

## Indo-European Numerals

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*Editor*

Werner Winter

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# Indo-European Numerals

*Edited by*

Jadranka Gvozdanović

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## Preface

This volume on Indo-European numerals has its origin two decennia ago, when the late A. S. C. Ross approached Hermann Berger, Robert G. G. Coleman, Bernard Comrie, Heiner Eichner, Ronald Emmerick, David Greene, G. Klingenschmitt, Kenneth R. Norman, Edgar C. Polomé, Glanville Price, H. Thesleff and Werner Winter proposing that they write chapters on numerals in the Indo-European language(s) in which they were specializing. They did so, and their original contributions date from late 1960s and early 1970s. A. S. C. Ross provided some general comments on Indo-European numerals, supplemented by an excursus on Tocharian *tumane* by H. W. Bailey and an excursus on Mesopotamian numerals by W. G. Lambert. A. S. C. Ross also wrote a chapter on Germanic, notes on analogy as mentioned in the various chapters, and compiled a list of lesser-known languages and localities mentioned in the various chapters. In the process of editing the volume, A. S. C. Ross retyped the original manuscripts using his own system of cross-referencing. Unfortunately, he passed away before he was able to accomplish the task to an extent which would have made it possible to publish the volume; this was partly due to missing bibliographical data which had been planned to be presented in an integrated bibliography of the entire volume.

After A. S. C. Ross's death, Mouton Publishers tried to proceed with the publication of this volume and W. Winter, the editor of *Trends in Linguistics*, devised a system of chapter organization so as to make the presented information more easily accessible. In the process of editing the volume, however, W. Winter found himself in a position when essential information was missing which seemed impossible to supply; in any case the task at hand exceeded by far the usual work of an editor, especially in view of new data on numerals which had become available since the beginning of the preparatory work on this volume.

Due to these circumstances, the Indo-European numerals volume seemed to be doomed to remain unpublished. However, the manuscripts were still being kept at the Linguistics Department of the University of Kiel when I arrived there as a Humboldt scholar in order to investigate numeral change and decay in the Tibeto-Burman languages of East Nepal, on the basis of the Linguistic Survey of Nepal questionnaires at the

University of Kiel, in addition to my own field-work in Nepal. It struck me that the manuscripts on Indo-European numerals contained too many valuable data on numeral developments, and extensive comparative evidence, to remain unpublished. On the basis of W. Winter's advice and with Mouton's consent, I took up the publication of this volume after completing my Tibeto-Burman numeral investigations.

In the process of the preparation of this volume, I wrote to the contributors to the volume (with the exception of D. Greene and A. S. C. Ross, who were no longer alive any more, and with the exception of Sir Walter Bailey and W. G. Lambert, due to a more limited new conception of the volume), asking them whether they were still in agreement with the publication of their manuscripts, and, if so, to send me their original bibliographies and any text revisions they might wish. With the exception of G. Klingenschmitt and H. Thesleff (who had contributed chapters on Albanian and Greek respectively), all the authors approached agreed to have their texts published in the volume I was proposing to edit. G. Klingenschmitt had decided to publish his manuscript on Albanian numerals elsewhere, and H. Thesleff had no time to revise his manuscript on Greek numerals, a revision of which he considered necessary. On the basis of these reactions, W. Winter and I proposed that E. Hamp should write a chapter on Albanian numerals and F. M. J. Waanders on Greek numerals. In addition to these changes as compared with the original conception of the volume, we also had to face the fact that two authors, H. Berger and Edgar C. Polomé, had published the texts originally intended for this volume elsewhere (i.e., Berger in *Münchener Studien zur Sprachwissenschaft* 47, 1986: 23–70, and Polomé in the *Journal on Indo-European Studies* 14: 1–2, 1986: 185–189). We finally decided to publish Berger's somewhat modified English version of his original chapter on Modern Indo-Aryan numerals, and to reprint Polomé's "A Note on Thraco-Phrygian numerals" with the consent of the editor of the *Journal on Indo-European Studies*, and with an *addendum* by Polomé in concern of recent evidence on Thraco-Phrygian. A major revision of the original chapter on Germanic numerals, needed in view of incomplete references and new evidence which had become available in the meantime, was carried out by J. Berns.

In addition to these chapters, which were already present in the original conception of this volume, there are also two newly written ones: a general chapter about Indo-European numeral reconstruction, called "Some thoughts about Indo-European numerals", and a chapter entitled "Remarks on numeral systems" which tries to formulate a link between

the Indo-European tradition of numeral investigation and recent theoretical interest in numerals which has been developed independently of Indo-European studies. The present volume presents a comprehensive survey of Indo-European evidence on numerals based on our knowledge from two decennia ago and updated where the authors considered it appropriate (which applied especially in the case of Tocharian, Thraco-Phrygian, Greek, and Germanic).<sup>1</sup>

The basic arrangement of each chapter is the following throughout the volume:

- X.0 Introduction
- X.1. Cardinals
  - X.1.0. Introduction
  - X.1.1. ‘One’
  - etc.
  - X.1.10. ‘Ten’
  - X.1.11. ‘Teens’
  - X.1.12. ‘Twenty’
  - X.1.13. ‘Thirty’ – ‘ninety’
  - X.1.14. ‘Hundreds’
  - X.1.15. ‘Thousands’ (and upwards)
- X.2. Ordinals
- X.2.0. Introduction, etc. as above
- X.3. Fractions
- X.3.0. Introduction, etc., as above
- X.4. Other categories as needed
- X.4.0. Introduction, etc., as above

(‘X’ refers to the number of the chapter. Finer divisions reflect the author’s own subdivision of the text – if any, as no guidelines had been given to the authors before they wrote their texts.)

Major deviations from this schema are found in the chapters on Anatolian and Balto-Slavonic. In the chapter on Anatolian, the second figure denotes the numeral discussed, and the third figure denotes either a cardinal numeral, if it is “1”, or an ordinal numeral, if it is “2” – e.g. “3.1.1.” denotes that within the third chapter (Anatolian) the cardinal numeral “one” is being discussed. In the chapter on Balto-Slavonic, on the other hand, the second figure denotes the numeral discussed, and the last figure – if it is not preceded by “0” – denotes a cardinal numeral if it is “1”, and an ordinal numeral if it is “2”.

The chapters are (whenever possible) based on the original manuscripts supplied by the authors and on their original bibliographies. Where appropriate, an explanatory list of the abbreviations used in the text has been included at the end of the chapter. In several chapters, the authors have chosen to make a distinction between minor references, fully given in the text, and major references, given in the bibliography. The major references have been standardized. The minor references aim at giving sufficient information to the reader, though it has not been possible to fully standardize these.<sup>2</sup> Bibliographical abbreviations follow the system used in *Linguistic Bibliography*, with additions in several chapters which have been explained separately.

It wish to thank the authors for their willingness to reconsider their manuscripts, and all the people who have contributed towards this publication in the course of the years. Among them, I especially wish to thank the editor of Trends in Linguistics for his constructive contributions, and the Editor in Chief of Mouton de Gruyter for all the stimulating efforts towards this publication.

It seems more than appropriate to dedicate this volume to the memory of its initiator, Alan S. C. Ross.

