

Translation of Frits Hintze, "Beitrage zur meroitischen Grammatik"

Contribution to Meroitic Grammar

[Note, here I try to keep *h* as the *h* with ) under it, and *h* as the one with the | under it. I probably did not follow this convention consistently.]

Foreword

The following examination for the most part originated in the preparation of a planned new edition of my "Structure of the 'Deskriptionsätze' in the Meroitic mortuary texts" (Hintze 1963). This new revision is desirable to me not only because of the by now not inconsiderable increase in the material but also because of the changes in interpretation of certain sentence analyses and structures. This work has however extended greatly by now the extent and the characteristics of the introduction for the new edition, and it is therefore published here as an independent work, especially since it maybe suited as a discussion of not only the special question of the Meroitic language as an individual example, but also to common methodological problems. Theoretical and methodological questions are securely of particular importance with the examination of an imperfectly known language, which Meroitic still clearly is. Therefore I have given also a quite a large amount of room, without however intending to provide an examination of language theory; to touch theoretical questions only as far as they appear to me to have importance to the direct practical purpose of this investigation. They are treated especially in the introduction (Chapter I) and in Chapter II 1.

In chapter II "The Syntactic structure of the Descriptive sentences" we will attempt, to work out the basis for a systematic study of the syntactic structures of the descriptive sentences in question and to demonstrate the application a new(?) analytical procedure (the "IC-Analysis"). This chapter is in part essentially an expanded version of a talk that I gave in October 1972 as a guest of the 2nd Allunionstagung (?) of Soviet Egyptologists in Leningrad. Section 3 of this Chapter "The Function of the so-called articles" is also the expanded new version of an article (Hintze 1977), which I read at the Round Table conference on Questions of Meroitic semantics in Paris in 1972.

In Chapter III "The Grammatical Structure and Function of the Descriptive sentences" we will make the attempt, with the examination of the syntactic analysis, to determine the Morphemes and their grammatical functions and remark on the appropriate paradigmatic relations.

In Chapter IV "The structure of the benediction verbs" we will attempt to arrive at what appears at first sight looks like an odd and seemingly completely unmotivated mess of various prefixes and suffixes that track with the verbs, to explain the apparent forms of the affixes and then also to understand their grammatical function. Section 4 of this Chapter includes the few statistical methods that are used, to determine, if and how far the individual text groups are distinctive in the use of the affixes, is quite a opposing contrast to the prior work.

Within the following examination, I have used in certain locations formulae, and I trust, that no one for this reason will let it deter them. These formulae also have the purpose, to precisely define the results of the examination and simplifying the manner of the explanation. With a pure verbal description a procedure, a rule or a structure, one can occasionally deceive oneself or a reader on uncertain points through the particular way he talks --- with a formulaic (an exact "formula" in the strict sense") it is possible but very difficult, With the list of structure forms one must be resolute in any case, on which place one puts a certain linguistic elements, and from it then their interpretation and their possible comparisons with other structures they are in a certain degree dependent on. Perhaps this is at first a struggle, with these formulae and suspicions in their use of symbols --- but one gains from these manners a clear image of the outcomes of the examination. It is perhaps appropriate here to supply the remarks of Z.S. Harris (1946,161) ".... However, the advantage which may be gained in explicitness and in comparability of morphologies, may offset the trouble of manipulating the symbols of the procedure. Furthermore, the proposed method does not involve new operations of analysis. It merely reduces to writing the techniques which every linguist uses as he works over his material. One works more efficiently when one thinks with pencil and paper."

The used formulae are in three situations: (a) algebraic formulae of the general grammar (b) structure formula of the spelling leaning on the tagmemischen and (c) “re-write rules”, which in the transformation-grammar normally have formulae for the rules. These formulae are here only used as comfortable tools, their use is not just kept because they are a completely appropriate set of procedures for the analysis of the (generative) transformation-grammar or the tagmemischen grammar, this still represents a strict application of the appropriate linguistic theory. Each symbol is explained in its (first) occurrence

In many cases there are several possible, but mutually exclusive interpretations which have been suggested, and I draw attention to where there are also quite often still unsolved questions or attempted solutions for continuing examination. It is pleasant, when some of these suggestions come together, and some of the “loose ends” are tied up. Altogether, there is still a wide field of questions for us. Borders are still by no means marked out.

A first version of the present work was sent off in February 1974 to a number of Colleges with requests for critical comments. From these have come the kind discussions by Dr. M Bierwisch, Dr N.B. Millet, Dr K H Priese, Prof R Ruzixks, Cr W Schenkel and Prof B.G. Trigger; Dr A.M. Abdalla sent in his direct discussion an example for the grammatical analysis of the Meroitic personal names. With my comments to these discussions I also changed my explanations of certain linguistic phenomena, particularly those in later times proposed in different publications; the account itself I changed only occasionally from the trial explanations, so as not to burden it with asides (and footnotes). Through these methods of published discussions, which are fundamentally provided for in the series *Meroitica*, --- already discussed in the forward to *Meroitica 2* ---, “what is of use for the selected themes of the decreed available material to be complete and for the distinctive constructions of the various approaches to the problem to be seen; is bringing the differencing interpretations of the material and so provide a foothold at the moment of the publication on the state of the current research. At the same time relieving those in related fields of having to orient themselves to the state and the results of meroitic research.”

Unfortunately the completion of this work in print was delayed for some time beyond the originally intended date. I make my warm thanks to the critics and assistants for their sympathetic patience towards the delays of the publication. I also wish to thank my wife, Dr. Ursula Hintze, who thoughtfully looked after all the phases of the following work since its inception and enriched it constantly with critical discussions.

## I. Introduction

### 1. The Phonetic interpretation of the Meroitic Script

The phonetic and morpho-phonological interpretation, that is used here on different locations of the work for the explanation of certain forms, is without exception the interpretation of the dead Meroitic writing system that I have discussed at the Conferences in Khartoum 1970 (Hintze 1974a) and Berlin 1971 (Hintze 1973a; see Trigger 1973b, 338). This interpretation of the Meroitic writing system is characterized by the following essential points:

(1) The so-called simple consonantal signs are interpreted as the consonant + vowel /a/:  
e.g. *m*=/ma/, *t*=/ta/ etc. The sign *š* is interpreted as /sa/.

(2) A few signs of the Meroitic alphabet stand for the constant + /e/ and one sign is the consonant + /o/. There are:

*ñ*=/ne/

*s*=/se/

*te*=/te/

*tê*=/to/

(3) A consonantal sign, that is followed by the vowel sign *i* or *o*, is read as /Ki/ or /Ko/. Whether the dipthong is meant (/Kai/ or /Kao/) is not known to us. The vowel sign *o* (*ê*) is phonetically read as [u]; the transliteration with *o* and the phonetic notation with /o/ have only traditional and practical basis.

(4) The vowel sign *e* also stands for the zero-vowel after a constant; *Ke* can be both /Ke/ and /K/.

(5) Double constants do not appear in the script.

To distinguish between the transliteration and the phonetic interpretation (and a given phonological reconstruction), the following scripts are used:

Transliteration : *cursive*

Phonetic interpretation: / /;

Phonological reconstruction [ ].

therefore e.g. *ant* /anata/ or /annata/, [annáta].

I view it as a welcome confirmation of these interpretations that their consistent use in the present examination of the morpho-phonological interpretation of the grammatical forms yields in most cases contradiction-free and understandable outcomes; for here questions and special cases are naturally examined with the arguments for the phonetic reading of the meroitic script that by no means already included these cases. These facts in any case considerably increase the probability for the correctness of my proposal for the interpretation of the Meroitic writing system .

## 2. The Meroitic mortuary texts.

### 2.1. Introduction

So far in the grammatical analysis of the Meroitic language, the offering tablets and Stela inscribed with mortuary texts have played a special role. It is above all these texts, that made possible Griffith's important and still authoritative understanding of the grammatical construction of Meroitic. Since that time a number of additional works have been published, that are principally based on these texts as well and that contribute to augmenting our knowledge of the grammatical and syntactic structures of the language (Hintze 1963, Heyler 1967, Trigger 1968, Millet and Heylet 1969, Priese 1971). Only recently have a few attempts been made to use additional linguistic material of other texts for grammatical analysis, such as the personal names (Adballa 1973 n.a.) or to interpret a longer "historical" text (Millet 1973), or to understand the general form of the temporal system of the Meroitic verbs (Schenkel 1972).

For the current examination I have used exclusively mortuary texts. These texts deliver to us a very great number of mutually comparable sentences, and therefore they provide an extremely useful basis for a grammatical-syntactic analysis. "The fundamental principle of the analysis of a given speech-event is the comparison with another given speech-event. At the same time one must determine how the components of the two speech-events correspond or differ. When a sufficient number of these are confronted at the same time a speech-event may be broken down into all the component elements, so that one comprehends a certain speech-event." (Bierwisch 1961, 42f.)

### 2.2 Correct and Incorrect Forms

First, I must call attention to a continual particular difficulty with the analysis of meroitic texts, we are resigned, due to our only very defective understanding of this language and due to the continuing struggle with its material extent, that for the time being one can scarcely or only in exceptionally rare cases distinguish between "correct" and "incorrect" forms. When we suppose in a special case, a grammatical or syntactic rule can be set up, we scarcely have the ability, with a single possible deviation from this rule to decide if our rule is not applicable, if diachronic or local (dialectic) factors are responsible for this deviation, or if it is indicating a facultative or stylistic variant or only a spelling mistake (with we can easily expect exist in the inscriptions).

### 2.3 Prerequisites for a syntactic description

In spite of these difficulties it is still possible, at least for the so-called "descriptive sentences" of the mortuary texts to work towards a syntactic description. The prerequisites for this are given through the following facts:

a) The Meroitic script is readable, i.e. it is readily transcribed into the Latin characters. Also a phonetic analysis and interpretation of this script is known by and large (see II), through which the listing of morpho-phonological rules is possible.

b) That in the Meroitic script in principle one can carry out consistent word-division, easing the marking off of complexes within the sentences and with it the Grammatical-syntactic analysis. Those units marked off through the word-division each include a lexeme *and* the grammatical-syntactic morpheme (Prefix and Suffix).

c) Regularly recurring "sentence endings" make possible the marking off of syntactically complete complexes; it functions as a stop signal and consequently delivers a termination for the syntactic analysis in the sequence of words. These complexes are here called "sentences". These Terminus shall initially only mean that such a complex can be isolated from its context and retains its syntactic unity. This corresponds to the definition that Bloomfield (1926) have proposed for the termination of a "sentence": "A sentence is a construction which, in the given utterance is not part of any larger construction". Approximately in the same sense is used by Heyler, Millet and Trigger for the term "stiche" or "phrase".

d) The mortuary texts have a stereotyped structure, with several sections which following Griffith are named as follows:

I: Invocation: Calling to the gods Isis and Osiris

II Nomination: Giving the Names of the deceased (A), his Mother (B) and Father (C).

III. Description: titles, further relationships and other qualities of the deceased:

IV. Benediction: The offering formulae, A-J for private people, C', K < L for Kings and those of their families.

These sections are formally distinguished from each other through their sentence structure, but II(B) and II(C) have the same structure as III and therefore here are taken into account in this investigation of the descriptive sentences. (Griffith had anyway combined sections II and III as the "description")

e) In a general sense, the "semantic horizon" of the descriptive sentences, i.e. the real divisions, as they relate to the "Text" (e.g. the sum of all descriptive sentences), is considerably similar to ours: it concerns statements on relationships, Titles, functions etc. of the deceased, hence it contains statements of facts in a syntactic form, which is here called "nominal sentence". --The relatively rare descriptive sentences, that appear to include statements of other types and those that perhaps report on some events, particularly those which include numerous details, remain beyond the scope of this work.

### 3. The role of Semantics

#### 3.1 "Text" and Decipherment model

Consequently we have many favorable prerequisites for the creation of a syntactic model (for these language fragments). While perhaps yielding a purely heuristic decipherment model (see also the summary by Apresjan 1971, 120ff.). But when such a decipherment model is accepted, only the "text" is known; on the other hand the following are unknown (a) the language of the texts, its history and its genetic relationships, its actual segments, the referents of the text, and the translation of the texts into a known language; furthermore (b) the elementary units: letters, sounds, phonemes, the limits of the morphemes, words, and sentences, and finally (c) the distinction between the lexical and the grammatical morpheme, the syntactically relevant classes of morpheme: Nouns, Verbs etc.

While of those points under (a) mentioned above, only the "referents" are known to use to a certain extent, the prerequisites under (b) mentioned above are relatively well known to us and partially so are the things under (c) mentioned above. Therefore we can indeed make the attempt, with some prospect of success, to work out a syntactic analysis model, this "inputs" a text (here the quantity of descriptive sentences) and "outputs" from any sentence a description of the syntactic structure. An analysis model is here understood as: a finite number for rules, with whose aid a unlimited number of sentences (of the same text form) can be analyzed.

### 3.2 Semantic restrictions

The above mentioned fact, that the referents, that which the descriptive sentences refer to, are known, should above all not be overstated, for the semantics of Meroitic are almost unknown to us. We know really only by chance the meaning of very few words with some certainty. When we anyway carry out a grammatical examination of Meroitic, we can therefore not work from the meaning of the individual words. Consequently one resigns oneself to the question: if a semantic language analysis is possible at all, which method should be used here and how much we can learn with these methods. However, I can here discuss the wide ramifications and well discussed problem of the role of semantics in Grammatical analysis only as far as when it has direct implications for the present investigation.

### 3.3 Semantics and Grammar

It is natural, and no linguist would deny, that the language in its whole is not separable from meaning: see e.g. Bloomfield (1943): "In language, forms can not be separated from their meaning. It would be uninteresting and perhaps not very profitable to study the mere sounds of a language without any consideration of meaning." -- By no means is it also a concern that the investigation of semantics, while out of the linguistic discipline, should be respected; see for this also Chomsky (1957a, 285): "I think there is ample justification for rejecting any appeal to meaning in the study of linguistic form. But it is necessary to make a clear distinction between the appeal to meaning and the study of meaning. While the first has been a constant source of confusion, the second is clearly an integral part of a full-scale description of language." The actual and essential question, around that is here given, is rather, how much and in what amount the semantics is relevant to the grammar of a language and at which part of the analysis it comes into play.

Here is first the simple fact that is not to be overlooked, that the indications of a sentence as "grammatically correct" does not have to do immediately with the meaning of the words, but on how the sentences are constructed, and that this depends only on their combination, and insofar that in these combinations the rules of the grammar must be kept precisely. The (lexical) word-meaning is not at all a part of a grammatical rule. This often appears in the discussions of examples of the "senseless" or "nonsense" sentences. Such sentences like "The square has drunk the hypotenuse" or "Colorless green thoughts sleep furiously." are without doubt sentences, they are grammatically correct, i.e. constructed in accordance with the rule of German grammar. Above all one obtains from poetry remarkable examples for grammatically correct but semantically at least unusual constructions, like e.g. "Auf bleierne Platten die wuchernden Stirnen gelotet" (J.R. Becher) or "die sandturme sind mit watterpuppen verstopft: (H. Arp). But also from Carnap one gets the sentence "Piroten karulieren elatisch", in which a root is unknown in the German language, is conjugated after the rules of German grammar and thus perfectly grammatically correct, but also senseless. In contrast the sentence "Die Mann schreiben das Briefe" while grammatically wrong, is still meaningful, being quite understandable and sensible.

How rarely the word's meaning has much to do with the grammar, is also shown very beautifully in an example used by Gleason (1955, 126) "Die Gametangien entwickelnden Zweige unterscheiden sich bei den thallosen Jungermanien wenig von den sterilen". This sentence can be analysed, its structure is recognizable and is describable, and can be proved to be grammatically correct (corresponds to the rules of German grammar), but as for its actual meaning, of its contents only the botanical or biological names are understandable. One can naturally draw on a special lexicon to determine what "Gametangien" or "Jungermanien" are and what "thallos" means, but that matters not in the least for one securing a grammatical analysis of the sentences.

### 3.4 Grammaticality

The grammatical correctness of a sentence is obviously not dependent on the (lexical) meaning of its constituent words, but only from their (grammatical) combinations. While the choice of the words yields a certain freedom, their grammatical combinations are constrained by strictly determined rules. "Certain freedom" means here, that with the choice of the words one must pay attention to whether they belong to a certain (semantic) class that is grammatically relevant or not. In a sentence like "The (male) .... wrote a

brief", one can insert in the empty position words like "Man", "boy", "uncle", and also "table", "stool", -- which are grammatically correct (and e.g. "table" is conceivable after all in a fairy tale); but one can not insert words like "woman", "aunt" (or also lamp"), -- but not because of its "meaning", but since in German genus is relevant. And how much a grammatical meaning is relevant, depends exclusively on the language involved, more precisely: on its grammar. The grammaticality of a meaning-part is always (and only) formally recognized, i.e. it only exists, when a formal term has been found in the relevant language. At the same time one is not allowed to understand "formal" too narrowly, both morphological and also syntactic features (position in a syntagma) or supersegmental features (e.g. intonation) can as well be important to it, as well as the possibility or impossibility of definite transformations. We can thereby formally distinguish a non-grammatical meaning from a grammatical meaning (see also Meljucuk 1960). Thus the grammatical meaning usually have a more or less abstract meaning, like "Noun", "Number", "actor", "agent", "possessive", "transitive", or also the meaning of a construction, like "genitive" etc. Bos (1971, 190) names these meaning-parts in connection with De Groot "a common category or grammatical meaning" and further says: "... the entire vocabulary of a language can be classified into sets of words or of stem morphemes having certain syntactical features (uses) in common as far as these depend on the stem morphemes and, in the case of inflection, certain morphological features; the units belonging to such a set appear to have a common category or grammatical aspect of meaning, which is functionally related to these features."

### 3.5 Lexical and grammatical morpheme

Before I say anything about the technique of the grammatical analysis, I must still make out the distinction between the lexical and grammatical morpheme. Occasionally the opinion is advocated that these distinctions, in the framework of the pure taxonomic grammar, are unnecessary or even unjustified, and that the morphemes of a language, by analogy to the phonemic inventory can be represented with a uniform morphological inventory. I believe however, that this distinction is not only possible but also necessary. I make use of the expressions "lexical morpheme" (LM) and "grammatical morpheme" (GM) without explicitly defining them -- that must occur in the framework of a general grammatical theory (see the definitions of "Lexeme" and "Grammeme" in Zierer 1965). The following, surely not exhaustive, listing of distinctions between these two morpheme categories shall but serve to illustrate what are associated with these two expressions:

- (a) The number of LM is very great, it is not definitively set.
- (a') The number of GM is very much smaller than the LM, it is in some cases precisely set (Isacenko, Ruzicka 1966).
  
- (b) The meaning-matrix of LM can be very extensive, its extent is not precisely set.
- (b') The meaning-matrix of GM is less extensive, its extent is set, for it is exactly through the defined number of the opposites, that the GM appear (Isacenko, Ruzicka 1966).
  
- (c) The LM have in a text a small individual frequency and an irregular distribution;
- (c') the GM have in a text a large individual frequency with a regular distribution; the frequent morpheme is always a GM (Juilland 1961; Suchotin 1963), e.g. *-lo* in the Meroitic descriptive sentences.
  
- (d) The classes of the LM have a large number of elements, from these some are associated with a small number of elements of the classes of GM.
- (d') The classes of GM have a small number of elements, from these some are associated with a large number of elements of the classes of LM. (Knorozow, from Apresjan 1971, 130)
  
- (e) The LM are (mostly) "free forms" (in the sense of Bloomfield), that can be found alone
- (e') The GM are (mostly) "bound forms", that are not found alone, but only can be found in combination with a LM (e.g. *-leb* in Meroitic)

(f) The substitution of the LM within a construction (a syntax) does not change the grammaticality of the construction, when the proper substitution class is taken into consideration.

(f') The substitution of the GM within a construction changes its grammatical content or makes it ungrammatical.

In the following investigation the classes of LM are indicated meta-linguistically with capital letters (e.g. B N V L). while the GM are written out object-linguistically.

#### 4. Methods of grammatical analysis

##### 4.1. Introduction

Generally one can say that with the investigation of Meroitic three distinct starting points and objectives are possible, and in each distinct methods are required:

(1) Investigation of the text for its possible contents, with the aim of an immediate translation of those passages, which yield a somewhat obvious interpretation; one can call this the "philological method"

(2) Comparisons with another language, for which a genetic connection with Meroitic is suspected (e.g. in one view with "Hamitic", or Nubian, or "East-Sudanic"), in this way the meaning of several words or word-stems can be obtained or specific grammatical constructions can be explained, here this is given as the "comparative method".

