oxprossing the semease MAka(ReII) in their configunation, namely:
a) \(\quad \underline{M B} p(x)+\operatorname{Mkg}(\) refl \()\)
b) \(\operatorname{IBp}(x)+\operatorname{DAKP}(\Omega s t)+\operatorname{DAkg}(\operatorname{Ren})\)
c) \(\quad \mathrm{Lpg}(x) / \ldots /+\operatorname{paka}(\operatorname{Ref} \Omega)\) h/n3s \((x) /\)
d) \(\quad L p(x) / \ldots /+\operatorname{DAKa}(\) Refl \()\) \(\mathrm{h} / \mathrm{DBp}(\mathrm{x}) /\)
e) \(\frac{\operatorname{Lpsp}(x) / \cdots}{h / \operatorname{Tap}(x)}(x /+\operatorname{DAka}(\) Refi \()\)

Mote that \(p=\) predicate, \(s=\) substantive


\section*{Taple e}

Pozms expressing other configurations, namely:
a) \(\mathrm{DBp}(x)+\mathrm{DAk}(\) Evin \()\)
b) \(\mathrm{DBp}(\mathrm{x})+\mathrm{DAkg}(\) Seek \()+\mathrm{DCm}(\mathrm{Dyn})\)
e) \(L p(x) / 0.0 /+\operatorname{DCm}(E f f)\) \(h / \underline{1 n p}(x) /\)
d) \(\frac{\mathrm{Lps}(x) / 0 \cdot 0 /+\operatorname{DCm}(0-\mathbb{B})}{\mathrm{h} / \mathrm{DSg}(x)}\)
e) \(\operatorname{Ippos}(x) / \ldots \cdot /+\operatorname{ICm}(0-\mathrm{B})\)
h/ Lps (x)/
f) \(\frac{\operatorname{Lpg}(x) / \ldots /+\operatorname{DAK}(\operatorname{IVin})}{}\) /DBe(x)/
\begin{tabular}{|c|c|c|c|c|c|}
\hline Root & xa & xb & Root & xa & xb \\
\hline \(\operatorname{rzn}(\mathrm{a})\) & Calmness & & ml (d) & Widov(p) & Widow(s) \\
\hline \(\boldsymbol{x f q}\) (a) & Kindness & & \(x y^{\prime \prime}(\mathrm{e})\) & medge & Feather \\
\hline rồy (b) & Please & & \(z \mathrm{ma}(\mathrm{f})\) & Lead & Leqder \\
\hline rfag (c) & Bigotry & Reject & zwd (d) & Supply & Provisions \\
\hline and(d) & Burn to awhes & Ashes & & & \\
\hline
\end{tabular}

Prominent anong the senses expressed by this sample are 'onooningeffect' (27.7\%) and 'effect' (29.6\%).

Por 20.5 ' of the sample we detect a 'reflexive' sense. However this anaiysis is not without problens. Wile it is not to our purpose to offer a diachronic account of the 7 th measure it does not seem improbable that 're\{lexiveness' in Arabic is a secondary phenomenon, deriving from the application of an "inchoated" predicate - that is, a predioate assigned the semene TKM \((0-\mathbb{B})\), to a 'cixomatance' having a human being in an 'objective' relatlonship.

This presents a problen to the investigator in that many of these apparently 'reflexive' foms can be analysed as "inchoatives" demanding a reflexive interpxetation in the particular context. On the other hand that an element 'reflexive' is relevant can hardly be doubtec, since thene are many fomas which have only one sense or the other even when Viewed from an external logical point of view.

The crux of the problen appears to be that the non-native speaking investigator is handieapped in that the internal logical stiructure of his own lancuage is inclined to intrude into his analysis of Arabic. One can have no doubt that a Fronch speaking linguist for instanoe mould detect a higher inoidence of reflexivity in the above sariple than we have chosen to do.

Table a
Forms expressing the configuration: \(\underline{L p}(x) / \ldots /+\) DAkq (Recip) h/DAkp(Dir)/
\begin{tabular}{|l|c|cc|}
\hline Root & \multicolumn{1}{|c|}{x} & Root & \multicolumn{1}{c|}{x} \\
by' Make contract & jwb Reply & 'sw & Assist \\
byn Differ & & & 'mr \\
\hline " Vary & hdw & Opposite & bht \\
" Discuss \\
jdl Quarrel & wkl Trust & bry & Compete \\
jns Akin & 'zr Help & bhw & " \\
\hline
\end{tabular}

\section*{Table b}

Other configurations contailing DAkq(Recip) namely:
a) \(\underline{D B p}(\mathrm{x})+\operatorname{DAkq}(\operatorname{Recip})\)
b) \(\overline{D B p}(x)+\overline{D A k p}(D i r)+\operatorname{DAkq}(\) Recip \()\)
c) \(\quad \frac{L p}{\mathrm{~h}}(\mathrm{x}) / \mathrm{DBp}(\mathrm{X}) /+\operatorname{DAkq}(\operatorname{Recip})\)
d) \(\quad \operatorname{Ips}(x) / \ldots /\)
h/DBs \((x)-\) DAkq (Recip) /
e) \(\quad \operatorname{Lpp}(x) / \ldots /+\operatorname{DAkq}(\operatorname{Rec} i p)\)
h/DBp(x) ~ DAKp(Dir)/
f) \(\quad \operatorname{Lpp}(x) / \ldots /+\operatorname{DAkg}(\operatorname{Recip})\) h/DBp \((x)\) - DAkp(Seek)/
g) \(\quad \operatorname{Lpp}(x) / \ldots /\)
h/Lp \((x) / / \ldots / / /\) DAkg(Recip)/
h/TDAkp(Dir) \(/ / /\)
\begin{tabular}{|c|c|c|c|c|}
\hline Root xa & xb & Root & xa & xb \\
\hline bhl (a) Curse & & jwr (d) & Neighbour ( p ) & Neighbour (s) \\
\hline jdb (a) Draw & & jml (e) & Amiable & Proper \\
\hline hbb(a) Love & & hrb (e) & Fight & Purious \\
\hline hsd(a) Envy & & bdl (e) & Fxchange & Replace \\
\hline wqf(a) Eigint & & brz(e) & Meet in combat & Imerge \\
\hline bgda (a) Hate & & \(\mathrm{hjj}^{\text {(f) }}\) & Dispute & Confute \\
\hline hdt (b) Speak & & \(j 1 \mathrm{~d}\) (g) & Fight with swords & Fight \\
\hline 'If(c) Hawmony & Accustom & 'kw(d) & Fratemise & Brother \\
\hline
\end{tabular}

\section*{Table c}

Forms expressing other configurations, namely:
a) \(\quad \mathrm{DBp}(\mathrm{x})+\mathrm{DAk}(\mathrm{Itn})\)
b) \(\quad \mathrm{DBp}(\mathrm{x})+\mathrm{DAk}(\mathrm{Evin})\)
c) \(\frac{I p p}{A}\left(\frac{x}{p}\right) /(x)^{\circ} / \sim \operatorname{DAkg}(\) RefI \() /\)
a) \(\quad \mathrm{DB} \mathrm{p}(\mathrm{x})+\mathrm{DCm}(\mathrm{BIP})\)
e) \(\quad \mathrm{DBp}(x) \div \mathrm{DCm}(\mathrm{Dyn})\)
f) \(\quad \mathrm{MRp}(x)+\operatorname{DAkp}(\) Ist) \(\div \operatorname{DAkq}(\) Refl \()\)
g) \(\operatorname{Lp}(\mathrm{x}) / \ldots \cdot+\mathrm{DCm}(\mathrm{nff})\)
\(\bar{h} / \operatorname{Dekg}(\mathrm{Dix}) /\)
h) \(\mathrm{Ippp}(\mathrm{x}) / \ldots\) /
h/DBp \((x)-\operatorname{Dak}(I \operatorname{tn}) /\)
1) \(\mathrm{Lpp}(\mathrm{x}) / \ldots /\)
\[
\mathrm{h} / \mathrm{DBs}(\mathrm{x}) \sim \operatorname{DAk}(\text { IVin }) /
\]
j) \(\mathrm{Lpp}(\mathrm{x}) / \ldots /+\mathrm{ICm}(\mathrm{E} \rho \mathrm{f})\) T/DRp \((x)\) - DAKp (Dir)/
k) \(\quad \operatorname{Lpp}(x) / \ldots /+\operatorname{DCm}(\operatorname{Dyn})\) h/DES \((x)-\operatorname{DAk}(2 \operatorname{tn}) /\)
1) \(\frac{L_{p p}(x) / \ldots /+10 n(D y n)}{}\)

\begin{tabular}{|c|c|c|c|c|c|}
\hline Root & xa & xb & 2 O & ม. & xb \\
\hline \(\mathrm{bb}^{\prime}(\mathrm{a})\) & Follow & \multirow{15}{*}{Bxclude
Puln} & \multicolumn{3}{|l|}{wyy(d) Slackness} \\
\hline 61w(a) & " & & \multicolumn{3}{|l|}{bdre(d) Obvious} \\
\hline W1a' \({ }^{(a)}\) & Procreate & & \multicolumn{3}{|l|}{bt'(d) Slow} \\
\hline why (a) & Follow & & \multicolumn{3}{|l|}{\(b^{\prime} d(d)\) Distant} \\
\hline jfw(b) & Roughness & & \multicolumn{3}{|l|}{\(\underline{t}^{*} \mathrm{~b}\) (e) Yawn} \\
\hline jhl (b) & IEmorance & & \multicolumn{3}{|l|}{jfiv(e) Shum} \\
\hline \(b^{3} \leq(b)\) & 13isery & & \multicolumn{3}{|l|}{\(\mathrm{jnb}(\mathrm{e})\) Avoi.d} \\
\hline bla (b) & Stupidity & & \multicolumn{3}{|l|}{j11(f) Par ebove} \\
\hline \(b 1 h(b)\) & Foolishness & & \multicolumn{3}{|l|}{bxic(s) Bless} \\
\hline h'sw(c) & Keep amay & & \multicolumn{2}{|l|}{\(\mathrm{b}^{\prime} \mathrm{d}(\mathrm{h})\) Follow regularly} & Distant \\
\hline tgild) & Heavinces & & \multicolumn{2}{|l|}{bdw( \(\mathbf{i}\) ) Pose as bedu} & Bedu \\
\hline jsm(d) & Dare & & \multicolumn{2}{|l|}{jnf( 5 ) Deviate} & \multirow[t]{2}{*}{Shift} \\
\hline wikl(d) & Non-conmital & & \multicolumn{2}{|l|}{" (3) Incline} & \\
\hline \(j \mathrm{jab}(\mathrm{k})\) & Pull back and & & \multicolumn{3}{|l|}{\({ }^{\prime} \mathrm{kl}\) (d) Consume} \\
\hline & & & bkl (1) & Give gruagingly & Micgardly \\
\hline
\end{tabular}

Ty the Bestem grammarians ble 6th reeasuxe is temed the mutäwi" or "reflex" of the \(3 x d\). inile there is indeod a strong moxphom logical paratelism betweon theso two, ospocially when compared vith the and and 5 th measures, the aemenic comespondences between the former pais amo to sowe artent different from those between the 1aちter.

In particulor the semenes \(\mathrm{DCm}(0-\mathbb{E})\) and \(\mathrm{DCra}(\mathrm{Rff})\), the expression of which might be reganded as the defining function of the true muteani', and which are typical of the 5th and 7th measures, are not common, as the sample shows. (The fomer in fact we take to be entirely absent).

The most common sense expressed by the 6th measure is 'reciprocity' which is detected in \(50.8 \%\) of the semple given above. The way in which this elenent typically interiocks with the remainder of the configuration offers further evidence for the conclusion that wo are not here treating of a true mutāui' relationship.

In paxcs. 2.2 of chapter 6 it is argued that the elenent DCn \((0-E)\), when expressed in the 5 th measure, can be said to Supplete the semendicmp(Causn) expressed by the 2nd measure. This we mould suggest is the true muțawi' melationship. On the other hand where Dhkg( Recip) may be detected, in some 70, of its occurences it is seen to supplenent some other element from system DAk.

Anong other noteworthy incidences in this sample are those of DAk(IVin) and DAk(Itn), both at 10.2\%.
part 12. A sample of foxis on the 7 th yeasure
Table a
Powns expressins the configuretion: \(7 B n(x)+1003(0-E)\)
\begin{tabular}{|c|c|c|c|c|c|}
\hline R00t & x & Hoos & \(\times\) & Yoot & x \\
\hline \(\mathrm{sm}_{3}\) & Open & \(\mathrm{ag}_{2}\) & Samothmess & toq & Cover \\
\hline 5 & Divide & gin & Commeot & trel & Fling \\
\hline \({ }^{3} \mathrm{E} 2\) & Buxy & shar & Welt & tif & Extinguish \\
\hline 3 Fq & Split & dibt & Detain & ¢7. 1 & Free \\
\hline 911 & Lame & dm & Denacge & \(t \mathrm{tma}\) & Inundate \\
\hline sbb & Pour foxth & \(\dot{d} \bar{e}\) t & Fress & tims & mfface \\
\hline sd. & Come aparit & dian & Closeness & turd & Soar up \\
\hline sıh & Evident & dar: & Dryness & tury & Fold \\
\hline \(92^{\circ}\) & Madiness & dys & Adid & yma & Injustice \\
\hline 9x-m & Pess & tibl & Crookedness & - \({ }^{\text {a }}\) \% & Infect \\
\hline \(5^{1} 9\) & Strive by lightringe & tio & Impuens & '20] & Bend \\
\hline
\end{tabular}

\section*{Table b}

Foms expressing other configurations, namely:
\[
\begin{aligned}
& \text { a) } \overline{D B p}(x)+\operatorname{DCm}(B f f) \\
& \text { b) } D B p(x)+D A k q(\operatorname{Ref}) \\
& \text { c) } \overline{D B p}(x)+D C m(D y n)
\end{aligned}
\]
\begin{tabular}{|c|c|c|c|c|c|}
\hline Root & x & Root & x & Root & x \\
\hline s̈ēf(a) & Infatuation & \(\mathrm{dy}^{\prime}\) (b) & Lie dowm & tov' (a) & Obedience \\
\hline Bg1 (b) & Occupy & dww(b) & Attach & - tq (b) & Rid \\
\hline \(\operatorname{srf}\) (c) & Abandon & \(\operatorname{trsh}(\mathrm{b})\) & Fling & -dn(a) & Lack \\
\hline \(\boldsymbol{s x f}\) (b) & Devote & tlb(a) & Seek & - gm (a) & Obscurity \\
\hline sw'(b) & Submit & & & & \\
\hline
\end{tabular}

This measure differs from the functionally analogous 5th principally in the greater significance of the sense 'oncomingeffect' ( \(71.7 \%\) as against \(27.7 \%\) ).

On the other hand the element 'effect' is rather less prominent at \(10.8 \%\) as against \(29.6 \%\), as also is the sense 'reflexive' at \(15.2 \%\) as acainst \(20.5 \%\).