Jadranka Gvozdanović

### Notes

1. Among recent studies mentioning numeral etymologies, I would like to draw the reader's attention to T. V. Gamkrelidze – V. V. Ivanov (1984): *Indoevropskij jazyk i indoevropejcy*, (Tbilisi, Izdatel'stvo Tbilisskogo Universiteta) 2: 842 – 855 (“Čislitel'nye i sistema sčeta” [Numerals and the system of counting]).
2. The authors' own reconstruction and transcription preferences were followed as much as possible:
  - in the presence vs. absence of a reconstructed series of palatal velars;
  - in the transcription of the laryngeals as  $H_1$ ,  $H_2$ ,  $H_3$ , or  $H_e$ ,  $H_a$ ,  $H_o$ , or  $E$ ,  $A$ ,  $O$ , or  $\partial_1$ ,  $\partial_2$ ,  $\partial_3$ ;
  - in the glide transcription, where  $y$  and  $w$  were used whenever possible, and otherwise  $j$  and  $u$  were respected.

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# Chapter 1

## Remarks on numeral systems

Jadranka Gvozdanović

Numerals are language signs, with forms and meanings which fit in with the language structures in which they occur. In most languages, numerals are characterized by relatively transparent form-meaning relations, which enable us to study patterning of numeral meanings (also referred to as “numbers”) in a relatively straightforward way.

Cross-linguistic studies of numerals (especially Greenberg 1978) in terms of the mathematical structure of numeral meanings, the order of elements in numeral phrases, and the syntactic relation to the head noun, showed that there is a high level of generalizability and regularity in the embedding into the language structure. Subsequently, Chomsky (1980: 248 f.) suggested that the property of the human mind to develop certain forms of mathematical understanding, especially concerning the number system, abstract geometrical space, continuity, and related notions, might be enlightening as regards deep and fundamental characteristics of the human species. And in a later publication (1982: 20 ff.), Chomsky suggested that what underlies both the human language faculty and the number faculty is a kind of computational complexity that is equipped to deal with discrete infinities.

Against the background of this type of interest in numerals from the universalist and cognitive points of view, Hurford (1975, 1987) investigated numeral systems assuming that they lie in the intersection of the human language faculty and the number faculty. The relevant features of the language faculty include in his opinion the pairing of word forms with concepts and highly recursive syntax. In addition to a generative treatment of morphological and syntactic properties of numeral forms, Hurford (1987) especially concentrated on cognitive – mainly acquisitional and partly also variational – properties of the numeral meanings. Concerning the pairing of forms and meanings in numeral morphosyntax, Hurford (especially 1987) established a general tendency by which languages prefer to form numeral expressions by combining constituents whose meanings correspond with arithmetical values which are maximally

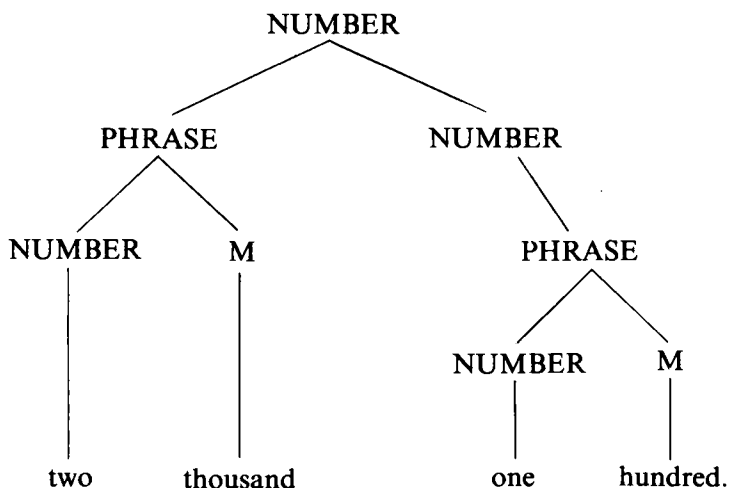
far apart. This tendency corresponds in his opinion to a general output constraint in language which tends to prohibit sequences of identical morphs.<sup>1</sup> It forms part of the general principles of numeral syntax, for which Hurford proposed an analysis in terms of phrase structure rules and additional language-specific constraints, such as the so-called “Packing Strategy” in English. The proposed simplified version of the phrase structure rules for English numerals is given in (1).

(1) A simplified version of the phrase structure rules for English numerals (Hurford 1987: 245):

$$\begin{aligned} \text{NUMBER} &\rightarrow \left\{ \begin{array}{l} \text{DIGIT} \\ \text{PHRASE (NUMBER)} \end{array} \right\} \quad (\text{'DIGIT' expands to any of} \\ &\hspace{15em} \text{the words } \textit{one, two, \dots, eight,} \\ &\hspace{15em} \textit{nine.}) \\ \text{PHRASE} &\rightarrow \text{NUMBER M} \\ \text{M} &\rightarrow \left\{ \begin{array}{l} \text{-ty} \\ \text{hundred} \\ \text{thousand} \\ \text{million} \\ \text{billion} \end{array} \right\} \end{aligned}$$

An example of a structure generated by (1) is given in (2).

(2) The phrase structure for *two thousand one hundred* in English (Hurford 1987: 246):



Corresponding to the pre-theoretical intuitive account of the facts, by which in additive constructions the highest-valued constituent is put first, Hurford's Packing Strategy states: "pack the highest-valued constituent as near as possible to the root (top) of the tree" (Hurford 1987: 246 f.). This can account for the fact that English *two thousand one hundred* is standard, but *\*one hundred two thousand* is not. Given its general formulation, the Packing Strategy captures also the pretheoretical intuitive account by which in multiplicative constructions the highest-valued constituent is put second, thus accounting for the fact that English *two hundred thousand* is standard, but *\*two thousand hundred* is not.

In addition to such morphological and syntactic generalizations, Hurford (1987: 305) established the following innate contributions to the organization of numeral systems:

- 1) the concepts of collection and individual object, and the relations between them;
- 2) the ability to represent arbitrary links between signified and signifier (the Saussurean Sign);
- 3) the disposition to make the sizeable inductive leap from a memorized sequence of words to the use of these words expressing the cardinality of collections (the Cardinality Principle);
- 4) the ability to acquire and control syntactic rules forming longer expressions out of the simple vocabulary, together with associated semantic interpretation rules;
- 5) the ability to assemble such rules into highly recursive rule sets.

"Out of these capacities", Hurford (1987: 305) wrote, "only the third, the Cardinality Principle, is special to numeral systems; the rest are very familiar in human language more generally." The Cardinality Principle, by which an inference regarding the cardinality of a set is made from an instance of the counting activity ending with a particular numeral word, is directly related to the ordering of numeral expressions, a feature which in Hurford's opinion sets apart numerals from other language elements, such as the set of noun phrases, or prepositional phrases, or other elements, which are in Hurford's opinion all unordered sets. This basic assumption, which is partly due to Hurford's generative background, was not exposed to further investigation. And it is at this point that one might speak of a missed opportunity for shedding more light onto the human cognitive capacities which underlie both the human language faculty and the number faculty.