(3) Investigation of the distribution of the linguistic elements and their substitution sets and thereby finding the syntactic and (as far as possible) also paradigmatic structure of the language: here this is taken as a "structural-analysis method"

These three methods naturally are by no means mutually exclusive, and it is the importance that one ascribes them that determines which of the three methods is taken as the foundation. I lean in this case towards giving the structural-analysis method absolute precedence. For, as said previously, that the texts of the language has none of the other prerequisites. When a sufficient quantity of comparable structures are available (like, for example, the descriptive sentences are), one can work to obtain a segmentation of the syntax into its relevant elements, to identify them and finally to realize their syntactic structure.

This makes possible the realization of a series of insights into the grammatical structure of Meroitic. Such an initial investigation creates the prerequisites that those methods named under (1) and (2) above can be turned to with some prospect of success.

The application of Method (2) can only be successful when a genetic connection exists between the compared language and Meroitic. Yet any such connection has in no case been really persuasively presented. Occasionally comparisons are not proven at all -- even when sometimes they appear obviously correct, there is always the possibility that they could have arisen in the framework as an accidental coincidence. It is at best a collection of raw material, this is a true evaluation of the comparative method.

To a certain extent this is similarly valid also for Method (1). Many translations are interesting and in special cases often also absolutely reasonable suppositions-- but the risk still exists that they are misleading us, because it can fake a secure understanding of Meroitic, even if it is really not available. However this method can be an important adjunct to the structural analysis method, for taking into consideration the philological context is absolutely necessary to determine possible or clear cases in a text of a precise "real-part". Exactly for this reason the descriptive sentences again are a good basis for the attempt, in the framework of the structural-analysis method information on the grammatical function of the precise linguistic elements is obtained. Naturally it must be our final aim, to understand the meaning of the Meroitic texts as far as possible, but this aim is in my opinion cannot be attacked head-on immediately. That the structural-analysis method "will not help greatly in understanding the meaning of Meroitic" (Haycock 1971, 308), is proper (this is also not the immediate aim), but it is in any case suited to give us insight into the grammatical-syntactic structure of Meroitic and consequently to prepare the ground for the use of the philological and comparative methods.

Generally there exists a considerable agreement about it, that the meaning can not be taken as the starting point for the grammatical analysis. So says e.g. Bloomfield (1943, 172): "... It is a serious mistake to try to

use this meaning (or any meaning) rather than formal features, as a starting point for linguistic discussion”, and Chomsky (1963,101) as well “that meaning will be relatively useless as a basis for grammatical discussion” (stress mine). While the starting point for the grammatical analysis is exclusively the form, that is to observe formal characteristics and with it grammatical function; but it is questionable how far this analysis can go, without using semantics at least as auxiliary criteria.

This analysis can be distinguished into the following varying procedures and steps: segmentation, identification, forming of the substitution classes and the grammatical interpretation of the constructions.

#### 4.2 Segmentation

With segmentation various methods of distribution analysis can be used, which essentially are based on the observation of recurring and exchanging elements. But with all methods criteria are necessary to eliminate the inadmissible--- i.e. false--- segmentations. Such an inadmissible segmentation is the decomposition of *chair: chest* into the elements *ch-*, *-air*, *-est*; one can even motivate this decomposition semantically: *ch-* “wooden object”, *-air* “something to rest on”, *-est* “object for storing”. Greenberg (1957, 19ff), from whom I borrowed this example, sets the basis for the first, Quadruple-Test. “A square exists when there are four expressions in a language which take the form AC BC AD BD” So from e.g. the Quadruple *eating:walking:eats:walks* yields A=*eat-*, B=*walk-* C=*-ing* D=*-s*. However such a Quadruple for *chair, chest* can be found: *chair:pair::chest:pest*. Therefore leads Greenberg to still another test, that uses the meaning: “A test of correspondance of meaning is applied to avoid such squares as *hammer:ham::badger:badge*” But this test has little use for Meroitic, as does the “Formalization” that Greenberg considers: “We can formalize the semantic test by a somewhat pedantic translation procedure. If some other language can be found into which the translation of our four items likewise provides a square, we have a result which can hardly be accidental and may be consider evidence for semantic correspondances.” But exact this is what we are missing for Meroitic.

Harris (1951, 158) has for his asemantic analysis looked at morpheme succession in a certain “surrounding” X : here combinations from as few as three sorts are necessary: AB/X, AD/X and CD/X (/X “in the context X”), from AB/X: AD/X the morphemes B and D and from AD/X and CD/X the morphemes A and C can be sorted out. But even with this method false segmentations are possible, see for example (from statements about a bird) *it is sitting on the chair: .... on the chest:.... on the nest*, through which can arise: /X=*it is sitting on the...* A=*ch-*, B=*-air* C=*n-* D=*-est*.

Both methods (with their additional refinements, the account of which I omit here) are naturally important aids for the analysis. They easily make possible the following segmentations: *antli:pqrli::antleb:pqrleb --> ant-,pqr-, -li, -leb* (but not yet *-l-i, -l-eb*) or *yetmdelo:yetmdebselo:yetmdeqebeslo --> yetme-, -qe-, -bes-, -lo* (and when *yetmdeqelo* does not occur, so it appears also that *-qe-* is bound on *-bes-* --it is then, that *yetmdeqelo* is not proved only “accidentally” in our test corpus). Their strict use offers also no basis for analysis like with *mde: mde-k: mde-k-r; m-de:nk-de; ds-ke:kt-kt:are-ke:am-o-ke:belol-o-ke:širemr-o-ke*, although naturally in several cases *-ke* or *-o-ke* can also be suffixes. But without the possible use of stricter methods, we are in danger of carrying out in the end an analysis of Meroitic words in terms of Phonemes (that is syllables) instead of morphemes; we can then take apart (the place name) *Nmlo* as *n-m-l-o* (from *n-pte:n-lote; m-lo; m-he; -l-o:-l-i*)

#### 4.3. The substitution classes

Therefore the next step for the (at first only provisional) segmentation must exist, which is to construct substitution classes. This not only takes the “context” into consideration, but also the “syntactic equivalence” and with it the syntactic level, from the analyses that follows (see also II 4.7.1). Generally speaking this means the substitution criteria is that when two terms are inserted in the empty slot of a construction and the syntactic position of this construction is not altered and it remains grammatically correct, then these two terms are elements of a substitution class (see Revzin 1962, 66):

$$A_1 x_i A_2 = \text{synt } A_1 x_j A_2 \text{ ---> } x_i x_j \text{ E X.}$$

For example, in the empty slot of the construction *ant* ( )-s sometimes *mni*, *mnp* etc. are inserted, therefore these belong to a substitution class.

The construction of the substitution classes is an important complement to the more mechanical procedure of segmentation and makes possible multiple corrections or confirmations to the provisional segmentations.

#### 4.4 The identification of morphemes

The syntactic equivalence is also a prerequisite for the identification of that which the segmentation found as a morpheme. When a morpheme sequence  $ABC_1$  can be decomposed into A, B and  $C_1$  and a morpheme sequence  $DC_2$  can be decomposed into D and  $C_2$  (wherein  $C_1$  and  $C_2$  are identical), it follows from this that not only are  $C_1$  and  $C_2$  identical, in addition it is the necessary evidence that AB and D are syntactically equivalent, i.e. that AB and D yield a paradigm referring to a construction XC. The evidence of the syntactic equivalence is clarified with help of the syntactic substitution classes. So e.g. *qebes:qes* can be segmented into *qe*, *be*, *s* but we can not yet identify this morpheme -s with the morpheme -s of the construction *ant Mni-s*, therefore *qe-(be-)* and *ant Mni-* are not syntactically equivalent. We must in this case until further notice distinguish a morpheme  $-s_1$  from a morpheme  $-s_2$ .

#### 4.5 The Grammatical Interpretation

The procedures of the analysis considered thus far therefore gives techniques where the principle has not had the meaning as the ultimate basis and where semantics has a subordinate role, if any, and in spite of this it yields results. The situation with the grammatical interpretation is yet probably different (see also the reference Hintz 1962, 228f). A clearly asemantic segmentation, upon the consideration of the substitution class, can then result e.g. in the realization of the existence of a construction  $K_1 = A+B-s$  and establish its syntactic equivalence with a construction  $K_2 = C+D-li-s$  and naturally also list the elements of the substitution class as A B C and D. But neither the grammatical categories of the elements, their "common category or grammatical meaning", nor the grammatical meaning of the construction are forthcoming. Here the boundary of an absolutely asemantic analysis is reached in any case. To overcome this, known semantic information is necessary. Now it is by no means necessary to know or take into consideration the exact (lexical) meaning of all elements of these constructions; the categories' meaning is perfectly sufficient. When Griffith for example had recognized that in the construction *ant mni-s*, *ant* exists as the (egyptian) word for "priest" and that *mni* is 'Amon', he clearly established the meaning of the construction  $K_1 = A+B-s$  as the genitive construction, and in addition that A and B belong to the class "Nomen". Here by no means is it the specific meaning that is useful, but only the part of the meaning that is relevant to the grammaticality and for the construction (see also II 6). So we can see in the construction *beloloke amni-s*, which appears semantically equivalent to the construction *ant mni-s*, is a genitive construction as well and in *beloloke* a priestly title is expected, though we do not know the exact (lexical) meaning of *beloloke* and it cannot be "translated".

As a result of the segmentation we obtain without fundamental difficulty the lexical and the grammatical morphemes as with the lexical morpheme also syntactically relevant classes (like N, V, Q etc). But we can, owing to the lack of sufficient semantic information so far, categorically relate the grammatical morpheme to the syntactically relevant classes only in exceptional cases (like those with -s [Gen], -leb [Plur] etc. are possible). Already therefore it is necessary to use hybrid notation for Meroitic

#### 4.6 Construction of a grammar

The particular conditions of Meroitic force us in any case to a principally asemantic analysis, with both the possibilities and also the limits of the used method apparent. The result can at best only be a construction of a grammar, that relates exclusively to the surface structure. In the course of the analytic procedure can the segmentation of the elements, their distribution classes and the construction are determined. But to recognize the meaning of the construction we require semantic information in the sense suggested above. In the favorable cases, on the other hand, semantic information can be gained when the analysis is carried out, as far as grammaticality and formality are known in this language. We can also still go a step further and through the consideration of the analysis resulting in a hierarchy of the syntax (see also Chapter III) reach

for a fragment of the “grammar of the sentence structure”, precisely --- as we will still see-- to a “sentence-structure-grammar for the basis on a constructive analysis” (PSG/IC) . Here arises an interpretation of the “grammar” , with the (morpho)-phonology + syntax + grammatical semantics constituting the grammar, but on the other hand the Lexicon and lexical semantics do not belong to the grammar (however they do naturally belong to the “language”!)

## II The syntactic Structure of the Descriptive Sentences

### 1. The IC-analysis

#### 1.1. Prerequisites

With the following attempt to investigate the syntactic structure of the descriptive sentences, I use on the whole the method of “immediate constituents” (IC-Analysis) derived from Bloomfield (1933), Wells (1947), Pittman (1948). This method is based on the following considerations (see Apresjan 1971, 163):

a) The sentence is not just a linear sequence of equally important morphemes; rather the morphemes that appear in the sentence have a distinct syntactic range. It therefore gives a syntactic hierarchy; the description of this hierarchy is equivalent to the sentence structure.

b) As the essence of the syntactic structure, only the relation of subordination is assumed. This is a binary relation. Therefore any syntactic element of this type consists of two parts, its “immediate constituents” (IC=‘immediate constituents’), that stand in the relation of the subordination.

c) Any syntactic element is equivalent to its kernel with respect to its syntactic range. When a syntactic element AB can be replaced by A (AB --> A) or A can be extended to AB (A --> AB), without thereby affecting the grammaticality of the sentence, so proving A and AB to be equivalent with respect to their syntactic range. We then name A the “central” element” (or the “kernel”) and B the “lateral element” (or the “satellite”) of the syntactic element AB (see Pittman 1948)

d) There are two cases in which the relation of subordination does not exist: coordination and apposition. d’) With coordination, it works around a conjunction (an *and* construction). In these cases through the coordination, combinations (A+B) are constructed from units with the same syntactic range and a block is built within the syntactic element, i.e. within the sentence. From the standpoint of the formal sentence analysis a coordinated term is a uniform element.

d’’) With the apposition sets up an equivalent relationship. From the standpoint of the formal sentence analysis the apposition (A, B) is replaceable by any of its elements ( A or B).

#### 1.2 Techniques

With the IC-Analysis of sentences are two possible techniques in which the methods are different but in the results they are identical:

a) One can consider the sentence (the chain of morphemes) as a syntactic element and first take it apart into its two immediate constituents. These derived constituents of the sentence then are taken as the starting point of the IC-analysis and in turn they are taken apart into their own immediate constituents. This procedure is continued until, with a considerable analysis, only the sentence-relevant morphemes are left. If one stops this method then and only then, then one obtains the result of the IC-analysis of the sentence. The individual steps then present an illustration of the hierarchy of the constituents and the syntactic structure of the sentence.

With this dichotomous procedure -- as Chatman (1955) has shown -- the respective divisions are where the parts of the morpheme sequence show greatest independence from each other , i.e. where the probability for the appearance of a specific combination from elements is at its least. So e.g. with the three possible divisions in *ant*/<sub>1</sub> /*mni*/<sub>2</sub> /*s*/<sub>3</sub> /*lo* the division /<sub>3</sub>/ is carried out first, which corresponds to the division of the lowest combination probability: the probability that *-lo* stands after *ant mni-s* is very small. Next the

division /<sub>1</sub> / is carried out: the probability that *ant* directly follows *nni-s* is considerably less than the probability that *ant nni-* follows the morpheme *-s*.

b) The other procedure -- which I use in the following examination-- begins not with the division of the sentence into its immediate constituents, but instead being by adding each final syntactic element to its kernel (e.g. II 4.3.; see Apresjan 1971, 166-9). This reduction then continues with aid from -- applied in a specific order -- reduction rules until the chain of syntactic elements finally leads back (reduces) to a terminal symbol "S". "S" means in this cases "grammatically and semantically correct descriptive sentence". This here also the order of the division (and the practical representation) finally amounts to a description the structured of the analyzed sentence. For the representation of these sentence structures I use a graph (a "tree"). This graph is used for the commonly used clamp-writing and avoids specific difficulties that can appear with the clamp-writing (e.g. the discontinuation morpheme, which can be given by a "non-projective" graph, but is not possible to represent in the clamp-writing). Particularly, I will discuss the reduction rules further below in section 4 of this chapter.

## 2. Notation

### 2.1. Relating to syntactic classes

For the implementation of this procedure it is first necessary that the individual elements of the sentence are related to their relevant syntactic class. This relations is in large part heuristics, for "experience", that in the end, through the comparison of the several sentences with each other and with it yields the distribution or their elements; therefore at first the trial-and-error method is used for these relationships.

These syntactically relevant classes must only be indicated with suitable symbols. These symbols are only used for the further operations.

#### 2.1.1 The syntactic classes

The number of relevant classes for the descriptive sentences -- as far as we can so far understand them -- works out to be small. First two main classes are to be distinguished:

- N: a "nominative" term, i.e. any term that is not V, P, L or G;
- V: a term, that appears at the end of the chain and is not a N. An attempt of the grammatical interpretation of the V-Term is discussed in chapter III. Proclitic elements on V (Prefix) are here not taken into consideration (but see Chapter IV); the syntactic relevance of the prefixes still must be precisely examined.

Until further notice it also appears to be wise to retain a symbol N/V:

- N/V: usually a term where N appears in the position of V: or a term, whose membership to N or V is fragile and that stands in the position of V.

Furthermore these syntactic relevant classes are distinguished:

- Q: a term sometimes also used with N, that encapsulates an N qualifier (e.g. that has the function of an adjective)
- L: a place-label or place-name (I have previously used the symbol "O"; however I stop now in favor of the Symbol L, that also is used in REM, for it is suitable to avoid confusion with 0=Null)
- P: Personal Name
- G: A grammatical morpheme, that appears not as a Suffix attached to a lexical morpheme, but instead as a independent word. (This symbol I have taken up for the model from the new REM)  
Distinct G-Elements in a sentence are denoted G<sub>1</sub> G<sub>2</sub> ....

Usually indices are only used in exceptional cases to individualize symbols within a construction

The symbols used here are first understood as exclusively syntactic (a partly semantic interpretation is attempted in section II.6) This is justifiable because for the analysis a sentence through this reduction procedure the syntactic role of an element depends only on its membership to the above mentioned classes, and not on its additional semantic content.

### 2.1.2 Concordance with the REM symbols

The presently used system of symbols corresponding to the elements of the sentence is by and large the same as what I have applied already in my prior work on the structure of the descriptive sentences (Hintze 1963), but it differs somewhat from that used in the REM. In REM appears what in the “analyse du texte” are the words subscripted symbols “egalement leur sens et parfois leur valeur grammaticale”. Presently in REM a finer semantic grouping is carried out, through which e.g. for the syntactic analysis they take apart uniform constituent classes. -- Those of my used symbols correspond to those used in the REM as follows (see Heyler et. al. 1970 b 3):

N	=C.	(nom de chose, e.g. <i>ato</i> ‘eau’)
	=D.	(nom de divinite, e.g. <i>amni</i> ‘Amon’); this symbol corresponds to one I use occasionally (e.g. in II.3) N <sup>d</sup> ; but in II.4 below we shall see that the reduction rules are so formulaic, that here this symbol is not necessary,
	=E	(nom d’etre humain, e.g. <i>abr</i> ‘homme’);
	=I	(nom abstract, e.g. <i>tewisti</i> ‘procyneme’)
	=N	(nom ne pouvant etre defini ni par A, ni par C, ni par D, ni par E, ni par G, ni par I, etc.)
V	=V	(verbe, c’est a dire terme, en principe, a enclise et proclise et de fin de proposition);
	=W	(term de nature A E N situe en fin de stiche regressif et precede de es complements); One can at first glance take this definition as that V corresponds to my V and W with my N/V, but actually in REM my V would appear as the term where W appears;
P	=P	(nom propre de personne)
L	=L	(nom de lieu, e.g. <i>atiye</i> ‘Sedeinga’)
Q	=A	(adjective en position d’epithete, e.g. <i>lh</i> ‘grand’)
G	=G	(terme grammaticale, apparemment non enclitique)

### 2.2. Hybrid Notation

The suffixes, e.g. such grammatical endings which are grammatically relevant, are written out and connected to the syntactic symbol through “-”, e.g. N-s, N-li-s, L-te-l. The Symbol (with its attached suffixes) are joined to a chain through “+”. It means therefore

- : syntactically relevant morpheme-limits (Morpheme-limits of a “sub-sentence level” are not taken into consideration, so e.g. *qorën* appears as N and not as N-*n̄*;
- + : word-limit; “+” here also corresponds to the : of the meroitic script.

This hybrid notation, with which the lexical morpheme are written with metalinguistic symbols and the (syntactically relevant) grammatical morpheme are written in the object-language, is not only for our purposes simplifying and clarifying, it also has the advantage that it makes the distinction between the lexical and grammatical morpheme especially dramatic. In a sentence structure, like e.g.

N+N-li-s+N+N-s+P+V-lo

N, P and V are to a certain extent variable, their occupation by different elements of their respective substitution classes does not alter the grammaticality of this structure, whereas -li-s, -s and -lo are constant, their alteration affects the structure and the grammaticality considerably.

Besides, a system of symbols stands for not only the membership of the elements of a specific structure to a word-class, but also at the same time the membership of these elements to a grammatical category, which is not possible for Meroitic; for that requires knowledge from the function of the grammatical form-class; which we have for only a few affixes. A symbolization of *ant Mni-s* as N+N<sub>g</sub> (N<sub>g</sub> Nomen in Genitive) are indeed possible, but this possibility is not available for many other suffixes and prefixes,

especially with the verbs. So here e.g. a latin sentence like *pater amat filium*, that with the Method of Harris can be written as  $N_n+V+N_a$ , must be denoted with  $N+V-t+N-um$ .

### 3 The function of the so-called articles

#### 3.1. The genitive construction

As has been emphasized (Heyler 1970a: 43, Hintze 1977), Meroitic gives two methods of giving the Genitive construction in the Nominal Group ( $N_1+N_2$ ), the use of which depends on the sematic category of the Rektum ( $N_i$ ):

- a) For a diety name, as well as the words *qore* “King” and *ktke* “Kandake” ( $N^d$ ) the suffix *-s* is attached,
- b) For all other nominals ( $N^d$ ), the (combination) suffix *-li-s* is attached.

We can represent these two constructions in following formula:

$$(1) \quad \text{Gen} (N_1, N_2) = \begin{cases} N_1 + N_2^d-s & (a) \\ N_1 + N_2^d-li-s & (b) \end{cases}$$

A detailed discussion of these genitive constructions is already given in another work (Hintze 1977), and I can therefore do without getting into the particulars here.