Paxt 13. A sample of forms on the 8th measure
mable a
Foms expressing the configuration: \(\mathrm{DBp}(x)+\mathrm{DCm}(\mathrm{gff})\)
\begin{tabular}{|c|c|c|c|c|c|}
\hline Root & x & Root & x & Root & x \\
\hline & Involvenent & \({ }^{\text {ml }}\) & Activeness & \({ }^{6} \mathrm{br}\) & Teach \\
\hline 'țb & Destruction(1) & \({ }^{\text {n }}\) ng & Concern & -d2 & Straightness \\
\hline & Beliove & \({ }^{\text {wd }}\) & Accustomed & \({ }^{\text {rma }}\) & Viciousness \\
\hline & Agitation & \({ }^{\text {wxs }}\) & Difficult(1) & \({ }^{1} \mathrm{zm}\) & Resolution \\
\hline & Knowledge (1) & 21m & Injustice & 'ṣb & Group (p) \\
\hline
\end{tabular}

Table b
Foms whose configuration contains the element \(\operatorname{DCn}(D y n)\) only. These are:
a) \(\quad \mathrm{DBp}(x)+\operatorname{DCm}(D y n)\)
b) \(\quad \frac{\pi p(x) / \cdot \cdot 0 /}{h / D B p(x) /}+\operatorname{DCn}(\operatorname{Dyn})\)
c) \(\quad \frac{\operatorname{Lpg}(x) / \cdots}{\mathrm{h} / \mathrm{DBg}(x)} /+\operatorname{DCm}(\mathrm{Dyn})\)
\begin{tabular}{|c|c|c|c|c|}
\hline Root & x & Root & xa & xb \\
\hline \multicolumn{2}{|l|}{\multirow[t]{11}{*}{```
'fv Visit with purpose
'ql Amest
'Iv rise
mad Intend
'wr Shape
\({ }^{\circ} \mathrm{br}\) Consider
'rd Object
'xw Afflict
'sr Squeeze out
```}} & - dw (b) & Bxceed & Pass \\
\hline & & \({ }^{1} \mathrm{rf}(\mathrm{b})\) & Acknowledge & Perceive \\
\hline & & 'zw(b) & Trace one's descent & Trace \\
\hline & & & & \\
\hline & & 1 sf (b) & Haphazaxdness & Rashness \\
\hline & & - wad (b) & Take as compensation & Substitute \\
\hline & & - da (b) & Consider & Reckon \\
\hline & & \(\cdot \operatorname{mr}\) (c) & Make pilgrimage & Pildgrinage \\
\hline & & \({ }^{\text {mma }}\) (c) & Put on turban & Tuxban \\
\hline & & \({ }^{\prime} \mathrm{nq}\) (c) & Tmbrace & Heck \\
\hline & & - \({ }^{\text {gs }}\) (c) & Mest(p) & Nest(s) \\
\hline
\end{tabular}

\section*{Table e}

Forms expressing other configurations. These are:
a) \(\mathrm{BBp}(x)+\mathrm{DAkg}(\mathrm{RefI})\)
b) \(\mathrm{DBP}(\mathrm{x})+\mathrm{DAkq}\) (Reoip)
c) \(\operatorname{Lpp}(x) / \ldots /+\operatorname{DCm}(\mathrm{Dyn})\) \(\mathrm{h} / \mathrm{DBp}(\mathrm{x}) \sim \mathrm{DAkq}(\) Refl \() /\)
d) \(\operatorname{Lpp}(x) / \ldots \cdot /+\mathrm{DCm}_{\mathrm{m}}(\mathrm{Dyn})\) \(\mathrm{h} / \mathrm{DBp}(\mathrm{x}) \cap \mathrm{DCm}(\mathrm{Eff}) /\)
e) \(\mathrm{DBp}(x)+\mathrm{DAk}(I t n)+\mathrm{DCm}(0-E)\)
f) \(\mathrm{Lp}(\mathrm{x}) / \ldots . . /+\mathrm{DAkg}(\) Recip \()\) h/DAkp (Dir)/
g) \(\mathrm{Lp}(\mathrm{x}) / \cdot \cdot \cdot /+\mathrm{DCm}(\mathrm{Eff})\) \(\mathrm{h} / \mathrm{DBp}(\mathrm{x}) /\)
\begin{tabular}{|c|c|c|c|c|c|}
\hline Root & xa & xb & Root & xa & xb \\
\hline \({ }^{1} \mathrm{kf}\) (a) & Isolate & & \({ }^{\text {mad }}\) ( \({ }^{\text {d }}\) & Depend & Support \\
\hline 'dx (a) & Excuse & & 'wrs \({ }^{\text {e }}\) & Befall & \\
\hline 'zl(a) & Isolate & & 'rik(f) & Fight & \\
\hline '1j(b) & Struggle & & 'sm(d) & Adhere & \\
\hline \({ }^{1} \mathrm{lw}(\mathrm{c})\) & Scale & Height & \({ }^{\prime 2} \mathrm{zz}(\mathrm{g})\) & Feel strong & Strength \\
\hline
\end{tabular}

Significant among the senses attsching to this measure are 'effect'( \(35.5 \%\) ), 'dynamic' ( \(42.2 \%\) ) and 'reflexive' ( \(8.8 \%\) ).

The relatively high incidence of \(\operatorname{DCm}(\mathrm{Dyn})\) perhaps requires coment since the 8 th measure is commonly regarded as 'reflexive' or "middle" in signification. (see Wright 1.55 and Beeston 1970,p74).

Now it is indeed possible that certain of the forms we have analysed in 'dynamic' tems should be regrarded rather as
'reflexive' - and might well be so by an investigator having Arabic as Iirst language, or some language mowe sensitive to notions of reflexiveness than is Finglish. However we susgest that such a remanalysis would not seriously affect the balance of sense patterns detected in our analysis, given the considerable difference between the mesults obtained for the "dynamic' and 'reflexive" senses.

Part 14. A sample of foms on the 10 th neasure
Table a
Forns expressing the configuratious \(\operatorname{DBp}(x)+\operatorname{DCm}(\) Rff \()\)
\begin{tabular}{|ll|ll|ll|}
\hline Root & \multicolumn{1}{|c|}{x} & Root & \multicolumn{1}{c|}{x} & Root & \multicolumn{1}{c|}{\(x\)} \\
\hline had & Ripeness & hyy & Shame & dwr & Roundness \\
hlen & Strength & kzy & Shame & zfy & Hide \\
hwl & Change & dqq & Thinness & & \\
\hline
\end{tabular}

\section*{Table b}

Foms expressing the configuration: \(\operatorname{DBp}(x)+\operatorname{DCm}(D y n)\)
\begin{tabular}{|ll|ll|ll|}
\hline Root & \multicolumn{1}{c|}{\(x\)} & Root & \multicolumn{1}{c|}{x} & Root & \multicolumn{1}{c|}{x} \\
\hline hqg & Claim & dxk & Comect & dkr & Remeraber \\
hwd & Overwhelm \\
ksr & Envy & dwr & Spin & dkw & Mare up \\
\hline
\end{tabular}

\section*{fable e}

Foms expressing the configurations: a) \(\operatorname{BBp}(x)+D C m p(C a u s n)\)
b) \(\operatorname{Lgp}(x) / \bullet \cdot \cdot /+\operatorname{DCm}(\operatorname{Dyn})\)
\(h / \operatorname{DBp}(x) \sim\) DCand (ausn)/
\begin{tabular}{|c|c|c|c|c|c|}
\hline Root & xa & xb & Root & xa & \(x \mathrm{~b}\) \\
\hline hsl(b) & Acquire & Come & kls (b) & Extract & Freedom \\
\hline hdr (b) & Send for & Present ( 2 j ) & klf(a) & Succeed & \\
\hline hle (a) & Swear & & drre \({ }^{\text {a }}\) & Flow cop & \\
\hline hyy (b) & Let live & Live & drj( \(\mathrm{a}^{\text {a }}\) & Advance & 112y \\
\hline kdm(b) & Bmploy & Serve & dvm (a) & Endure & \\
\hline \(\underline{k x g}(\mathrm{~b})\) & Remove & Depart & dxf( 2 ) & Flow & \\
\hline
\end{tabular}

\section*{Mable d}

Forms expressing the configurations: a) \(\mathrm{DBp}(x)+\operatorname{DAkq}(\) Refl \()\)
b) \(\frac{\mathrm{Lpp}(x) / \ldots \cdot /+\mathrm{DCm}(\mathrm{Dyn})}{\mathrm{h} / \mathrm{pB}(\mathrm{x})}\)
\begin{tabular}{|c|c|c|c|c|c|}
\hline Root & xa & xib & Root & xa & xb \\
\hline kd \({ }^{\prime}\) (a) & Submit & & de' (a) & Warnth & \\
\hline kdv(a) & " & & dwre(a) & Tumn round & \\
\hline kfy(a) & Hide & & dxy (b) & Take refuge & Scatter \\
\hline
\end{tabular}

\section*{Table e}

Foms whose configuration contains the element DAkp(Seek). These latter are:
a) \(D B p(x)+D A k p(\) Seek \()+D C m(D y n)\)
b) \(\underline{D B p}(x)+D A k p(\) Seek \()+D C\) mp (Causn)
c) \(\frac{\mathrm{Lp}(\mathrm{x}) / .0 .0 /}{\mathrm{h} / \mathrm{DPp}(\mathrm{x}) / \mathrm{DAkp}(\text { Seek })+\mathrm{DCm}(\mathrm{Dyn})}\)
d) \(\operatorname{Lpp}(x) / \ldots \cdot /+\operatorname{DCn}(\operatorname{Dyn})\) \(\mathrm{h} / \mathrm{DBp}(\mathrm{x}) \sim \mathrm{DAkp}(\) Seek \() /\)
\begin{tabular}{|c|c|c|c|c|c|}
\hline Root & xa & xb & Root & xa. & xb \\
\hline hff(a) & Protection & & dis (c) & Stave off & Push away \\
\hline \(\underline{k b r}(\mathrm{a})\) & Knowledge & & dils(a) & Show & \\
\hline \(\underline{\operatorname{lyx}}\) (d) & Best & Goodness & dnv(d) & Neamess & \\
\hline & & & rj \({ }^{\prime}\) (b) & Retum & \\
\hline
\end{tabular}

\section*{Table f}

Forms expressing the configuration: \(\mathrm{BBp}(x)+\mathrm{DAkp}(\mathrm{Bst})+\mathrm{DCm}(\mathrm{Bff})\)
\begin{tabular}{|ll|ll|l|}
\hline Root & \multicolumn{1}{c|}{\(\mathbf{x}\)} & Root & \multicolumn{1}{c|}{\(\mathbf{x}\)} & Root \\
\hline hqr & Contemptible & hmq & Stupidity & x \\
hll & Lawful & krf & Insignificance & Lowness \\
hlw Treachery & Sweetness & & & \\
\hline
\end{tabular}

\section*{Table e}

Forms expressing other configurations. These latter are:
a) \(\mathrm{DBp}(x)+\mathrm{DAk}(\mathrm{BI})+\mathrm{DCm}(0-\mathrm{E})\)
b) \(\mathrm{Lp}(\mathrm{x}) / \ldots \mathrm{L} /+\mathrm{DCm}(\operatorname{Ef} \mathrm{f})\)
\(h / D B p(x) /\)
c) \(\mathrm{Lps}(\mathrm{x}) / 0 \cdot 0 /+\mathrm{DCm}(\mathrm{Eff})\)
d) \(\frac{\mathrm{Lps}(x) / \%}{\mathrm{~h} / \mathrm{IFs}(\mathrm{x})} /+\mathrm{DCm}(\mathrm{Dyn})\)
e) \(\operatorname{LDsp}(x) / \ldots \cdot /+\operatorname{DCm}(\operatorname{Dyn})\) \(\mathrm{h} / \mathrm{Lsp}(\mathrm{x}) /\)
f) \(\operatorname{Lp}(x) / \cdots \cdot /+\operatorname{DCm}(D y n)\) \(\mathrm{h} / \mathrm{BPp}(\mathrm{x}) /\)
g) \(\mathrm{DBp}(\mathrm{x})+\mathrm{DCm}(0-\mathbb{E})\)
\begin{tabular}{|c|c|c|c|c|c|}
\hline Root & xa & xb & Root & za & xb \\
\hline hqq(b) & Fntitlement & Rightness & \(\mathrm{dbr}(\mathrm{d})\) & Turn the back & Back \\
\hline haman (a) & Stronger & Strensth & \(\mathrm{dmm}(\mathrm{f})\) & HLow & Mow copiously \\
\hline hlb(a) & Milk(p) & Milk(s) & & & \\
\hline hrum(e) & Take a bath & Bath & \(d^{9} w(f)\) & Sumatan & Call \\
\hline hyn(c) & Await the & Time & dyn(s) & Incur debts & \\
\hline & & & \(\mathrm{d}^{2} \mathrm{~b}(\mathrm{c})\) & \#olflike & Wolf \\
\hline
\end{tabular}

Speaking for the moment in diachronic terms the 10th measure is comonly regarded as having been the "reflex" of a measure characterised by having prefixed a alone (i.e. sar'ad etc. See Wright 1.65, Rem C and Moscati, 1969, paras. 16.10/11/21).

The significance of this observation in the present context resides in the possibility of viewing the earlier function of the 10 th measure not as the expression of "reflexive" or "midale" (as for instance (right 1.61-see also Fleisch, 1956, p93) but, in a nanner analogous to the 5 th, 7 th and 8 th measures, as the expression of 'effective' senses of one sort or another.

Viewed in this way it is then not necessary to posit the sort of convoluted literalisation found in Wright in justification of the assumption of an oxiginal and syncrhonically basio reflexive function.

This is not to deny the significance of this latter function, which can be detected in at least 10.5 of the above sample, but merely to suggest that the better analysis follows if we allow the two types of sense to stand side by side. In so doing we find a 19.3\% incidence of the sense 'effect'.

Less predictable on the assumption of an eamiler "effective" function for this measure is the \(21 \%\) incidence of the sense "causation" - not accompanied by "effect'. However given that the prefix does not appear elsewhere in the Arabic verbal system, we raight suspect a loss of motivation and hence the onset of semantic fragmentation. (This measure is "still freely productive of new verbs" - Beeston, 1970, p75).

Also significant (both at \(12.2 \%\) ) are the senses "seeking" and "estinating'.

\section*{Appendix B - To chapters 6 and 7}

Part 1. A sample of forms on the measure Fa'iL
Table a
Forms expressing the configuration: \(\operatorname{DBp}(x)+\operatorname{DCm}(\mathbb{E f f})\)
\begin{tabular}{|c|c|c|c|c|c|c|}
\hline Root & x & Root & x & Root & x Root & x \\
\hline \(\mathrm{d}^{\prime} \mathrm{b}\) & jocose & & Ripeness(2) & wḍh & Cleamess djn & Tameness \\
\hline \(\mathrm{d}^{\prime} \mathrm{r}\) & Lewdness & ndr & Blooming (2,3 & wt' & Lowness(2) " & Gloom \\
\hline & Darkness & & Drunkenness & & \[
\left.\begin{array}{r|r}
\text { Abundant } \\
(2,4)
\end{array} \right\rvert\, \text { drs }
\] & \[
\begin{aligned}
& \text { Cbliter- } \\
& \text { ated }
\end{aligned}
\] \\
\hline nṣ & Wearisome & & Wideness(2) & wfy & Complete-dr' & Armoured \\
\hline nsh & Sincerity( 1,2 ) & & Lasting & dbr & \[
\left.\begin{array}{r}
\text { ness } \\
\text { Past }
\end{array} \right\rvert\, d r y
\] & Awareness \\
\hline n ! \({ }^{\text {' }}\) & Purity(2) & & & W'y & Attentiveness & \\
\hline
\end{tabular}

Table b
Forms expressing a sense 'individuation'. The configurations concerned are taken to be:
a) \(\operatorname{Lsp}(x) / \ldots /\)
\(\frac{h}{h} / D B p(x)-D C m(D y n)-D S u(\) Indiv \() /\)
b) \(\operatorname{Lsp}(x) / \ldots /+\mathrm{DHa}(\mathrm{Male})\)
\[
\frac{h}{h} / \underline{L p}(x) / / \ldots / /-D C m(D y n)-D S u(\text { Indiv) } /
\]
c) \(\mathrm{Lsp}(x) / \ldots /+\mathrm{DHa}(\mathrm{MaZe})\)
\[
\text { h/DBp }(x) \sim D C m(D y n)-D S u(\text { Indiv }) /
\]
d) \(\mathrm{Lsp}(\mathrm{x}) / \ldots \cdot /+\mathrm{DHa}(\mathrm{Male})\)
\(h / D B p(x)-\operatorname{DAk}(\) (copn \() \sim D S u(\) Indiv \() /\)
\begin{tabular}{|lll|lll|}
\hline Root & \multicolumn{1}{c|}{ xa } & \multicolumn{1}{c|}{ xb } & Root & xa & xb \\
\hline dsr(a) & Propeller & Push & ws̈y(c) & Slanderer & Slander \\
d'w(b) & Host & Invite & w'z(d) \(^{\prime}\) & Preacher & Preach \\
nsh(c) & Good adviser & Sincerity & wfd(c) & Newcomer & Arrive \\
nṣr(c) & Helper & Help & & & \\
ngr(d) & Guard & View & & & \\
\hline
\end{tabular}

Table c
Forms expressing other configurations. These are:
a) \(\mathrm{Lp}(\mathrm{x}) / \mathrm{n} / \mathrm{o} / \mathrm{D}+\mathrm{DCm}\) (Eff)
b) \(\underline{D B p}(x)+D C m(D y n)\)
\begin{tabular}{|c|c|c|c|c|}
\hline Root & xa & xb & Root & x \\
\hline \(\mathrm{df} \mathrm{f}^{\prime}(\mathrm{a})\) & Repellent & Push & dfq(b) & Burst forth \\
\hline nḑb(a) & Dryness & Seep away & nsıl(b) & Fall \\
\hline \(\mathrm{drr}(\mathrm{a})\) & Lucrative & Hlow & & \\
\hline drj(a) & Circulate & Move & & \\
\hline
\end{tabular}

The items in this sample are in one sense atypical since, being drawn from Wehr, they include few whose function - in traditional terms, is purely "verbal" as opposed to "adjectival".

Bearing this point in mind we note a \(72.2 \%\) incidence of an 'effective' sense and a \(22.2 \%\) incidence of an 'individuating' function. All except one of the forms in the latter group also express a sense of 'male human animacy', and of these two (or a barely significant 5.5) indicate an 'occupation'.

Forms marked (1) in table a) have a variant on the measure \(\mathrm{Fa}^{\prime} \overline{\mathrm{u}} \mathrm{L}\)
\begin{tabular}{llllllllr}
\("\) & \("\) & \((2)\) & \("\) & \("\) & \("\) & \("\) & \("\) & \("\) \\
\("\) & \("\) & \((3)\) & \("\) & \("\) & \("\) & \("\) & \("\) & \("\) \\
\("\) & Fa'il \\
\("\) & \("\) & \((4)\) & \("\) & \("\) & \("\) & \("\) & \("\) & \("\) \\
mar'iuL
\end{tabular}

Part 2. A sample of forms on the measure Fa'ila
Table a
Forms expressing the configuration: Lsp(x)/.../
\(h / D B p(x) \sim D C m(D y n) \sim D S u(\) Indiv \() /\)
\begin{tabular}{|lll|lll|}
\hline Root & \multicolumn{1}{c}{ xa } & \multicolumn{1}{c|}{ xb } & Root & \multicolumn{1}{c}{ xa } & xb \\
\hline sry & Atmosphere & Pervade & dwq & Sense of taste & Taste \\
\(d^{\prime} w\) & Motive & Call & rw' & Imposing thing & Startle \\
sqy & Rivulet & Give to & zjr & Restriction & Restrain \\
& & drink & & & \\
dkr & Memory & Remember & & & \\
\(d w r\) & Perimeter & Go round & & & \\
\hline
\end{tabular}

Table b
Other configurations having a lexeme in Lsp. These are:
a) \(\frac{\operatorname{Lsp}(x) / \omega /}{h / L p(x) / / \ldots / / \sim D C m(E f f) \sim D S u(\text { Indiv }) / ~}\)
b) \(L \mathrm{Lsp}(x) / \ldots /+\mathrm{DHa}(\) Fem \()\)
\(h / D B p(x) \sim D A k(0 c c p n) \sim D S u(\) Indiv \() /\)