In fact, arguments in favour of similarity between numeral ordering and ordering in the other parts of language can be found both syntagmatically and paradigmatically. These arguments can be understood if one views

- a) the presence of ordering among forms as reflecting ordering among the meanings of these forms, and
- b) the basis of ordering as being constituted by asymmetrical implication of the type “B implies A, but A does not imply B”; asymmetrical implication affecting elements of the same level is traditionally referred to as “markedness”, and asymmetrical implication affecting elements across levels is traditionally referred to as “hierarchy”.

If understood in this, more general, sense, then ordering which can be established for the number system (i. e., the system of numeral meanings, as reflected by the numeral forms) does appear to be comparable to ordering which can be established for the other parts of language.

A syntagmatic argument can be deduced i. a. from phenomena captured by the so-called Packing Strategy constraint described above, by which “the highest-valued constituent” is packed “as near as possible to the root (top) of the tree”. This constraint shows that fixed ordering holds among numeral forms if their meanings are mutually hierarchically differentiated. The observed effect of meaning hierarchy on the order of the forms representing these meanings holds for numerals in a way comparable to that obtaining for the other parts of language. This principle was already implicitly recognized by Hurford (1978), who formulated the Packing Strategy constraint with reference to morphosyntactic principles which are in this type of approach applicable to the other parts of language as well. What I am doing here is in fact reformulating them in terms of form–meaning relations and ordering. In this reformulation of the principles already recognized by Hurford, the ordering which is characteristic of numeral phrases parallels the ordering which is characteristic of, e. g., Heads and Modifiers in noun phrases, and this ordering of forms follows from their meanings, such that Heads denote entities and Modifiers denote properties. Between these categories, there is asymmetrical implication in the sense that entities are characterized by properties, and if so, implied by them (a property may either characterize an entity or an event; in the latter case, it shows up as a Modifier of a verb phrase, not a noun phrase). It is on the basis of this asymmetrical

implication that a hierarchy obtains by which a nominal Head is dominating and its Modifier subordinate. Languages tend to express this meaning hierarchy by means of formal phenomena such as the Modifier's copying, e. g., gender and number from its Head and/or by means of word order constraints. In the numeral system, this is paralleled by the difference between so-called building blocks (e. g., 'ten', i. e., not fully equalling Hurford's category 'M', as will be shown below) and so-called numeral elements (e. g., 'one'): if present, a numeral building block dominates numeral elements, but numeral elements need not imply a building block (for cross-linguistic variational data, e. g., from Tibeto-Burman, cf. Gvozdanović 1985). It is this asymmetrical implication holding for the different categories of numeral meanings which underlies the hierarchy that plays the relevant rôle in the morphosyntactic constraints such as the Packing Strategy discussed above.

If the meanings of the categories involved are mutually characterized by asymmetrical implication, this has consequences for their syntagmatic usage possibilities. Paradigmatic characterization and syntagmatic usage possibilities consequently fit in within one whole. It is on the basis of paradigmatic asymmetrical implication that not only the morphosyntactic phenomena discussed above can be explained, but also usage possibilities of a bare hierarchically dominating category with reference to its (potentially) subordinate ones. This is a well-known phenomenon of generic expressions in language (by which, e. g., *a monkey* or *monkeys* can be used with reference to any of the possible properties of the given set of entities). A nominal Head can be used in this way, but if a Modifier is to be used in a similar way, then languages tend to develop additional adjustment means (such as saying, e. g., *a beautiful one* in English, with *one* referring to the corresponding dominating category). In the numeral system we have the same phenomenon of usage possibilities of a dominating category with reference to its (potentially) subordinate ones in the usage possibility of any of the numeral building blocks or a multiplication of it with reference to any of its subordinate building blocks and/or any of the possible numeral elements further specifying it (such as saying in English, e. g., *this happened in the eighteen hundreds* or *this happened in the eighteen hundred twenties*, with referential applicability to any of the decads and specific years of the nineteenth century in the first example, and with reference to any of the specific years within the given decad of the nineteenth century in the second example).

In addition to these principled similarities between the numeral system and the remaining parts of language, there is a well-known difference, too. It is found in the presence of full ordering among the numeral

meanings, which is not to such an extent found in the remaining parts of language. However, even though there is full ordering, there are alternatives in its patterning, demonstrated by language-specific differences in the building blocks as used in the numeral hierarchies. Depending on the language, the building blocks can be based on the meaning of 'five', 'ten', 'twenty', 'hundred', etc., and only the ways in which these building blocks participate in hierarchies with respect to each other and with respect to the numeral elements show basic cross-linguistic similarities. These similarities, all deriving from the same principle of asymmetrical implication at the level of numeral meaning, are revealed by the principles of linear ordering at the level of numeral forms, which fit in with – and are hence indicative of – the general principles of linear ordering in a given language, and which reveal the meanings of the units undergoing this ordering.

It is in respect of hierarchy that numeral systems can be assumed to fit in within one whole with fundamental characteristics of language systems. And it is in this respect that a study of numeral systems, with their relatively straightforward patterning of form and meaning in the derived forms and syntagms, can be revealing with respect to fundamental characteristics of the human mind.

What kind of independent evidence can be given for the idea presented here that the numeral system is organized hierarchically, such that there are level differences as described above? From what kind of data can the existence of levels be deduced?

The relevant sort of data would be of the sort showing that the so-called building blocks are units comparable to each other and different from the so-called basic elements. If there is such a phenomenon among numeral meanings, we can expect it to show up in similarities among the forms connected with these meanings, such that numeral building blocks are, or become, similar to each other in a way distinguishing them from the so-called basic elements 'one', 'two', etc. Whereas similarity among basic numeral elements is by nature linear, similarity among building blocks – if it is attested – is by nature nonlinear and unexplainable by any linear principle, unless it takes into account levels.

The relevant sort of data concerning nonlinearity within numeral systems can be derived from studies of analogy, such as Winter's (1969). Winter discusses analogy in language, including numerals, as similarity in form which originates from similarity in meaning: in the case of numerals, it is often – but apparently not always – based on contiguity,

i. e., linear ordering in counting, as shown by the following Sanskrit examples.

(3) Analogy in the ordinal numerals of Sanskrit (from Winter 1969: 36):

Sanskrit

1		
2	dvit̥fyaḥ	↑
3	ṛt̥fyaḥ	↕
4	turiyaḥ	↓
	caturtháḥ	↑
5	pañcátháḥ	↕
	pañcamáḥ	↕
6	ṣaṣṭháḥ	↑
7	saptatháḥ	↕
	saptamáḥ	↓
8	aṣṭamáḥ	↕
9	navamáḥ	↑
10	daśamáḥ	↑

The only exception to contiguity as underlying analogical formation in the ordinal numerals of the first decad in Sanskrit is found in the influence of the *-m-* suffix of *daśamáḥ* (i. e. *daśamás*) 'tenth' on the form for 'fifth'. Winter (1969: 38) concludes that an explanation for this phenomenon can be given only in connection with an investigation of the higher numerals. This statement is correct, and now that more extensive numeral data have been collected for this volume, we can see that in another case of analogy in Old Indian (which comprises Sanskrit), *pañcát-* 'group of five' is due to influence of *daśát-* 'group of ten', which in its turn owes its accentuation to the other tens (cf. chapter 5 (5.3.5.4) of the present volume). This shows that in Old Indian, 'five' was apparently a unit on a par with 'ten' and the higher tens, i. e., it was apparently a building block and in this sense similar to 'ten' and the higher tens, and distinguished from the basic numeral elements. Such data on non-linear analogies are indicative of the existence of paradigmatic level differences among the numerals, and apparently of the type which may be claimed to be reflected by syntagmatic rules such as Hurford's Packing Strategy. As the analogies show that such paradigmatic differences can claim independent existence, we are justified in assuming that the observed

syntagmatic level differences follow from the corresponding paradigmatic ones, and that numeral systems are not only linearly, but also hierarchically ordered.