In front of the ending *-s* the writing with *qore* : *qori-s* shows a vowel shift ( $e : i$ ), that with *ktke* : *ktke-s* or *Mnpte* : *Mnpte-s* does not happen and also with *Mni* : *Mni-s* or *Woš* : *Woš-s* there is no vowel shift observed. When one takes into consideration, that the *e* of the Meroitic script stands not only for /e/ but also /0/, then this allows these behaviors to be explained as follows: for a word-final vowel, add the ending *-s*, for a word-final consonant, however, use the ending *-is*. This rule can be expressed simply in the following manner: The genitive ending *-is/* loses the vowel /i/ when the preceding noun ends in a vowel, or as a morphogramatical rule:

$$(2) \quad N + /is/ = \begin{cases} N_c + /is/ \\ N_v + /s/ \\ /i/ \rightarrow /0/ \text{ for the vowel} \end{cases}$$

( $N_c$  = Noun with consonantal ending  
 $N_v$  = Noun with vowel ending)

According to this interpretation *qore* is /qor/, but *ktke* is /katake/ and the locative ending *-te* is /te/. That the genitive ending *-(i)s* is understood as *-(i)s/*, is already shown elsewhere (Hintze 1973a, 330).

#### 3.2 The definite article

The formal distinction between the genitive constructions (1a) and (1b) with regards to the absense and the exsistence, respectively, of the so-called articles *-li*, generates the question of its syntactic use and the meaning of these formations. Heyler (1967) has written a long treatise on “the Meroitic Article”, in which there is a breif survey on the views expressed thus far on the meaning of the article, and the totality of the different forms of the article (*-l*, *-le*, *-li*, *-lw*, *-lo*) and their usage is investigated. A clear result cannot be reached still: “L’analyse ddes fonctions logiques des stiches regressifs a pu donner par moments l’impression qu’il y aurait quelque correspondance entre les variations de forme de l’article et celles de la fonction des hemistiches ‘determines’: mais, ici, les donnees sont trop reduites pour permettre aucune hypothese consistante. Les faits linguistiques reels qu’elles representent sans doute ne peuvent encore etre determines a notre avis” (Heyler 1967, 122). -- On the question of the function of the arctcle vs. the article-sign, Heyler does not go further in his work.

The opinion that *-l* is the definite article in the sense of a definition, was first expressed by Meinhof, and since then has had general acceptance (see the Review by Heyler 1967, 106-7). In favor of this interpretation of the *-l* as a sign of definition appears the fact for speech, that personal names and deity names have no article, since these are -- as in various languages where a distinction between “definite” and “indefinite” is made at all -- seen as definite.

It widely appears for speech, that in a syntax N-*l* the *-l* can be replaced with a personal name:

$$(3) \quad N-l == N + P$$

and that is why e.g. also following sentence constructions are equivalent to each other:

$$(4) \quad \begin{aligned} N-l + V-lo &= N + P + V-lo \\ \{N + N-s-l + V-lo &= N + N-s + P + V-lo \\ N + L-te-l + V-lo &= N + L-te + P + V-lo \text{ etc.} \end{aligned}$$

These observations have caused me to call the morpheme *-l* an “article” (Hintze 1963, 18).

### 3.3 Semantic determination?

But one is led to difficulties when one sees the *-l* as a mark of (semantic) determination, in most cases it appears this interpretation is simply impossible.

It appears out of the question that the function of determination appears in the structure N-*li* + V-*lo*; here on the contrary a translation with the indefinite article is most appropriate: e.g. *ant-li wi-lo* (Kar 118): ‘one, the brother is of a Priest’ (i.e. ‘brother of a priest is he’), however surely not “brother of *the* priest”; *ant Mnp-s-li sm-lo* (Kar 125) ‘wife of a priest of the Amanapa is she’. When one interprets *-li* as an definite article, this will yield the meaning that he had only one priest at a time, which is however surely nonsensical. This appears also in a case with the plural form of the “article”, which is wholly distinct: *ant-leb yetmde-lo* (Kar 22) one can hardly translate this, however, as “one, that stands to *the* priests in the *mde*-relationship’ (for *mde* see Hintze 1974b), that is, meaning: to all priests, but the above is more likely ‘one that stands to (several) priests in the *mde*-relationship’.--on the other hand *pqr qori-s* is certainly ‘one (or the) *pqr*-prince of the king’, not ‘... a king’.

### 3.4 Indefinite article?

When we in this context view again the two genitive constructions (a) and (b) where the word appears, that there are two ways to write the down the semantic distinction that exists between the two cases:

(I) With (a) it is a matter of (at all or for a given time) only one extant person: the god Amon, the king, the Kandake e.g. it refers to a proper noun: in contrast to the matter in (b) of multiple extant persons or things. One can therefore come sooner to the conclusion that *-li* is something like a *indefinite* article, ‘one (of many)’: *hlbiñ pesto-li-s* ‘*hlbiñ* of a pesto’, compared to *ant Mni-s* ‘Priest of the Amon’. Here fits, but not so well, the appearance of *-li* with a geographic label like *Arome* ‘Rome’ in *apote Arome-li-s* ‘Envoy of Rome’.

(II) With (a) it is the matter of a God (e.g. Amon) and of divinized people (king, queen) and in contrast to with (b) of non-divine people or things. This explanation is however still unlikely to be correct, because one can scarcely introduce, as a well-behaved distinction of a supposedly grammatical sort, that a morpheme /-0/ (e.g. in /Amani-0-s/) means ‘belongs to the class of divine beings’; and in contrast that the suffix *-li* means ‘belongs to the class of non-divine beings’. Besides beyond the genitive constructions there are both *qore-li* ‘King’ as well as *mk-li* ‘God’. The existence or non-existence of the *-li* is therefore specific for the genitive construction alone.

With the interpretation (I), therefore is strongly favored, we must still however provide a satisfactory explanation of the construction *Arome-li-s*.

### 3.5 The construction L-te-li

A contradiction to the formulation of the rule (I) appears still to exist, that also with  $N^d$ , when the locative construction L-te stands also in the genitive construction, the suffix *-li-s* is used, e.g. *ant Mnp Bedewi-te-li-s* ‘priest of Amanapa from Meroe’. Still these cases allow a reasonable explanation, that initially L-te only means ‘in L’, and that this postpositional fate is then nominalized through *-li*, that is the status of an adjective is shifted: L-te-li ‘one situated in L’. (The suffix *-te* thus corresponds to the Egyptian preposition *m* ‘in’, while the suffix *-te-li* corresponds to the nisbe *jmj* ‘situated in’). This nominalized locative syntax is enclosed with the god’s names as a qualifier and then the whole expression is put in the genitive. If we use Q:L to stand for this qualifier (e.g. Q manifested at L), so we can write the well-behaved construction of the accepted rule as follows:

$$(5) \quad \text{Gen} (N_1, N_2^d + Q : L) = N_1 + (N_2^d + Q : L\text{-te-li})\text{-s}$$

In a sentence like *ant Mnp Bedewi-te-li-s-lo* ‘one, the one priest of Amanapa who is from Meroe’ (Far 21) Amanapa and Meroe belong together, and it is not indicating where this office is held; however in a sentence like *mreperi ktke-s Dor-te-lo* ‘one, the one mreperi of the Kandake who is in Dor’ (Arm 2) *mreperi* and *ktke* work together and the office is held in Dor.

### 3.6 -li as boundary-signal

Another function of *-li* appears within certain description-sentences that have the basic structure N ... V+lo. Here in front of the V-lo stands the nominal group regularly terminated with *-li*, but apparently this nominal group can not have *-li* in front -- aside from within the genitive construction with *-li-s* (for an apparent exception, see II.4.7.2). In these cases the *-li* is therefore in some manner a boundary-signal, that a sentence-part, that is an immediate constituent of the sentence, is finished. This function of *-li* has already been noted by Griffith, in his scanty sketch of the Meroitic language, with the discussion the postposition he says “*l, li* for a word or phrase when followed by another word which it qualifies, as *pešto-l yetmde* ‘to whom a peshto is kin’, ‘kin of a peshto’” (Griffith 1911, 23) -- Heyler calls the break between the two immediate constituents of the sentence ‘pause’: “... pour la commodité, nous dirons que le stiche comporte deux ‘hemistiches’, le premier déterminant, le second déterminé: entre ces deux hemistiches se trouve une limite, que nous appellerons ‘pause’” (Heyler 1967, 117) It is clear that this limit is signaled by *-li*.

One can formulate these facts thusly: That a bare noun (N) stands to a certain extent in status constructus, it is not immediately a sentence structure, it is only part of a constituent and requires a supplement. The ending *-li* can syntactically complete it and at the same time yield an immediate sentence structure, e.g. in a IC of the proper sentence. So is therefore a N syntactically understood as {N...} or {...N...}, in contrast to N-li which is {N-li} or {... N-li}. At the same time this plays no role on the question of determination.

### 3.7. Three functions of -li

We can therefore establish three different functions of *-li*, that can be approximately labelled as: (a) indefinite article (b) nominalizer and (c) sentence-unit-former. When we label these with *-li<sub>1</sub>*, *-li<sub>2</sub>* and *-li<sub>3</sub>*, this raises the question, whether we also have here multiple morphemes. We must take this possibility at least into consideration; for the identification of these three morphemes requires we equate syntactic substitution-classes, for which a thorough examination is necessary. The sound correspondence alone does not require such an identification.<sup>2</sup> I suppose however, that at least *-li<sub>1</sub>* and *-li<sub>2</sub>* are identical, I will return to this after the examination of the morpheme *-lo* (see III.5).

<sup>2</sup> so is e.g. in German the morpheme *-er<sub>1</sub>* in *Lehr-er* not identified with the morpheme *-er<sub>2</sub>* in *tief-er*.

## 4. The Reduction of the constituents

#### 4.1. The Reduction rules

For the IC-analysis and the method of constituent-reduction (see II 1.2. (b)) the reduction rules are given below. With these rules only the (sentence closing) ending *-lo* is taken into account, not its facultative variant *-lo-wi* nor the plural form *-leb-k-wi*, since these endings, which are treated in detail in III.5., have no influence on the structure of the sentence themselves. Other plural forms, like e.g. *V-bes-lo* that stand in relation to the structure of the sentence, will be treated in III.4. The rules are composed such that the symbol  $N^d$  is not needed.

##### 1. Reduction from N + Q:

(R1.1)  $N + Q \rightarrow N$

(R1.2)  $N + Q-l \rightarrow N-l$

##### 2. Reduction from N + L-te

(R2.1)  $N + L-te \rightarrow N$

(R2.2)  $N + L-te-l \rightarrow N-l$

(R2.3)  $N + L-te-li-s \rightarrow N-s$

(R2.4)  $N + L-te-li-s-l \rightarrow N-s-l$

##### 3. Reduction from N + N-s

(R3.1)  $N + N-s \rightarrow N$

(R3.2)  $N + N-s-l \rightarrow N-l$

(R3.3)  $N + N-li-s \rightarrow N$

(R3.4)  $N + N-li-s-l \rightarrow N-l$

##### 4. Reduction from N + N

(R4.1)  $N + N (+ \dots N) \rightarrow N$

(R4.2)  $N-l + N-l (+ \dots N-l) \rightarrow N-l$

##### 5. Reduction from N + P

(R5)  $N + P \rightarrow N-l$

##### 6. Reduction from V-lo

(R6.1)  $N-l + V-lo \rightarrow S$

(R6.2)  $P + V-lo \rightarrow S$

##### 7. Reduction from N-lo or N/V-lo

(R7.1)  $N-lo \rightarrow S$

(R7.2)  $N/V-lo \rightarrow S$

#### 4.2. Conditions for their use

With the use of these reduction rules one must maintain the following conditions:

(a) The order of the used reduction rules is established as shown; with the reduction of a sentence into a related symbol chain, one is therefore at first to examine, whether rule of the order number 1 is used, when this is not the case, pass on the rule of the order number 2, etc. The necessity of establishing that the order is kept follows from the hierarchical structure of the sentences.

(b) With subordinating syntagma (R 1, 2, 3, 6, 7) one cannot simultaneously reduce more than two symbols to a new one. The correspondance of the Principle of the IC-Analysis, that falls out from the binary relation of subordination.

(c) With coordinating syntagma (R 4) the simultaneous reduction from more than two symbols is allowed, here such syntagma function as a uniform block in the sentence (see also II 1.1. d') With the Apposition (R 5) naturally do not derive from more than two symbols.

#### 4.3 Kernel sentence, endocentric and exocentric constructions

The nature of these reductions can also -- using the terminology introduced by Bloomfield -- therein be understood as gradually eliminating from a sentence all the endocentric constructions, until only an exocentric construction remains. These exocentric construction correspond to the types of the "kernel sentence" of the Meroitic nominal sentence. It is 1. the two-structure Sentence: N-*lo* "it is a N" and 2. the three-structure Sentence: N-*l* + V-*lo* "referring to N, it is being V". See also the discussion in Chapter III.

#### 4.4 Examples of the conditions of the reduction rules

On hand are several examples I like to use to illustrate presently the procedure with the conditions of the reduction rules in an inscription, that at the same time they can make the sentence structure graphic. The references in [ ] here indicate the line relating to the sentence, that is the structure-number (in Hintze 1963), those in ( ) stand for the line number of the reduction rule which is the applicable result. The Sentence (V) corresponds to structure [300] for the improved reading and interpretation in REM 1019.8.

(I)	<i>ant</i>	<i>mnpsl</i>	<i>yetmdelo</i>	[191]			
	N +	N-s-l +	V-lo	[3.4.1]			
(3.2)	N-l +		V-lo	[3.1.2.1]			
(6.1)	S						
(II)	<i>ant</i>	<i>mnps</i>	<i>brtre</i>	<i>štelo</i>	[271]		
	N +	N-s +	P +	V-lo	[4.3.1]		
(3.1)	N +	P +	V-lo	[4.1]			
(5)	N-l +		V-lo	[3.1.2.1]			
(6.1)	S						
(III)	<i>hrphñ</i>	<i>phrste</i>	<i>atpete</i>	<i>yetmdelo</i>	[305]		
	N +	L-te +	P +	V-lo	[6.1]		
(2.1)	N +	P +	V-lo	[4.1]			
(5)	N-l +		V-lo	[3.1.2.1]			
(6.1)	S						
(IV)	<i>pelmoš</i>	<i>atoliš</i>	<i>yeredelb qoris</i>	<i>hlomi</i>	<i>yetmdelo</i>	[277]	
	N +	N-li-s +	N +	N-s +	P +	V-lo	[4.5]
(3.3)	N +	N +	N-s +	P +	V-lo	[---	
(3.1)	N +	N +	P +	V-lo	[4.2]		

(4.1)	N +		P +	V- <i>lo</i>	[4.1]		
(5)		N- <i>l</i> +		V- <i>lo</i>	[3.1.2.1]		
(6.1)		S					
(V)	<i>plšn</i>	<i>arere</i>	<i>mrepero</i>	<i>pestoliš</i>	<i>msmhye</i>	<i>smlō</i>	[EK 26]
	N +	L- <i>te</i> +	N +	N- <i>li-š</i> +	P +	V- <i>lo</i>	[---]
(2.1)		N +		N- <i>li-š</i> +	P +	V- <i>lo</i>	[---]
(3.3)		N +	N +		P +	V- <i>lo</i>	[4.2]
(4.1)		N +		P +	V- <i>lo</i>	[4.1]	
(5)		N- <i>l</i> +		V- <i>lo</i>	[3.1.2.1]		
(6.1)		S					
(VI)	<i>pesto</i>	<i>akiñtelo</i>					[110]
	N +	L- <i>te-lo</i>					[2.2.1]
(2.1)		N- <i>lo</i>					[1.1]
(7.1)		S					
(VII)	<i>ant</i>	<i>mnp</i>	<i>bedewitelislo</i>				[135]
	N +	N +	L- <i>te-li-s-lo</i>				[2.6]
(2.3)		N +	N- <i>s-lo</i>				[1.4.1]
(3.1)		N- <i>lo</i>					[1.1]
(7.1)		S					

#### 4.5. Sentence Rules

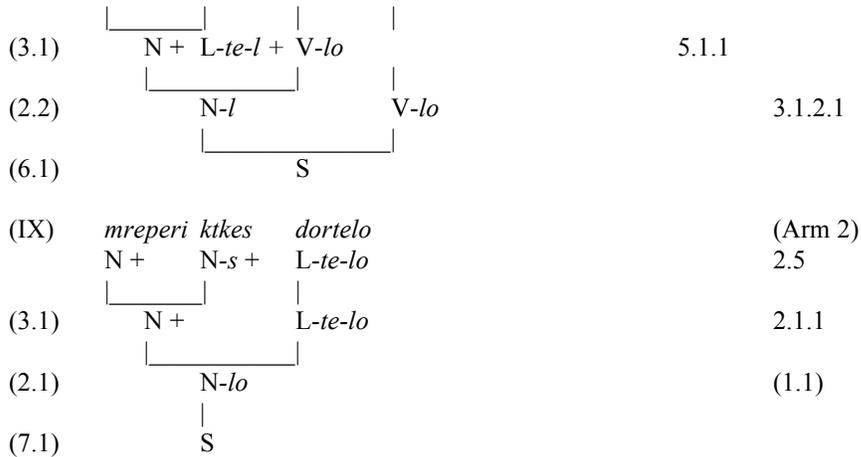
These examples illustrate the individual reduction steps that lead to a complicated sentence structure from a basic sentence type and finally give the sentence structure. This reduction-writing cover the IC-structure of the sentence. --Only a few cases are given, for the reduction rules given above are not sufficient, therefore sentence rules are made necessary.

##### 4.5.1. The order of the operations

The first of these sentence-rules concern the order of the operations. The general rule, that the separate reduction writings must be carried out in the order their (group-)order number, is not valid when the operation cannot be followed (e.g. when L-*te* of Group 2 exists, but the necessary N for the reduction does not stand immediately in front of it). In such cases the first following allowed reduction is carried out; then the return to the preceding groups must happen as soon as possible. Two examples shall illustrate the application of this sentence rule.<sup>3</sup>

<sup>3</sup> The Example (VIII) is constructed by analogy to GA 29, where the sentence plural form and the variant *mno* appears for *mnis*.

(VIII)	<i>ant</i>	<i>mnis</i>	<i>tmñtel</i>	<i>kdtelo</i>
	N +	N- <i>s</i> +	L- <i>te-l</i> +	V- <i>lo</i>



#### 4.5.2 Treatment of the Plural forms

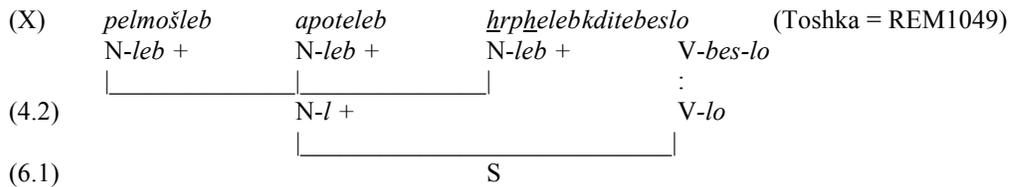
A second sentence rule is necessary, when one wants to handle the various plural forms within the sentence without some reduction rule, that is as long as these rules are not yet formulated:

(a) For N-*leb* can be replaced with N-*l*, when there is at the same time V is found to have a plural infix (e.g. (*qe*)*bes*) ; which is removed when N-*leb* --> N-*l* is carried out.

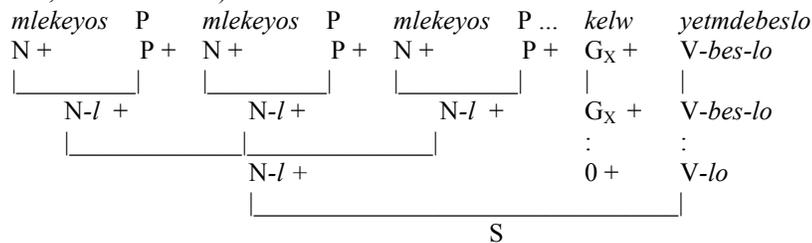
(b) with the reduction of the Coordination (e.g. N-*l* + N-*l* --> N-*l*) as well, simultaneously remove the existing plural infix with V.

(c) the occasional the coordination chain final G<sub>X</sub> *kelw* is also removed with the reductions of these coordinations.

Two examples shall illustrate these procedures.