c) \(\operatorname{LIsp}(x) / \ldots /\)
\(h / D B P(x) \sim D A K(E x t e n) \wedge D S u(\) Indiv \() /\)
d) \(\operatorname{Lsp}(x) / \ldots /\)
\(\mathrm{h} / \mathrm{DBp}(\mathrm{x}) \mathrm{DSu}(\) Inst \() /\)
e) \(\mathrm{Lsp}(\mathrm{x}) / \ldots\) /
\(\mathrm{h} / \mathrm{DPD}(\mathrm{x}) \sim \mathrm{DSu}(\mathrm{Indiv}) /\)
f) \(\operatorname{Lsp}(x) / \ldots /+\operatorname{Ann}(\) Fen \()\)
\(h / \operatorname{mpp}(x) \cap \operatorname{DAk}(E x t e n) \cap \operatorname{DSu}(\) Indiv \() /\)
g) \(\operatorname{Lsp}(x) / \ldots /\)
\(h / \operatorname{DBD}(\mathrm{x}) \wedge \mathrm{DC}(\mathrm{Eff}) \sim \operatorname{DSu}(\) Inaiv \() /\)
\begin{tabular}{|c|c|c|c|c|c|}
\hline Root & xa & xb & Foot & xa. & xb \\
\hline aqt(a) & Scrap & Forgot & riat (c) & Renegades & Rejeet \\
\hline sqy (b) & Bamaid. & Water & \(d^{\prime} \mathrm{w}(\mathrm{c})\) & One who calle for st. & Call \\
\hline zny(b) & Whore & Fomicate & & & \\
\hline rqs (b) & Dancer & Dance & \(x^{\prime} y(\) d \()\) & Vievfinder & See \\
\hline \(\operatorname{shn}(\mathrm{b})\) & Witch & Bewitah & rbto(d) & Bond & Bind \\
\hline sqtic) & Harlot & Fall & \(\mathrm{rssd}(\mathrm{d})\) & Telescope & Observe \\
\hline dhy( d \(^{\text {c }}\) & Smart fellow & Cleverness & \(\mathrm{rfa}(\mathrm{d})\) & Prop & Support \\
\hline \(\mathrm{rbv}(\mathrm{e})\) & Hill & Increase & mit \({ }^{\prime}\) (d) & Lifting appar & Raise \\
\hline zyd(e) & Appendage & & & atus & \\
\hline \(\operatorname{rch} 1(1)\) & Female canel & Journey & \(\operatorname{sbh}(\mathrm{d})\) & Glider & Moat \\
\hline
\end{tabular}

\section*{rable o}

Other configurations, namely:
a) \(\mathrm{DBs}(x)\)
b) \(\mathrm{Les}(x)\)
\(h /\) Miss \((x) \cap \operatorname{DSu}(\) Indiv \() /\)
c) \(\mathrm{Ls}(\mathrm{x}) / \ldots .0 /+\mathrm{DH}_{2}(\mathrm{Fen})\)
\(\mathrm{h} / \mathrm{DAk}(0 \mathrm{copn}) /\)
d) \(\mathrm{pBp}(\mathrm{x})\)
\begin{tabular}{|c|c|c|c|c|}
\hline Root & xa & \(x\) x & Root & x \\
\hline g'd(b) & Tributary(1) & Foream & xhb(c) & Iun \\
\hline dlv(b) & Waterwheel & Bucket & \(\operatorname{sxy}\) (a) & Coluam \\
\hline xyin (b) & Odour & Wind & \(s^{\circ} \mathrm{d}(\mathrm{a})\) & Tributary (1) \\
\hline sbl (b) & Passers by & Way & dgs (a) & Kneecap \\
\hline sbq(d) & Precedence & & \(x q s(a)\) & " \\
\hline & & & srib(a) & Reptile \\
\hline
\end{tabular}
(1) al.temative analyses

As with other measures having the \(\mathrm{ta}^{-\prime}\) marbūta the principal function of this measure - when not denoting an aninate creature, is considered to be the expressing of 'individuation'. (see para. 1.5 of chapter 7).

The concept 'female animacy' occurs less frequently than might be expected (15.3). This hovever dexives largely from the fact that Wehr does not list instances of Fa'ila unless their sense is not prediotable from that of their counterpart Fe'iL.

The senses 'occupation' (10.2\%), 'extensive' (7.6\%), and 'instrument' (15.4\%) are also sigrificant.

Concepts which are independently attested elsewhere tend to overlap in a rather confusing fashion when applied to the analysis of forms on this neasure and FatiL of part 1. Consider for instance the form katib. When having the sense writing it is taken to express the configuration:
\[
\text { Inp } \text { (Iktb: write) }+\operatorname{DCm} \text { (Dyn) }+\mathrm{AAs} \text { (Prog })
\]

Then expressing the sense writer which (diachronically) is secondary to writing one is initially tempted to analyse its underlying configuration thus:

Lsp(kātib: writer)/ \(\ldots \cdot /+\mathrm{nHa}(\mathrm{Male})\)
\(\mathrm{h} / \mathrm{DBD}(\) Iktb: write \() \sim\) DCM (Dyn) \(\wedge A A s(\) Prog \() ~\) DSu (Indiv) \(/\)
Intuitively however i.t is fairly clear that we are here concerned with the conoept 'occupation' wioh is independently attested for the measure Fa''脕 (see part 4 of this appendix) aniz that the better analysis of this fom when bearing the second sense is as per part 1, table b, configuration d.

Since, as we have argued in para. 1.1 of chapter 6 'occupation' is but a specialised fom of 'habituation', and since the concepts 'dynamicity' and 'progressive' both imply a certain 'ongoingness' the cause of this overlapping is not far to seek.

Therefore since we have assumed that "habituation' is, in the intemal logic of Arabic, but a variant interpretation of the concept 'extensive' (see paxa.1.0 of chapter 6) one is not suxprised to find foxsas on this measure analysed as per the configuration of table \(a\), and configurations \(b\) and \(c\) of table \(b\) (notwithstanding the analysis of Lsp (kātib) above the assignnent of aspect to a substantive is taken to be counter-intuitive).

Similariy, following the argunent in paia. 1.6 .0 of chapter 10 configurations having the structure of \(g\) in table \(b\) are predictable also. Note that for the puxposes of configuration (f) in table (b) we assume without argument an adherent system of
non-human aninacy, designated An , and having the members (Male) and (Female).

\section*{Paxt 3. A sannle of forms on the measure Fa'ūL}

Table a
Configurations containing a substantivization, namely:
a) \(\operatorname{Lsp}(x) / \ldots \cdot /\)
\(h / \mathrm{DBp}(x) \sim \operatorname{DCm}(E f f) \sim \mathrm{DSu}(\) Indiv \() /\)
b) \(\operatorname{Lsp}(x)\)
\(\mathrm{h} / \mathrm{DBp}(\mathrm{x}) \sim \mathrm{DAk}(\) Exten \() \sim \mathrm{DSu}\) (Indiv) \(/\)
c) \(\mathrm{L}, \mathrm{gn}(\mathrm{x}) / \ldots \mathrm{C} /+\mathrm{DHa}(\mathrm{Male} \mathrm{e})\)
\(h / D B p(x) \sim\) DAk( Bxten) \(\cap \mathrm{DSu}(\) Indiv \() /\)
d) \(\operatorname{Lspgs}(x) / \ldots\).
\(h / \mathrm{Lps}(x) / / \ldots / /\) ค \(\operatorname{DCm}(\operatorname{Rff}) \wedge \mathrm{DSu}(\) Indiv \() /\)
e) \(\operatorname{Lgsp}(x) / \ldots \cdot /+\operatorname{DHa}(\) Male \()\) \(\mathrm{h} / \mathrm{DBp}(\mathrm{x}) \cap \mathrm{DCmq}(\mathrm{E}-\mathrm{I}-\mathrm{S}) \wedge \mathrm{DSu}(\) Indiv \() /\)
\begin{tabular}{|c|c|c|c|c|c|}
\hline Root & xa & xb & Root & xa, & xb \\
\hline rest (a) & Unweaned fernale canel & Suckle & zff(b) & Ostrich(1) & Huzry \\
\hline \(\boldsymbol{r k b}(\mathrm{a})\) & Mount & Ride & sbh (c) & Good & Swim \\
\hline \(\underline{\operatorname{dra}}(\mathrm{a})\) & Powder & Sprinkle & \(\operatorname{shn}(\mathrm{d})\) & Meal before daybreak & Fat before daybreak \\
\hline dilk(a) & Iiniment & Rub & ms1(e) & Messenger & Send \\
\hline wd. \({ }^{\text {(a) }}\) & Water for ritual ablution & Purity & & & \\
\hline
\end{tabular}

\section*{Table b}

Configurations containing a predicatisation, namely:
a) \(\operatorname{Lpp}(x) / \bullet . \cdot /+\operatorname{DCm}(E f f)\) \(\mathrm{h} / \mathrm{DBp}(\mathrm{x}) \sim \mathrm{DAk}(\) Bxten \() /\)
b) \(\mathrm{Lp}(\mathrm{x}) / \cdot \cdot 0 /+\operatorname{DCa}(\operatorname{Dff})\) h/DBp \((x) /\)
c) \(\operatorname{Ipg}(x) / \ldots \cdot /+\operatorname{DCm}(\operatorname{Rff})\) \(h / \mathrm{DBs}(x) /\)
\begin{tabular}{|c|c|c|c|c|c|}
\hline Root & xa & xb & Root & xa & xb \\
\hline ricd (a) & Swift & Race & dı1(b) & Docility & Lowliness \\
\hline zff(a) & " & Huxry & \(\mathrm{dm}^{\prime}\) (c) & Watering & Tears \\
\hline \(s^{9} \mathrm{~m}(\mathrm{~b})\) & Disçuat & Weariness & & & \\
\hline
\end{tabular}

\section*{Table c}

Configurations having only a base predicate or substantive， nanely：
a） \(\mathrm{DBs}(x)\)
b）\(\quad \mathrm{DBp}(\mathrm{x})+\mathrm{DAk}(\mathrm{Pxten})+\mathrm{DCm}(\mathbb{P P})\)
c） \(\mathrm{pBp}(\mathrm{x})+\mathrm{DCM}(\mathrm{Dyn})\)
d）\(\quad \mathrm{DBp}(\mathrm{x})+\mathrm{DCm}(\mathrm{Bff})\)
\begin{tabular}{|c|c|c|c|c|c|}
\hline Foot & 2 & Root & \(x\) & Root & \(x\) \\
\hline \[
\begin{aligned}
& \mathrm{zff}(\mathrm{a}) \\
& \mathrm{s}^{\prime} \dot{(\mathrm{t}}(\mathrm{a}) \\
& \mathrm{sff}(\mathrm{a})
\end{aligned}
\] & \begin{tabular}{l}
Ostrich（1） \\
Snuff \\
Medicinal powder
\end{tabular} & \multicolumn{4}{|l|}{\begin{tabular}{l}
duh（a）Water laden zhg（c）Die \\
s＇l（b）inqualsitive nsh（d）Sincerity（3） \\
（2）
\end{tabular}} \\
\hline
\end{tabular}

The principal sense expressed by this measure is＇effective＇（39．5\％）
either in an included or in an adherent relationship．The next most common is＇individuation＇（ \(34.8 \%\) ）．If this group is taken with those foms expressing a＇base substantive＇we find that \(52.1 \%\) of the sample expresses a substantive of some kind．Thirdly， there is the＇extensive＇sense，detected in \(30.4 \%\) of the sample （see Wright 1.232 ，rem d）．

Although the saaple is small the results are probably not too misleading aince the measure is not particularly comon．

\section*{Notes：}

1）Alternative analyses
2）Fora having a parallel in Ta＇＇ā
．3）＂＂＂＂＂场它这

Part 4．A sample of forms on the measure \(\mathrm{Fa}^{\circ}\) aid

\section*{Table a}

Configuations containing DAk（Exten），namely：
a） \(\mathrm{DBp}(\mathrm{x})+\mathrm{DAK}(\) Exten \()+\mathrm{DSu}^{(\text {Indiv })}+\mathrm{DHa}(\) Male \()\)
b）\(D B D(x)+D A K(\) Pxten \()+D C M(B f i)\)
e）\(L \operatorname{sps}(x) / \ldots /\)
\(\mathrm{h} / \mathrm{DBD}(\mathrm{x}) \sim \operatorname{DAK}(\mathrm{Bx}\) ten）\() \operatorname{DSU}(\) Indiv \() /\)
d） \(\operatorname{In}(\mathrm{x}) / \ldots \cdot /+\mathrm{DCm}(\mathrm{Bff})\) \(\mathrm{h} / \mathrm{DAk}\)（ Bxten）／

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e) \(\mathrm{Lsp}(\mathrm{x}) / \ldots /+\mathrm{DHa}(\mathrm{Male})\) \(\mathrm{h} / \underline{\mathrm{Lp}}(\mathrm{x}) / / \ldots / / \mathrm{DAk}(\) Exten) DSu(Indiv)/
f) \(\operatorname{Lpp}(x) / \ldots \cdot /+\operatorname{DCm}(E f f)\) \(\mathrm{h} / \mathrm{DB} \mathrm{p}(\mathrm{x}) \mathrm{DAk}\) ( Fxten)/
\begin{tabular}{|c|c|c|c|c|c|}
\hline Root & xa & xb & Root & xa & xb \\
\hline \(\mathrm{nsb}(\mathrm{a})\) & Cheat & & \(\mathrm{ntt}(\mathrm{c})\) & Grasshopper & Jump \\
\hline \(k d b(a)\) & Lie & & kbs(c) & Piston & Press \\
\hline kfr (a) & Disbelieve & & \(\operatorname{mdd}(\mathrm{c})\) & Creeping plant & Spread \\
\hline \(n \operatorname{th}(\mathrm{~b})\) & Butt & & qhr(d) & Conquer & \\
\hline & & & 1 mh (d) & Shimmering & \\
\hline wdh(f) & Brilliance & Clarity & \(\operatorname{lm}^{\prime \prime}\) (d) & Sparkling & \\
\hline qwi (f) & Garrulous & Say & 1 wh (d) & Scorching & \\
\hline 1d'(f) & Scorch & Burn & kw'(a) & Slanderer & \\
\hline \(\operatorname{mjn}(\mathrm{f})\) & Insolence & Mock & & & \\
\hline
\end{tabular}

\section*{Table b}

Configurations containing DAk( occpn), namely:
a) \(\frac{\mathrm{Lssp}}{\mathrm{h}}(\mathrm{x}) / \ldots /+\mathrm{DHa}(\mathrm{Male})\) \(h / \operatorname{Lsp}(x) / / \ldots / /\) DAk(occpn) DSutIndiv)//
b) \(\mathrm{Lsp}(\mathrm{x}) / \ldots /+\mathrm{DHa}(\mathrm{Male})\) \(h / D B p(x) \quad D A K(O c c p n) \quad D S u(I n d i v) /\)
c) \(\mathrm{Lsp}(x) / \ldots /+\mathrm{DHa}(\) Male \()\) \(\mathrm{h} / \mathrm{Lp}(\mathrm{x}) / / \ldots \cdot / / \mathrm{DAk}(0 \mathrm{ccpn}) \mathrm{DSu}(\) Indiv)/ \(\mathrm{h} / \mathrm{DBp}(\mathrm{x}) / /\)
d) \(\mathrm{Lsppp}(x) / \ldots /+\mathrm{DHa}(\) Male \()\)

e) \(\mathrm{Lss}(x) / \ldots /+\mathrm{DHa}(\mathrm{Male})\) \(h / D B \mathbf{s}(x)\) DAk(Ocopn) DSu(Indiv)/
f) \(\mathrm{Ls}(\mathbf{x}) / \ldots /+\mathrm{DHa}(\mathrm{Male})\) h/DAk(0ccpn)/
g) \(\mathrm{Lp}(x) / \ldots /+\mathrm{DAK}(0 \mathrm{ccpn})+\mathrm{DSu}(\) Indiv \()+\mathrm{DHa}\) \(\mathrm{h} / \mathrm{DBp}(\mathrm{x}) /\) (Male)
h) \(\mathrm{DBp}(x)+\mathrm{DAk}(O c \mathrm{ph})+\mathrm{DSu}\) (Indiv) +DHa (Maie \()\)


\section*{Table \(c\)}

Forms having the configuxation: DB3
\begin{tabular}{|c|c|c|c|c|c|c|c|}
\hline Root & & x & Root & & x & Root & x \\
\hline kbd & Citrus & & kxt & Leek & & \(1 y^{\prime}\) & Wryneck \\
\hline 1bad & Felt & & 1 mm & Wild & thyme & & \\
\hline
\end{tabular}

From the above list it will be seen that in 21 instances ( \(48.8 \%\) ) a sense 'occupation' is dotected. Diachronically this would seem to be derivable from the more seneral. sense 'extensive' in its
'habituative' interpretation (see the notes to part 2 above) and this is detected in 39.5\% of the sample (see Wright 1.233 and Howell para.243).

For sose foms the distinction between 'occupation' and 'extensiveness' is difficult, if not almost impossible, to dxam - a problem rendered the more difficult by the fact that one's analysis tends to be colouzed by an anglocentric conception of what does ox does not constitute an occupation. However since there are many clear instances the distinction in itself seems legitimate.

Also of interest are the three foms of table c denoting plants of various kinds. Since these comprise \(7.1 \%\) of the smple thay are taken to constitute evidence for a moxphologically motivated subdivision within systen MBs. (Compase para. 1.1 of chapter 9). Note
that in contrast to the foms of table \(e\) the fom kallaf: hostler is assigned the analysis (f) by analogy with other foms having MAk( Ocom), despite its lack of internal structure.

\section*{Part 5. A sample of forms on the measure Falaja}

Table a
Configurations containing DSu(Inst), nanely:
a) \(L \operatorname{Lsp}(x) / \ldots /\)
\(h /\) DBMp \((x)-\) DSu( \(\operatorname{Inst}) /\)
b) \(\mathrm{Ls}(x) / \ldots /\)
h/DSu(Inst)/
c) \(\frac{\mathrm{Lspg}}{\mathrm{h} / \mathrm{Ips}(x)}(x) / / \ldots / / / \sim \operatorname{DSu}(\) Inst \() /\) \(h / \overline{D B s}(x)-\) DCrgp \((C a u s n) / /\)
a) \(\frac{\operatorname{Lsp}(x) / \ldots \cdot /}{h / \operatorname{Lp}(x) / / \ldots / / \cap \operatorname{psu}(\text { Inst })}\) \(\mathrm{h} / \overline{\mathrm{pBp}}(x) / /\)


\section*{Table b}

Configurations containing DSum( Place) and DSu(Voh), nanely:
\[
\text { a) } \frac{\operatorname{Lsp}(x) / \cdots \cdot /}{h / D B p(x)}-\underline{D S u}(\text { Veh }) /
\]
b) \(I s p(x) / \ldots /\)
h/DBp \((x) \sim\) DSug \((\) Place \() /\)
c) \(L s(x) / \ldots /\)
h/DSu(Veh)/
d) \(\mathrm{Ls}(\mathrm{x}) / \ldots /\)
h/DSug(Place)/
e) \(\frac{\mathrm{Lss}}{\mathrm{D}}(\mathrm{x}) / \ldots /\)
\(h\) DBs \((x)-\operatorname{DSUg}(\) Place \() /\)
\begin{tabular}{|c|c|c|c|c|c|}
\hline Root & xa & xb & Root & \(\mathrm{x}_{\text {a }}\) & xb \\
\hline Ews.(a) & Submarine & Submerge & nsf(a) & Torpedo boat & Torpedo \\
\hline jrr (a) & Tractor & Draw & jwl (a) & Motor cycle & Wander \\
\hline fwx (b) & Fountain & Gush & bdl (b) & Telephone exchange & Exchange \\
\hline krk( \({ }^{\text {c }}\) & Dredge & & & & \\
\hline " (d) & Prison & & jbn(d) & Cemetery & \\
\hline kls(e) & Ifne kiln & Lime & \[
\begin{gathered}
\mathrm{jbs}(e) \\
"(e)
\end{gathered}
\] & Gypsum quarry Plaster kiln & \begin{tabular}{l}
Gypsum \\
"
\end{tabular} \\
\hline
\end{tabular}

\section*{Table c}

Configurations containing \(\operatorname{DAk}\) (Exten) and \(\operatorname{DAk}(\) (Ocpn), namely:
a) \(\mathrm{DBp}(x)+\operatorname{DAk}(\mathrm{Bxten})+D \mathrm{DCm}(E f f)\)
b) \(\frac{\mathrm{Lsp}(x) / \ldots /}{h / / \mathrm{p}(\mathrm{x}) / / \ldots / /-\mathrm{DAk}(\text { Exten })-\mathrm{DSu}(\text { Indiv }) /}\) \(\mathrm{h} / 7 \mathrm{DBp}(\mathrm{x}) / /\)
e) \(\frac{L s p(x) / \ldots /}{h / d B p(x)}\)
\[
\frac{h / D B p(x)-D A k(\text { Exten })-D S u(\text { Indiv }) / ~}{\text { (x) }}
\]
d) \(\operatorname{Lss}(x) / \ldots\).
\[
h / D B S(x) \sim D A K(\text { Exten }) ~ D D S u(\text { Indiv }) /
\]
e) \(\mathrm{Lsp}(\mathrm{x}) / \ldots /+\mathrm{DHa}(\mathrm{Fem})\)
\[
\mathrm{h} / \underline{\mathrm{DBp}}(\mathrm{x}) \sim \underline{D A k}(0 \mathrm{ccpn}) \sim \underline{D S u}(\text { Indiv }) /
\]
\begin{tabular}{|c|c|c|c|c|}
\hline Root & xa xb & Root & xa & xb \\
\hline bzq(c) & Cobra Spit & jwl (c) & Vanderer & Wander \\
\hline " (c) & Snail & tıj(d) & Iceberg & Ice/snow \\
\hline kwy(e) & Ironing woman Sear & \(n \mathrm{db}(\mathrm{e})\) & Hised mou & nernoum \\
\hline Root & xa. xb & xc & Root & x \\
\hline qrad (b) & \multicolumn{2}{|l|}{Clothes moth Gnaw Sever
minent scholar Investigate Seek} & \multirow[t]{2}{*}{fhm( a )} & \multirow[t]{2}{*}{Understand} \\
\hline bht (b) & \multicolumn{2}{|l|}{Tminent scholar Investigate Seek} & & \\
\hline
\end{tabular}

\section*{Table d}

Other configurations, nanely:
a) \(\frac{\operatorname{Lsp}(x) / \ldots /}{h / D B p}(x)+\operatorname{ICmp}(C a u s n)+D S u(\) Indiv \() /\)
b) \(\operatorname{HBs}(x)\)
c) \(\mathrm{mB} p(x)\)
\begin{tabular}{|lc|ll|}
\hline Root & \(z a\) & zoot & \multicolumn{1}{c|}{x} \\
\hline fz' \(z^{\prime}(\mathrm{a})\) & One inspiring fear Fright & bdl(b) & Culvert \\
& & & \(j z r(b)\) \\
& & Scorpion \\
& & kfr(c) & Penance \\
\hline
\end{tabular}

The most comon augnontive sense dotected in this sample was
'Instrument' (47.7\%). Overlapping this but in caritain cases distinct is a sense 'vehicle' (11.3\%). Also significant is 'place' (15.9\%).

Predictably perhaps Fa''aja shares Tith Fa'd the function of expressing the sense 'extensive' which however is less significant here than for the latter(15. \(\% \%\) as against \(39.5 \%\) ).

In Wright 1.233 Rem \(C\) the measure Fa' \({ }^{(0)}\) is listed as one of those adritting of "being strengthened in their meaning by the addition of the ternination (tes narbuta), Whioh is ...used, as the gramarians say lilmubaragati: to signify intensiveness, or 1it-ta KI di 1 -mueaiagati: to strencthen the intensiveness".

However the analogy of Fa "'ai, might suggert that "intensiveness" is signalled by gemination of the second radical, with the tä' marbuta tending to mark 'individuation'. On the other hand the concept "strengthen the idea of intensiveness" seens meaningleas on the basis of this sample.

\section*{part 6. A sample of forms on the measure fu'tai.}

\section*{Table a}

Forns having the configuration D7s.
\begin{tabular}{|l|l|ll|}
\hline Root & \multicolumn{1}{|c|}{x} & Root & Root \\
\hline\(j l b\) Rose water & drh Spanish fly & krt Leek \\
kbz Mallow & rbh Monkey & klb Hook \\
ktf Swift & mn Pomegranate & n & Cramp \\
kfn Pumice stone (1) & znr Belt & kñs Scrapbook \\
drj Francolin & skn Rudder & lfh Mandrake \\
dkn Shop & kbd Citrus & tfh Apple \\
\hline
\end{tabular}

Table b
Forms having other configurations, namely:
a) \(\mathrm{Lsp}(x) / \ldots /\)
\(\mathrm{h} / \underline{\mathrm{DBp}}(\ddot{x})-\mathrm{DSu}(\) Indiv) \(/\)
b) \(\operatorname{Lsp}(x) / \ldots /\)
h7DBp \((x) \sim\) DAk(Exten) \(\sim\) DSu(Indiv) \(/\)
c) \(\quad \frac{L p}{h}(x) / D \operatorname{Dp}(x) /\)
\begin{tabular}{|c|c|c|c|c|c|}
\hline Root & xa. & xb & Root & xa & xb \\
\hline \(\mathrm{jm}^{\prime}(\mathrm{a})\) & Aggregate & Gether & hrq(b) & Tinder & Burn \\
\hline jnz(a) & Requiem & \multicolumn{2}{|l|}{\multirow[t]{2}{*}{Conduct fun-kt \(f(a)\) eral service \({ }_{n t}{ }^{n}(\mathrm{~b})\)}} & Hook & Snatch \\
\hline & & & & Scarecrow & Watch \\
\hline \(\underline{k} f^{\prime \prime}\) ( \({ }^{\text {b }}\) ) & Bat & Day blind- & wḍ'(c) & Brilliance & Purity \\
\hline & & ness & dkn(a) & Bench & Flatten \\
\hline \(k t b(a)\) & Schoow & Write & \(k d s(a)\) & Heap & Heap \\
\hline
\end{tabular}

All except one of the forms in this sample express substantive senses. The exception wudda': brilliant, conforms to the statement
in Wright1. 233 Rem b , but since this appears to be the only
reference to the measure in the whole work we are left with a
distinctly misleading impression of its functions.
Being a measure with geminate second radical a \(13.3 \%\)
incidence of the sense 'extensive' is not unexpected.

\section*{Part 7. A sample of forms on the measure map'ai}

Table a
Configurations containing DSug(Place), namely:
\[
\text { a) } \frac{\operatorname{Lsp}(x) / \ldots /}{h / D B p(x) \sim \operatorname{DSug}\left(P l_{a c e}\right) /}
\]
b) \(\log (x) / \ldots /\)
\[
\mathrm{h} / \text { DBs }(x) \sim \text { DSus }(\text { Place }) /
\]
e) \(\operatorname{Ln}(x) / \ldots /\) h/DSug( Place)/
\begin{tabular}{|c|c|c|c|c|c|}
\hline Root & xa & xb & Root & xa & xb \\
\hline tbn(b) & Straw staok & Straw & thf(b) & Museum & Curiosity \\
\hline nbt(a) & Source & Grov/ & \(n \mathrm{jm}\) (c) & Mine & \\
\hline \(\operatorname{ngf(a)}\) & Dieting resort & Thinness & m3y \({ }^{\text {a }}\) (a) & Corridor & Waik \\
\hline n'y \({ }^{\prime}\) (a) & Distant place & Distance & \(\mathrm{nsj}{ }^{\text {(a) }}\) ) & Weaving mi & 11 Weave \\
\hline \(\mathrm{n}^{\prime \prime}{ }^{\prime}(\mathrm{a})\) & \[
\begin{aligned}
& \text { Place of } \\
& \text { origin }
\end{aligned}
\] & Energe & 'ty (a) & Place from to which one comee & / Come \\
\hline 'my(a) & Place of refuge & Take refuge & & & \\
\hline tre(b) & Rampart & Shield & \(\operatorname{tif}(2)\) & Desert & Destruction \\
\hline \(n b^{\prime}\) (a) & Source & Issue & \(\mathrm{njm}(\mathrm{a})\) & Source & Appear \\
\hline \(\underline{\operatorname{nhm}}\) (a) & Throat & Slaughter & nhl (b) & Beehive & Bees \\
\hline nhw( \({ }^{\text {a }}\) ) & Goal & Go & nkr \({ }^{\text {a }}\) ) & Nostril & Snort \\
\hline wt' (a) & Foothold & \multicolumn{4}{|l|}{Tread undersoot} \\
\hline
\end{tabular}

\section*{Table b}

Configurations containing DSuh(Loc), namely:
a) \(\operatorname{Lsp}(x) / \ldots /\) \(h / D B p(x)\) DSuh(Loc)/
b) \(\operatorname{Lg}(x) / \ldots /\) h/pSuh(Loo)/
\begin{tabular}{|c|c|c|c|c|c|}
\hline Root & xa & xb & Root & xa & xb \\
\hline \multirow[t]{2}{*}{mpt ( s )} & \multirow[t]{2}{*}{Death/place of death} & \multirow[t]{2}{*}{Die} & 'tm( \({ }^{\text {c }}\) ) & Irneral ceremony & \\
\hline & & & \(\operatorname{tm}^{\prime \prime}\) (a) & Coveted object & Covet \\
\hline \(n z^{\prime}(\mathrm{E})\) & Am & \multirow[t]{2}{*}{Desire} & nst! (a) & Pleasant thing & Ansmation \\
\hline 'rb(b) & Coal & & bht(a) & Field of & \\
\hline tjx \((\mathrm{a})\) & Business & Trade & & investigation & \\
\hline
\end{tabular}

\section*{Table c}

Other configurations, namely:
a) \(\operatorname{Lap}(x) / \ldots /\)
\(h / \mathrm{DBp}(x) \mathrm{DSu}(\) Indiv \() /\)
b) \(\mathrm{DB} \mathrm{s}(\mathrm{x})\)
c) \(\mathrm{DBp}(x)\)
\begin{tabular}{|c|c|c|c|c|}
\hline Root & x \({ }^{\text {a }}\) & xt & Root & x \\
\hline \({ }^{\text {mil }}\) (a) & Hope(s) & Hope(p) & \(\mathrm{ndm}(\mathrm{c})\) & Remorse \\
\hline ' \(\operatorname{tm}(\mathrm{b})\) & Sin & & \(\mathrm{bra}(\mathrm{c})\) & Glitter \\
\hline \(\operatorname{trs}(\mathrm{b})\) & Bolt & & \(\mathrm{njw}(\mathrm{c})\) & Safety \\
\hline \(n \mathrm{db}(\mathrm{a})\) & Lamentation & Lament & & \\
\hline
\end{tabular}

This measure is one of the prinoipal through which the sense 'place' is expressed, the sample producing an incidence of \(54.2 \%\).

The rather more abstract sense 'locus' is taken to be present in \(22.8 \%\) of the sample. Not uncommonly it may be interpreted either spatially or temporally - as for instance manāt or ma'tam. One may speculate whether this is not an earlier function of the measure, remaining now as a trace -along with certain of the prepositions (see section 1 of chapter 8), of a stage in Semitic or pre-Semitic intellectual developnent when these two categories were not distinguished.

However this may be, the assumption of a concept neutral between time and space allows us to describe a number of foms which camot be said to express either of these oategories as for instance manza' or mankat, although these might equally be analysed as abstract extensions of the notion 'place' zather akin to those occurring with prepositions (see para. 1.0.2 of chapter 8).

There are no forms expressing only a sense of time.

\section*{Part 8. A sample of forms on the measure maF'iL}

\section*{Table a}

Confisurations containinc DSuć Place), nanely:
\[
\text { a) } \frac{\operatorname{Lsp}(x) / \ldots \cdot /}{h / D B p(x) \sim \operatorname{DSug}(P l a c e)} /
\]
- 387 -
b) \(\operatorname{Isp}(x) / \ldots /\)
\(\mathrm{h} / \mathrm{Lp}(x) / / / \ldots / / \sim \operatorname{DSug}\left(\mathrm{Pl}_{\text {ace }}\right) /\) \(\mathrm{h} / \mathrm{DBp}(\mathrm{x}) / /\)
a) \(\quad D B p(x)+D S u g\left(P l_{\text {ace }}\right)\)
\begin{tabular}{|c|c|c|c|c|}
\hline Root & xa & xb & \multicolumn{2}{|l|}{xc} \\
\hline \[
\begin{aligned}
& \text { sqt.(b) } \\
& \text { skn(b) }
\end{aligned}
\] & Landine place Dwelling & Sink dow Dwell & \begin{tabular}{l}
Fall \\
Repose
\end{tabular} & \\
\hline Root & \(x a \quad x b\) & Root & xa & xb \\
\hline \[
\begin{aligned}
& \text { hml (a) } \\
& \text { hys (a) } \\
& \text { wṭn(a) } \\
& \text { nzl (a) } \\
& \text { hbs(c) }
\end{aligned}
\] & Canel borne Caxry
Sanctuary \(\quad\) Flee
Domicile \(\quad\) Dwell
\begin{tabular}{l} 
Stopping placeDescend \\
Place of conf-Confine \\
inement
\end{tabular} & \begin{tabular}{l}
nṣb(c) \\
sjd (a) \\
nbd (a) \\
nsk(a)
\end{tabular} & \begin{tabular}{l}
Place of planting Mosque \\
Pulse \\
Hermitage
\end{tabular} & \begin{tabular}{l}
Plant \\
Bow down Throb Ascetism
\end{tabular} \\
\hline
\end{tabular}

Table b
Configurations containing DSuh(Loc), namely:
a) \(\operatorname{ISp}(x) / \ldots /\)
\(\mathrm{h} / \mathrm{DBp}(\mathrm{x}) \sim \mathrm{DSuh}(\mathrm{Loc}) /\)
\begin{tabular}{|lll|lll|}
\hline Root & xa & \multicolumn{1}{c|}{\(x b\)} & Root & \multicolumn{1}{c|}{ xa } & xb \\
\hline\(w^{\prime} d\) & Appointment & Promise & jls & Gathering & Sit \\
hll & Due date & Due & hfl & Assembly & Gather \\
\hline
\end{tabular}

Table c
Other configurations, namely:
a) \(\mathrm{DBp}(\mathrm{x})\)
b) \(\mathrm{DBs}(x)\)
\begin{tabular}{|ll|lc|lc|}
\hline Root & \multicolumn{1}{c|}{\(x\)} & root & \multicolumn{1}{c|}{\(x\)} & Root & \(x\) \\
\hline hyd.(a) & Avoidance & nsm(b) & Sole/hoof & hjr(b) & Eye socket \\
hyṣ(a) & Flight & & & & \\
\hline
\end{tabular}

In this measure the sense 'place' is detected in \(57.8 \%\) of the sample and 'locus' in \(21 \%\).

There is in this sample one instance of a form expressing "time" only (mahill: due date). Since however it occurs in a rather small sample of 19 forms it is not regarded as significant, despite comprising 5.2\%.

Pant 9. A sample of formen the measune mip' at

\section*{Table a}

Foms having the configurations \(\operatorname{Lsp}(x) /\).../ \(h / D B p(x) \sim D S u(\) Inst \() /\)
\begin{tabular}{|c|c|c|c|c|c|}
\hline Root & xa & xb & Root & xa & xb \\
\hline & & & j2ms & Trace & Pull \\
\hline tqb & Drill & Boxe & jud & Scraper & Strip \\
\hline jzz & Wool shears & Shear & jnn & Shield & Conceal \\
\hline jhzs & Microscope & Bring to light & hbs & Device for shutting & Obstruct \\
\hline h.jm & Cupping gilass & Cup & hmp & Heating system & Heat \\
\hline hin & Staff & Grookedness & h20 & Spade & Dig \\
\hline hesd & Sickle & Reap & hly & Cotrion gin & Gin \\
\hline hks & Touchstone & Nub & mss & Sucker & Suck \\
\hline mah & Dust eloth & Wipe & \(\mathrm{nz}{ }^{\prime}\) & Axrow & Aim \\
\hline nbs & Pulpi & Reise & nsf & Winnow & Scattex \\
\hline nint & Chisel & Drests & & & \\
\hline nde & Cotton caider & Comb & & & \\
\hline nsj & Loom & Heave & & & \\
\hline ndh & Shower & Sprinkle & & & \\
\hline
\end{tabular}

Table b
Other configurations containing pSu(Inst), namely:
a) \(\mathrm{DBp}(x)+\mathrm{DSu}\) (Inst)
b) Lss \((x) / \ldots /\) \(h / D B s(x) \sim\) DSu(Inst) /
c) \(\quad 1 \mathrm{~s}(x) / \ldots /\)
h/DSu(Inst)/
d) \(\operatorname{Inn}(x) / \ldots 1\)
\(\mathrm{h} / \mathrm{Lp}(\mathrm{x}) / / \ldots . . / / \sim \mathrm{DSu}(\) Inst \() /\) \(h / \underline{D B p}(x) / /\)
e) \(\operatorname{Lspg}(x) / \ldots /\) \(h / \operatorname{Lps}(x) / \ldots / /\) ค DSu(Inst)/
\(h / \operatorname{mg}(x) / /\)
\(-389-\)
\begin{tabular}{|c|c|c|c|c|c|}
\hline Root & xa & \(\pi b\) & se & \multicolumn{2}{|c|}{x} \\
\hline \multirow[t]{4}{*}{\[
\begin{aligned}
& \mathrm{jss}(\mathrm{~d}) \\
& \mathrm{hss}(\mathrm{e}) \\
& \mathrm{nsw}(\mathrm{e})
\end{aligned}
\]} & Probe & Nxamine ? & Touch & \multicolumn{2}{|l|}{njus(a) Plane} \\
\hline & Sickle & How & Grass & \multicolumn{2}{|l|}{niz3(3) Goed} \\
\hline & Beak & \multirow[t]{2}{*}{Tear} & \multirow[t]{2}{*}{Eagle} & \multirow[t]{2}{*}{\[
\begin{aligned}
& \tan (c) \\
& \operatorname{trd}(c)
\end{aligned}
\]} & \\
\hline & & & & & \\
\hline Root & зa, & xb & Root & xa & \(x \mathrm{~b}\) \\
\hline \({ }^{3} \mathrm{bsc}(\mathrm{b})\) & Needlecase & Needle & 2itw (b) & Paincoat & Rain \\
\hline tres(b) & Bolt & Shield(1) & \(n j 2(b)\) & Sickle & Ferbage \\
\hline ̇ra(b) & Bowl & Meal. & wam(b) & Branding Lron & Brand \\
\hline
\end{tabular}

\section*{Table o}
other configurations, namely:
a.) \(\operatorname{DBp}(x)+\operatorname{DCa}(E f f)\)
b) \(D \mathrm{DE}(x)\)
\begin{tabular}{|c|c|c|c|c|c|}
\hline Root & x & Foot & \(x\) & Root & x \\
\hline jhre(a) & Loud voiced & hijx (b) & Fye socket & nธx (b) & Gang \\
\hline
\end{tabular}

For this measure we need only note the overwhelming preponderance of the sense "Inetmument - \(92.4 \%\), and that of these 83.4 are substantivizations of prodiontes and \(16.6^{\prime}\) substantiviz ationg of substantives.

Part 10. A sample of forms on the measure maprut
Table a
Forms having the configuration: \(\overline{\mathrm{DB}}(\mathrm{x})+\mathrm{DCm}(E P \mathrm{P})\)
\begin{tabular}{|c|c|c|c|c|c|}
\hline Root & x & Root & \(x\) & Root & x \\
\hline 'th & Insani.ty & shb & Accompany & dm & Guarantee \\
\hline 'dur & Txeuse & \(8 x^{1}\) & Fell & tb' & Print \\
\hline \% 2 m & Suppose & s'q & Strike with lightning & trin & Cast down \\
\hline \({ }^{\prime} \mathrm{bd}\) & Forship & & & t! & Taste \\
\hline - dra & Non-existence & Scl & Polish & \(\pm .16\) & Desize \\
\hline sb \(\bar{¢}\) & Dye & 它它 & Conpress & trux & Subterranean \\
\hline sd' & Crack & dram & Close & 2.1m & Frong \\
\hline
\end{tabular}

Table b