The hypothesis about the relevance of numeral systems to our insight into cognitive capacities which underlie language as a human communication system can now be formulated as follows: *the relation between meaning and form in numeral systems reflects the principles of ordering within and among levels which are fully applicable and hence more transparent than those in the remaining parts of language, which are of the same type, but not always applicable to the same extent.* This hypothesis contains two subparts: one concerning principles in numeral systems, and one concerning their parallels in the remaining parts of language. The first subpart of this hypothesis can be tested and further elaborated on the basis of extensive numeral data from a set of genetically related languages, such as those contained in the present volume. Whereas derived numeral forms reveal the principles of ordering in a straightforward way, basic numeral forms and those whose derivation is not transparent any more so that they may be called “pseudo-basic” reveal the principles of ordering only through analogies in which they were involved. Given the fact that analogy is a possibility in language, never a necessity, ordering need not be fully revealed by analogy. This means that the hypothesis about ordering among basic and pseudo-basic numerals cannot be fully tested. Language speakers know that their meanings are ordered, but as their language system does not have full ordering, the language forms used for expressing the numeral meanings do not fully reflect the ordering among the numeral meanings. It is at this point that an extensive set of data from genetically related languages can give us indications about ordering in various parts of the numeral systems which, if taken together, can give a full picture of the principles involved.

The present volume contains extensive data on Indo-European numerals. Its purpose is descriptive and its organization such that it can enable the reader to draw conclusions about the principles of ordering outlined above. The reader is invited to pay special attention to data on analogy and new formations presented in the various chapters of this book. For a better understanding of these data, special attention should be paid to language-specific numeral building blocks, also called “numeral bases”. They are crucial to our understanding of analogy and new formations as affected by level differences. The following types of numeral systems emerge from the data on Indo-European:

- the system based on ‘five’, i. e., the quinary system, in Welsh, and with sporadic evidence in Old Indian;
- the system based on ‘ten’, i. e., the decimal system, which is the main system in Indo-European languages;
- the system based on ‘twenty’, i. e., the vigesimal system, in Iranian, Indo-Aryan, Albanian, Celtic, Romance, North Germanic, and sporadically as borrowed in Slavic;
- the system based on ‘hundred’, in Modern Indo-Aryan (where contemporary non-derivability of the lower numerals is due to a mixed effect of sound change and analogy).

Starting from the present collection of data, an investigation of how the principles underlying the structure of numeral systems relate to the principles underlying other parts of language will hopefully belong to our immediate future tasks.

### Note

1. I am obliged to state that counterexamples to this “constraint” do occur in languages, but with a meaning modification. For example, in Limbu, a Tibeto-Burman language from East Nepal, *thik* means ‘one’ and *thik thik*, ‘one each’ (cf. also Gvozdanović 1985: 162).

### References

- Chomsky, Noam  
 1980 *Rules and representations* (Oxford: Basil Blackwell).  
 1982 *The generative enterprise: a discussion with Riny Huybregts and Henk van Riemsdijk* (Dordrecht: Foris).
- Greenberg, Joseph H.  
 1978 “Generalizations about numeral systems”, in: J. H. Greenberg (ed.), *Universals of human language: word structure* (Stanford: Stanford University Press): 249–295.
- Gvozdanović, Jadranka  
 1985 *Language system and its change (on theory and testability)* (Berlin/New York/Amsterdam: Mouton de Gruyter).

Hurford, James R.

1975     *The linguistic theory of numerals* (Cambridge: Cambridge University Press).

1987     *Language and number* (Oxford: Basil Blackwell).

Winter, Werner

1969     “Analogischer Sprachwandel und semantische Struktur”, *Folia Linguistica* 3: 29–45.

## Chapter 2

### **Some thoughts about Indo-European numerals\***

Werner Winter

Carl Darling Buck voiced a commonly held opinion when he stated (1949: 936):

No class of words, not even those denoting family relationship, has been so persistent as the numerals in retaining the inherited words.

Except for some suffix-variation and actual substitution in the case of ‘one’ (13.32), the IE words for ‘one’ to ‘ten’ have persisted everywhere with only slight changes other than phonetic; likewise the IE word for ‘hundred’, while for ‘thousand’ there are several different groups.

Buck then went on to make some remarks about the ‘-teens’, the decads, and the ordinals (multiples of ‘one hundred’ were left unmentioned), pointing out some disturbances in these sets of numerals, but feeling no need for even a mild qualification of his opening sentence. It would not seem unfair, though, to revise his statement so as to read: “No class of words (in Indo-European languages) has been as persistent as the set of cardinals ‘two’ to ‘ten’ in retaining the inherited words”.

Even in this toned-down version, a number of facts have to be disregarded. Some years ago, when discussing the possibility of utilizing evidence from analogical change as an indication of semantic structure, I placed side by side (Winter 1969: 34–35) those forms of lower cardinals in Sanskrit, Greek, Latin, Germanic (represented by Modern Low German), Slavic (with data from Russian), Baltic (Lithuanian), Tocharian (B), and Armenian which had undergone irregular development under the influence of adjacent cardinals. With the exception of ‘ten’, not a single lower cardinal had remained unaffected. At the time, I interpreted these findings as support for the very natural claim that lower numerals

\* An earlier version of this paper was read at the symposium honoring the memory of Sir William Jones, which was held in 1986 in Calcutta, India.

formed a closely-knit semantic field with a fairly well definable internal structure. I rejected the assumption that the analogical changes had taken place due to adjacency in actual counting because of the fact that analogical reshaping was even more common in ordinals than in cardinals and that an enumeration of ordinals in a sequence of numerals uninterrupted by non-numeral forms was too unnatural in actual language use to have triggered the introduction of, say, Skt. *dvitīyaḥ* 'second' shaped after Skt. *trītiyaḥ* 'third' (Winter 1969: 38). Whether one wants to accept this conclusion or not, the fact remains that even the low cardinals do not show the resistance to irregular change attributed to them by Buck. Still, one will not want to deny that 'two' through 'ten' reflect, though here and there with slight distortion, a set of fairly well reconstructible Proto-Indo-European forms.

However, even these forms present their problems. 'Two' is a dual based on a thematic stem *\*dwe/o-*; 'three', a plural form with a stem *\*trej-* subject to ablaut variation. 'Four' is more peculiar: it, too, is a plural form, but the stem is not a simple one, but has, in the masculine, the *\*-e . . o-* vowel pattern of a compound. However, this is an observation in terms of form only: it cannot be supplemented by an identification of the two elements of the compound with surviving simple stems or roots. Thus, 'four' remains, in spite of its formal complexity, an unmotivated lexeme, at least at the level of reconstruction which can be reached using the methods available to us.