(XI) (GA 39, from MNL 2.4):



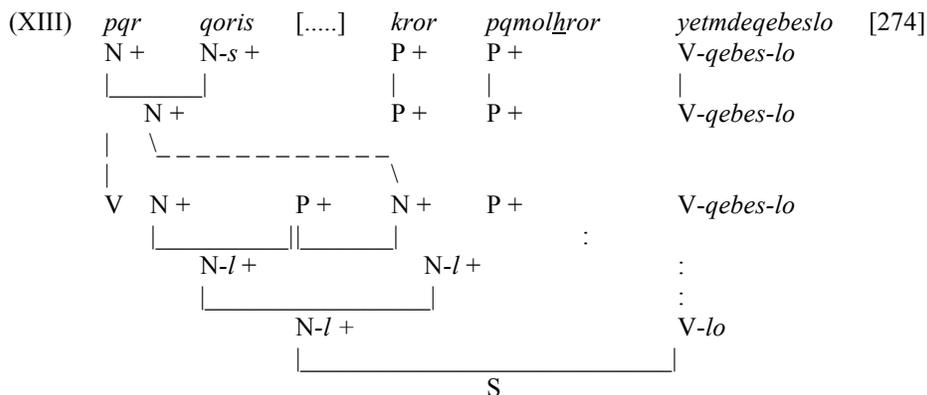
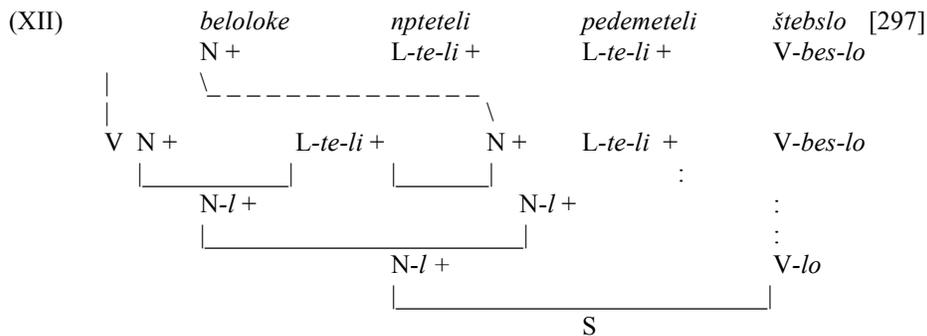
#### 4.5.3. Treatment of elliptical sentences

The third sentence rule concerns the treatment of elliptical sentences. Such as occurs when a (lexical) morpheme in the sentence stands in subordination to more than one (lexical) morphemes, such that X<sub>1</sub> + X<sub>2</sub> + X<sub>3</sub> is a syntax abbreviation for (X<sub>1</sub> + X<sub>2</sub>) + (X<sub>1</sub> + X<sub>2</sub>). In such a case, there appears in the reconstruction of the lexical morpheme in the text a null-variant, which is the prerequisite for the further reduction.<sup>4</sup> That an ellipsis is present, is outwardly recognizable, if two not immediately reducible

equivalent expressions follow each other successively (e.g. *L-te-li* + *L-te-li* or *P* + *P*). A structure like *N* + *L-te-li* + *L-te-li* ... which can by (R2.2) immediately be reduced to *N-l* + *L-te-li*, but this syntax is one which the declared rules cannot further reduce. Therefore the completer construction must first be established, then the reduction can follow. For this we have 2 examples:

In the examples (X-XIII) there is connection marked with - - - - : It shall suggest the reduction, that is the operation, for which the just explained sentence rule is necessary, and the --> on the left edge (and leave out all connections with -----) suggests the transformation, as it shows as well a sentence rule when necessary. The possibly is that with such transformations the framework of a IC analysis is already violated, but it is anyhow only to test, if and how this, together with the other sentence rules can be acquainted with our reduction rules.

<sup>4</sup> An analogous procedure is necessary with Transformation analysis, see Apresjan 1971, 178f.



#### 4.6. Possibilities for algorithms

Those reduction rules formulated in II.4.1 must, as shall be suggested, still be extended and refined, but first here to me what matters is that the general procedure of sentence analysis as the basis of an IC analysis for a certain group of Meroitic sentences be made clear. Above all it is also possible, from these to proceed to develop a strict algorithm, from which can be derived a program (e.g. for a automatic working of the materials stored in REM). It is however not intended, that these algorithms be prepared here in detail -- this would go above and beyond the current framework go --, only is general building shall now be suggested:

(a) First the relating of the syntactic symbols to the syntactically relevant elements of the sentence must happen (see above II.2.1). For those sentences in the REM provided with subscripts a direct transfer of the symbols is possible given the concordance in II.2.1.2.

(b) For *V-lebkwi* and *N-lebkwi* can immediately be written as *V-lo* and *N-lo*, since these ending have no relation to the "internal structure" of the sentence (see Priese 1971).

(c) For some reduction writings are to be examined to see whether elliptical sentence, appositions or plural constructions exist:

(c') Elliptical constructions are recognizable because they have *L-te* and *L-te*, or P and P, or *N-li-s* and *N-li-s* immediately following each other (the latter case has not been covered until now, it is still probably a possible structure) The completion of such structures, that must happen for the reduction, appears for the general rule  $ABC \rightarrow ABAC$ .

(c'') With coordinateing constructions they are examined before the reduction to see whether in the V-expression a plural infix (like *-bes-*, *-qebes-*, *-bhe-*) occurs; these are to be removed at the same time with the reduction of the coordinating construction. Such constructions are recognizable, e.g. *N-l* and *N-l* or *N* and *N* follow each other and that no *L-te* or *N-s-* constructions appear multiple times.

(c''') After these examinations and any necessary removals of plural infixes within the V-expressions as under (c'') are carried out, when *N-leb* shall be reduced to *N-l* (see also below under III.2 for the handling of the Plural from with V-expressions)

(d) The reduction itself is carried out in a fixed order of the group number of the reduction rules, as far as these apply:

(R 1) first dispose of all Q

(R 2) then all constructions with *L-te*

(R 3) then all constructions with *N-s*

(R 4) then all constructions with  $N + N + \dots + N$ ,

(R 5) then all constructions with  $N + P$

(e) When a reduction with the rank number  $n$  is not feasible (though a corresponding element does exist), then the reduction with the rank number  $n+1 \dots i$  is first carried out; but as soon as with the further reduction the condition is fulfilled, that the reduction with the rank number  $n$  is possible, immediately return to the corresponding reduction

(f) These gradual reductions must lead the above to what is given by rule (R 6) or (R 7) through to S, and with this the procedure is finished.

#### 4.7. General results of "Ungammatl" sentences

We can now put the question to us, what can be set up with such a procedure and what results are to be expected.

I believe to have shown, that one can develop for the merotic description sentences an ordered number of rules and algorithms, and with these tools it shall be possible to examine the descriptive sentences in all known texts and naturally also any new texts yet to be discovered, as syntactic constructions. Such an examination breaks all of the description sentences into precisely two subsets: (1) those that allow the established rules to lead back to S, and (2) those for which this is not the case, whose "grammaticality" therefore needs to be examined. Within those sentences belonging to group (1) are further found those where (1a) the syntactic structure is clear or (1b) multiple syntactic descriptions are possible, and are therefore syntactically ambiguous.

Here, however, only those sentences falling under (2) shall be taken into consideration briefly. With the first inspection for which I in 1963 cataloged the description sentences (Hintze 1963) initially yielded that from the ca. 500 sentences (with repetition, the Group 8 "unclear" had 12 Sentences, from which two -- [333] and [336]-- are not description sentences, also those belonging to the "stela texts" are not taken into consideration), about 90 for which the above given reduction rules did not lead back to S. With further investigations, however, it appears that this relatively small? portion (ca 18%) can be reduced considerably.

##### 4.7.1 Correction of the structure description

With some of these sentences it appears wholly obvious that there is a false interpretation of its structure, e.g. a false syntactic end symbol. For these I would like to state some examples:

(a) Disregarding the syntactic relevance as understood above with some N-s expression: here is the important distinction between the syntactically relevant grammatical morpheme and word-constructing morpheme on the sentence level, and that belonging on a sub-sentence-level which has not been noted. Some of these N-s function in the sentences wholly obviously as a N, therefore they are completely like constructions such as N-*ñ* (e.g. *qoreñ*). Just as *qoreñ* or *šleqeñ* functions in the sentence as N, take these corresponding constructions: *štmdes* or *qoris*, and just as with *-ñ*, *-s* here is a word-building suffix and it is --itself when one is animate, that is connected with the Genetive *-s* -- not equivalent with them (syntactically). With such a revised interpretation, a great number of the apparently sentences prove to be perfectly correct. We have then in our model of the sentence analysis a welcome means to distinguish between grammatical elements, those that belong to the sentence analysis, and those that relate to the word-construction.

(b) From this basis it also appears that sentences like *štemdes kdilo* are to be understood not as N-s + N-lo [Structure 1.3.3], but better as N + Q-lo ( --> N-lo --> S).

(c) With the structure [1.3.1] (N + N-lo) one can, as I have already presented, accept it as coordination (N + N --> N) or also attribution (N + Q --> N), but in the structure [1.3.2.1] (N-l(i) + N-lo) and [1.3.2.2] (N-lw + N-lo) is probably interpreted nearer to N-l(i) + V-lo: V is in these cases always *mlo*, that perhaps can also be understood as N/V.

(d) The structure [2.1.2] (N-li + L-te-lo) is probably better understood as N-li + V-lo (see Leclant 1971, 180).

(e) The combination *mlo mrs* (Structure [2.4],[2.5]) obviously functions in the sentence as a simple N (that is N + Q); here the construction is in connection with the other word-constructions on a sub-sentence-level which are still near to investigation. A “normal” genetive combination appears not to exist here anyhow, as a result then *\*mr* may not be read as a N<sup>d</sup>. Moreover we cannot with security say whether the decomposition *mr-s* is actually justified (for which at best that one sometime can speak to cover *mlo qorislo* [67])

(f) Structure [3.3] is probably not understood as N + N-l + V-lo, but better as N + P + V-lo see Heyler to Arm. 4 (with Trigger 1970, 29), with the above reduction rules we still do not take into consideration the variant N + P + Q-l + V-lo. This variant can perhaps be clarified as follows: when a qualification appears with P (e.g. *lh* ‘the old’ or *mete* ‘the younger’), to yeild P + Q, the sentence structure requires the *-l* which on the P alone (that is N + P) appears not to be taken up. The corresponding reduction rule can the form has P + Q-l --> P (thus N + P + Q-l + V-lo --> N + P + V-lo --> N-l + V-lo --> S)

Thus with an entire series of sentences the prior interpretations (syntactic notations) needed correction. By such a correction one shows however that they are “grammatically correct”, i.e. they can be analyzed with our reduction rules. This accounts for ca. 70 of the 90 initially “ungrammatical” sentences.

#### 4.7.2 Publication Errors

With some of the still remaining irregular sentences however appear anyway from a false text e.g. an error in the publication, that is in the copy. Some examples are given here:

[186] *abr-s mte-lo* yeilds the single representation of the structure N-s + V-lo [Structure 3.2] However, actually the text is (from REM 1030) *abr[to]ye mte-lo* hence it has the entirely normal structure P + V-lo [Structure 7.1], or perhaps also P + Q-lo(?).

[295] *apote-l kdi[s]-l Qbeqe-te-l šte-lo* is while single representation of the structure N-l + N-l + L-te-l + V-lo known [Structure 5.4] therefore the above given rules cannot reduce it to S. Hence the text REM 1032 appearing here is actually two sentences, that both have a completely normal structure: (1) *apotel kdis[lo]* , is either N-l + V-lo or P + V-lo, and (2) [...] *Beqetel štelo* is probably N + L-te-l + V-lo.

[319] *hlome pelmoš yetmdelo*: the text here actually has *pelmošl*, the sentence therefore has the structure P + N-*l* + V-*lo* [Structure 7.2.2] (see also under II 4.7.3) so that for the “abnormal” construction P + N + V-*lo* until further notice still remains only in document [320].

#### 4.7.3 Influences of Egyptian Syntax

The just mentioned structure [7.2.2] (P + N-*l* + V-*lo*) is not the normal construction of apposition with P, which is N + P. It only appears five times, and but once in Inscription 88[321] and four times in Inscription 89 [319],[322-324]; it is hence limited to two texts. Since in all these cases the P is an Egyptian name and in just both these texts such Egyptian personal names occur (hence a “meroitico-egyptian” family exists), I prefer to think that this form of apposition is influenced by Egyptian syntax, for the apposition Name + Title is good late Egyptian.

#### 4.7.4. Text errors

With further examination still a comparatively few cases remain that the above formulated reduction rules do not cover. Included are singular cases, where only a single representation exists for a given structure, yet with these distrust with respect to the correctness of the text must be taken into consideration. In such cases we cannot with certainty exclude errors of the Meroitic scribes or the stonemasons. Such singular cases are declared e.g. [127] (Structure [2.3.2]: N + N-*li* + L-*te-lo*) and [293] (Structure [5.2]: N + N + L-*te-l* + N + L-*te-l*).

#### 4.7.5. The uncertain structure 3.1.1

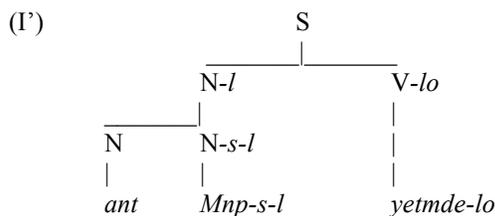
Still there remains the serious case, that cannot be dealt with using the above reduction rules, of 13 remaining examples of the structure [3.1.1] (N + V-*lo*) (the case [144] does not have this structure, it is to be read as *snte-leb wi- .Heyler* with Trigger 1970, 32), which is about 3% of the 500 descriptive sentences. Because since my time new description sentences have become known and no further representatives of this structure has appeared, in total it goes down to ca. 2%. These sentences thus -- from the standpoint of the reduction rules -- can be apparently irregular construction and one must therefore still search for details for the reason for the irregularities. Overall, however, the application of the reduction rules cannot be put seriously into question.

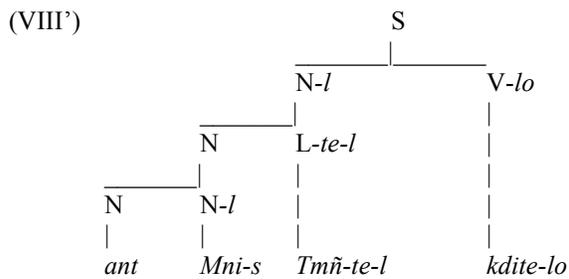
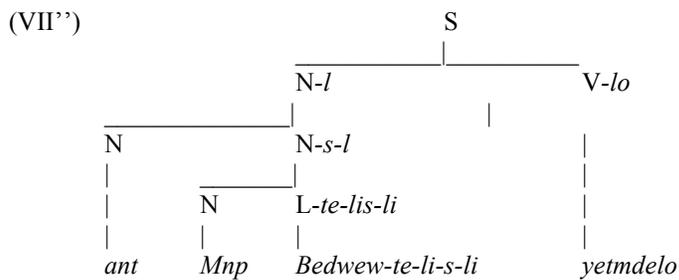
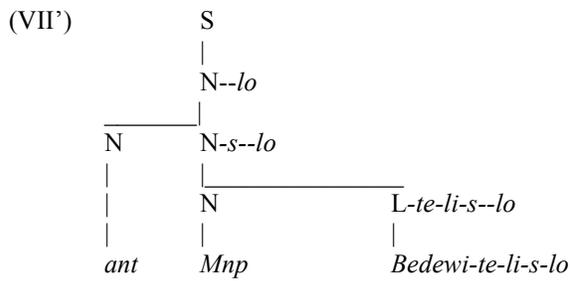
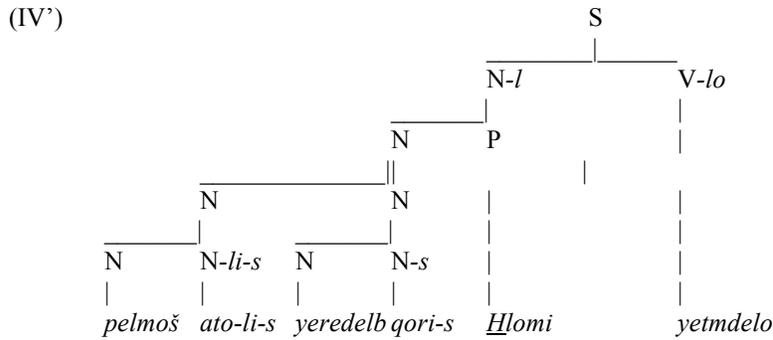
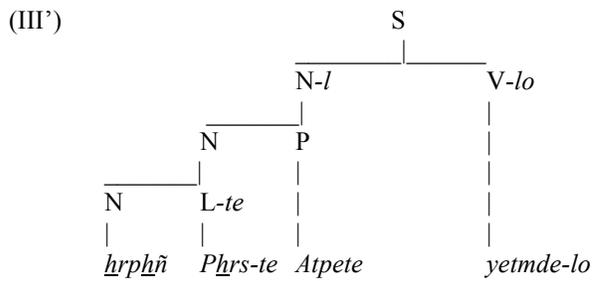
### 5. Expansion

In the foregoing sections the reduction formulas for the syntactic analysis were used, hence developing a grammatical analysis model for Meroitic description sentences on the basis of a IC analysis. And that is indeed also what we require in the practice for the examination of the Meroitic language. In spite of this being correct, it is interesting and also informative to attempt, through the reversal of these rules and their sequence, to obtain a “generative” IC model, that is able to produce from a starting symbol S, with the expansion rules, a resulting chain (grammatically correct) of a description sentence. (It is here perhaps necessary to draw attention to the fact that at present exclusively the examination of the “surface structure” is handled, and the “generation” of a sentence with a “deep structure” is not taken here.)

#### 5.1. Examples

We first consider the reflected and reversed representation of one of the above given examples, and in doing so we here write the syntactic symbols on the nodes of the trees:





The sentence (VII'') is constructed by analogy from (VII') and (VIII'), it is however in any case grammatically correct. One compares for it the sentence structure [328] with Heyler's (1970a, 43) improved interpretation.



N	N- <i>li-s-li</i>	N	N- <i>li-s-li</i>	:	:		
Mlekye	mrde	pešto- <i>li-s-li</i>	mrde	pelmoš- <i>li-s-li</i>	kelw	<u>hrp</u> he- <u>b</u> he- <i>li</i>	yetmde- <i>lo</i>

Here “(S)” stands for the dependent, inserted sentence, and one can represent it through the corresponding expansion rules:

- (6) P + V-*lo* + (S) -> P + (S) + V-*lo* anf  
 (7) (S) -> N-*li* + N-*li*

The rule (6) refers to the permutation of the elements, the rule (7) to the expansion of (8).

#### 5.4. Discontinuous Morphemes

This shows that the reduction rules given above in this form are not yet suited, via simple reversal, to deliver the necessary expansion rules for the production of a sentence. These rules have, when reversed, the form

- (8) A -> B + C

that is with (R 4) the form

- (8') A -> B + C + ....

This form of the rules, while correct, alone are obviously not complete; one cannot generate with them e.g. in the sentence (X) and (XI) the plural morpheme *-bes-* in V-*lo*. For the analysis (i.e. for the elimination of these *-bes-*) the sentence rules formulated in II.4.5.2 were sufficient; but for the generation from S one requires a corresponding rule of the following form:

- (9) When A -> B + C , then also Y -> Y + Z.

This problem is also appears when one reserves the example (X) reverses and depicts it in the manner of (X'). Here appears, in combination with the expansion (a) N-*l* -> N-*l* + N-*l* + N-*l*, (b) an element G<sub>1</sub> in the N-*l*-part of the sentence and also (c) an element G<sub>2</sub> in V-*lo*. Since (a), (b) and (c) are mutually required, and together mark the plural, we have to take here the appearance of a discontinuous morpheme, which is known to create serious difficulties for (generative) IC-analyses. For the settlement of these problems we require rules of the following type

- (10) B -> D + .... + E

Complemented with qualification rules of this form

- (11) A -> B + C and  
 B -> D + .... + E afterwards yeilds  
 A -> D + C + E.

Rules of this type, their possibility and usage will be discussed by Yngve and Harman for the Meroitic description sentences, in a work still in preparation. This task is probably worthwhile, as their solution perhaps allows for the analysis given above (II 4.5.2) rules of a form

- (12) D .... E -> E

in the rule-code for the analysis are accepted and thereby arrange the whole rule apparatus to be uniform.

#### 5.5 Ellipses

A further problem arises with the conversion of examples (XI) a (XII) into (XI') and (XII'), i.e. the treatment of the Ellipses. Here we can perhaps develop a facultative rule of the following form:

$$(13) \quad A + B + A + C \rightarrow A + B + C \text{ when} \\ A = B \text{ and } B \equiv C$$

## 5.6. Recursion

A further task is to establish the conditions under which the recursion of the generative rules can be restricted. This is necessary because with the dominance of the regressive construction already clearly requires in theory a restriction with respect to its storage capacity (any leftward branch requires a storage place), and with unlimited recursions it is possible for ungrammatical constructions to come about.