Other configurations, namely:
a) \(\operatorname{Ln}(x) / \cdot \cdot \cdot /+D C_{m}(E f f)\)
\(\mathrm{h} / \mathrm{DBp}(\mathrm{x}) /\)
b) \(\operatorname{Lsp}(x) / \ldots\).
\(\mathrm{h} / \mathrm{DBp}(\mathrm{x}) \quad \mathrm{DCm}(\mathrm{Fff}) \quad \mathrm{DSu}\) (Indiv)/
c) \(\frac{\mathrm{Lpg}(x) / \cdot}{\mathrm{h} / \mathrm{DBs}(\mathrm{x})} /+\mathrm{DCm}(\mathrm{Eff})\)
\begin{tabular}{|c|c|c|c|c|c|}
\hline Root & & xb & Root & xa & xb \\
\hline 'd.d(a) & Numerable & Count & sn' (b) & Produce & Manufacture \\
\hline drb \({ }^{\text {a }}\) (a) & Fix & Beat & swgen b & Jewelry & Fashion(p) \\
\hline mın(a) & Suspicion & Belief & \(t \mathrm{lb}\) (b) & Desire & Seek \\
\hline dabt \({ }_{\text {a }}(\mathrm{a})\) & Precision & Seize & 'tte(c) & Moth-ridaen & Moth \\
\hline ', jn(b) & Paste & Knead & \(s \mathrm{~d} \times(\mathrm{c})\) & Affliction & Chest \\
\hline sbb(b) & Lead & Pour forth & & with pector ailment & \\
\hline 'bd(b) & Deity & Worship & & & \\
\hline \(t \mathrm{trq}(\mathrm{c})\) & Much frequented & Road & thl 10 & Splenetic & Spleen \\
\hline t'n(c) & \(\mathrm{Pl}_{\text {a }} \mathrm{Su}^{\text {e }}\) stricken & Placue & \(\operatorname{shn}(\mathrm{c})\) & Crush & Neal \\
\hline swn(a) & Well protected & Conserve & & & \\
\hline
\end{tabular}

Each of the above forms expresses an 'effective' sense, not uncomonly accompanied by semantic shift from the base predicate \((16.2 \%)\). Substantives are rather less common than in the parallel measure Fä'iL - comprising 13.5\% here as against \(24.3 \%\) for the latter, and all of them are "inanimate" (see part 1 of this appendix).

Part 11. A sargple of forms on the measure mulia' il
Table a
Configurations containing DAk(occpn), namely:
a) \(\operatorname{Lsp}(x) / \ldots /+\mathrm{DHa}(\mathrm{Male})\)
\(h / L \mathrm{p}(\mathrm{x}) / / \ldots / / \sim \operatorname{DAK}(0 \operatorname{copn}) \sim \mathrm{DSu}(\) Indiv)/
\(h / D B p(x) \cap \operatorname{DCmp}(\overline{C a m s n}) / /\)
b) \(\frac{L \operatorname{spppg}}{}(x) / \ldots / 4 \mathrm{DHa}\) (Jale \()\)
h/Ipps(x)//.../// DNk(Ocopn) \(\cap\) DSu(Indiv)/ \(\mathrm{h} / \operatorname{Lps}(x) / / / \ldots / / / 7 /\) \(\mathrm{h} / / / / \mathrm{DBs}(\mathrm{x}) \quad / / /\)
c) \(\frac{\operatorname{spbs}(x) / . . . /+\mathrm{DHa}(\mathrm{Male})}{}\) \(\mathrm{h} / \mathrm{Lpg}(\mathrm{x}) / / \ldots \mathrm{F} / / \sim \mathrm{DAk}(0 \mathrm{ccpn}) \wedge \mathrm{DSu}(\) Indiv \() /\)
d) \(\mathrm{Lsp}(x) / \ldots /+\mathrm{DHa}(\mathrm{Male} e)\) \(h / \operatorname{DBp}(x) \cap \operatorname{DAk}(0 c o p n) \wedge \operatorname{DSu}(\) Indiv \() /\)
e) \(\mathrm{Lsp}(\mathrm{x}) / . \cdot \mathrm{C} /+\mathrm{DHa}(\mathrm{Hale})\)
 \(\mathrm{h} / / \mathrm{DBp}(\mathrm{x}) / /\)
\begin{tabular}{|c|c|c|c|c|}
\hline Eoot & xa & xb & xc & xd \\
\hline \(\operatorname{snf}(\mathrm{c})\) & Author & Compose & Classify & Kind \\
\hline \multirow[t]{7}{*}{} & Root & xa & xb & \(x\) \\
\hline & sdre(a) & Exporter & Export & Go out \\
\hline & gfw \({ }^{\text {a }}\) & official receiver & Liquidate & Clarity \\
\hline & gwn(c) & Creator & Fashion & Fom \\
\hline & "kss(c) & Actor & Personify & Individual \\
\hline &  & Legislator & Legislate & Law \\
\hline & \[
\begin{aligned}
& \operatorname{tunf}(e) \\
& \sin (d)
\end{aligned}
\] & Guide for Anatomist & \begin{tabular}{l}
circumamb \\
Dissect
\end{tabular} & Go about \\
\hline
\end{tabular}

\section*{Table b}

Configurations containing DCmp(Causn), namely(see also
configuration (a) in table (a):
a) \(L p p(x) / \ldots /\)
\(\mathrm{h} / \mathrm{DBp}(\mathrm{x}) \sim \mathrm{DCmp}(\) Causn \() /\)
b) \(\mathrm{DBp}(x)+\mathrm{DCmp}\) (Causn)
c) \(\mathrm{Lsp}(x) / / \ldots /\)
\(h / D B p(x) \sim D C m p(C a u s n) \cap D S u(\) Indiv \() /\)
d) \(\operatorname{Lsp}(x) / \ldots\) /
\(h / \underline{D B p}(x) \sim \operatorname{DCmp}(C a u s n) \sim D S u(\) Inst \() /\)
\begin{tabular}{|c|c|c|c|c|c|c|}
\hline Root & xa & & xb & Root & xa & xb \\
\hline \(\operatorname{sman}(\mathrm{a})\) & Detemination & Deafness & & sdd(a) & Aggravate & Intensity \\
\hline \(t \mathrm{tx}\) (c) & Fmetic & Vomit & & Bhw( a ) & Arouse the & Desire \\
\hline thr x (c) & Disinfectant & Purity & & & app & \\
\hline dill (b) & Go astray & & & sıwq(a) & " & " \\
\hline sfuv(b) & Distress & & & \(\operatorname{shng}(\mathrm{d})\) & Vemier & Rightness \\
\hline & & & & dikn(d) & Amplifier & Bigness \\
\hline
\end{tabular}

\section*{Table c}

Other conficurations, namely:
a) \(\mathrm{Lps}(x) / 0.0 /+\mathrm{DSu}(\) Indiv \()+\mathrm{DHa}(\mathrm{Male})\)
b) \(\operatorname{Lsp}(x) / \omega \cdot /+\mathrm{HHa}(\mathrm{Male})\) \(\mathrm{h} / \mathrm{DBp}(\mathrm{x}) \sim \mathrm{DCm}(\mathrm{Dyn}) \sim \mathrm{DSu}(\) Indiv) \(/\)
c) \(\mathrm{Isp}(x) / \ldots \cdot /+\mathrm{DHa}(\mathrm{Male} \mathrm{e})\) \(h / \mathrm{DBp}(\mathrm{x}) \sim \mathrm{DAk}(\) Bxten \() \cap \mathrm{DSu}\) (Indiv)/
d) \(\mathrm{DBp}(\mathrm{x})+\mathrm{DCm}(E f \mathrm{f})\)
e) \(\mathrm{DBp}(\mathrm{x})+\mathrm{DSu}\) (Indiv) \(+\mathrm{DHa}(\) (Hale \()\)


The measure mupa'ril being a member of the 2nd measure, this sample should be compared with that given in part 7 of Appendix A.

Prominent among these forms is the sense 'occupation' which is detected in \(32 \%\) of the sample.

Bearing in mind the distortion introduced by adhering to Wehr's lexical cxiteria it will be seen that some \(64 \%\) of the sample are substantives of varying structure. This is more than for the functionally not dissimilar Fa'il where only 24.3 \% of the sample were substantives (see part 1 of this appendix).

\section*{Part 12. A sample of forms on the measure muFa' \({ }^{\text {al }}\)}

\section*{cable a.}

Foms having the configuration: \(\mathrm{DBp}(x)+D C \mathrm{~m}(\mathrm{Bff})\)
\begin{tabular}{|c|c|c|c|c|}
\hline Root \(\mathbf{x}\) & Root & x & Root & x \\
\hline dxj stain & & Intensity & \multirow[t]{2}{*}{sdq} & \multirow[t]{2}{*}{Credibility} \\
\hline tbl Moistness & & Different & & \\
\hline äb" Sate & shr & Well known & sf! & Plate \\
\hline abk Plait & & Confusion & 9 gv & Purity \\
\hline Shm Patness & swin & Disfigumement & gwh & Withered \\
\hline
\end{tabular}

\section*{Table b}

Configurations containing DSug(Place), namely:
a) Lsppss \((x) / . . . /\)
\(\mathrm{h} / \operatorname{Lppg}(x) / \cdots \cdot /\) n \(\mathrm{DSug}(\) Place \() /\)
\(\mathrm{h} / \operatorname{Lps}(x) / / / \cdots \cdot / / / / /\)
\(\mathrm{h} / / / \mathrm{DBS}(x) / / /\)
b) \(\operatorname{L\operatorname {Lss}(x)/\ldots ./2}\)
\(h / \mathrm{DBs}(x) \sim \mathrm{DSug}\left(\mathrm{Pl}_{\mathrm{a}} \mathrm{ce}\right) /\)
c) \(\quad \mathrm{Lsps}(x) / \ldots /\)
\(\mathrm{h} / \mathrm{LOs}(\mathrm{x}) / / / \ldots / / \sim\) DSug(Place) \(/\) \(\mathrm{h} / \mathrm{DBs}(\mathrm{x}) / /\)
d) \(\quad \operatorname{Lsp}(x) / 0 . . /\)
\(h / D B P(x) \sim\) DSug(Place) /
\begin{tabular}{|c|c|c|c|c|}
\hline Root & xa & xb & xc & xd \\
\hline \(\operatorname{swn}(\mathrm{a})\) & Photographer's studio & Represent & Fashion & Form \\
\hline stw( c ) & Winter residence & Pass the winter & Winter & \\
\hline dhy (b) & Place where one has breakfast & Forenoon & & \\
\hline \(\sin\) ( \({ }^{\text {d }}\) ) & Dressing room & Undress & & \\
\hline s.lb(d) & Crossroads & Cross & & \\
\hline slw(d) & Place of prayer & Pray & & \\
\hline
\end{tabular}

\section*{Table c}

Other configurations, namely:

b) \(\mathrm{Lsp}(x) / \ldots\). \(\mathrm{h} / \mathrm{DBp}(\mathrm{x}) \cap \mathrm{DCm}(\mathrm{Eff}) \cap \mathrm{DSu}(\) Indiv) \(/\)
c) \(\frac{\mathrm{Ipp}(x) / \cdots}{\mathrm{h} / \mathrm{DBp}(\mathrm{x}) \sim \mathrm{DCmp}(\overline{\mathrm{Causn})} / \mathrm{DCm}(\mathrm{Eff})}\)
d) \(\mathrm{Lspp}(x) / \cdots \cdot /+\mathrm{DHa}(\mathrm{Male})\) \(\mathrm{h} / \mathrm{Lpp}(\mathrm{x}) / / \ldots \ldots / / \cap \mathrm{DCm}(\mathrm{Bff}) \cap \mathrm{DSu}(\) Indiv \() /\)
e) \(\quad \mathrm{Lppp}(x) / \ldots /+\mathrm{pCm}(\mathrm{Eff})\) \(\mathrm{h} / \mathrm{Ipp}(\mathrm{x}) / / \ldots \mathrm{l} / \mathrm{/}\) \(h /\) DBp \((x)=\) DCmp (Causn) //
f) \(\quad \frac{\operatorname{Lpps}(x)}{\mathrm{h} / \mathrm{Tps}(x)} / / /+\mathrm{DCm}(\mathrm{Eff})\) h/ \(/ \mathrm{LDS}(x)\)
\(\mathrm{h} / / \mathrm{DEs}(\mathrm{x}) / /\)
g) \(\frac{L \operatorname{sppps}(x) / . . . / ~}{L / L}\)

h) Lippps \((x) / \cdot \cdot \cdot /+\operatorname{DCm}(\mathrm{Rff})\)
 \(\mathrm{h} / / / / \mathrm{DBs}(\mathrm{x}) / / /\)
i) \(\mathrm{Lp}(\mathrm{x}) \ldots f+\mathrm{DCm}(\mathrm{Eff})\) \(\mathrm{h} / \mathrm{pBp}(\mathrm{x}) /\)
\begin{tabular}{|c|c|c|c|c|}
\hline Root & xa & xb & xc & xd \\
\hline \(\mathrm{d}^{\prime \prime} \mathrm{f}(\mathrm{a})\) & Double & Double & & \\
\hline \({ }_{\text {d1 }}{ }^{\prime}(\mathrm{a})\) & Rib & Rib & & \\
\hline " \(\mathrm{j} \boldsymbol{r} \mathrm{r}(\mathrm{a})\) & \begin{tabular}{l}
Figured with \\
plant designs
\end{tabular} & Plant & & \\
\hline damn(a) & Include & Inside & & \\
\hline \(\operatorname{shn} x(a)\) & Sootiness & Soot & & \\
\hline Sbk(b) & Lattice window & Lattice & & \\
\hline \(\boldsymbol{s b r}(\mathrm{b})\) & Preserved foods & Preserve & & \\
\hline SETx (c) & Diminution & Snellness & & \\
\hline Srde \({ }^{\text {d }}\) ) & Fugitive & Drive away & Flee & \\
\hline s gil \((\mathrm{d})\) & Employee & Employ & Ocoupy & \\
\hline \(\operatorname{srax}^{\text {a }}\) (e) & Neglect & Drive away & Flee & \\
\hline sm \({ }^{\text {c }}\) (f) & Waterproof & Rub with wax & Waxs & \\
\hline \(\operatorname{snf}(\mathrm{g})\) & Literary work & Compose & Classify & Sort \\
\hline \(\operatorname{svx}(\mathrm{h})\) & Illustrated & Represent & Fashion & Form \\
\hline syd(i) & Loftiness & Erectness & & \\
\hline
\end{tabular}

Forms expressing substantive senses comprise \(33.3 \%\) of the sample of which 19.4\% have the sense 'place' (cf Wright 1.227). Note that in contrast to the measure maF'al and maF'il (parts 7 and 8 above) the sense 'locus' is entirely absent.

Substantive senses are rather more common to this measure than the functionally analogous maF'ūL (13.5\%) (part 10 above).

\section*{Paxt 13. A sample of foms on the measure Fa'Ila}

\section*{Table a}

Configurations containing DCm(Eff) and DSu(Indiv), namely:
a) \(L \operatorname{sp}(x) / \ldots /\)
\(h / D B p(x) \sim D C m(E f f) \sim D S u(\) Indiv \() /\)
b) \(\mathrm{Lsp}(x) / \ldots /+\mathrm{DHa}(\) Fem \()\)
\(h / D B p(x) \sim D C m(E f f) \cap D S u(\) Indiv) \(/\)
c) \(\frac{\operatorname{Lspp}(x)}{\mathrm{h} / \operatorname{Lpp}(x)} / \% / \ldots / / \sim \mathrm{DCm}(\mathrm{Bff}) \cap \mathrm{DSu}(\) Indiv \() /\) \(\mathrm{h} / \mathrm{DBD}(\mathrm{x}) \sim \mathrm{DCm}(\mathrm{Dyn}) / /\)
d) \(\mathrm{Lsp}(\mathrm{x}) / \ldots /+\mathrm{pHa}(\mathrm{Tem})\)
\(h / \operatorname{Lp}(x) / / \ldots \cdot / / \sim D C m(E f f) \sim D S u(\) Indiv)/
\(h / D B s(x) / /\)
\begin{tabular}{|c|c|c|c|c|c|}
\hline Root & xa & zb & Root & xa & xb \\
\hline xjw(a) & St.hoped for & Hope & \(x \underline{d 1}\) (a) & Vice & Baseness \\
\hline IZ \({ }^{\prime}\) (a) & Heavy loss & Deprive & xdk (a) & Snall gift & Gift \\
\hline \(x^{\prime} y^{\prime}(\mathrm{a})\) & Herd & Tend & \(x \bar{g} \mathrm{~b}(\mathrm{a})\) & Object of desire & Desire \\
\hline nḍd(a) & Cushion & Arrange in layers & & & \\
\hline wde (a) & St. put down & Place & \(\underline{\operatorname{mar}}(\mathrm{a})\) & Leaven & Leaven \\
\hline dkg (a) & Inner self & Finter & dkn(a) & Cigarette & Smokiness \\
\hline dss(a) & Intrigue & Intrigue & dfn(a) & Fidden treasure & Buxy \\
\hline daqq(a) & Particle & Fineness & dnw(a) & Base quality & Baseness \\
\hline \(\underline{\mathrm{dbh}}(\mathrm{a})\) & Sacrificial
victim & Sacrifice & & & \\
\hline \(\underline{\text { dkx }}\) (a) & Stores & Store & \[
\operatorname{drr}(a)
\] & Fragrant powder & \\
\hline \(\underline{\operatorname{man}}(\mathrm{a})\) & Censure & Blame & \(\mathrm{xsf}(\mathrm{a})\) & Colleague & Join \\
\hline \(\mathrm{rbb}(\mathrm{b})\) & Foster daughter & Possess & & & \\
\hline & Root & xa & \(x\) & \multicolumn{2}{|c|}{xc} \\
\hline & \multirow[t]{2}{*}{\[
\begin{array}{ll}
\hline \mathrm{ngh}(\mathrm{c}) & \mathrm{S} \\
\mathrm{r} \\
\mathrm{r} \\
\hline
\end{array} \mathrm{~s}(\mathrm{~d}) \quad \mathrm{m}
\]} & \multirow[t]{2}{*}{\begin{tabular}{l}
Sincere advice \\
Ma nageress
\end{tabular}} & \multirow[t]{2}{*}{Advise sincerely Head} & \[
\text { se } \quad \text { Since: }
\] & \\
\hline & & & & Head & \\
\hline
\end{tabular}

\section*{Table b}

Foms having the configuration: DBS
\begin{tabular}{|c|c|c|c|c|c|}
\hline Root & \(x\) & Root & x & Root & x \\
\hline rb' & Guard & wst & Means & wsl & Means \\
\hline w' & Reel & wim & Hostility & Wzf & Position \\
\hline wf* & Penviper & \(\underline{\mathrm{k} m} \mathrm{l}\) & place of luxurious vegetation & dr \({ }^{\prime}\) & Target \\
\hline den & Darkness & & & dhn & Pomade \\
\hline \(\underline{\text { a }}{ }^{\prime}\) & Means & wş & Directive & & \\
\hline
\end{tabular}

Nvery form in this list expresses a substantive, cormonly
including the sense 'individuation', which of course is predictable in a measure having the \(t \bar{a}\) ' marbuta. (Compare the sample on Ferila in part 2).

Being cognate to Fa'IL (see para. 1.6 .0 of chaptex 10) the conjoining of 'effective' with 'individuation' is also predictable.

On the basis of this sample the claith in Wright 1.233 Rem c regarding the "Intensifyinc" function of this measure must be considered an overstatement.

Samples of verbs closely associating with prepositions, and a context based sample of the preposition \(1 i\).

Part 1. Vexbs associating with the preposition bi

\section*{Table a}

Cases where bi is taken to express DSIn(At) only
\begin{tabular}{|c|c|c|}
\hline Verb & Verb & Verb \\
\hline \begin{tabular}{l}
2nicl Jake an example of \\
4nwig Remain at \\
Tha' Remain at \\
1wty Place one's confidence in \\
2wrd Make st. reach \\
1wsm Stamp st. as
\end{tabular} & \begin{tabular}{l}
Invt Hang st. on \\
1hym Fall in love \\
4 wtq Tie st. With \\
5whi Unite with \\
2wry Pretend
\end{tabular} & \begin{tabular}{ll} 
2nwh & Extol \\
4wbh & Heed \\
1pwjd & Love \\
\(4 w d y(D e a t h) c u t ~ o f f ~\)
\end{tabular} \\
\hline
\end{tabular}

\section*{Table b}

Verbs expressing the configuration: \(\operatorname{Lpp}(\mathrm{x}) / . . . /\)
\(\mathrm{h} / \underline{\mathrm{DBP}}(\mathrm{x}) \sim \mathrm{DSIx}(\mathrm{At}) /\)
\begin{tabular}{|lll|lll|}
\hline Root & \multicolumn{1}{c|}{ xa } & \multicolumn{1}{c|}{ xb } & Root & \multicolumn{1}{c|}{ xa } & \multicolumn{1}{c|}{ xb } \\
\hline Inky & Offend & Hams & 1nhd & Lift & Rise \\
8nhy & End with & Teminate & 1ws̈y & Betray & Slander \\
\hline
\end{tabular}