Lack of motivation is not uncommon in lower numerals. Thus, it seems impossible to find a connection of *\*septm̥* with any other element of the Proto-Indo-European lexicon; 'seven' just means 'seven' and nothing else. This does not alter the fact that *\*septm̥* is a strange form; it remains tempting to identify final *\*m̥* with the accusative ending of consonant stems. Even if one were to take *\*-t-* as a consonant-stem variant of *\*-ti-* found elsewhere in cardinals, the remaining *\*sep-*, while now acceptable in terms of Proto-Indo-European root structure, would remain an isolate: if indeed *\*sept-* originally should have denoted a heptad rather than mere 'seven', the underlying *\*sep-* would still require a rendering as 'seven' and only as that.

Moreover, residual problems of considerable weight persist. We would have to assume that an accusative form was generalized; this in itself is not an impossibility, witness the spread of descendants of the Latin accusative in Old French. Somewhat less anticipated would, at first glance, seem the occurrence of a singular rather than a plural form; this objection can be neatly handled by referring to the claim that nothing

but a singular form should be expected if *\*sept-* did indeed mean ‘heptad’ – witness the plural form used in Russian in the declension of *tri* ‘three’ as against the singular forms found for *pjat’* ‘five’, etc. What remains an unanswerable question, though, is why it should have been only ‘seven’ that was expressed by an abstract noun. Or is it that one could ascribe a special status to a numeral which could be used referring to the fourth part of a lunar month? Rather than complicate the issue by alluding to, and elaborating on, the possibility that ‘seven’ might have been borrowed from a Semitic language (cf. Møller 1909: 124, where, of course, a claim for Urverwandschaft is involved), I prefer to limit myself to showing up a possible option and to leave the matter at that.

Attempts at finding motivation in other lower cardinals have been made in the past. The fact that the word for ‘eight’ shows the ending of a masculine dual has been taken as an indication of the use of an old quaternary system in Proto-Indo-European. Taken by itself, this is a rash conclusion. Even if Avest. *ašti-* ‘width of four fingers’ (cf. Henning 1948: 69) could be taken as pointing toward a related PIE *\*okto-*, which might tentatively be rendered by *\*‘pertaining to a group of four’* (with no connection whatsoever with PIE *\*k<sup>w</sup>etwores* ‘four’), PIE *\*oktōw* would not contain more than a hint of a system or subsystem in which multiplication could be used to express non-prime numbers.

The quaternary hypothesis would be considerably strengthened if the old assumption (cf. Walde – Hofmann 1954: 180) could be made plausible that the word for ‘nine’ was related to the word for ‘new’. If Gk. *nearós* ‘youngster’, Arm. *nor* ‘new’ can both be considered derivations from an *\*-r-*stem noun PIE *\*newr*, then it is not impossible that beside the *\*-r-*stem, an *\*-n-*stem should also have existed. *\*newn* could then perhaps be an endless locative (cf., with different ablaut grade, OInd. *udān* ‘in the water’); its meaning ‘in the new’ could have been reinforced by preposing *\*en* ‘in’, which would then be reflected in Gk. *ennéa*, Arm. *inn* ‘nine’. If this interpretation were correct, the apparently optional addition of *\*en* might constitute a shared innovation of Greek and Armenian. If, on the other hand, Gk. *e-* and Arm. *i-* are ‘prothetic vowels’, they must be taken to reflect a Proto-Indo-European laryngeal, and both the common innovation and the connection with ‘new’ would have to be dropped from our list of potential hypotheses concerning Gk. *ennéa* and Arm. *inn*. As it is, the assumption of an addition of *\*en* provides a neat explanation for the (double) *-nn-* of Gk. *ennéa*; on the other hand, the Greek ordinal *énatos* | *eínatos* | *ēnatos* | *énotos* ‘ninth’, which seems to have replaced

an older \**enwanos* (cf., *mutatis mutandis*, Sommer 1951: 25–36), appears to be unaccounted for without elaborate additional assumptions.

To sum up the points just discussed: It seems to me that the arguments in favor of a connection of ‘nine’ and ‘new’ do not carry enough weight to consider the hypothesis proved that ‘nine’ marked overtly the onset of a new set of numbers; even less can the assumption that Proto-Indo-European had a quaternary system at some point in its prehistory be deemed sufficiently supported. Ossetic *farast* ‘nine’, literally ‘beyond eight’, is taken by Abaev (1958: 419–420) to show that ‘eight’ was a round number, at least from an Ossetic point of view, but he is cautious enough to add ‘just like ten’, which prevents one from citing the Ossetic form in support of a quaternary hypothesis.

Szemerényi (1960: 78–79) enumerates arguments which may be adduced to posit an underlying \**weks* for the Indo-European forms for ‘six’. In footnote 55, he then suggests a connection with PIE \*(*H*)*weks-* ‘to grow’, “so that ‘6’ would be ‘the increase’ after the first ‘hand’”; \**s-* in the widespread \**sweks* he considers “secondary”, “obviously from the following numeral \**septm̥*”. If these assumptions are warranted, ‘six’ would indeed be a clear case of motivation in a lower cardinal. While the basic thrust of the argument seems to be well-founded, certain details need further elaboration.

Before a root noun \**Aweks* ‘increment’ can be posited as underlying the Indo-European forms for ‘six’, explanations have to be found for the vacillation found between forms with and without \*-*w-* and for the onsets Skt. *ṣ-*, OInd. \**kṣ-* as reflected by Middle and New Indic forms with initial *ch-*, Avest. *xšv-*, Slav. *š-*, and Lith. *š-*.

OInd. \**kṣ-* and Avest. *xšv-* show the reflex of PIE \**s* regular in a *ruki* environment. Sanskrit *ṣ-* is regular if a *ruki* environment can be reconstructed; so is Balto-Slavic *š-* before *-e-*, given the same condition. To posit a Proto-Indo-European onset \**ksw-*, with simplification of the original cluster in most daughter languages, would mean positing a monstrosity violating all we know about root structure and clustering rules in Proto-Indo-European. If then \**k-* cannot be part of the root of ‘six’ and cannot be a proper onset of the word for ‘six’, what could be its origin?

There is nothing to recommend claiming the presence of a prefix \**k-* since no meaning or function can be ascribed to it, nor would it be at all likely that a cluster \**ksw-* would have survived without either consonant deletion or vowel insertion.

The *ruki* environment must therefore be sought outside, and that means preceding, the lexeme ‘six’, which can indeed be reconstructed, in almost full agreement with Szemerényi (1960: 78), as *\*sweks*.

The word which one does expect to find preceding ‘six’ in an ordered sequence of cardinals, no matter whether the sequence was one encountered in an actual counting enumeration or rather one in the speaker’s memory as reconstructible from the evidence of analogical reshaping (as pointed out earlier), is the word for ‘five’. This very observation seems to lead us into a blind alley: the combined evidence of the cardinals Skt. *pāñca*, Gk. *pénte*, Arm. *hing* (if taken together with Arm. *hngetasan* ‘fifteen’), Tocharian B *piś*, A *pāñ*, leaves no doubt that the underlying Proto-Indo-European word must be posited as *\*penk<sup>w</sup>e*; this in turn means that ‘five’ would not provide a *ruki* environment as *\*-k<sup>w</sup>-* is not immediately adjacent to *\*s-* of *\*sweks*.