The repeated application of an expansion rules is however possible with e.g.

$$(14) \quad N \rightarrow N + Q$$

leads to  $N + Q + Q$ . This construction occurs in *mk-(k)di-lh* (Inscr 123) and *temey-kdi-lh* (GA 22). The repeated application of

$$(15) \quad N-l \rightarrow N + L-te-l$$

leads to  $N + L-te-l + L-te-l$ , for which an example is provided above under (XII), which is the only one found thus far as far as I know.

The repeated application of the rule

$$(16) \quad N \rightarrow N + N-s$$

yields the construction  $N + N-s + N-s$ . (e.g. *\*ant Mni-s Mnp-s*), for which thus far no proof exists, it is however possible such a structure will turn up.

With the laying out of the expansion rules the question of recursion anyhow requires particular attention. From the recursive application of the expansion rules arise elliptical constructions, which are rare in the currently known descriptive sentences proper.

It has thus been shown that the exercise of converting the reduction rules into expansion rules can deliver additional information on questions of Meroitic grammar.

## 6. Semantic Information

### 6.1. Terminal elements

A further task is to set up the rules for replacing the syntactic symbols of the terminal links with the allowed terminal elements. We therefore require rules of the type

$$(17) \quad A \rightarrow a.$$

These can basically occur in the form of the list, that then at once contains all the semantic information that can be gained through the syntactic analysis.

### 6.2 Syntactic and paradigmatic relations

Such semantic information is obtained over all through the substitution classes. Between the structure of syntagma  $A B$  there is a syntactic relation just as between the syntagma constituting a longer chain of syntagma, which I describe as  $R^s$ : e.g. in  $N_1 + N_2-li-s$  the relation is  $N_1 R^s_2 N_2$ . In this relation  $N_1$  and  $N_2$

are bound variables, thus not every element of the class N can be inserted here as  $N_1$  or  $N_2$ . Those elements which are inserted in a certain relation  $R^S_i$  generate a substitution class, and between the elements of a substitution class there appears a paradigmatic relation,  $R^P$ . The relation  $R^P$  is an equivalence relation, the relation  $R^S$  a (limited) order relation. These correspond in a certain way to the relations of the  $R_2$  and  $R_0$  quality which have been investigated by Lekomcev (1963) in a metalinguistic work. He has thereby detected that the two relations are linked with one another through a distributive rule, which also applies for our relations  $R^S$  and  $R^P$ :

$$(18) \quad a R^S (b R^P c) = (a R^S b) R^P (a R^S c)$$

This connection between the two relations reflects is also again used below in Chapters III and IV with the spelling of the structure formula:

$$(19) \quad \begin{array}{c} [ a ] [ b ] \quad [ a ] [ b ] \\ [ \ ] [ \ ] = [ \ ] [ \ ] = ab \text{ and/or } ac. \\ [ \ ] [ c ] \quad [ a^* ] [ c ] \end{array}$$

For the insertion of the terminal elements our generation procedure we need an overview of the elements of the different substitution classes, that can be generated through the relation  $R^S$  and can be summarized through the relation  $R^P$ . Furthermore we need for the formulation of the corresponding rules a suitable symbolism, that corresponds to these substitution classes. Of particular importance is that all elements of a substitution class must have at least some common semantic features. Therefore we obtain by this investigation again information on *the* range of the semantics which are grammatical in the relevant language. And this is naturaly for Meroitic, where a special problem for us is the lack of sufficient direct semantic information, particularly and especially valuable.

### 6.3 The genitive construction

I like to show the potential of such investigations still with the example of the genitive construction, without working out all the details here. I go from of the following expansion rules:

$$(20) \quad N_1 \rightarrow N_1 + N_2 \text{-}i\text{-}s$$

$$(21) \quad N_1 \rightarrow N_1 + N_2 \text{-}s$$

For distinguishing the elements N in the different constructions and the relations  $R^S$  and  $R^P$  we use the following matrix:

$$(22) \quad \begin{array}{cc} & \begin{matrix} (1) & (2) \end{matrix} \\ \begin{matrix} N_1 \\ N_2 \end{matrix} & \begin{matrix} N_{11} & N_{12} \\ N_{21} & N_{22} \end{matrix} \end{array}$$

We can now put ourselves the question, how do the classes  $N_{11}$   $N_{12}$   $N_{21}$  and  $N_{22}$  behave with respect to each other. At the outset there appears to be the marking off of the  $N_{22}$  against  $N_{21}$ :

- the  $N_{22}$  are god-names and the words *qore* and *ktke*
- the  $N_{21}$  are such N that do not belong to  $N_{22}$
- (i.e.  $N_2 = N_{21} \cup N_{22}$ , and  $N_{21} \wedge N_{22} = 0$ )

The class  $N_1$  has, as far as we can so far comprehend, the common semantic feature "Title" or "Office". However the classes  $N_{11}$  and  $N_{12}$  are overlapping. It gives some  $N_1$  which only belong to  $N_{11}$  (e.g. *arebetke*, *mlñ*, *pelmoš*), a greater number of  $N_1$  which belong only to  $N_2$  (e.g. *ant*, *are*, *šlh*, *šlhš*, *ššor*), but also some which belong to both  $N_{11}$  and  $N_{12}$  (e.g. *dkem* *hlbiñ*, *qoreñ*),  
(i.e.  $N_1 = N_{11} \cup N_{12}$  and  $N_{11} \wedge N_{12} \neq 0$ ).

It can also be possible, that the classes  $N_{21}$  and  $N_1$  have common elements, however this case appears not yet to be proved or in any case observed.

Currently very interesting and informative are e.g. the intersection of the classes  $N_{11}$  and  $N_{12}$  ( $N_{11} \wedge N_{12}$ ) viewed together with the further  $N_1$  that are connected with the  $N_{22}$  *qore* and *ktke*. These amount here to five groups:

1.  $N_1$  which only occur with *qore* or *ktke*: *hbhñ, mreperi, pqr, tñ, yeredelb*;
2.  $N_1$  which occur with *qore* and with god-names: *ant*;
3.  $N_1$  which occur with *qore* and with non-god-names: *apote*;
4.  $N_1$  which occur with *qore* and with god-names and non-god-names: *hlbiñ, qoreñ*;
5.  $N_1$  which occur with god-names and non-god names: *dske, šleqeñ*.

From this method, through the observation of the substitution classes allows lexical material to be processed and represents a suitable basis for semantic analyses.

#### 6.4. Sentence structure and Sentences

When we now return to discuss our question in II.5.: how is it possible, with the help of the expansion rules, to build up a generative model for the Meroitic description sentences, we can establish the following conclusion: that the necessary investigation is not yet carried out, and it is not yet possible, to formulate the rules of the type  $A \rightarrow a$  for the insertion of the terminal elements. We can therefore, until the questions of the indication(?) (II.2.2), the discontinuous morphemes (II 4.5.2; 5.4), the restriction of recursion (II.5.6) and the constitution of the substitution class for the various syntagma (II.6.1) are answered, only generate grammatically correct sentence structures, but not any grammatically proper (and meaningful) sentences. This is naturally not the actual purpose of the investigation of the Meroitic language, however, it has shown us that the investigation of the expansions is an important and also informative staging point, and using them can be profitable.

### III. The Grammatical Structure and Function of the Descriptive Sentences

#### 1. The core sentences

##### 1.1. Two Types of core sentences

In Chapter II we attempted to investigate the interior structure of the descriptive sentence with help of a constituent analysis. In Chapter III the question to the grammatical function of these sentences shall be treated. With the analysis of the descriptive sentences ( $S_D$ ) there amount to two types of core sentences (II.4.3; see also II.5.2), that are denoted through the following structures:

- (23)  $S_{D(1)} \rightarrow N-lo(wi)$   
 $S_{D(2)} \rightarrow N-l + V-lo(wi)$

##### 1.2. The core sentence $S_{D(1)}$

Looked at we first the core sentence  $S_{D(1)}$ ; this construction must appear as a complete sentence, i.e. a syntactic construction, that is not part of a larger (syntactic) construction (s.o. I.1.3(c)), and the N-term must have the function of a predicate. Thus it is very probable that it is the ending *-lo* which makes N-term a predicate. However, when the subject is seen in the entire context, where the (A)-sentence names the person. The *-lo* therefore stands to a certain extent for a "Identity relation", that here shall be denoted with  $R_1$ .  $N-lo$  means 'it is N' (or 'it was N'), where 'it' is the person named in the (A)-sentence.

##### 1.3. The core sentence $S_{D(2)}$

Before I arrive at the ending *-lo* itself and the other endings of the descriptive sentences, I must first briefly point out the core sentence  $S_{D(2)}$ . Here the ending *-lo* naturally stands for  $R_1$  just as in  $S_{D(1)}$ , but the V-term appears also in relation to the N-term in the same sentence, that is in most cases (e.g. with all V-terms

which is a relationship name) the relation R<sub>2</sub> (“genetive”), but in so far two cases ([293] and Arm 3. see above III.3.2) it appears in the relation R<sub>3</sub> (“dative”).

## 2. The suffixes

### 2.1. Parameters of the suffixes

When we examine the different endings of the N/V terms, it appears that their occurrences are dependent on the following parameters:

- (a) The (A)-sentence can refer to one or multiple persons : A<sub>sg</sub> or A<sub>pl</sub>
- (b) In the D-Sentence one or more persons or offices can be named, which are referred to by the V-term: D<sub>sg</sub> or D<sub>pl</sub>
- (c) The N/V term indicates the relation R<sub>1</sub> R<sub>2</sub> or R<sub>3</sub>

These parameters can be clearly arranged in form of the Matrixes (Lists) depicted here; those forms which are not documented, but only constructed by analogy are marked by a \*.

#### Matrix 1 (R<sub>1</sub>A)

A	
sg	N- <i>lo-wi</i>
pl	N- <i>leb-k-wi</i>

#### Matrix 2 (R<sub>2</sub>D)

A\D	sg	pl
sg	V-( <i>qe</i> )- <i>s-lo-wi</i> V- <i>lo-wi</i>	V-( <i>qe</i> )- <i>b-es-lo-wi</i> V- <i>lo-wi</i>
pl	*V-( <i>qe</i> )- <i>s-leb-k-wi</i> V- <i>leb-k-wi</i>	*V-( <i>qe</i> )- <i>b-es-leb-k-wi</i> V- <i>leb-k-wi</i>

#### Matrix 3 (R<sub>3</sub>D)

A\D	sg	pl
sg	*V- <u><i>he</i></u> - <i>lo-wi</i> *V- <i>lo-wi</i>	V- <i>b-<u>he</u>-lo-wi</i> *V- <i>lo-wi</i>
pl	*V- <u><i>he</i></u> - <i>leb-k-wi</i> *V- <i>leb-k-wi</i>	*V- <i>b-<u>he</u>-leb-k-wi</i> *V- <i>leb-k-wi</i>

These suffixes can also be illustrated in the following structural formula (in which the *-qe-* which occurs in Matrix 2 is for now disregarded):

#### Structure Formula 1:

N +	0	0	+	0		lo	(±)	wi
				leb		k		

[1] [2] [3] [4] [5]

Structure Formula 2:

V ±	0	s	+	0	lo	(±)	wi
		0					
	b	es		leb	k		

[1] [2] [3] [4] [5]

Structure Formula 3:

V ±	0	<u>h</u> e	+	0	lo	(±)	wi
		0					
	b	<u>h</u> e		leb	k		

[1] [2] [3] [4] [5]

In these formulae we mean:

- + the ending is obligatory
- ± the ending can exist or be absent, its occurrence is conditional on the grammar
- (±) the ending is facultative (so far however in the plural only *-lebk-wi* is known, not *\*-lebk*, this ending however only appears in such texts which always have *-wi*).

Further meanings of the writing

a   b	a   b
= ab or cd	c  = ab or ac or de
c   d	d   e

(For the distributive combination between the paradigmatic and the syntactic structure which these writings are based on, see above II.6)

## 2.2 The terms of the suffix formulae

The analysis of these suffixes therefore yields that its five substantive places are structured in three groups (terms):

I. The term [1][2] relates to the nominal group within the descriptive sentence (ND); it is composed of:

[1] the number of the nominal group and

[2] the relation of the V-term to the ND.

This suffix-pair is only available when the “meaning”, i.e. the syntactic <Rektion> of the V-term, is required or made possible, i.e. it is syntactically limited; it is however missing in many cases also with pluralized ND (see Millet and Heyler 1969).

II. The Term [3][4] relates to the person named in the (A)-sentence, it is composed of:

[3] the number of A, and

[4] is a sentence closure particle congruent with this particle, which I call the “copula” (cop).

The suffix-pair [3][4] is obligatory, i.e. it is syntactically controlled.

III. The Term [5] is occupied by a facultative particle., whose existence or not obviously is neither grammatically nor syntactically controlled; this particle has apparently only a stylistic value and I called it here an “emphatic particle”) (Emph)

When result allows now the following syntactic structure formulae to be set up:

Structure Formula 4:

$$\begin{array}{cccccc}
 V \pm & |ND_{sg}| & ||R_2V|| & + & |A_{sg}| & |Cop_{sg}| \pm & [Emph] \\
 & | & ||R_3V|| & & |A_{pl}| & |Cop_{pl}| & \\
 & | & | & & & & \\
 & |ND_{pl}| & ||R_2V|| & & & & \\
 & | & ||R_3V|| & & & & \\
 & [1] & [2] & & [3] & [4] & [5]
 \end{array}$$

Structure Formula 5:

$$\begin{array}{cccccc}
 V \pm & [Num(D)][Rel(V)] & + & [Num(A)][Num(Cop)] \pm & [Emph] \\
 & [1] & [2] & [3] & [4] & [5]
 \end{array}$$

For the formula (5) gives it the following possible referents:

Num(D) sg = 0, Num(D) pl = *b*;  
 Rel(V) R<sub>1</sub> = 0, Rel(V) R<sub>2</sub> = *s*/0, Rel(V) R<sub>3</sub> = *h*/0  
 Num(A) sg = 0, Num(A) pl = *leb*  
 Num(Cop) sg = *lo*, Num(Cop) pl = *k*  
 Emph = *wi*/0

### 3. The V-term

It is still necessary to discuss the question of which grammatical category the V-term belongs to. I have in multiple earlier works utters to the effect, that it acts without exception as the verb, that therefore e.g. *kdis* is not a Noun with the meaning “sister”, but the verb “to be a sister”. However it appears to me now doubtful whether this interpretation can be fully supported in all cases.

#### 3.1 Nominal sentences

It can probably also be safely accepted, that the Sentence S<sub>D(1)</sub> acts as a nominal sentence (see above III.1.1.). (A) ... N-*lo* must then roughly mean “(A), ...he is a N” (or ... he was a N”) or “(A)..... he is the N”, which obviously does not express the tense, and indeed it is not expected with nominal sentence. Hence the meaning of the descriptive sentence *ant-lo* is “he was (is) a Priest”. The term which here makes a sentence, is however surely the suffix *-lo* (sg.) *-lebkwi* (pl) (see also however under III.5). These endings however also appear in the sentences S<sub>D(2)</sub> and they scarcely can be understood differently in the sentence S<sub>D(1)</sub>. One is therefore led to conclude that with the sentences S<sub>D(2)</sub> they also refer to a Nominal sentence. This however also means that when the V-term is genuinely a verb, in these sentences it exists as a nominalized form (e.g. a participle or a verbal noun).

#### 3.2. Verbal sentence? The Relation R<sub>3</sub>

In the case where the V-term stands with relation R<sub>3</sub> (AR<sub>3</sub>D), it is very likely to be originally a genuine verb that here is nominalized. Thus far still only two cases are known: ... *tereki tk-bhe-lo* (Far 21 [296]) and ... *hrphe-bhe-li* (arm 3 = REM 1066, see above II.5.3). The meaning of *tereki tk-* is unknown, for *hrphe-* Priese (1971,285) has suggested to meaning “command”.

#### 3.3. Genitive Sentence: The Relation R<sub>2</sub>

In this case, where the relation R<sub>2</sub> exists (AR<sub>2</sub>D), however it is more realistic to accept that a simple genitive relationship exists and to regard the V-term as a Noun (that is as a nominalized form).

This appears also easily possible with the relationship terms *kdis/kdite* “sister”, *wi* “brother”, *šte* “mother” and *sm* “wife”. However we are then forced to accept that in Meroitic two distinct genitive constructions are given:

- (24)  $N_1 + N_2 - (li) - s - (lo)$  (1)  
 $N_2 - l + N_1 - (lo)$  (2)

The distinction between these two constructions can be illustrated also as follows:

- (25) (1) (2)
- $$\begin{array}{c} N_1 \\ | \\ \hline | \\ N_1 + N_2 - (li) - s - (lo) \end{array}$$

$$\begin{array}{c} N_1 \\ | \\ \hline | \\ N_2 - l + N_1 - (lo) \end{array}$$

The progressive construction (1) is found with titles, the regressive construction (2) with relationship terms and with few and rare other terms, whose meaning is still not known to us, that however they probably stand near the known close relationship labels semantically. The distinct usage of the two constructions can probably also give a hint to the syntactic meaning of the two genitive constructions: In the progressive construction (1)  $N_1$  is the important element,  $N_2$  is only a specification, that can be left out without loss of essential information; besides *ant Mni-s* “priest of Amon”, *ššor Mnp-s* “sasor of Amanapa” we have also very often simply have *ant* “priest” or *ššor* etc. The statement, that a person (A) holds a priestly office, as opposed to another secular office, was often considered sufficient; and in the genitive construction (1) this essential part of the statement appears in the first position and the reduction  $N_1 + N_2 - (li) - s \rightarrow N_1$  is therefore absolutely meaningful and admissible.

On the other hand with the construction (2), a reduction to  $N_1$  is rather meaningless. Then a sentence something like *\*kdis-lo* “she is the sister”, *\*wi-lo* “he is the brother” would inform very few about the social and familial position of the dead. Here it can inform however for all whose sister or brother the deceased is. And also in the construction (2) the primary element with the greater information content appears in the first position:  $N_2 - l + N_1 - (lo)$ ; and this term is in general also not reduced to  $N_1 - (lo)$ . Therefore it is legitimate, that in the above mentioned reduction rule (R 6.1) the sentence  $N - l + V - lo$  is not first reduced to  $V - lo$  but instead is immediately reduced to S, this means that the interpretation of  $N - l + V - lo$  as a second type of core sentence (besides  $N - lo$ ) is shown to be correct.

A case where a  $N_1$  stands alone which otherwise is used in construction (2), is found only once in Kar 124, where entirely at the end of the inscription is written *sm-lo* “She is a wife”, this at least by itself appears to still have a knowable declaration, namely that the deceased was married and not single. This inscription is however still strange, since in this text one sentence earlier already provided detailed information on whether the dead person was married: *amero Mnp-s-l sm-lo* “she is wife of a amero of Amanapa”. We can here however not exclude that the isolated *sm-lo* works as an entirely another word from *sm* “wife” (similarly, *wi* “brother” is entirely not identical with the *-wi* in *-lo-wi*). We see here again the principle trouble with a constituent analysis, which can describe to a considerable extent the segmentation (e.g. morpheme boundaries), and also can largely determine substitution classes, however still in many cases the identification of the morpheme is not possible with security.

### 3.4 relationship terms with prefixes

Now there are still three relationship terms, that have as a rule one of the prefixes *ye-* or *t-* otherwise known as a verbal prefix, and with this they can also be assumed (to derive) from other roots of a verbal origin. It is these the term *tdhe-* for the maternal descent, *terike-* for the paternal descent and *yetmde-* presumably for the relationship mother’s brother -- sister’s child (the different variants of the prefix are not considered here).

The sentence structure of the so-called “nomination” -(A), (B) *tdhe-lo* (C) *terike-lo* -- can be understood as ‘(A), (B) is who bore (him), (C) is who begot (him)’ or perhaps more in line with the above statements as ‘(A), (B) is the bearer, (C) is the begetter’ whereby again the Relation R<sub>2</sub> exists and the verbal term can be understood as nominalized (a participle or verbal noun).

In any case *tdhe-* and *terike-* do not provide the simple nouns for “mother” or “father” (‘mother’ is named *šte*). What is certain however is their semantic function as statements of maternal and paternal descent, can then be based only the *activity* of bearing and begetting, which fits well the “verbal appearance” of these forms as well. In distinction there are the prefixless terms *šte*, *wi*, *kdis/kdite* brought about alone and thus lie much nearer to a nominal interpretation. Then must however also with *yetmde-* corresponds to some root “activity”. Since this term represents the probable mother’s brother -- sister’s child relationship (Hintze 1974b), it is clear that here another sort of activity must exist besides begetting or bearing. Unfortunately we know nothing at all about the special function of the mother’s brother within the Meroitic family organization, aside from the fact that the (hereditary) succession of offices passes from mother’s brother to sister’s child. It in any case appears that the Meroitic family organization had a strictly matrilineal superstructure (Hintze 1974b). In analogy to other matrilineally organized societies one can suppose that it gives an active roll to the mother’s-brother in a variety of areas of responsibility: very often the guardianship of the sister’s children; he conducts their education; he passes on the sister’s sons his office, he takes them as successors; he plays a decisive role in initiation rites; he acknowledges formally the children of his sister as “sister’s children”, i.e. as belonging to the correct line for offices and rights in areas of responsibility, thus one can suppose for the sentence of the type P *yetmde-lo* the meaning ‘P is as a sister’s child-regarder’ whereby again *yetmde-* is a nominalized verb and also the relation AR<sub>2</sub>D exists.