Certain of the analyses in tables (a) and (b) are tentative to say the least, and presuppose an abstract interpretation of the locative seneme. Note that in the case of the forms of table (b) and similar configurations elsewhere the preposition is assumed to be surjectively associate with the lexeme, along with the verb form.

Table c
Cases where bi is taken to express DAr(Reason):
\begin{tabular}{|c|c|c|}
\hline Vexb & Verb & Verb \\
\hline 1nw' Break down because of \\
& \begin{tabular}{c}
1 hz, \\
1 hn, \\
Lauch at \\
Take pleasure \\
in
\end{tabular} & \\
\hline
\end{tabular}

\section*{Table d}

Cases where bi is taken to express \(\operatorname{AGr}(09)\) :
\begin{tabular}{|c|c|c|c|c|}
\hline & Vexb & \multicolumn{2}{|c|}{Verb} & Verb \\
\hline 1 nm 2 & Give st. & 10 nvm & Entrust to so. & 1hti Applaud \\
\hline 1hdr & Blare out & 1hdr & Blurt out & 1hri praise excossively \\
\hline 1 hzz & Shake & 1hivv & Induce so. & \\
\hline 5hkn & Make fun of & 4 h 31 & Offer up & 1 hms Whisper \\
\hline \(2 \mathrm{hn}{ }^{\prime}\) & Congratulate & 6 hm & Consider easy & 1hwy overthrow \\
\hline 4 hury & Drop & 4hyb & Shout to & 5 whd Perforia by os. \\
\hline 5msI & Ask for help & 5wsh & Put on & \\
\hline
\end{tabular}

\section*{Table e}

Cases where bi is taken to express \(\operatorname{DAr}(I-R-0)\) :
In an adherent relationship we have: ( \(1 \mathrm{hz} \mathbf{F}^{\circ}\) ): laugh at (compare table c) ( 6 hm ): be careless in

In an included relationship:
\(\mathrm{Lpp}(10 \mathrm{~h} t r+\mathrm{bi}:\) make light of \() /. . . /\)
h/MBp (10htr: negligence) \(n\) MAr (I-RMO)

\section*{Table}

Configurations containing DMIr(Inst), namely:
a) In an adherent relationship
b) \(I m p(x) / \ldots /\)

\begin{tabular}{|l|lll|}
\hline \multicolumn{1}{|c|}{ Verb } & Root & \multicolumn{1}{c|}{xa} & \multicolumn{1}{c|}{ xb } \\
\hline 2hdd Threaten so.with & 8hdy & Thake as model Right guidance \\
10hll Introduce st.by & 2hwl & Scare so. with \\
4hwy Fall upon st. w/- & Thyl & Shower so. w/- \\
1why Inspire so. w/- & 2wry & Allude to st.w/- \\
1why Defame so w/- & & \\
\hline
\end{tabular}

Part 2. Verbs associating with the preposition 1i
Table a
Cases where \(1 i\) is taken to express DMr. (Ben):
\begin{tabular}{|ll|}
\hline \multicolumn{2}{|c|}{ Vexb } \\
\hline 1qdy & Pass judgement in favour of \\
8Ims & Request st. for so \\
2mhd & Clear the way for so. \\
5nsr & Stand up for so. \\
\hline
\end{tabular}

Table b
Cases where 1.i expresses D72r(50) in an adherent selationship:
\begin{tabular}{|c|c|c|}
\hline Verb & Verib & Verb \\
\hline 2cis Bory to & 7k:s\% ze manifert to & \(17 t \mathrm{f}\) bekind to so. \\
\hline 1 ¢ृv2 Sey to & 1 kff Gusmantee st to. & 12wh Be viaible to so \\
\hline Toyd Credst st. to & 1 kan Lie in wait for & 21w Wave to so. \\
\hline 2qyd Destine st for so & 1 km Have Sriendship for & 5mad Devote os.to. \\
\hline 1ktb Bequeath st.to so & 1/hn 2 ell the fortune of & 2nkn Give a fimm position to sa. \\
\hline 4ktr: Give frequently to so. & 1 kyd Inay snares for & 5 mlq Matter so \\
\hline 2krs Devote st.to. & 21zq Foist st.onto so. & 8naf Do justice to \\
\hline 1nbh Observe st. & Intet Be in the mood for & infr Masten to \\
\hline 5nhz Lean on st. & inş Show ennity towasde & Snicr
Be alienated
from \\
\hline 1ndb Appoint so. to an office & Angt Listen to & \\
\hline 6 nal Cede st. to so. & 1ngh Give so.sincere \(\begin{gathered}\text { advice }\end{gathered}\) & \\
\hline 1nsb Ascribe st.to so. & 8nsw Cone to so's ald & \\
\hline
\end{tabular}

\section*{Mable c}

Cases where ii expresses \(\operatorname{DOM}(T \mathrm{~T})\) in an ineluded relation ship, namely:
\[
\frac{\operatorname{Lpp}(x) / \ldots /}{h / \operatorname{DBp}(x)} \quad \operatorname{DM1x}(T 0) /
\]


\section*{Table d}

Other functions, nanely:
a) DAS (neason)
b) \(\mathrm{BAr}(\mathrm{I}-\mathrm{R}-0)\)
c) \(\mathrm{AGr}(\mathrm{Oj})\)
a) DAg (Parp)
\begin{tabular}{|c|c|c|}
\hline Verb & Verb & Verb \\
\hline 12, b(a) He sad beeruse of & 2kfre(b) Torgive so for & 5 mhl (b) Aavertise artffuly \\
\hline 8utb (d) Subscribe for & 2ntl (c) Exemplify st. & \(1 \mathrm{mmv}(\mathrm{c})\) Find by good luck \\
\hline 8kxto (b) Pas attention to & & \[
\begin{gathered}
\text { inf'(d) Serve for } \\
\text { st. }
\end{gathered}
\] \\
\hline
\end{tabular}

Part 3. A contoxt-based serple of the preposition 15
a.) Instancos exprossing Mus(Purp)

"The Fuad the first aoademy for longuace"
2) ...1i'aqdiya fini 1-baqjyata II min....hayatit
"...in oxder to spond in it what is left of...
my 1ife"
3) mā katabtu ... li'ujaddida bika 'ehdan....
"I have not mitten ... in onder to renew contact with you
'âkara

When she cane to the house agnin in order to spend the festival holiday..."
5) ...'alradat tatawassalu 'ilayni bi'anna Yashabaha lit-taftigi ani 1- attali
"...she begran imploxing his to go with her in oxder to look for the porter"
6) laqad sa'ala 'anka .... 'addata marmatín lineqil 1-'akyāsi "He has inquired for you...several times in oxder to camy sone sacks"
7) wafI ba'di miyārātihè 1ibayrūta linultarā hājétinā. "Cn one of her trips to Beyrut in oxder to buy things she needed"..
8) watabarrakę w-rukkābu 1 inn-nuzuli
"The pasnenfere moved in order to get off"
b) Instances expressinc DPIn(o)
1) Saquitu lahu ... "And I said to hinu..."
2) wastabāna li... "And it became clear to me..."
-..yuhāmilūna "an yubaddilūhu bimã yatara" ã lahum "...trying to change it "into what seened fit to them"
4) ...'allantu liman yu'dünani
"...I used to inform (to) those who imritated ne..."
5) ...ya' tabirūna dālika tahqiran lahum
"...they consider that a disparagenent to then"

"...except by a hinting to the office"
7) wahuwe "awvalu man "arssada hayātahu...pidirāsāti tota"riki 1m"islams
"He was the first one to devote his life...to the study of Islamic history"
8) ...bil-ma' nā 1-faransi 1ihādā 1-'ibārati
"...in the pronch meaning "to" that expression"
9) yukayyilu lin-nägitri 'ilayhi...
"It appears to one who looks at it..."
10) fafetahat II fātatun...
"A girl opened (the door) "to" me...."
11) fazafarat zafratan kāda yanqati' u lahã qailbuhā
"She sighed a sigh which almost broke 'to her' heart
12) walawla dālika mē țaraqta 1I bēban
"liad it not been for that you would not have
knocked "to me' a door (i.e.'a door of mine')"
13) wanādā texma lahu ba'da dā̄lika
"What happened to him after that"
14) wastaslamat 15 'aflcarrina
"She yi.elded herself to her thoughts"
15) waff ba'di ziyārātihā 1ibaymūta...
"On one of her trins to Peyrut,.."
16) wazahara lahā 'alaั biḍ'ati 'antārin...
"IThere appeared to her some metres away..."
 bihaytu 'ujawrizu linafsi 'anna...
"....because the name of our quarter was not so
elegant that I would allow "to ryself that...'"
18) ...yanqusuhē 'an takūna lihayātihā qInatun mastaqillatun...
"...she lacked "that there should be to her life" an
indopendent value"
c) Instances expressing pyry(Pos)
1) ...l-lady kēna 1I Jamafu 1-'indimami 'ilayhi... "...' \(w h i c h\) there has been to me' the honour of belonging to it..."
 1i1-mutayling
"...rather as Tuwaylithi's newapaper "the Lanp of the Rast" did"
3) wakāna 1 Inajähi Taha, Husseyn qImatun ranniyatun Where was to the success of Trha Hussein a symbolic value"
4) ...yaskumu bijānibihi jāmun Lanā
"...by the sice of which lived a neichbour of oums"
5) Katabtu 'ilayka li'anna laka 'indry wadi' atun...
"I have written to you because I have a charge of yours..."
6) . ...wahiye kullu mā tabqi lahā min 'anali konsi sanawätin
"....and that wes all that remained to her of five years work"
d) Instances expressing par \((\mathrm{I}-\mathrm{R}-0)\)
1) wahädihi l-kutubu tu'addu mina t-tala'i'i lihādihi d-dizasāti
"These books are reckoned anong the earliest
in respect of such studies"
2) ....wagad wada'a mu'janan 1il-hayawānāti
"..and he had compiled a dictionaxy on animals"
3) ....li'anna ru'ya 1-'istiq1ē1i 1i1-'arabi lan takun qad tajassanat...
"...because the drean of Arab independence
(independence in respect of the Arabs) had not taken shape..."

"There was general rejoicing...about this successful Azhawi."
5) ...falan taqif lahn 'ala 'atarin
"...but she could not see any sign of him"
e) Instances expresging mar (reason)
1) wagad tanabbaha dakāuhā katizran IA ikttilaṭihā bihā'ulā'㑒-duyurfi...
"Her intellect had beeone moch sharpened in consequence of hor mixing with these guests..."
2) qadat 1i1-migatafati bi'an yakūna sarqIya t-tarifiyati
"It was detemuined by chance that he should be Bastern educated"
3) kēna \(1 I\) sadiqua "whibbuhu 1ifadithi....
"I had a friend whom I liked for his merit..."

"...and that was through foar of the future"
5) wasa 'ahaibu mewtahumā '111ā huznas 2ifraqdi
"...and I attribute their death solely to somov at_losing me"
6) fase'aqtu 1 insumis mā ma'aytu...
"I was stumned by the homor of what I had seen"
1) Instances expressing mine(Ben)
1) ....l-"isti.qlialu 1-naz 'ūm linēdihi d-duwali
"...the independence claimed for these states"
2) ihrail 15 hādihi Bostanṭati
"Carzy thin muitcase for re"
3) ...ffe seqqat 1 nnarsihā terxqen baynohum.e. "and pushed 'for herself quay' anong them
E) Instance expressing \(\operatorname{AGs}(0 j)\)
...vakcanū JanI'ahun kāzihIna 191- hukni 1-'utmeniyi
"...and they all disliked the ottomen regime"

\section*{Part A. Verbs agsooiatinc with the preposition min} mable a

Cases there min expresses \(\operatorname{pmr}(\mathrm{From})\) in an adherent relationship:
- 404 -


The verb (10ntf) is taken to express the configuration:

> Lhpe 1 Onkr + raine scom) /..../
> h/nBp (10rkê: pride) DDIn(From)/

Where the preposition is taken to express both the lexeme
(surjectively with the verb) and \(A G X(0 j)\).
qable b
Casen where min is taken to express \(\mathrm{AGr}(0 \mathrm{j})\) :
\begin{tabular}{|c|c|c|c|c|c|}
\hline & Verb & \multicolumn{2}{|c|}{Verb} & \multicolumn{2}{|r|}{Verb} \\
\hline 1had & Ruin & 2ha* & Placate & 2 hwi & Overemphasize \\
\hline 10wte & Trake muse of & \(\hat{1}\) mạ! & Humiliate & 5misd & Ascertain \\
\hline 4 mby & Weaken & 18's & Renounce & 2 bdy & Substitute \\
\hline 1b1E & Wear out & 1hdis & Shorten & & \\
\hline
\end{tabular}

Teble o Cases where min is taken to express DAr (Feason)
\begin{tabular}{|c|c|c|}
\hline Verb & Verb & Vexb \\
\hline \begin{tabular}{l}
1hz" Laugh at \\
\(1 t^{\prime} \mathrm{b}\) Be weaxy of
\end{tabular} & \begin{tabular}{l}
1bra Be siok and tirad of \\
1t'r Avenge os for
\end{tabular} & 1bsm Be disgusted 1, by ijz' Be sad about \\
\hline
\end{tabular}

Whon accomperying the vesib ( \(2 w^{\prime} y\) ): wayn so asainst ain is taken to express \(\mathrm{MAx}(\mathrm{I}-\mathrm{P}-0\) ), and when accompanying ( 1 nyl): accomplish, the semene DSlux (With).

Part 5. Veribs associating with the propogition'ala
Table a
Cases where 'ala is taken to express DS2mex (Upon) in an adherent relationship:
\begin{tabular}{|c|c|c|c|c|c|}
\hline & Vexb & \multicolumn{2}{|r|}{Verb} & \multicolumn{2}{|c|}{Verb} \\
\hline 4nker & Deny st. to 50. & 1 Inch & Breathe in mo's & 1 nut & 130 zm \\
\hline 1nvt. & Tate as condstiona upon & 6hft & Rush onto & 1hyju & Make for \\
\hline 2hw & Inaite so agoinst & 2hwl & Scare so. & 7hank & Give os. up to Be easy for \\
\hline 17wy & Pounce upon & 2hyb & Intimidate & 17xyl & Spsinkle st.on \\
\hline 1 h ym & Guaxd so. & 1wtb & Dash at so. & 1wjb & Be enjoined on so. \\
\hline 1wfd & Do ancry yith so. & 4 wja & Compel so.to & 1 max & Be received \\
\hline 17 mx 约 & Interfere with & 2wz' & Distribute anong & 2ws' & Be byersicts towaxds \\
\hline 1vọ! & Impose at. on so & \(6 \mathrm{~m}{ }^{1}\) & Agree on & 2wzf & Assign st.to so. \\
\hline 1 mg ] & Intrude on & 4wly & Approach & 6 mfy & Decide in favour of \\
\hline
\end{tabular}

Table b
Cases where'ala is taken to express \(\operatorname{AGx}(0,0)\) :
\begin{tabular}{|c|c|c|}
\hline Verb & Vexb & Verb \\
\hline \begin{tabular}{l}
1 man Indicate sh. \\
4 whik le about to do
\end{tabular} & \[
\begin{array}{|ll}
\hline \text { 1nw? } & \text { Exoood st. } \\
\text { 1w\%i } & \text { Do regulaxiy }
\end{array}
\] & 5han make fun of \\
\hline
\end{tabular}

Teblec
Cases where 'aiā is talcen to express DAr (I-lu-0):
\begin{tabular}{|c|c|c|c|c|c|}
\hline \multicolumn{2}{|r|}{Verb} & \multicolumn{2}{|r|}{Vexb} & \multicolumn{2}{|l|}{Verb} \\
\hline 1 mmm & Report 1iselinously about & \[
\begin{aligned}
& 6 \mathrm{~nm} \\
& 2 \mathrm{mn},
\end{aligned}
\] & Take tuans in Congmatulate on & 6 htf & Tincoumace one another in \\
\hline 10hz' & Wook & 1hys & Be furious about & 3wzr & Help so.in \\
\hline 3wt. & Agree with so.on & 5 fI & Spare no trouble over: & 3 wfa & \[
\begin{aligned}
& \text { Agree with } \\
& \text { so.in }
\end{aligned}
\] \\
\hline 6hlk & \multicolumn{3}{|l|}{Fight desperately for} & & \\
\hline
\end{tabular}

When accompanying (5hlon): be annoyed by and (2wbic) : reprimand for \(t\) is preposition expresees DAx(Reason):
When accorapanying (1 ind ): sebel seningt and (1hbb): (same) we have the configuxations:
\[
\begin{aligned}
& \text { Lov( Inhd + ala)/e../ } \\
& \text { h/yBu(inhas: rise) } \wedge \frac{\text { DSlwx (Upon) }}{(\text { continued })}
\end{aligned}
\]
and
\(\operatorname{lng}\left(1 \mathrm{hbb}+{ }^{\prime} \mathrm{al} \overline{\mathrm{a}}\right) / \ldots .0 /\)
h/DBp ( 1 hbb: move) ~ 1SIlvx (Upon)/
where the proposition is traken to express both the lexeme (murjeotively) and ACx \(0 j\) ).

Part 6. Vexbs agsociatine with the maposition fi

\section*{Table 3}

Casos where rI is teken to oxpress DSIx (In):


The vorb ( 1 wq') : be Gividea into is analyasble into the confisuretion:


2'able b
Cases where fiJ iss taken to express DAx \((I-16-0)\) :
\begin{tabular}{|c|c|c|}
\hline Vezi & Verio & Verb \\
\hline 1 nim 3 Be covetous of & 6nwb Take tumas in & 5nxy Be choosy in \\
\hline 2 nxy Jost about & Ghak Do one's utmost \(2 n\) & Ghwm Be careless in \\
\hline 3hy Arree with so.abou & \(5 v^{\prime} \mathrm{d}\). Be slow in & 5wiq Proceed with confidence in \\
\hline 4wjz Be concise in & 5wst Mediate in & \\
\hline 3wiq Acree with so.in & ivqe Have doubts about & 2vicl. Give power of attomey in \\
\hline 6 my N Waver in & 1wh Lack strength for & \[
4 \mathrm{bd} \mathrm{c}^{\prime} \text { Be outstanding }
\] \\
\hline 2bzz Suxpans so.in & 5bst Speak at length about & 5bsx Reflect on \\
\hline 5bt' Be taxdy in & & 171E Go fas in \\
\hline
\end{tabular}

The verb (1bht): invegtigate is anolysable into the configuration:
\[
\frac{\operatorname{Lov}(1 h h t}{h / D B p}(\text { ibht: seek }) \sim \operatorname{DSlz}(\operatorname{In}) / \ddot{ }
\]

Table o
Carses where in is talcen to express \(A G X(0 j)\) :
\begin{tabular}{|c|c|c|c|c|c|}
\hline & Verb & & Verb & \multicolumn{2}{|l|}{Verb} \\
\hline inly & Iluart & 5\%ib & Pounce upon & 3 ms 1 & Continue \\
\hline 4v'x & Intinate st. & 13t\% & Decide on & Cork & Bless \\
\hline
\end{tabular}