Now, in spite of its easy reconstructibility, PIE *\*penk<sup>w</sup>e* does not appear to be a Proto-Indo-European form of long standing. Two arguments can be raised against it: For one, *\*penk<sup>w</sup>e* has two full-grade vowels, and this is in violation of old ablaut rules. The second point is just as serious: the use of the ordinal suffix *\*-to-* outside ‘tenth’ is secondary according to, among others, Szemerényi (1960: 86–87). One has to agree with Szemerényi (1960: 85) that it is “inevitable to conclude that ‘5th’ ... was originally *\*penk<sup>w</sup>o-*, or rather *\*pñk<sup>w</sup>o-*”. Strangely enough, the comparative evidence is overwhelmingly in favor of the full-grade, rather than the zero-grade, form (cf. Gk. *pémptos*, Lat. *quīntus*, OHG *fimfto*, Lith. *penktas*, Tocharian B *piñkte* vs. OInd. *paktháh* and perhaps – in spite of the vigorous objections by Szemerényi (1960: 71–74) – forms from High as well as Low German: from my own dialect of Low German, *di föfti* ‘the fifth’ as against *fīf* ‘five’ may be quoted here). The preponderance of apparent full-grade forms is matched in ‘sixth’ even where *\*sw-* has been preserved, and of course in ‘seventh’ where zero-grade forms of *\*sept-* would not agree with rules of Proto-Indo-European syllable structure. The important point to be made here, however, is that the ordinals show a trace of the final *\*-e* of ‘five’ only in some clearly secondary formations (cf., e.g., Pokorny 1959: 808). As *\*p(e)nk<sup>w</sup>os* is to be segmented as *\*p(e)nk<sup>w</sup>-o-s*, we are free to assume that *\*-e* in *\*penk<sup>w</sup>e* is a development (comparable to *\*-e* of the third person singular perfect) introduced to permit the occurrence of underlying *\*penk<sup>w</sup>*, with an inadmissible final consonant cluster *\*-nk<sup>w</sup> #*, as a free surface form. The alternative to the addition of an “empty” protecting vowel would have been the deletion of final *\*-k<sup>w</sup>*; it is highly doubtful whether this substance-

destroying alternative was ever made use of – \**pen-* in ordinals like dialectal Gk. *péntos*, Tocharian A *pänt* ‘fifth’ seems to be insufficient evidence for raising such a claim.

In a rapidly produced counting sequence, however, the underlying form \**penk*” could surface, provided the word boundary between ‘five’ and ‘six’ was eliminated so that ‘six’ could “protect” ‘five’. As a result of such a development, phonological processes blocked by word boundary could become operative: just as in rapid-speech counting the sequence *-s + s-* in slow-speech Engl. *six seven* is reduced to a single *-s-* in allegro [sɪksɛvəm], so stem-final \**-k*” of \**penk*” ‘five’ could now provide the proper environment for the immediately adjacent initial \**s-* of ‘six’ to cause application of the *ruki* rule in Indo-Iranian and Balto-Slavic. The close sequence ‘five-six’ thus could become Proto-Indo-Iranian \**pank*<sup>(w)</sup>*šwac*. (I have included the velar element of the labiovelar to be able to account for the difference between Skt. *ṣaṭ* and Avest. *xšvas*; cf. below, Proto-Balto-Slavic \**penkšes*.) Decomposition of the sequence \**-nk*<sup>(w)</sup>*š-* could now bring into existence forms for ‘six’ with rather different onsets: \**š-* in Skt. *ṣaṭ*, Lith. *šeši*, OCS *šestī*; \**kš* in the Old Indic form underlying Middle and Modern Indic *ch-* and in Khotan Saka *kšai*; \**kšw-* in Avest. *xšvas*. \**k*” thus remained with ‘five’ or was interpreted as shared by ‘five’ and ‘six’, so that the insertion of a protective \**-e* could lead to the recreation of \**penk*”*e* even on the basis of the allegro form (however, there is no need to stress this point: allegro and lento forms should have existed side by side so that we merely have to assume that *ruki*-affected forms were introduced in the lento set, replacing there forms with a plain \**s*<sup>(w)</sup>-onset).

Armenian seems to show a special reflex of the allegro configuration: If Olsen (1981: 5) is right in deriving Arm. *veç* ‘six’ from earlier \**huwe-*, then the deviant insertion of a Sievers-Edgerton \**-u-* is easy to understand if we envisage \**swe-* as occurring in position after the cluster \**-nk*” of the allegro form for ‘five’.

The distribution of \**s-* and \**sw-* is erratic: clear instances of \**-w-* are found in Avestan, Armenian, Greek, Celtic, and Baltic (forms such as OPruss. *uschts* ‘sixth’ seem to point to a dissimilatory reduction of \**šuštas* rather than to a survival of a form without an \**s-* onset, as Szemerényi 1960: 78 would want to have it). The simplest explanation for such a distribution is to assume that \**-w-* was lost by dissimilation against the labial element of the labiovelar of ‘five’, either by distant dissimilation in the lento set or, perhaps more likely so, by contact dissimilation in the allegro sequence. The dissimilation hypothesis requires a relatively late

survival of labiovelars even in satem languages; as there is some evidence for just that in Albanian and in Armenian, the proposal made here cannot be rejected outright, but should be taken under advisement.

Szemerényi (1960: 69 with fn. 69) joins others who proposed before him that PIE *\*deḱmt* should be analyzed as *\*de-ḱmt* and rendered by 'two hands'. The difficulty remains that the evidence for a set of forms for 'two' without *\*-w-* is at best shaky. While 'two hands' is a perfectly reasonable rendering of 'ten' in a quinary system, all depends on a demonstration that Proto-Indo-European had such a quinary system at least in its first decad of numerals. To prove this point, it has to be shown that *\*penk<sup>w</sup>* can be identified as related to Indo-European words for 'hand'. A connection has indeed been suggested between *\*penk<sup>w</sup>e* 'five' and OHG *fūst*, ORuss. *pjast* 'fist' (cf. e.g., Pokorny 1959: 839, Vasmer 1953: 477 for literature). An *\*-st* suffix is not uncommon in — above all paired — body parts (cf., e.g., OInd. *muṣṭiḥ*, Tocharian B *maṣce* 'fist', Lith. *kūmstė* 'fist'). *\*penk<sup>w</sup>* might then originally have referred to the hand clenched to form a fist; by way of contrast, one could imagine that *\*oḱto-*, reflected by Avest. *ašti-* 'width of four fingers' and PIE *\*oḱtōw* 'eight' might have designated four fingers outstretched, with the thumb turned in.