### 3.5 Summary

By recognition of the interpretation expressed here, we can explain all descriptive sentences uniformly as nominal sentences, their essential mark being the ending *-lo(wi)/-lebkwi* (see Hintze 1977). The V-term these sentences are partly originally nouns or in some cases nominalized verbs (V<sub>N</sub>) The reduction formula can consequently still be modified and made precise

## 4. The *s*-infix

### 4.1. The basic assumptions

There is now still yet to investigate, how the forms of the *-s-* infix (*-s-*, *-qes-*, *aqes-*, that is *-bes-*, *-qebes-*, *aqebes-*) are organized. The previous discussions of these infixes (Hintze 1963, Millet and Heyler 1969, Priese 1971) I shall not repeat here, except simply to establish assumptions that most directly come from the Theory of Millet and Heyler and examine whether the several types occurring of this form can be easily accommodated with these assumptions.

These basic assumptions are as follows:

(1) The morpheme *-s* stands for the possessive relationship of the 3rd person:

*-s* 3 sg. *-bes* 3 pl.

at the same time given is the comprehensive form

*-qes*; *-qebes*

and the quasi-independent form

*-aqes-*; *aqebes*

(The very rare variant with *qo* instead of *qe* occurs when the bare variant is seen)

(2) The possessive term can

(I) appear as an independent term: N-*s* “his N”

(II) be clarified with the regressive genitive construction

$N_2-l + N_1-s \rightarrow$  “the N<sub>2</sub>, his N<sub>1</sub>”/

This suffix *-s* must never be identified with the suffix *-s* of the progressive genitive construction (although naturally a “genitive” connection is likely)

It is therefore better, first to distinguish

(a)  $-s_1$  = Genitive suffix of the progressive construction

(b)  $-s_2$  = Possessive suffix 3 person

Also to be added from the level of the word construction is a third  $-s$ - Suffix

(c)  $-s_3$  = nominal suffix (still uncertain function)

The fact that we must here split up externally apparently identical elements into three different morphemes, in no way speaks against this analysis. In probably all languages are good examples for the phenomenon: e.g. the morpheme  $-s/$  in *he writes* is identical with neither the morpheme  $-s/$  in *books* nor the  $-s/$  in *the king's court*. Just as in this example from English also in Meroitic the “splitting up” of the  $-s$  into distinct morphemes is established through the varying distributions.

#### 4.2 Possessive term

For the use (I) we have several examples in the texts, in which several persons are named one after the other or side by side (see also Millet and Heyler 1969):

EK32: a stela with the representation of a woman Šhiye with nomination and benediction formulae, and the representation of children with the inscription *šretklo mteqes-lo* which means “he is Šretk, he is her child (son?)”.

Inscr. 108: In the meroitic-chapel of Philae following after Bekemete there is a boy with the inscription *Šnnebli-lo ms-qes-lo* “He is Šnnebli, he is his child (son?)”. From these yeild a meaning ‘child’ for *mte* and *ms*, whereby either *mte* ‘child (or son?) of a mother’ and *ms* ‘child (or son?) of a father’ or *ms* and *mte* behave like *kdis* ‘sister’ to *kdite* ‘sister’.. The three proof from Kar 47 that Heyler and Millet give as examples 21-23, can therefore agree, when that each of these sentences is an apposition e.g. *Arwtl mte-s-lo* “Arwtl, he is his child”. However more difficult is

Stela Kar 23:

Here is named (A<sub>1</sub>) Kditoye, with a statement of parentage followed by (A<sub>2</sub>) Temye, *mte aqe-s-lowi* which however is followed by the statements of father and mother, thus when it applies to Temye, the interpretation of *mte* as ‘son’ or ‘child’ in this case appears to be excluded. That most of the persons named in the stela Kar 23 appears also on the offering table Kar 6, and in the same manner, thus it is hardly possible to make a clear image of the family structure; see the remark of Griffith on Kar 6 “.... The parent’s names are thus curiously counterchanged, suggesting that amongst the Ethiopians marriage was elastic and that exchange of consorts even among relations was customary.” Even if this conclusion is perhaps largely correct, so remains still the fact that Kar 23 must still be used with greater caution in the support or refutation theory on relationship labels.

Kar 15: (A<sub>1</sub>) Lolewitr and (A<sub>2</sub>) *yetmde-qe-s Mmye* “his mother’s brother Mmye”

Kar 64: (A<sub>1</sub>) Qoreqore and (A<sub>2</sub>) *[y]etmde-qe-s Qoretkr* “his mother’s brother Qoretkr”, and (A<sub>3</sub>) *Mlidws sm-s-lo* “Mlidws, his wife”. --If this interpretation is correct --that here is obtained entirely informally --, the nominalization of the otherwise as verbal interpretation *yetmde* is caused already through the nominal possessive ending *-qes*. In this text it is still strange that the (B)- and (C)- terms appear in the plural so (A<sub>1</sub>) and (A<sub>2</sub>) appear to be related.; then however Qoreqore and Qoretakar are brothers, and naturally the interpretation of *yetmde* does not fit. We see here again how we still rarely extract a clear understanding of a restricted portion from the meroitic language.

#### 4.3 Intensified Genitive

For the usage (II) --Intensified Genitive-- Millet and Heyler have put together 17 documents, and it is not necessary, to repeat these here. One further text can still be added: *meñte-leb-wi-[q]ebes-lo* (Sed W 3)<sup>5</sup>. Of these 18 documents, 11 come from Gebel Adda, where this form seems to be especially popular, 3 from Karanog, 2 from Faras and one each from Toshke and Sedeinga.

<sup>5</sup>See Kush 14, pl XXX and XXXII, REM 1091, 20 appears to be defective

## 5 The ending *-lo*

Now it is still possible to examine the Term [3] [4] of the above mentioned structure formula somewhat further. In these structure formula it was understood as [Num(A)][Num(Cop)] and at the same time as the sentence constructing elements of the nominal sentences. It has however been shown that several V-terms were probably originally verbs, which in these sentences function as nouns, which somehow are nominalized. Therefore emerges the question, by what means is the nominalization brought about. There are multiple answers possible (Hintze 1977).

### 5.1. Nominalization?

It can be that the mark of a construction as a nominal sentence at the same time brings about the nominalization of a verbal predicate (see perhaps the relationship in the old nubian nominal sentence with the predicate use of the adjunctive of *-ra* from the *-lo* Hintze 1971, 290). This interpretation is based on the structure formula set up above

$$(26) \quad \begin{array}{l} [0] [lo] [A_{sg}] [Cop_{sg}] \\ [ ] [ ] = [ ] [ ] = [Num(A)][Num(Cop)] \\ [leb] [k] [A_{pl}] [Cop_{pl}] \end{array}$$

### 5.2 Deconstruction of *-lo*

However, one can also propose that the nominalization is brought about through the appearance of the *lo* corresponding to an “article” *-l-* pl *-l-eb*, and that the actual nominal sentence is specified by the ending [Cop: *-o/-k*]. Then one must write the term [3][4] in the following way:

$$(27) \quad \begin{array}{l} [l] [o] [Nom(A_{sg})] [Cop_{sg}] \\ [ ] [ ] = [ ] [ ] = [Nom(Num(A))][Num(Cop)] \\ [leb] [k] [Nom(A_{pl})] [Cop_{pl}] \end{array}$$

### 5.3 The hypothetical Nominalizer *\*l*

Finally it is also possible to accept a hypothetical nominalizer *\*l* (Priese 1971), that does not appear in the writing, for it is assimilated on the following *-lo*; actually it must then be named then *\*le =/l/*, but the assimilation however requires a contact position. The term [3][4] the structure formula must then be written as:

$$(28) \quad \begin{array}{l} [*le] [lo] [Nom(A_{sg})] [Cop_{sg}] \\ [ ] [ ] = [ ] [ ] = [Nom(Num(A))][Num(Cop)] \\ [leb] [k] [Nom(A_{pl})] [Cop_{pl}] \end{array}$$

### 5.4 Another deconstruction of *-lo*

With the interpretations under 5.2 and 5.3 one still can go further in writing and ascribe the nominalization function now to the *-l*. Then must one the term [3][4] still further reduce the structure (see Trigger 1968). It then amounts to:

$$(29) \quad \begin{array}{l} [l(e)] [0] [o] [Nom] [A_{sg}] [Cop_{sg}] \\ [ ] [ ] [ ] = [ ] [ ] [ ] = [Nom][Num(A)][Num(Cop)] \\ [le] [b] [k] [Nom] [A_{pl}] [Cop_{pl}] \end{array}$$

or

$$(30) \quad \begin{array}{l} [*l(e)][0][lo] \\ [ \quad ][ \quad ][ \quad ] \text{ etc.} \\ [le \quad ][b][k] \end{array}$$

## 5.5 Summary

Our current knowledge of Meroitic grammar prevents going further on determining definitively which one of these various possible interpretations is alone correct. I believe however that the interpretation 5.1 a higher probability for having it and that it therefore deserves precedence. For it says at once, it is simple and economical, thus it can do without the introduction of a hypothetical element *\*l*. In addition we can still provide arguments against the other interpretations:

(1) if *l(e)* (5.2, 5.4) or *\*l* (5.3, 5.4) causes the nominalization of the verbal V-term, then arises the question, how does this *-l/\*l* behave in the case where the V-term is already a noun (then one cannot speak properly of a “nominalized noun”).

(2) if this *l/\*l* is supposed to be related to the “article”, one is missing the assimilation on a preceding *-ñ /-n/*. A term like *šleqeñ /saleqen/* is supposed to then give first *šleqe-l /saleqella/* or also */saleqell(e)/* (see Hintze 1973a,330) and with the addition of *-lo* a form like *šleqe-lo*; actually, however, the texts have *šleqeñ-lo*. The “article” itself on the other hand does always assimilate on a preceding *-ñ /-n/*, see

<i>šleqeñ</i>	<i>šleqe-l</i>	<i>šleqeñ-lo</i>
<i>hrphñ</i>	<i>hrph-l</i>	<i>ttñ-lh</i>
<i>hbhñ</i>	<i>hbh-l</i>	<i>qoreñ-lh</i>

In that with *-lo* the assimilation does not happen, the obvious explanation is due the fact that here (just as with *-lh* “great”) the morpheme boundary is more strongly evident than with the “article” *-l*, and the *-lo* has a strong syntactic “weight”. (For the various morpho-ponetic evidence for morpheme boundaries, see Hintze 1947). That is why the arguments of Priese (1971,276, 1.13.3.) miss the mark(?): it is about neither “phonetic” nor “morphological” phenomena, but morphophonetics. The example *ariteñ-l* (without assimilation) and *hbhe-lh* (with (geblicher?) assimilation) can be scarcely considered substantial evidence: with *ariteñ* the character of the *-ñ* as a suffix by no means secure, it can just as well be interpreted here as */ne/*, and the unique *hbhelh* in Inscr 110 is probably a scribal error, which also otherwise occur several times in the inscriptions of the meroitic chapel, beside the reading of *e* as the correct letter here is insecure.

## IV. The structure of the benediction verbs

### 0. Introduction. The affixes

In most funerary texts the “description” is followed by a series of stereotyped sentences, that Griffith has called “the terminal formulae or benedictions”: the formulae A-J are found in texts for non-royal persons, the formulae C, K and L in texts for kings and their relatives. These sentences also have a quite transparent structure and allow also expectation on their general contents. Already Griffith had made for Formulae A and B a suggested translation (Griffith 1911, 45): “One may suspect the meaning of *ate mhe pš-te* and all the variants to be something like ‘abundant water mayest thou drink’; and the parallel B *at mhe pš-hr-te* may be ‘abundant bread mayest thou eat’.”

The structure of the most frequent types of Benediction sentences can be illustrated with the formulae (31), that of formulae C d and E with formula (32):

$$(31) \quad S_B \rightarrow (N + Q) + V$$

$$(32) \quad S_B \rightarrow ((N + Q)-l) + V$$

To the previously given relations between N and V one can add the relation “direct object”  $R_4 : N_B R_4^s V_B$ .

Here however the internal structure of the sentences themselves shall not be discussed, instead first of all in these sentences we discuss the occurrence of verbal terms with apparently so arbitrarily chosen various prefixes and suffixes. These affixes are assembled from the following elements: *p-*, *š-*, *w-*, *y-*, *0-*, *-ke*, *-te*, *-s*, *-to*, and *-0*, from which the various possible combinations are obtained. The actual combination of these elements found in the texts are<sup>6</sup>:

Prefix: *p-*, *p-š-*, *p-w*, *y-* and *0-*

Suffix: *-ke-te-s*, *-ke-te*, *ke-s*, *ke*, *ye-s*, *-te*, *-s*, *-to*, and *-0*

With complete freedom to choose the possible combinations of these affixes with the verbal stem, there are theoretically 45 different verbal forms, that however from the entire context for the sense and purpose these inscription must have essentially the same semantic contents, or the grammatical-semantic differences in any case must be minimal. This is certainly a very strange fact and it does not make it easy without further work to find a plausible explanation or even think up a reasonably plausible explanation. We will however see, that it is still possible to bring some order in this initial chaos: and for this reason that the number of the affixes can be markedly reduced.

<sup>6</sup> Not taken into consideration are variations in the vocalization of the affixes (e.g. *pš-*, *pši*, *piši*, *kete*: *kte* etc.) the exchange *p* : *b* (*b* in the cases is understood as a variant of *p*); the still unique form *pitošuherbhekes* (Kar 23) example of the prefix element *-to-* (the verbal stem is *h(e)r*); and the also unique example of the prefix *a-* in *ahrkete* (Far 2).

## 1. The Suffixes

### 1.1. Orthography

We find written in the texts the following new suffixes, that is the suffix combinations:

- |                   |                  |                |
|-------------------|------------------|----------------|
| (a) <i>-ketes</i> | (e) <i>-kete</i> | (h) <i>-to</i> |
| (b) <i>-kes</i>   | (f) <i>-ke</i>   | (i) <i>-0</i>  |
| (c) <i>-tes</i>   | (g) <i>-te</i>   |                |
| (d) <i>-s</i>     |                  |                |

### 1.2. The suffixes *-to* and *-te*

The suffix (h) *-to* cannot be understood as a variant or else as equally good for the suffix (g) *-te*. First *-to* has an entirely different distribution than *-te*, it appears e.g. directly after *hr* or *hol*, where *-te* basically, as we see in next passages, is not found, see e.g.

*pši-hr-to* : *pši-hr-kete*  
*pši-hol-to* : *pši-hol-kete*

Whereas the suffix *-s* is frequently found after *-te*, it does not appear after *-to* in any of the so far known texts. Furthermore *-to* forms its own syllable as opposed to *-te*, which, as will be shown below, is understood as *-t/*. The suffix *-to* therefore appears as an independent unit.

This suffix is relatively rare, it appears 13 times in 6 texts; these texts sometimes however have besides *-to* also *-kete* or *-0*, as the following outline shows:

Formula	A	B	C	D
Verb	<u><i>h</i></u>	<i>hr</i>	<u><i>hol</i></u>	<i>th</i>
Sh.1	<i>-to</i>	<i>-to</i>	<i>-to</i>	<i>-to</i>
Kar 1	<i>-to</i>	<i>-to</i>	--	--
Kar 51	<i>-to</i>	<i>-to</i>	--	--
Kar 22	<i>-to</i>	<i>-to</i>	<i>-kete</i>	--
Kar 12	<i>-0</i>	<i>-kete</i>	--	<i>-to</i> ( <u><i>hol</i></u> )

### 1.3 The suffixes *-te*, *-tes*, *-and* and *-es*

It appears that the suffixes *-te*, *-tes* and *-s* are just orthographical or morpho-phonological variants of *-kete*, *-ketes*, that is *-kes*. It appears then not to be an independent form.

#### 1.3.1 After the Infix *-bh-*

When we first take into consideration the form with the plural infix *-bh-*, we find here the following variants:

(a) *-bhekete* :            (b) *-bh $\underline{t}$ e*  
       *-bhekes* :            *-bh $\underline{e}$ s*.

These writings allow, under the obvious assumption of a progressive assimilation /hk/ -> /hh/, the following interpretation,

(a') *-/bahket/* :            (b') *-/bahhat/*  
       *-/bahkes/* :            *-/bahhes/*

The same assimilated and nonassimilated forms are found side by side with the verb h:

(a) *pših $\underline{e}$ kete* :            (b) *pših $\underline{t}$ e*  
       *pših $\underline{e}$ kes* :            *pših $\underline{e}$ š*

which allows the following phonemic interpretation:

(a') */pasih $\underline{h}$ ket/* :            (b') */pasih $\underline{h}$ hat/*  
       */pasih $\underline{h}$ kes(e)/* :            */pasih $\underline{h}$ hes(e)/*.

With a verb that does not end with h or *h*, such as *hr*, *hol*, *l*, etc. it is the *-ke* that is always written, i.e. with these verbs the *-te* never appears without *-ke-*; it does vanish in the script however also with the Infix *b(e)h-*, see:

(a) *pšolkete* :            (b) *elhte*  
       *h $\underline{o}$ lkete* :            *h $\underline{o}$ lbhte*  
       (a') */pasolaket/* :            (b') */yelahhat/*  
       */h $\underline{o}$ laket/* :            */h $\underline{o}$ labahhat/*

Further examples of the explanation of the seemingly irregular forms through the effects of assimilation are e.g.

*bših $\underline{e}$ s* (Toshka) =  
       */basi $\underline{h}$ hes/* < *\*/basi $\underline{h}$ kes/*  
*bših $\underline{e}$ bhes* (Ibr 2) =  
       */basi $\underline{h}$ bahhes/* < *\*/basi $\underline{h}$ bahkes/*  
*bšitkbhes* (Ibr 1) =  
       */basitakabahhes/* < *\*/basitakabahkes/*

Occasionally one finds also a regressive assimilation /hk/ -> /kk/; which explains for example the following forms:

*pšohebkete* (Kar 104) =  
       */pasohbacket/* < *\*/pasohbahket/*.  
*pšihrkete* (Kar 104) =  
       */pasiharabacket/* < *\*/pasiharabahket/*

*pšihēbkes* (Arm 3a) =  
 /pasi**h**bakkes/ < \*/pasi**h**bahkes/

Similarly using the assimilation /**h**k/ -> /kk/ the following form can be explained:

*bišokte* (Kh 10043 Argin) =  
 /bisokkat/ < \*/bisoh**h**ket/

### 1.3.2 Syllabic structure

The specific conditions regulating the change of the writing *-bhe-: -bh-* makes it possible to know finally the syllable structure of the suffix. See the forms:

(a) V-*bhe-kete* : (b) V-*bh-te* with  
*pšihē-kete* : *pših-te* and  
*pšihē-to,*

the obvious phonemic way to interpret these are

(a') V-/bahket/ : (b') V-/bahhat/  
 /pasi**h**ket/ : /pasi**h**hat/ and  
 /pasi**h**to/

Therefore is when the suffix *-kete* is understood as *-ket/* and *-bhe-* as */bah/*. for */bah/ + /ket/* the morpho-phonetic rule is valid (see also IV1.4)

(33) /bah/ + /ket/ -> { /bahket/ (a)  
 { /bahhat/ (b)

### 1.3.3 Assimilated forms

Consequently this shows first three of the suffixes set up in IV.1.1 are orthographic or morphophonetic derived forms, with which the *k*, owing to assimilation on a previous *h* or *h̄*, is not visible in the text; thus the following equations are possible:

(c) *-tes* = (a) *-ketes/*  
 (d) *-s* = (b) *-kes/*  
 (g) *-te* = (e) *-ket/*

### 1.3.4 The verb *pl(e)*

It is strange then that here the very rare verb *pl(e)* of the benediction formulae C and D appears to yield an exception (the only examples are Kar 78, 79, 101, 127): it always has *-pl(e)te*, whereby no morpho-phonetic possible explanation for the loss of the *-ke-* can be found. Perhaps here the *-te* perhaps is not a suffix, but instead belongs to the verb stem (*-plete*)?