Part 7. Verbs associsting aith the proposition 'ant
Mable a
Cases where 'an is taken to express mnlr(From)
\begin{tabular}{|c|c|c|}
\hline Vexb & Yex\% & Verb \\
\hline 1rict Shatink from & 1nhd Get up from & inver Avold st. \\
\hline 1mw Exceed & 1wnt Inherit fron & 1wd' Take st.from \\
\hline 2miy Tum away from & Tbtq Emanate from & 1bld keep one's distance from \\
\hline trim Translate Exom & 1tny Divert so from & \\
\hline \(5 \mathrm{x} x \mathrm{C}\) Get xid of & \(5 j z^{*}\) Be separable & 6jsw Withdraw from \\
\hline 192w Dislodge from & 1 gnh Dopart from & 1hbs Hold back st. \\
\hline 1hjb Hide from & 1hjz Restrain st. from & 4hju Shrink from \\
\hline Shei Depart from & 1.hss Pull st.away & \\
\hline
\end{tabular}

When occumping with (1hd') we have the configuxation:
\(\operatorname{Lnp}\left(1 h^{\prime}\right.\) ' + 'an: stop doing \(/ / .\).
h/bBe(1hd': calmeess) ~DDIx(Pron)/

Table 3
Cosses where 'an is taken to express \(\operatorname{AGr}(0, i)\)
\begin{tabular}{|c|c|c|c|c|}
\hline \multicolumn{2}{|r|}{Vexb} & Verb & \multicolumn{2}{|r|}{Verb} \\
\hline Trics & Scomm & 1 nom Indicate & 1nvb & Topresent \\
\hline 2 nwh & Mention & 10wdh Invastigate & 1blet & Look Sor \\
\hline 6 blc 1. & Give exadetnely to & 4jzy Replace & 43mb & Answer(question) \\
\hline 3, wz & Pass over & & & \\
\hline
\end{tabular}

Table e
Cases where 'an is taken to expreadhar (I-R-0) alone
\begin{tabular}{|c|c|c|c|c|}
\hline \multicolumn{2}{|r|}{Verb} & \multicolumn{2}{|r|}{Vexb} & Verb \\
\hline 1nhw & Forbid so.to do st. & 2wx & Equivocate about & 5wr' Be cautious about \\
\hline 2 wry & Allude to st. & 17'2. & Wam so. of & 2wikl lingage as counsel in respect of \\
\hline 1blec & Be stingy in & 4bt \({ }^{\text {\% }}\) & Be late for & \\
\hline \(261 .{ }^{\text {er }}\) & Report about & 2hat & Tell so. about & \\
\hline
\end{tabular}

Table d
The following verbs express the configuration:
\begin{tabular}{|c|c|c|}
\hline Voxis & zab & \(x b\) \\
\hline 1 1man & Overiooic & Sleepiness \\
\hline 1twb & Renounce & Fiepent \\
\hline 1402 & Too duil for & Dullness* \\
\hline 1 jbm & Too coverdly for & Cowardice \\
\hline 1521 & Too great for & Greatness \\
\hline 5hxy & Inquire into & Pursue \\
\hline 5him & Ashamed to face & Sherne \\
\hline
\end{tabular}

Part 1. A sanple of foxma on the neesure 'ar'at, - exeluding elatives

\section*{Table a}

Forms expressing prodiontes of colour, on the configuration:
\[
\operatorname{TEn}(x)+\operatorname{DC}(\pi f f)
\]
\begin{tabular}{|c|c|c|c|c|c|}
\hline Root & x & Root & x & Root & x \\
\hline shrn & Blackness & & Dark brownness & gax & Bromnness \\
\hline awd & " & & Creyness & 8h\% & Dessert coloured \\
\hline sfr & Yellowness & shb & Reddish & & \\
\hline
\end{tabular}

\section*{Tab2.e.}

Fowne expressing prodicates of physical chawateristics. Configuration as above.
\begin{tabular}{|c|c|c|c|c|c|}
\hline Root & \(x\) & Poot & \(x\) & Root & x \\
\hline vtif & Bushy eyebrowed & & Deafness & šj \({ }^{\prime}\) & Bravery (?) \\
\hline Bac & Laxge mouthed. & 田't & Having matted hair & 曋'r & Hirsute \\
\hline sqr & Fair complexionod & & Having a sensitive nose & ant & Grey haired \\
\hline ถีws & Boldnese (?) & & Lallomedness & Ezyb & Aged \\
\hline ¢1' & Bald heeded & & Doafneas & tıs & Deafness \\
\hline '9n & Speechless & 'x] & Lumenoss & 'zb & Celibate (?) \\
\hline 'gr & Left-handecness & ' BW & Dinsighted. & & \\
\hline
\end{tabular}

\section*{Table.}

Forns expressing substantives (a) and other predicates (b).
\begin{tabular}{|c|c|c|c|c|c|}
\hline Root & x & Root & x & Root & \(x\) \\
\hline shar (a) & Syematic duot & \multicolumn{4}{|l|}{\multirow[t]{3}{*}{}} \\
\hline \(S^{\prime 2} z^{\prime}(\mathrm{b})\) & Abominable & & & & \\
\hline 'bl(a) & Gronite & & & & \\
\hline
\end{tabular}

Colour predicates comprise 25 , of the sample and riysical charactoriatios \(48 \%\) on \(57 \%\) secording as how the conoept is defined.

Paxt 2. A many Bounde of forns on the 9 th mossure
\begin{tabular}{|c|c|c|c|}
\hline Root & x & Root & \(x\) \\
\hline sur Brommess & & swd & Blockness \\
\hline cir Yellowness & & shb & Redaish \\
\hline
\end{tabular}
1) 'axaftu...mi"assisa "l-hilāli" qabla "an yamūta bisanatayni 'aw taiatin
"I. eot to knors. . . the founder of "al-hilal" two or three years before he died"
2) wanā hiye 'illã 'ayyāmin qaià'ila hattã 'arafitu 'anna. "It was only a few days before I leamed that..."
3) 'araftuha fi 1-yami i-ladi kunnã naltaqI fihi ma'an...
"I not to know her on the day when we were meeting..."
 "If in Burope there were...they would know how to meke use of the sky"
5) ja"a jaddr... masakana dimas̈qa

Mry grandfather came...and sottled in Danascus"
6) faša'artu ka'ama...va' alimtu 'annĩ qad 'atartu biḍāllati "I felt as if...and realised that I had stumbled across what I han been looking for"
7) hāḍã 'anmun 1ktalafat fihi 1-'axā'u
"This is a matter on which opinions differ"
8) wakawwanū dudawlata 1-"akkadIyat́a 1-1ati staja'at....an tuwahbida 1m'iräqa
"They set up the Akkedian state which yas able... to unite Iran"
 1-'akirati
"...which have prolifersted in the last twenty or thirty years"
10) Waba'da sanina...'indamē kaburtu, 'axaftu l-ladi kuntu *as̈täqu 'ilayhi
"After some years... When I had grown up, I reelised what it wes I yeamed for"

Part 2. A sample of stative verbs admitting 'static' interpretation
1) fana labita ba'duu man laraiuñ hattē.
"Some of those who knem me lost no time in..."
2) famā wasa'anI 'illā 'an 'ataytu bisułūdin'udūlin min kibāri rijaili d-damlati. 'amafuñ fi dake d-dIwani mundu
"awvali nas'atI
"I could do nothing but bring forward reliable
witnessen from anong eninent statesmen who had known
me in that department fro the first"
3) 'innaka 'arafta hina taraktani... "You know when you left re..."
4) laqad 'araftuhā bilabmihā madmihā
"I knevy her intinately"
5) 'innahā...ain 'aftaki 1..n' aqā'idi 1-latz 'arafahā ta'rilgu 1-" insānIyati.
"It is...azong the most destructive creeds knom to human history"
6) fri l-'ināqi sabābun...'urifa bimaylihi...'ila țalabi l-'ilmi
"In Iraq is a younger genexation. . knom for its taste...for the parsuis of knowieogen
7) Laqad zanna hrukkänunē...' amnahum 'anâma zāhisatan 'ādiyatan "Our rulers thoustat... that they were faced with a run of the mill phenomenon"
8) hādā \(1 \bar{a}\) yamna' un \(\bar{a} m i n a ~ s-s a y x i ~ ' ~ a j . \bar{a} m \bar{a}\) 'ulima minhā "This does not prevent us from proceeding on the basis of what is known of it"
9) laqadi 'tagada hukcārnun̄....'annahum qādirūna 'ala taṣfiyyati 1-qadiyati 1-filastinIyati
"Our rulers believed...that they vere capable of settline the Palestinian question"
10) 'äs̉a I~'araiu qabla l-'iszami fi sibhi jazIrati 1-'amabi "Beiore Islan the Arabs lived in the Arabian Peninsula"

\section*{part 3. A scume of contexts containinci lagad}
1) Iagad kena I-1agnūn 'an...
"It was thought that..."
2) "lagad 'atqaia 'ajf̄añ 2-karā yā 'umanh"
"Sleep has made my eyelide heavy mothex"
3) walastu 'ansĩ mă hayitu "asnānahu lagad kānat kal-jamarāti 2-1ani'ati...
"I shall not forget his teeth as long as I live. They werc like red-hot coals"
4) hunalika quitu "lagae "êtléqa 1-hayawanu n-nātiqu min jami'i quyūaini
"I said there "The talking aninal has been freed from his bonds" "
5) bal lagad qIla 'inna 1-jaysa l-misriya wal-jaysia 1-birițānIya śtabakā...
"However, it was gaid that the Egeyptian amy and the British arny had clashed..."

Words underlined in any definition are themselves defined elsewhere in the glossary. References are to chapter and paragraph .

Adherent. Applied to a systom winich does not have the possibility of inclusion in a lexeme. (2:4.0)

Association. The relationship between one or more elements of the content code and one or more elements of the expression code (2:2.0)
-Bijective: The case where some element of content or expression is associate with only one element of the partner code. \((2.2 .1)\)
-Surjective. The case where some element of content or expression ia associate with more than one element of the partner code. \((282.1)\)
-Impure. An association where the elements involved whether of content of expression or both, are dxawn from more than one systern (2:2.2)
-Pure. A surjective association where the elements involved whether of content or expression or both, are dxam from only one system. (2:2.2)

Augmentive. Used of any system whose members may be includod in a. lexeme, excluding the systens of base substantives and predicates (see part 2 of this ap endix) and those of lexemes. ( \(9: 3.10\) )

Bijective language. A language where the tendency is for one sememe or lexeme only to be associate with each morpheme ( \(3: 0.0\) )

Circumstance. A state of affairs or an event in the perceived real world, linking a number of participants in a representation ( \(4: 1.2\) )

Configuration. An unordered array of semenes and or lexemes
in an encoding or an ordered array of morphemes in an expansion. (2:5.11)

Content Code. The set of systems of content and the set of rules governing the possible collocations of their nembers with each other. (2:1.2,1.3)

Dual. Applied to a system of content whose members may stand either in an included or adherent relationship. (2:4.0)

Dunny symbol. An element of the Nominal and Verbal serios of the moxphological component of the expression code, and of a template generated from those series, or an element of a syntactic template. The former is replaced by a phoneme of a triradical root, the latter by a fom. (2:4.23)

Encoding. Applied either to the process of assigning a set of sememes and lexemes to some representation, or to the result of that process. ( \(2: 5.11\) and \(4: 2\) )

Fincoding rules. A set of rules enabling the assignment to any representation of an array of content elements adequate to the expression of that representation ( \(4: 2.0\) )

Expansion. Applied either to the process of assigning morphemes and syntactic structures to an encoding or to the result of that process. (2:5.11 and 4:3)
- Primaxy. Applied to the equivalent of a morphophonemic level of representation. ( \(3: 2.4\) )

Expression code. The set of systems of morphemes and syntactic templates and the set of rules governing the possible collocations of their nembers with each other. (2:1.2, 1.3)

External logic. An ideal language-neutral apparatus for analysing or characterising the nature of events, states and objects in the real world. The concepts of the representation are intended as a crude approximation to this ideal. \((2: 5.11)\)

Form. Any token of the types designated by the tem measure. Any string of morphemes - e.g. the pronouns of Arabic, not
conforing to a measure. (2:1.0fn)
Incluaion.
The relationship between (typically) a sememe and lexeme where the former is understood to fom part of the latter. \((2: 4.0)\)

Internal logic. A cover term for the structure of the content and expression codes. Used in particular to indicate the way in which a language analyses reality, and as such is equivalent to "Weltanschaunnc". It should be contrasted with extermal logic. (2:4.10)

Lexeme.
A semantic unit winich includes one or more lexemes and or senemes. ( \(2: 4.0,4.10\) )
- of the nth degree.

A lexeme formed by ' n ' successive processes of substantivisation or predicatisation (9:3.00)

Limitation rule. A rule stating a collocational restriction between two or more elements in the content code, or morphemes in the expression code. (2:5.11 and 3:1.3)

Measure - Third degree. A set of forms each varying only on the value of the trixadical root.
- Second degree. A set of third degree neasures sharing certain morphological characteristics.
- First degree. A set of second degree measures sharing rather more abstract morphological characteristics. (2:1.0fn).
Morpheme. A unit of segnentation equivalent to the Structuralist morphophoneme. (3:2)

Overlapping.
- Arbitraxy The case where there is no apparent diachronic or synchronic relationship between identical nembers of two systems.
- Motivated. The case where there is an apparent diachronic relationship between identical members of two different syatems ( \(3: 1.11\) )

Paradignatic contrast.
- Strong. The case where two elements of some system contrast in many if not all enviroments in which one of them occurs.
- Weak. The case where two elenents of some system have only restricted opportunities for contrast. This restriction may derive from the nature of the elements themselves, or from the nature of the elenents with which they stand in confisuration. \((8: 2.0)\)

Participant: Typically but not necessarily an object or person in the perceived real world concemed in some event or state. (4:1.2)

Representation. A portrayal of some event or state in the real world; an instance of extexnal logical analysis. In practice an approximation to both of these. (2:5.11 and 4:1)

Fule.
- Addition A rule, usually of encoding, which adds to an encoding sement or expansion an element for which there is neither (in the case of an encodingsegment) an input from the representation, nor (in the case of an expansion) an association. ( \(4: 2.1\) )
- Association A statement of association between elements of content and expression.
- Encoding (See under Encoding)
- Limitation (See under Limitation)

Segment. Any part of an encoding governed by a relational semene. \((4: 2.0)\)

Sememe. The minimum semantic unit of the content code. (2:4.0, 4.10)

Series.
An ordered set of morphological systems and dumny symbols. ( \(3: 1.2\) )

Surjective language. A language where the tendency is for more than one sememe or lexeme to be associate with each morsheme.

Syntactic template.
- Primary

A template which may be replaced either by
forms or by a secondary syntactic template. A string of dungy symbols representing distribution classes. ( \(3: 4.2\) )
- Secondary. A template consisting of a string of dumy symbols which may be replaced only by foms. \((3: 4.2)\)

System.
stable.

Tnstable. A systers where two or nore elenents and the sules in which they participate may not be characterised in well defined way. \((2: 2.3,2.4)\)

Terplate. A pattern consisting either of an ordered set of morphemes and durmy symbols (iforphological template) or of dumxy symbols alone (syntectic terplate) (2:4.23)

\section*{Part 2. A clossary of abbreviations used in the translation of exanples.}

Note that all of these are pre-theoretical.
\begin{tabular}{lll} 
& \multicolumn{1}{c}{ Mumber } & \multicolumn{2}{c}{ Voice } \\
s singular & act act ive \\
d dual & pass passive \\
p plural & & incoah incoahative
\end{tabular}

\section*{Aspect}
comp complete
incomp incomplete

\section*{Other terns}
hyp marker of a hypotheticel clause
iat maxker of an interrogative clause
n- \(\hat{1}\) a norphene or morpheme string having 'no-function'
neg negative
```