The time seems to have come to try and sum up our findings so far: The lower cardinals up to 'three' are unmotivated forms. 'Four', considered a compound, so far defies analysis. 'Five' is, if correctly analyzed, a motivated formation, with 'fist' as the primary meaning of *\*penk<sup>w</sup>*. 'Six' may ultimately be an elliptic expression "increment (of 'five')". 'Seven' is unanalyzable: the possibility of its being a very old loanword from a Semitic language cannot be ruled out entirely. 'Eight' may mean 'both sets of four (outstretched) fingers'. Unless 'nine' can be connected with 'newness' (which is difficult in view of some Greek forms), it remains unanalyzable. For 'ten', an interpretation 'two hands' has been suggested; this sounds persuasive as far as the meaning is concerned; but *\*de-* causes difficulties, and so does the fact that 'two' would have been expressed by a numeral rather than a dual form of 'hand' being used.

All higher cardinals, beginning with 'eleven' are syntagms (in a broad sense of the term), that is, they are based on lower numerals either derivationally or through processes of composition or phrase formation, with the possibility of elliptic reduction of complex forms. This is a very natural state of affairs. Numbers are an open-ended semantic field (at least potentially so, although speakers of numerous languages stop counting at a very early point); unless the counting potential has been left

undeveloped, it is in principle impossible to name the highest number of any full-fledged system. The property of nonfiniteness makes it impractical to use separate lexical items for any but a few lower numbers; the situation in Modern Indo-Aryan, with its relegation of all numbers up to 'one hundred' to the lexicon as items to be learned separately and not to be derived by palpable rules, is quite exceptional and hard, if not impossible, to explain.

What is needed to cope with the necessities of a nonfinite universe of numbers, is a set of building blocks and a set of operations to be applied to these building blocks.

In theory, it would be possible to base a nonfinite set of units (disregarding fractions, that is) on one unit, viz., 'one', and one operation, viz., addition. This solution is thoroughly impractical, as can easily be shown: Suppose I say, preferably in a monotone, 'one' + 'one' + 'one' + 'one' + 'one' + 'one' + 'one' + 'one' + 'one', and then ask which number I had just uttered, only very few listeners would be able to give the correct answer, viz., 'ten'. If, on the other hand, I had pointed out that in Bantawa Rai, a Tibeto-Burman language of Eastern Nepal, *chuk* meant 'hand', *?ükchuk* 'one hand; five', and that *hüwa-* was one of the variants of 'two', used in bound forms, probably few, if any listeners would have difficulties in determining that *hüwachuk* denoted 'ten'. There would have been no difficulty because we had all learned to apply an operation other than addition, too, viz., multiplication. That multiplication and not addition or subtraction was called for had been indicated by giving the information that the compound form *?ükchuk* meant 'one hand =  $1 \times \text{hand} = \text{five}$ ' and not 'one plus hand = six' or 'hand minus one = four'. The logically possible operation *?ükchuk* 'one hand = five divided by one = 5', so that *hüwachuk* would require a reading 'five divided by two = 2.5', would probably occur to no one since the effectiveness of division (as of subtraction) is very limited in sets of natural numbers: without the use of other, conflicting operations, it would be quite impossible to cope with the task of forming increasingly high numbers.

Lexicalization and addition are the only operations which, in theory, could be applied in isolation to express a set of integers, but both are ruled out in practice for that purpose. Total lexicalization is, on the one hand, too cumbersome for memory storage and for learning to use it for anything but very short sequences of numbers (the situation in Modern Indo-Aryan presents an extreme case of lexical-set extension); on the other, it would require the creation of a new lexical item for every new

number one wanted to express, which in turn would constantly increase the weight of the storage-and-learning problem; moreover, there seems to be ample evidence that creation *ex nihilo* is found very rarely in natural languages.

Addition used by itself runs into another difficulty, as we have seen a short while ago: there are rather severe limitations on the scope of human perception as far as the number of elements that can be evaluated without naturally provided breaks is concerned. Very few listeners would be able to identify properly the value of moderately high numbers if they were to be expressed as sequences of 'one'.

Multiplication cannot be applied to complete sets of integers for a simple non-linguistic reason: prime numbers cannot be expressed as products. Subtraction pure and simple could only be used if one was to deal with a finite set of numbers, the highest member of which could be taken as a starting point. However, such a set would lack the property of being expandable at will, and therefore be of fairly little use. Division, taken by itself, suffers from the shortcomings of multiplication (now taken in reverse) and subtraction combined: it can thus be only of very limited use under special circumstances.

The optimal solution then is a combination of addition and multiplication; slightly inferior, as soon as more than a few relatively low numbers have to be expressed, is a process of addition to lexicalized higher numbers reflected by numerals not derivable from smaller entities. An example, for simplicity's sake presented in English translation, could be cited again from Tibeto-Burman. As competing expressions for 'twenty' are found, one multiplicative 'four hand', one independent, viz., 'heap' (for which we may use 'score' as an English parallel), 'twenty-one' can be expressed either by saying 'four hand plus one' or by employing 'one score plus one'. The 'score' approach obviously suffers from the same weakness as was encountered in a purely lexical solution: too many entities would have to be learned and stored. Note here that even languages with an extensive use of lexicalized numerals such as the modern Indo-Aryan ones, extend this approach only to very few numbers higher than 'one hundred' — there is 'one thousand', 'a hundred thousand', 'ten million', but no separate lexical item for, say, 'five hundred' or 'twelve thousand'.

Multiplication is a very effective way of abbreviating the expression of higher numbers; addition, and, more rarely so, subtraction is the means of coping with numbers that cannot be analyzed as multiples of the multiplicand or multiplicands utilized in a particular counting system. Thus, if, as in a language of the Yuman group in California, 'six' is

expressed as ‘two times three’ and ‘nine’ as ‘three times three’, ‘eight’ will have to make reference to either ‘six’ or ‘nine’ by addition or subtraction, respectively, or else a separate lexical item has to be used (unless, of course, ‘four’ is also employed as a multiplicand, so that ‘eight’ could become ‘two times four’; ‘seven’, however could in no case be handled by multiplication).

It seems to be normal to select as high as possible a multiplicand as the basis for higher numerals, apparently with the proviso that a numeral so chosen should be unanalyzable as a complex term synchronically. More than one multiplicand may be chosen as the counting progresses to ever higher numbers. Thus, it is quite common in languages of the world to find a combination of a quinary and a vigesimal system; modern Indo-Aryan languages progress from a system with ‘hundred’ as a unit of multiplication to higher systems with ‘one thousand’ and ‘one hundred thousand’ as multiplicands; modern French starts out decadic, then turns vigesimal, then moves on to ‘hundred’, ‘thousand’, ‘million’, etc., as multiplicands; Tocharian has ‘ten’, ‘hundred’, ‘thousand’, ‘ten thousand’, and, in a context influenced by Indic tradition, ‘ten million’ as multiplicands.