### 1.3.5

The relationship between the assimilated and the non-assimilated forms

It is remarkable that both the non-assimilated form (33a) and the assimilated form (33b) are found in the texts For this different possible explanations may be given:

(I) This assimilation is the result of the speech-historical process that takes place to a certain extent within that timespan we observe. With this diachronic explanation the non assimilated form should belong to the

older texts; the occurrence itself is analogous to the assimilation /s/+/l/ -> /t/ and its reflection in the Meroitic orthography (see Hintze 1959, 67).

(II) It is a matter of different idiolects or dialects of the speech-forms. With this explanation it should be possible to establish differences between several Tes(x?)t-groups from various locales or also familial origins.

(III) It is a matter of purely orthographic differences: the assimilation is phonetically always present, but the orthography is sometimes more “phonetic”, sometimes more “morphological” that is “morphophonetic”.<sup>7</sup> The same interpretation is also possible with the orthographic *t* for *sl*. Against this interpretation, however, there appears at the first glance the regular change /e:/a/ with the non-assimilated compared with the assimilated form being spoken (see also IV.1.5), yet this contradiction is only superficial; *ket* corresponds with the morphophonetic spelling. However also with this orthographic explanation it should be possible to establish the development of the orthography with texts of different ages. I believe in any case that the explanation given under (III) deserves precedence, but the necessary examination to prove to validity or invalidity of the explanations (1) and (II) is still to be done.

<sup>7</sup> See here also the arabic orthography *al-šams* with the spoken [aššmas], that is [āššāmiš]

#### 1.4 The Suffix *-ke*

The form *V-ke-0*, in which the suffix (f) *-ke* appears (see IV 1.1) is extremely rare, it comes in the entire corpus only five times (0.08% of all suffixes). This number is so small, that one can disregard the suffix *-ke* on this basis. However this form anyway is probably not linguistically correct. Of the 5 examples, 2 come from Kar 111, an inscription that is also otherwise filled with undoubted errors: in Sh 3 there appears the ending *-k* at the very end of the inscription and on the stone simple there was no place for the remaining letters. Kar 84 is one not very carefully executed inscription that has four times, one after the other, has the form *-kes* and then *pšthke*, where as obviously as the *-s* is left out, like *-te* with *-ke* in Sh 13. That both Shablul-stela are reckoned by me as *-kete*, Kar 84 as *-kes* and Kar 111 is not taken into consideration. In any case finally one should not extract a independent suffix *-ke* given with the benediction verbs.

#### 1.5 The Suffixes *-ketes* and *-kes*

Now still we have to examine the relationship of the suffixes *-ketes* and *-kes* to each other. An examination of the deposition of these suffixes in the benediction formulae show at once a complementary distribution: in texts that have *-ketes* do not have *-kes* and conversely. These complementary distributions are however connected to similarly a geographic distribution. On this basis, we can divide our texts in two groups a North group (Shablul, Karanog, Arminna, Gebel Adda and various single texts whose origin is reliable e.g. Toshka, Aniba, Ibrim) and a Southern Group (Faras, Nag Gamus, Meroe and diverse single texts e.g. Argin) The further examination confirms the veracity of this organization sufficiently. The following table shows the distribution the suffix *-ketes* (that is *-tes*) and *-kes* (that is *-es*) of these two groups:

Table I: The frequency of the suffixes *-ketes* and *-kes* in the Northern (N) and Southern (S) funerary texts

	N	S	
<i>-ketes</i>	2	20	22
<i>-kes</i>	54	4	58
	56	24	80

This distribution cannot be seen as accidental ( $\chi^2 = 49.7$  with Yate's correction; Yule's associated coefficient  $Q=0.99$ ) We can therefore derive the conclusion that *-ketes* is the normal form of the southern texts and *-kes* is that of the northern texts.

The complementary distributions of the two suffixes also allows, however, the conclusion that they are basically identical. When we from the above (IV.1.3.2) develop the phonetic form *-ket/* stands for the



- (a'') the prefix *p-*
- (b) the verbs *h*, *hr*, *h*, *l*, *th*, *dotedi*, and *pl(ete)* have either
  - (b') the prefix *y-* or
  - (b'') the prefix *pš-*

### 2.2.2. Textual errors

Exceptions to these rules are very rare; they can in most cases be seen as textual, that is, scribal errors:

*ph-* (Kar 77) the loss of the expected *šo* is brought about through the line change, it is to be read as *p<šo>hte*;

(Kar 111) this is the above mentioned (IV.1.4) extremely error-riddled inscription;

*phr-* (Kar 7) this is also a very poorly written and unreliable text  
(Kar 130): here it appears as a wholly obvious omission

*ph-* (Kar 93) the is also a very poor text

*pth-* (Kar 111): is the above-mentioned error-filled text

*pitk-* (Arm 3b): this form is clearly derived through a textual omission (for *piši-tk-*)

The 8 cases of *pš-* with *hol* (Kar 12,40,71,80,95; Sh 1, 8, 10) can on the other hand probably cannot simply be interpreted as errors. For the discussion of these forms see below IV.2.6.3.

### 2.3 The prefixes *0/y-* and *p-*

The distribution of the prefixes (see 2.1.1) is distinct, thus there do not exist four prefixes independent from each other. When we describe the verbs named under (a) as  $V_a$  and those named under (b) as  $V_b$ , so appears as equally good variants:

$$\begin{array}{cc} \{0-V_a\} & \{p-0-V_a\} \\ \{y-V_b\} & \text{and} & \{p-š-V_b\} \end{array}$$

or otherwise expressed as:

$$(37) \quad p + \begin{array}{l} / V_a \rightarrow p-0-V_a \\ \backslash V_b \rightarrow p-š-V_b \end{array}$$

Therefore we have to deal actually with only two prefixes:

(a) *0/y-* and

(b) *p-*

where (a) has the rank [1'] and (b) the rank [2'], which allows to be depicted in the following structure-formula:

$$(38) \quad \begin{array}{cc} |p| & |0| \\ | & | + V + \dots \\ | & |y| \\ [2'] & [1'] \\ (/p/ + /y/ \rightarrow /ps/) \end{array}$$

(Further refinements to this interpretation are below IV.2.5)

### 2.4 The prefixes */0/-* and */p/-*

The explanation of these facts, -- that have been discussed in a similar manner as part of the round-table conference on the question of meroitic semantics in Paris in 1972 -- is not so simple. It relies considerably on the interpretation of the *y*-form. I see here at first two possibilities:

(I) *y-* is an independent verbal prefix. However in any of the Verbs  $V_b$  no *y-*-less form is known, e.g. for *yih*, *yoh*, *yih*, *yipl*, *yeth* (in NG 5 *tk* appears obvious to be a scribal error)

(II) The verb  $V_b$  has a vocalic initial sound, that on account of the lack of a ‘glottal stop’ in Meroitic appears with frontal (palatal) vowels in the script as *y-*. This explains forms like *yih*, *yihm*, *yipl*, *yeth*, but not *yoh*, where one then rather expects *\*woh*. Also against this explanation however is that besides the *yel-* of the funerary texts, outside these texts *l-* is also found (if it is to be handled as the same verb)

With an assumption of the explanation (II) one can represent the corresponding morphophonetic rule as follows ( $vV$  = verb with initial vowel,  $cV$  = verb with initial consonant):

$$(39) \quad \begin{array}{l} /0/ + \quad | \quad /_vV \rightarrow /y/ - V \\ \quad \quad \quad \backslash \quad cV \rightarrow /0/ - V \\ \\ /p/ + \quad | \quad /_vV \rightarrow /p-s/ - V \\ \quad \quad \quad \backslash \quad cV \rightarrow /p-0/ - V \end{array}$$

A similar interpretation appears to have been had by Hestermann, if I properly understand his somewhat unclear formulation (Hestermann 1925, 13): “... nach p- ist y- gleich -s- oder breiter ausgedruckt: p-y- vor Vokal ergibt p-s- vor Vokal”. This is the actual “Hestermannsche Lautgesetz” and not the already made observation of Griffith that *s-l* goes to *t*, that I had described previously owing to a regrettable error as the “Hestermannsches Lautgesetz” (Hintze 1963, 3, Anm 10). However Hestermann’s declaration that the *s* belongs to the stem of the verb (“... das Prafix *p-s-* kann vorlaufig nicht akzeptiert werden, da das *s* untruglich zum Stamm gehort”), was naturally not durable.

## 2.5. The prefixes /0/- and /pas/-

The acceptance of the transition  $/y/ \rightarrow /s/$  however does not allow a acceptable phonetic interpretation. In Meroitic the intervocalic  $[y]$  is well established, e.g. the “Hiastus-eraser” in forms like *payeši* <- [pa’esi] or in *ašoreyi* <- [asure] + [i] etc., and also otherwise very frequently e.g. as the name-ending *-ye* as in *Harmadoye* etc. These facts make a phonic explanation very improbable. We can in any case not say that in Meroitic generally intervocalic  $[y]$  becomes  $[s]$  -- and we must thus set up a special phonetic rule for the case  $[p] + [y]$ .

This however is very unacceptable. We actually can do without a special ad-hoc rule, when we accept as the actual for of the  $/p/-$  prefix to be  $/pas/-$ . This requires simply that in  $/pas/- + V_b$  (=  $vV$ , verb with initial vowel, see above IV.2.3. and 2,4, Formula (37) and (39)), the  $/s/$  remains and also is always written, whereas in  $/pas/- + V_a$  (=  $cV$ , Verb with initial consonant), the  $/s/$  assimilates on the immediately following consonant and therefore as a rule disappears in the script (as far as the writing is not morphological -- or “etymological”; see above the relationships of  $-/ket/$  and  $-/ketse/$ , IV.1.3.1 and 1.3.2). This can now be represented in the following morphophonetic rule (40), that replaces at the same time rules (37) and (39):

$$(40) \quad \begin{array}{l} /_vV \rightarrow /pas/ + _vV \\ /pas/ + \quad | \\ \quad \quad \quad \backslash \quad cV \rightarrow /pa_c/ + cV \end{array}$$

Acceptance of this Rule<sup>8</sup> provides a entirely simple and natural explanation of such forms as:

$$\begin{array}{l} /pas/ + /ih/- \rightarrow /pasih/- \\ /pas/ + /hol/- \rightarrow /pahhol/- \\ /pas/ + /tar(e)/- \rightarrow /pattar(e)/- etc. \end{array}$$

<sup>8</sup> For this phenomenon there is a good parallel in Nubian: in Dongolawi there can be the following assimilations  $s + t \rightarrow tt$ ,  $s + d \rightarrow dd$ ,  $s + k \rightarrow kk$ ,  $s + g \rightarrow gg$ ,  $s + n \rightarrow nn$ ,  $s + \tilde{n} \rightarrow \tilde{n}\tilde{n}$ ,  $s + g \rightarrow gg$ ,  $s + w \rightarrow ww$ , see Armbruster 1960: 538ff

## 2.6 Secondary forms

### 2.6.1. /pis/-

Only briefly will I draw attention to the following: The prefix /pas/- has a secondary form /pis/-, that above all appears when the following verb has the initial vowel /i/; this admits a simple interpretation of vowel hamony (The relationship of /pas/- to /pis.- is undriven [?] 300:70) We obtain then the following rule:

$$(41) \quad /pas + {}_iV \rightarrow /pis-{}_iV/$$

This vowel assimilation is however not in all cases visible orthographically.

### 2.6.2 The vowel shift [u]:[i]

The verb h has the forms /oh/- and /ih/- (approximately with the same frequency) with a vowel shift [u]:[i], that in Meroitic is also otherwise observed.

The vast majority of cases with the /pas/-Prefixes and their various writing explanation can be informally explained in this manner; a few irregular writings can be seen as faulty

### 2.6.3 The form *pšhol*

The writing *pšhol* mentioned above in IV.2.2.2 is now explained simply as a morphological “etymological”) writing, as we also met with the suffixes .

## 2.7. The prefixes y- and 0-

With this interpretation, as it may even be pointed out that it is also not necessary to accept the prefix as double-structured.

$$(38') \quad \begin{array}{|c|} \hline |pas| \\ \hline |0| \\ \hline | \\ \hline \end{array} \begin{array}{|c|} \hline |0| \\ \hline |\{y\}| \\ \hline |\{0\}| \\ \hline \end{array}$$

one can just simply write

$$(38'') \quad \begin{array}{|c|} \hline |pas| \\ \hline |\{y\}| \\ \hline |\{0\}| \\ \hline \end{array}$$

This however now raises the question of the relationship of the /y/-Prefix to the /0/-prefix. Here appears simply to be when one accepts that /y/- is not a special prefix, but that y appears with a verb  $\sqrt{V}$ , which has a initial vowel, corresponding to known rules of Meroitic orthography, as I had already explained above IV.2.4. (II). In this case we have only one prefix: /pas/- and besides it what is interpreted as a prefixless form. Just to simplify the later presentation below I refer to this form as a /0/-prefix that stands in opposition to the /pas/-prefix.

## 3. Structure and grammatical form of the benediction verbs

The general structure of the benediction verbs correspond to the general struction of the Meroitic verb . It can be illustrated through the following formula:

$$(42) \quad V_B = \pm \text{Pref} + V \pm \text{Inf} + \text{Suff.}$$

First the various “places” (terms) of this structure shall be taken into account:

### 3.1. The Infix *-bhe-*

Between the V and the suffix in the cases where the text refers the several deceased there appears the infix *-bhe-* ; when the text only refers to one deceased, there appears in archaic inscriptions *-he-*; non-archaic inscriptions have no such infix.<sup>9</sup> We find here therefore the various elements, that express in the structure formula for the verb the description sentences (III.2.1.) the relation R<sub>3</sub> (Related to the Nominal Group in the description sentences). Here it however obviously proves to relate to that person named in the (A) sentence. Thus one can hardly interpret it in the benediction sentence to have completely different grammatical function, one expresses the relations in the benediction sentence by having given back the following formula:

$$(43) \quad N_B R_4 V_B R_3 P_{(A)}$$

One important verb that is used in the benediction formula is with high probability ‘give’, that is the verb *\*l*: thus the attempted translations of Griffith (see above IV.0) probably must be modified somewhat and in general the contents of these sentences should likely be read as: “plenty of Water may he (they) be given” or “...one may give him”, or “shall he (may he) given him”.

<sup>9</sup>One can also view it as a infix *-/0-0/-* and then in formula (42) replace  $\pm \text{Inf}$  with  $+\text{Inf}$ .

Consequently this allows the meaning of the Term  $\pm \text{Inf}$  in the Formula (40) to be declared with:

$$(44) \quad \text{Inf} = [\text{Num} (P_{(A)})][R_3 P_{(A)}]:$$

it is manifested through:

$$(45) \quad \text{Inf:} \quad \begin{array}{|c|c|c|} \hline 0 & | & h \\ \hline | & | & 0 \\ \hline b & | & h \\ \hline \end{array}$$

### 3.2. The Term $\pm \text{Pref}$ .

The term  $\pm \text{Pref}$  can, as shown by the facts above in IV.2.6 and 2.7, now simply be written as:

$$(46) \quad \pm \text{Pref:} \quad /pas/-$$

### 3.3 The Term $+\text{Suff}$

The term  $+\text{Suff}$  is on the other hand distinctly bipartate

$$(47) \quad + \text{Suff:} \quad + \begin{array}{|c|c|} \hline ket & | + [se] \\ \hline to & | \\ \hline 0 & | \\ \hline \end{array}$$

Thus */se/* comes only after */ket/*, not after */to/*. It is probably also not acceptable after */0/*: the three examples for the bare suffix *-es* can be informally explained as assimilated forms: *bšiheš* =

/basihhesse/ (Toshka), *bšitbhes* = /basitakahhesse/ (Ibr 1) and *b[ših]rbhes* = /basiharabahhesse/ (Ibr 2) -- The suffix /to/ appears -- in any case as far as we know so far -- only when the prefix /pas/- appears. The suffix *-to* in “historical” texts (e.g. Tañyidamani, see Hintze 1960, 160-1) is probably distinct for the *-to* of the funerary texts.

### 3.4. The structure formula

When we are able to disregard the infix already discussed above (it appears not to cause any further problem for the structure of the verbal complexes) the following structure formula results:

$$(48) \quad V_B = \begin{array}{c} / \pm pas + V + | ket | \pm se \\ | \quad \quad \quad | 0 \quad | \\ \backslash + pas + V + to \\ [1'] \quad [0] \quad [1] \quad [2] \end{array}$$

As well probably the term [2] only appears when also the form /ket/ appears (48a).

### 3.5. The grammatical function

The attempt to relate these affixes to a grammatical meaning and function must naturally remain rather speculative., aside from the infix *-(b)he-* (see above III.1.3.1), proof their grammatical meaning is yet to be seen by me. The distribution analysis presented above and that arising from possible combinations after all offer clues for the attempt a grammatical interpretation after all and thus make I here suggestions, that to me in this framework seem possible.

Since the entire context for with the benediction formula regards the requests or wishes for offerings (water, bread, etc.), one must first probably ask, who here is working as the giver. So far we accepted that it is in the dieties named in the invocation Isis and Osiris. Griffith thought the offering is accepted as a request by the dead (Griffith 1911, 46). I myself think this can be an impersonal meaning (“... may he be given”) or a request to the giver (“may they give him”) -- where “they” are the gods addressed in the invocation (Hintze 1955, 362; 1963,2). It appears to me now however probably that it refers to a request for funerary offering from the descendants, that is, from the grave visitors and readers of the inscription.

#### 3.5.1 The Suffic -/0/

We now address first the question of the cases in which the suffix *-/0/* appears. There are multiple possible explanations:

(a) It can refer to the abbreviation of the full forms, and in several cases one also has the impression that it is brought about simply through space limitations (this method has been mentioned above already multiple times) However one finds the *-/0/-* from also in texts, where the explanation as abbreviation due to space limitations is not very likely: their relatively frequent occurrence also perhaps speaks against this explanation.

(b) The suffix *-/0/* has a grammatical meaning; it to be understood as *-/a/*. This gives here two possibilities for the phonetic interpretation:

(b1) The *-/a/* belongs to the verb-stem, then *yel* is interpreted as */ela/* ; or

(b2) the *-/a/* ia a grammatical ending, then *yel* is to be understood as */el/ + /a/* or as */ela/ + /a/*, *hol* corresponds to */hol/ + /a/* or */hola/ + /a/*.

The explanation (b2) is probably to be preferred. When one accepts this, one can classify the verb not only by their initial sound ( $vV$  and  $cV$ ), but also their final sound ( $V_V$  and  $V_C$ ) see e.g.

*holkete*: *hol* = /hola/ + /ket:/hola/ + /a/,  
*elhte:yel* = /elahhat/.ela/ + /h/ + /ket:/ela/ + /a/  
*yihkete:yih* = /ih/ + /ket:/ih/ + /a/.

### 3.5.2. The suffix -/se/

The term [2] is facultative, one can suppose this is a reinforcing particle, similar to the *-wi* in the nominal sentence (see above III.2.2). If one wants one can here draw attention to structural parallels of the old-nubian suffix *-so*, frequently with the imperative, however also reinforcing other verb forms.

### 3.5.3. The suffixes -/ket/, -/ketse/, and -/to/

The Term [1] presents itself with three variants (-/ket/, -/a/, -/to/) the interpretation as pronomial marks is quite obvious. As a trial one can assume: 2 sg -/a/, 2 pl -/ket/, 3 pl -/to/.

### 3.5.4 The Prefixes /0/- and /pas/-

The Term [1'] can be interpreted as a modal (or temporal?) marker; that is /0/- = imperative, /pas/- = Optative (or Future?)

### 3.5.5 The verbal-scheme

Thus arises the following verbal scheme:

	Imperative	Optative
2 sg.	0 - V - a	pas - V - a
2 pl.	0 - V - ket	pas - V - ket
3 pl	-----	pas - V - to

With this interpretation one also understands, why -/to/ is not combined with /0/-. The 3.pl. can be understood also as a general pronoun "one".

### 3.5.6. The structure formula of the Benediction verbs

Thus arises as the complete syntactic structure formula for the benediction verb:

$$(49) \quad V_B = + \text{Mod} + V \pm \text{Pron}_{(A)}R_3 + \text{Pron}_B R_1 \pm \text{Emph}$$

with the following possible elements:

Mod = Imp: /0/-; Opt:/pas/-  
 Pron<sub>(A)</sub>R<sub>3</sub> = sg: -/0-he/-, -/0-0/-; pl: -/b-he/-  
 Pron<sub>(B)</sub>R<sub>1</sub> = sg.2.: -/a/; pl.2: -/ket/; pl/3: -/to/  
 Emph = -/se/.

V The use of the affixes of the benediction verbs in the text groups

## 0 Introduction

## 0.1. Preliminary remarks

In chapter IV it has been shown the apparent number of prefixes can be reduced from 5 to 2 (/pas/- and /0/-), and the number of suffixes from 9 to 4 (-/ket/, -/ket+se/, -/0/ and -/to/). This also reduced the number of possible combinations from 45 to 8, however the construction /0/-V-/to/ does not appear to occur, giving finally 7 possible forms. This raises the question, whether these remaining forms are used completely at random or whether one can discern some dependences on their use.