Other tems (continued)

```
apoc an apocopate verb form
mas a masdar or verbal nown
ap active pearticiple
pp passive participle
subj subjunctive

Part 3. A giossary of Content systoms
1 Dual systems
a. Ak The systern of aktionsart or quasi-adverbial Predicate (6:1) augments comprising:
(Dir) Indicating broadly that an event is accompanied by a certain directionality or motion away from its source
(EI) Indicating that some attribute is manifested elatively, that is in a comparative or superlative degree.
(Est) Indicates that someone estimates or considexs that some other person or thing is possessed of some attribute.
(Bvin) Indicating that some person or thing evinces some attribute, whether genuinely or feigned.
(Exten)Indicatine that an attxibute is manifested or action performed extensively, be it habitually or with a certain intensity, or to some high degree.
(Itn) Indicating that some event is iterated.
(occm) Indicating that someone is engaged by way of occupation with some activity or thing.
(Reeip) Indicating that some action is perfomed reciproca11..
(RefI) Indicating that some action is perfomed reflexively, or state is (usually estimated to be) attributable to oneself.
(Seek) Indicating that some person or thing seeks or tries to bring about some event or state.
b. Ar The system of abstract relations comprising: (8:2)
(Reason) Indicating the reason for or source of some event or state.
(I-R-0) Indicating in mespect of what some event occurs or quality is attributed. (Puxp) Indicating the purpose of some event or state.
c. Bp The system of base predicates or predicates which are (9:2) not further analysable into sememes in internal logical terms.
d. Bs The systen of base substantives or substantives which (9:1) are not further analysable into sememes in internal Logical terms.
e. Cm The syster of causal modality, related to but wider (6:2) rancing than the traditional category of "voice". Comprising:
(Causn) Indicating that some event or state is oaused or brought about.
(Dyn) Indicating that some event or state is perceived dynonically: Related to the traditional "active".
(Eff) Indicating an effect (as opposed to a cause), in other mozds a state in existence.
(E-I-S) Indicating an effect augnented by an implication of some source for that effect. Equivalent to the traditional "passive".
( \(0-\mathbb{E}\) ) Indicating an oncoming effect or the ontering into some state.
f. Dlr The system of dynanic local relations, that is, elements (8:12)
indicating motion to or from a point, whether conceived conoretely or abstractly, spatially or temporally. Comprising:
(From) Notion from a point
(To) Motion eway from the point of oxigin but neutral as to arrival at sone second point.
( mp to) Notion away from the point of origin with implication of arrival at a second point.
g. Ha The system of human animacy, comprising:
(1fale) Indicating a male person concerned in some way with an event or state, or with some object.
(Fen) Indicating a female porson concemed in sone way with an event or state, or with some object.
h. S1r The system of static local relations, conceived (8:11) spatially or temporally, concretely or abstractly. Comprising:
(Above) Indicating location above a point.
(After) Indicating temporal location after some point in time.
(At) Indicatipe spatial or terporeal looation neutrel as to precise location.
(Before) Indicating temporal location before some point in time.
(Below) Indicating spatial location below a point.
(By) Indicating spatial location adjacent to a point.
(In) Indicating spatial or temporal location in an area
(Inside) Indicating spatial location inside an object.
(Since) Indicating continual temporal location since or subsequent to some point in time.
(Upon) Indicating spatial location upon or on top of a point.
i. Su The system through which substantives are created, (7:1)
comprising:
(Indiv) Indicating sone individual instance of some event, state or object, or person or thing concerned in some event or state.
(Inst) Indicating the instrument through which some event occurs or state obtains, or the instrument used in connection with some object.
(Locus) Indicating the locus in time or space of some event, state, or set of objects.
(Place) Indicating the place where some event habitually occurs or state obtains, or where some set of objects are to be found.
(Veh) Indicating the vehicle used to perfom some action.
\(j\) Tlr The system of tertiary local relations, or local (8:13)
relations having no precise location in space.
(Ag) Indicating the asent of some action.
(Ben) Indicating the beneficiary of some action.
(Inst) Indicating the instrument of sone action.
(Pos) Indicating the possessor of sone object or attribute.

2 Adherent systens
a. As The system of aspect, comprising: (10:1)
(Comp) Indicating that an event or state is complete, Interpretable either as a translation from one state to another or as having reached the second state often, in the case of a state, with an implication of past time.
(Dux) Indicating an event or state which endures, interpretable in the fomer case as iteration and in the latter as continuing existence.
(Perf) Indicating that an event or state is complete without specific temporal implication.
(Prog) Indicating an event or dynanic state in progress.
(Trans) Indicating a translation from one state to another but without implication of iteration.
b. Dt The system of deteminacy comprising: (11:2)
(Def) Indicating a definite or particular instance of some predicate or substentive.
(Indef) Indicating an indefinite instance of some predicate or substentive.
c. Gr The system of gramatical relations, comprising: (8:3)
(Ann) Indicating a relationship of annexation between two or more substantives or predicates.
(Att) Indicating a relationship of attribution between a predicate or more complex encoding segnent and a substantive.
(0j) Indicating the object of some event or state.
(Suj) Indicating the subject of some event or state.
d. Maa A first system of modifiers of aspect, comprising: (10:2)
(for the purposes of this study)
(Wext) Indicating that sone event or state occurs next or subsequent to some other event or state.
e. Mab A second system of modifiers of aspect, comprising: (10:2)
(Displ) Indicating a displacenent either of sequence of events or states or, of a predicate marked for completive aspect, from the translative to the static interpretation.
(H-D) Indicating that sone event or state marked for durative aspect is non-definite, that is, may occur or exist, or tends to or does sometimes.
f. Mac A third system of modifiers of aspect, comprising: (10:2)
(Past) Indicating that some event or state has occurred in past time.
(Fut) Indicating that sone event or state occurs in future time.
5. Wu The system of number comprising: (11:I. 3 )
(Sing) Indicating a substantive or predicate conceived as an individual - including collectives.
(Dual) Indicating a substantive or predicate conceived as a pair.
(Plural) Indicating a substantive or predicate conceived in groups of more than two.
h. Pe (First) Indicating that self is referred to.
(11:I.3)
(Second) Indicating that the person(s) addressed is referred to.

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[^0]:    (1) See section 1 of chapter 10. The parallel is fax from exact since on the one hand our theoretical presuppositions are quite different, and on the other, Wright's account is (I believe) simply wrong.
    (2) The first bracketed material is inserted, the second appears in the text. See Chomsky, 1966, p5.

[^1]:    (1) Keeping in mind the conceptual shift from the notion "gramatical category"to that of'content' element. This is of course possible because the teras "active and "passive" contain a'semantic trace'. See 4.1 of chapter 1.
    (2) Nor should one under-estimate the restraining influence of a defective orthography on measures which in general vary only on short vowels.

[^2]:    a) enter (3ms-act-com): the-teacher (msn): the-school (fsa) "The teacher entered the school".