As a starting point for the discussion of this question, one can take the frequency of the affixes in the various localized text groups and determine by means of these statistics, whether the text groups are distinct from one another in the use of the affixes. This can be established with the help of basic statistical methods. The use of statistical methods are based in this case on the assumption that the funerary texts which reach us represent to a certain extent a random sample (spot-check) of the original population and thus permit conclusions for the respective populations. This assumption is well allowed, as it is scarcely reasonable to suppose that accidentally e.g. of all offering tables found on which the suffix -/ketse/ -*kes* is written, the southern texts are lost and that there only such are found that are the ones having the writing -*ketes*.

A certain dependence from the production of the offering tables can in any case exist when somewhat later texts remain preserved better and in greater numbers kept than archaic texts, or when only a definite, limited time-period's portion of a graveyard is excavated -- however then the spot-check is a random sample probing the relationship in a certain time period.

The following investigation lays the distribution of the affixes in the various text-groups out, without consideration of which verbs these affixes are attached to. One can naturally also take the various verbs as a starting point to determine whether it gives a relationship between them and the affixes. However when it gives such a relationship, then must also the different distributions of the affixes be directly based on the different uses of the verbs (and the benediction formula) in the various text groups and thus reflect them. Starting from the text groups has the advantage that all verbs are included together, while with starting from the verbs themselves, on account of the very rare occurrences, complicates statistical evaluations. The question still relation between the verbs and affixes, between verbs and text groups and between prefixes and suffixes are however briefly treated in V.4.4.

## 0.2. The material

The affixes are divided into the text-groups Sh(ablul), Kar(anog), Arm(inna), G(ebel) A(dda), Far(as), N(ag) G(amus) and Mer(oe). Tables 2 and 3 give the affixes in their orthographic form (without taken into consideration sch variants as *pši-*, *piši-*, *bši-* etc.), while for the Tables 4 and 5 the morphophonetic forms are used. For the statistical analysis only the data in tables 4 and 5 are used.

Table 2: The frequency of the (orthographic) prefixes of the benediction verbs in the text groups

	Sh	Kar	Arm	GA	Far	NG	Mer	
<i>pš-</i>	40	215	21	20	59	11	7	373
<i>p-</i>	7	24	3	0	4	2	23	63
<i>y-</i>	2	24	1	0	10	1	11	49
<i>0-</i>	2	49	1	0	8	3	19	82

51 312 26 20 81 17 60 567

Table 3: The frequency of the (orthographic) prefixes of the benediction verbs in the text groups

	Sh	Kar	Arm	GA	Far	NG	Mer	
-kete	26	182	8	6	41	14	40	317
-te	3	76	0	0	15	4	8	106
-ketes	0	2	0	0	8	0	9	19
-kes	7	11	17	14	1	2	0	52
-tes	0	0	0	0	2	1	0	3
-to	4	7	0	0	2	0	0	13
-e	10	35	0	0	5	0	2	52
	50	313	25	20	74	21	59	562

Table 4: The frequency of the (morphophonetic) prefixes of the benediction verbs in the text groups

	Sh	Kar	Arm	GA	Far	NG	Mer	
/pas/-	47	239	24	20	63	13	30	436
/0/-	4	73	2	0	18	4	30	131
	51	312	26	20	81	17	60	567

Table 5: The frequency of the (morphophonetic) suffixes of the benediction verbs in the text groups

	Sh	Kar	Arm	GA	Far	NG	Mer	
-/ket/	29	258	8	6	56	18	48	423
-/ketse/	7	13	17	14	11	3	9	74
-/to/	4	7	0	0	2	0	0	13
-/0/	10	35	0	0	5	0	2	52
	50	313	25	20	74	21	64	562

### 0.3. Investigation methods

The aim of the statistical investigation is to prove whether the varying use of the different affixes in the various text groups is allowed in the area of an accidental sampling fluctuation, or whether it deviates significantly from this. Further shall investigate whether a classification of the text groups based on the feature "Usage of Affixes" is possible.

The null hypothesis is the assumption that the usage of the affixes in the various text-groups show no essential difference. For the determination of whether the deviation is significant, several simple statistical test methods are used:

- the Chi-squared homogeneity test
- the calculation of the 95% confidence levels for the relative frequencies
- Tschuprows association coefficient  $T$

Unfortunately several of our text groups are quite small. Thus one has to question whether probably significant differences are not yet detected which could turn up with larger sample (of the populations).

### 1. The prefixes

#### 1.1. Total

The Chi-Squared homogeneity statistic for Table 4, in which no theoretical frequency occur is as small as 1 (for /0/- in GA the theoretical frequency is 4.42) gives

$$\chi^2 = 40.65 \text{ (DF = 6; } P < 0.001; \chi^2_{0.001} = 22.46); T = 0.18$$

This gives highly significant difference between the groups, that with respect to the use of the prefixes with a probability to exceed as 99.9% that they are not drawn from a homogeneous population.

## 1.2 Groupings

Further analysis gives that in the probability of the use of the prefixes, there are three groups:

(A) Sh, Arm, GA:

$$X^2 = 1.66 \text{ (DF=2, P=0.44)}$$

$$T = 0.11:$$

The relative frequency of /pas/- is in this group  $p=94\%$ . The 95% confidence levels for the parameter  $p$  of the corresponding population lays in the interval 88%...97%

(B) Kar, Far, NG

$$X^2 = 0.05 \text{ (DF=2, P=0.97)}$$

$$T = 0.01$$

The relative frequency of /pas/- in this group is  $p=77\%$ . The 95% confidence levels for the parameter  $p$  of the corresponding population lays in the interval 73%...80%

(C) Mer:

The relative frequency of /pas/- is  $p=50\%$ , the 95% confidence limits are 37%...63%

The three groups and significantly different from each other

$$X^2 = 40.06 \text{ (DF=2, P<0.001, } X^2_{0.001} = 13.82)$$

$$T = 0.22$$

## 2. The Suffixes

### 2.1. Total

In the table 5 one obtains with Arm, GA and NG theoretical frequencies at small as 1. We can however combine on the one hand Arm and GA and on the other NG and Mer to single group (Arm+GA:  $X^2 = 0.02$ , DF=1, P=0.89; NG + Mer:  $X^2 = 0.76$ , DF=2, P>0.60) so that the theoretical frequencies are all greater than 1. Thus we obtain:

$$X^2 = 168.19 \text{ (DF=12, P>0,001: } X^2_{0.001} = 32.91);$$

$$T = 0.29$$

This also gives a highly significant difference between the groups in their usage of the suffixes. The comparison of the  $T$ -coefficients shows that the association between the text-groups and the suffixes is more important than between the text-groups and the prefixes.

### 2.2 Groupings

Further analysis yields that we have four highly significantly different groups:

(a) Sh:

-/ket/ is significantly rare

-/to/ and -/0/ are significantly frequent

(b) Arm GA

-/ket/ is significantly rare

-/ketse/ is significantly common

(c) Kar

-/ket/ is significantly common

-/ketse/ is significantly rare

(d) Far, NG, Mer

no significant deviations of the actual from the theoretical frequencies

The following summary (Table 6) shows the observed frequencies in these four groups and (in parantheses) their theoretical expectations under the assumption of the validity of the null hypothesis:

	Sh	Kar	Arm + GA	Far + NG + Mer
-/ket/	29 (38)	258 (236)	14 (34)	122 (116)
-/ketse/	7 (7)	13 (14)	31 (6)	23 (20)
-/to/	4 (1)	7 (7)	0 (1)	2 (3)
-/0/	10 (5)	33 (29)	0 (4)	7 (14)
	50	313	45	154

( $X^2=165.99$ , DF = 9,  $P<0.001$ ,  $X^2_{0.001}=27.88$   $T = 0.31$ ).

A comparison of these groups shows that they are significantly different from each other in the frequency of the usage of the suffixes The most distinct outlier is the Group Arm + GA, which stands at the greatest distance from Kar (Table 7)

Table 7. The comparison of the text groups in the frequency of the usage of the suffixes, with the aid of the Chi-Squared (DF=3,  $X^2_{0.001} = 16.27$ ) and the Tschuprows association coefficient  $T$  (in parentheses)

	Far + NG + Mer	Kar	Arm + GA
Sh	18.90 (0.23)	18.27 (0.17)	34.22 (0.46)
Far + NG + Mer		21.22 (0.16)	51.78 (0.39)
Kar			153.82 (0.50)

3. The combination of the prefixes and the suffixes

The combination of the significant traits with the usage of prefixes and suffixes (see 1.2 and 2.2) makes it possible to structure the test groups into five larger groups:

Text group	traits
(1) Sh.	A a
(2) Arm + GA	A b
(3) Kar	B c
(4) Far + NG	B d
(5) Mer	C d

Table 8 contains an overview of the significant characteristics of these 5 groups. The symbols mean  
+ = significant excess  
- = significant deficit  
0 = neutral

In this table moreover contains the writings of -/ketse. (-ketes or -kes), as well as the forms of the prefixes we-/qe- of the expanded invocation (Heyler 1964) in the relevant spaces are

- + = present
- (+) = present, but in reduced numbers
- = not present
- [-] = expanded invocation not attested,

Table 8: Significant characteristics of the text groups

Text-group	Prefix	Suffix	Writing	Expanded
------------	--------	--------	---------	----------

	/pas/	/0/	/ket/	/ketse/	/to/	/0/	of /ketse/		Invocation	
							<i>ketes</i>	<i>kes</i>	<i>qe-</i>	<i>we-</i>
Sh	+	-	-	0	+	+	-	+	[-]	[-]
Arm + GA	+	-	-	+	0	0	-	+	-	+
Kar	0	0	+	-	0	0	(+)	+	-	+
Far + NG	0	0	0	0	0	0	+	(+)	(+)	+
Mer	-	+	0	0	0	0	+	-	+	-

For the various groups the following traits are characteristic:

(1) Shablul has an excess of /pas/- and the suffixes -/to/ and -/0/; /ketse/ is written as *-kes* (the expanded invocation is not attested)

(2) Arminna and Gebel Adda use /pas/ significantly often, as well as the suffix -/ketse/; -/ketse/ is always written as *-kes*; the prefix /0/ and the suffix /ket/ are significantly rare, the expanded invocation is the prefix *we-*.

(3) Karanog is characterized by an excess of -/ket/ and a deficit of -/ketse/; -/ketse/ is most often written as *-kes*, but the writing *-ketes* is found; the expanded invocation uses the prefix *we-*

(4) Faras and Nag Gamus behave neutrally in the case of the prefixes and the suffixes; -/ketes/ is usually written *-ketes*, but the writing *-kes* is known. wutg tge expanded invocation both *we-* and *qe-* are used, but *we-* is dominant.

(5) Meroe is characterized through a deficit of .pas/- and an excess of /0/- and is thus distinguished from the other groups; -/ketes/ is always written *-ketes*; the extended invocation uses only *qe-*.

With this combination of characteristics, that distinguish the various groups from each other, there appears to be a continuous transition from Meroe to Lower Nubia, that however does not correspond throughout to a geographic succession of places from south to north. With all characteristics however the group Faras+Nag Gamus takes to a certain extent a middle position. Important to note is the strong effect of the location, that is also apparent with the use of the description sentences in the funerary texts (see Hintze 1976, 27). Securely standing behind these appearances are speech-historical and historical connections, that are important for an investigation of the story of the Meroitic expansion to Lower Nubia. Before one however can do this analysis, still a series of further questions must be answered, several of which I must treat briefly in the following section

#### 4. Connections between the verbs and the affixes

With the above statistical investigation we looked at the usage of the affixes in the various text-groups, without regard to which verbs these affixes were connected with. It is thus still necessary to look at the relation of the different verbs to the affixes at least in passing. If these relations are very tight, so must the distribution of the verbs in the different text groups correspond with the structure of the text groups established above (and in certain manner this means a distinct distribution of the various benediction formulae).

##### 4.1. The usage of the benediction verbs in the text groups

Some of the benediction formula using verbs are so rare, so in the following investigation they cannot be considered. These are *do/de*, *kle*, *plte*, *we/wi*.

Also the relatively rare verb *h* is not considered. One has supposed that it is hereby to be treated as a variant of *h̄*. However it appears the documentation says that *h* only appears in the formula B, in which otherwise *hr* is used (only in Inscr 130 [Dakka] does *hr* appear in formula A). For Formula A however *h̄* is characteristic (209 examples); it appears in Formula B only 4 times (Kar 68, 82, 94, Ashm 455). Hence one can understand the rare *h* as a variant of *hr*, or otherwise explain it as *h<r>*.

Further the doubtful verb *š* is not considered. In the majority of cases where it appears to exist, it can be handled as the verb *h*, that through a regressive assimilation (see above IV.1.3.1) does not turn up in the writing. So allows e.g. an informal explanation of the form *pšokete* as /pasohket/ -> /pasokket/. Such an explanation is possible for the stela Kar 2, 34, 84, Far 7, 28 (?) and Kh 10043, but it fails with *pšo* (Kar 126, Far 36) and *pšobhte* (Kar 45); these forms must for the time being be interpreted as irregular or uncertain.

The unique and also very dubious verb *wl* in *pši* : *wl* (Kar 126, Formula F) can well be a writing for *we* that is also used in Formula F in Mer 45.

Table 9 shows at first glance that the classification of the text groups established by the affixes is not specially marked. However the group Meroe shows conspicuous peculiarities: The verbs *tre* and *twd* are only expected in Meroe, as they are only used on kingly offering table; the Verb *l* is generally only found in archaic texts, which are in particular found in Meroe (the one example Far 43 also comes from an archaic text). It is however justifiable, when one investigates the distribution of the verbs, to disregard these special verbs, as well as *dotedi* which is only found in Karanog (this is found 10 times in Kar, is not significantly frequent for the rest).

Table 9: The frequency of the benediction verbs

	Sh	Arm	GA	Kar	Far	NG	Mer	
<i>h</i>	17	8	11	112	30	8	6	192
<i>hr</i>	16	8	8	90	31	6	5	164
<i>hol</i>	12	3	0	72	12	5	22	126
<i>th/tk</i>	4	7	1	12	3	1	0	28
<i>dotedi</i>	0	0	0	10	0	1	0	11
<i>l</i>	0	0	0	0	1	0	10	11
<i>tre</i>	0	0	0	0	0	0	14	14
<i>twd</i>	0	0	0	0	0	0	10	10
	49	26	20	296	77	21	67	556

For the distribution of the remaining four verbs (*h*, *hr*, *hol*, and *th/ek*), one gets altogether

$$X^2 = 77.70 \text{ (DF=18, } P < 0.001), T = 0.19$$

as a highly significant value. The group Mer is responsible for most of this high value for the chi-squared: here *h* and *hr* are significantly more rare and *hol* significantly more frequent, When we remove the group Mer, for the remaining groups we get:

$$X^2 = 34.56 \text{ (DF=15, } P = 0.003), T = 0.14$$

The greatest contribution to this still significant chi-squared comes from the group Arm with its high number of *th/tk*. When we exclude this group as well, for the rest we get:

$$X^2 = 12.03 \text{ (DF=12, } P = 0.44), T = 0.09$$

a non-significant value

#### 4.2 The usage of the affixes with the benediction verbs in the text groups

With regard to the usage of the benediction verbs Meroe and Arminna are distinct from the other groups, which on their part are not essentially different from each other. This is evidence that the distinct usage of the affixes is considerably distinct from the usage of the verbs. This is particularly so for the suffixes, however to a certain extent also for the prefixes. We have above (IV.2.5) seen that the relation extends between the form of the prefixes (the orthographic alternation of /pas/ with *p-* and *pš-*, and *y-* with /0/-) and the verb-classes, but between the type of prefixes (/pas/ or /0/) and the different verbs the connection is not just that there is a significant deficit of a prefix (e.g. /pas/-) that can be clearly explained through a corresponding deficit of a certain verbs. However Meroe has also a strongly distinct in its use of verbs from the other texts, a significant deficit of *h* and *hr* and a significant deficit of /pas/-. Of the 6 examples of

*h* and *hr*, with the prefix preserved, it is always /pas/-, one can conclude that the rarity of *h* and *hr* also explains at least part of the deficit of /pas/- . Furthermore the verb *l*, that in Mer occurs 10 times and that is not used in the other texts (with the exception of one case in Far), is responsible for a part of the excess of /0/- and thus also a deficit of /pas/- , since *l* always appears with the /0/-prefix. however Mer also has a significant excess of the verbs *hol*, *tre* and *twd*, and these verbs use /pas/- 27 times and /0/- 17 times, here appears also a significant excess of the verbs in contrast with a significant deficit with that with their common prefix

With the three most frequent verbs (*h*, *hr* and *hol*) are however still a significant relationship with the prefixes, as follows clearly from Table 10<sup>10</sup>

Table 10: The distribution of the prefixes with the verbs *h*, *hr*, and *hol*

Prefix	Verb			
	<i>h</i>	<i>hr</i>	<i>hol</i>	
/pas/-	196	165	42	403
/0/-	21	13	72	106
	217	178	114	509

$\chi^2 = 160.00$  (DF = 2 , P<0.001),  $T = 0.47$

This gives a highly significant result. The association between these verbs and their prefixes is very tight. Especially distinctly marked is the higher frequency of /pas/- with *h* and *hr*. The exact relationship shows the 95% confidence levels the occurrence of the prefix /pas/-with the three verbs:

<i>h</i> :	86%...93%
<i>hr</i> :	89%...96%
<i>hol</i> :	29%...45%

It is however different with the suffixes and these three verbs, as Table 11 shows. The small association between these verbs and the suffixes confirms only that results established above, that the distribution of the suffix is not so very correlated with that of the verbs , but are subject to a variety of local factors

Table 11: The distribution of the suffixes with the verbs *h*, *hr*, and *hol*

Suffix	Verb			
	<i>h</i>	<i>hr</i>	<i>hol</i>	
-/ket/	159	127	104	390
-/ketse/	33	26	9	68
-/0/	20	20	8	48
	212	173	121	506

$\chi^2 = 7.78$  (DF=4, P=0.10),  $T = 0.09$

<sup>10</sup> It is here not the text grouping but the verbs that matters, so included are all funerary texts enclosed and occasional scattered finds that were known to me.

#### 4.3. Relationships between the prefixes and suffixes.

Very briefly we shall deal with the question whether there is a relationship between the prefixes and suffixes. Such an association appears to exist in at least two cases:

The (relatively rare) suffix *-to/* appears always in constructions with the prefix /pas/-, this probably cannot be interpreted as a coincidence . It must however still be checked, whether lack of the construction \*/0/-V-*-to/* is to be interpreted as significant in view of the rarity of *-to/* overall; if this however shall turn out to

be the case, then the grammatical interpretation of the form V-/to/ as suggested above will be supported in a welcome manner

A further association of this type occurs with the Suffix -/ketse/: it is significantly rarer with the prefix /0/- as the following Table 12 shows

Table 12: The relationship between the prefixes and suffixes

Prefix	Suffix		
	without -/se/	with -/se/	
/pas/-	381	74	455
/0/-	131	9	140
	512	83	595

$$X^2 = 8.63 \text{ (DF} = 1, P = 0.003), T = 0.12$$

Whether further relationships of this type are ascertainable must await further investigations

#### 4.4 Effects of chronological factors

Concluding we shall briefly bring up the question of whether we can ascertain to relations between the age of the texts (“archaic”, “transitional”, “late-transitional”, “late”, the distinctions introduced by Griffith) and the verbs or their affixes.

Such a relationship is secure with the verb *l*, that is only used in the archaic texts. When we compare e.g. the frequency of the prefixes /pas/- and /0/- in the groups Mer and Far with each other, so obtaining with taking *l* into consideration  $X^2 = 8.88$  (P=0.002) a highly significant result, without *l* however  $X^2 = 3.15$  (P = 0.08), a non-significant result. This indicates a tight relationship between the /0/- prefix and the verb *l*.

With the Verb *hr* we have the archaic text Far 43 with the form *(y)ihr-*; this form is very rare in the later texts and the form with the /pas/- prefix is dominant. In total one gains the impression that the form with the /0/-prefix is preferred in the older texts while in the younger texts it is the /pas/-prefix. This must however still be thoroughly investigated for any local differences in the various verbs under consideration.

With the suffixes the form -/ketse/ (*-ketes, -kes, es*) first appears in the transitional texts, but one gains the impression that it is useful frequently in the later texts. Thus corresponds with the above finding that the form -/ketse/ is significantly less common with the /0/-prefix.

A comprehensive consideration of the old texts is however at present hardly possible with sufficient certainty. Thus extensive background work is still necessary.