For Proto-Indo-European, the condition that a numeral used as a multiplicand should be unanalyzable synchronically leads one to consider Late Proto-Indo-European a language characterized by ‘ten’ and ‘hundred’ as multiplicands, while at an earlier stage of the language, at which ‘hundred’ was still recognizably derived from ‘ten’, there was a purely decimal system, as far as all numbers above ten are concerned. The higher numeral ‘thousand’, to the extent that its various forms permit an analysis, seems to contain a reference to a basic notion ‘hundred’, be it explicitly, as in Goth. *þūsundi* and its Germanic congeners as well as in OPruss. *tūsimtons*, OCS *tysęšti*, be it in an elliptic form like Tocharian B *yaltse*, A *wälts*, which could be analyzed as a nominalized adjective (B *-tse*, A *-ts* can be rendered by ‘provided with’) derived from a root noun pre-Toch. *\*wel-* whose *\*-i-*stem counterpart can be seen in Slav. *\*velī* reflected by OCS *velīmi* ‘very’ and later Slavic forms (cf. Vasmer 1953: 181 with earlier literature; for the Tocharian forms cf. van Windekens 1976: 555 with literature — no connection with B A *wälts*-\* ‘± condense’ should be attempted); a slightly different interpretation of the Tocharian forms is included in chapter 4 of the present volume. Germanic and Balto-Slavic forms could be read directly as conveying the meaning ‘strength hundred’, the Tocharian ones as ‘(the hundred) with strength’. It would be highly satisfactory if Gk. *khēlioi/khēllioi/khēllioi/khēllioi*, OInd. *sahās-*

*ram*, Avest. *ha-zarəm*, Khotan Saka *ysāra*, Lat. *mille* could be tacked on; however, all attempts made so far remain fraught with difficulties (cf., e.g., Frisk 1970: 1099–1100); a detailed discussion would take up too much time here.

No matter how one wants to evaluate details, the overall picture remains very much as outlined by Szemerényi (1960: 1):

“1000” appears in forms based on an IE \**gheslo-* in Aryan and Greek, probably also in Latin, and this fact would suggest that in the Southern part of the IE area, at any rate, even this number was well established. But we must also acknowledge that this number is expressed by different words in the other dialects — especially in Germanic and Balto-Slavic — and, although it is not impossible that \**gheslo-* was lost in these areas, it is perhaps safer to admit that the word for “1000” was not fully established in the last period of the IE community.

One could perhaps paraphrase what is said in the last sentence, in a way more in line with earlier formulations in the present paper, to wit: while there were ways in the Late Proto-Indo-European to express the notion ‘one thousand’, the results of the formation processes used were still different enough not to permit one lexicalization applicable to the whole of the Indogermania. If it should prove possible to analyze \**gheslo-* as motivated in ways similar to what has been suggested here for the Tocharian forms, one could feel tempted to submit that there may have been a notion ‘strength hundred’ used in more subareas than those of the Germanic, Balto-Slavic, and Tocharian languages, but that the notion was cast in different forms so that the reconstruction of a form ‘one thousand’ would remain impossible even for Late Proto-Indo-European.

But what about numbers below ‘one thousand’? Is it a fact that, as Szemerényi (1960: 1) states, “the agreement in the formation of the hundreds is so close that their development must be ascribed to Indo-European”?

When we look at actually attested numerals above ‘ten’, we find that it is not only minor changes, which we may ascribe to analogical distortions of an earlier state of affairs, that occur in ample numbers, but that the operations used in employing the building blocks provided by lower (or, marginally, higher) numerals to express higher numbers, are subject to drastic changes in periods open to inspection because of adequate attestation of data.

Let me just list a few instances. ‘Eleven’ and ‘twelve’ are based on ‘ten’ and ‘one’ or ‘two’ respectively (indirectly also in Germanic and Baltic), but the operations used vary: the digit may precede or follow ‘ten’, the components may be fused into a single word or a phrasal status might be preserved; the constituents may be just ‘ten’ plus digit, or a connective may be added; ‘ten’ may appear as such, or it may be modified; the same may happen to the digit; finally, changes might totally obscure the constituents and ‘eleven’ and ‘twelve’ may become lexicalized as such. To illustrate the types of representation, a few examples (for ‘twelve’ only) will suffice:

Juxtaposition without connective:	Toch. B <i>śak wi</i>
Juxtaposition with connective:	Gk. <i>dúo kai déka</i> , Toch. A <i>śák wepi</i>
Fusion without connective:	OInd. <i>dvādaśa</i> , Lat. <i>duōdecim</i> , Gk. <i>duōdeka</i> , <i>duódeko</i>
Fusion with connective:	Russ. <i>dvenadcat’</i>
‘Ten’ modified:	Arm. <i>erkotasan</i>
‘Two’ modified:	Gk. <i>dōdeka</i>
Lexicalization:	Fr. <i>douze</i> , Hindi <i>bārah</i>

There would be a need for further sub- and cross-classification if all details were taken into full consideration, but the rough classification will suffice. Once we turn toward ‘eighteen’ and ‘nineteen’, the picture gets even more involved: while the operations used to form ‘eleven’ and ‘twelve’ outside Germanic and Baltic all involved addition to ‘ten’, forms like Lat. *ūndēvīgintī* ‘nineteen’ and *duōdēvīgintī* ‘eighteen’ show subtraction employed. The examples given by Schwyzer (1939: 594) prove that, while never systematized as in Latin, subtraction could be used in forming numerals with ‘eight’ and ‘nine’ in digit position by speakers of Greek as well. That an option for subtraction may well be open under special circumstances even when addition is the rule can be shown by such examples as the expressions for ‘6:20’ and ‘6:40’ in normal, non-time-table German: *zwanzig nach sechs*, but *zwanzig vor sieben*. In this type of German, closeness to the higher number causes addition to be overruled by subtraction. In English, the same applies to the expression of fifteen-minute periods (*quarter past six*, but *quarter to seven*) and that of minutes (*twenty past six*, *twenty to seven*) just as in German, but the half-hour is expressed differently: by addition in English (*half past six*), by subtraction in German (*halb sieben*). French largely follows the pattern found in

English (*six-heures-et-quart*, *six-heures-et-demie*, but *sept-heures-moins-le-quart*). Russian uses an even more complex system: full hours are referred to with cardinals, as in French (*v šest' časov = à six heures*); quarter past and half past express that one fourth and one half of the distance to the next full hour have been covered, this hour now expressed as an ordinal (*četvert' sed'mogo '6:15'*, *pol-sed'mogo '6:30'*); for '6:45' however, a formulation 'seven (cardinal) without a fourth' (*bez četverti sem'*) is used. The last-mentioned form is purely subtractive; those for '6:15' and '6:30' in Russian are different in that the speaker both moves backward from a point in the future (in expressing the hour) and forward (in naming quarter and half-hour): we thus have subtraction and addition combined in a very strange way, as we also find in German *fünf nach halb sechs '5:35'*.

A further point should be made here: it is not uncommon that within one and the same language variation will be tolerated to an amazing degree. Thus, 'quarter to seven' has in Modern High German the regional variants *viertel vor sieben* and *dreiviertel sieben* which, as was seen in the case of Russian, differ strongly in their internal structure, although they, of course, taken as a whole, denote one and the same thing. In this respect, the German phrases then offer a good parallel to what could be observed in the case of Greek renderings of 'twelve' mentioned earlier: Gk. *dúo kai déka* showed juxtaposition of 'two' and 'ten' with the connective 'and'; Gk. *duódeka* and *duódeko*, fusion without connective; Gk. *dódeka*, fusion with concurrent change of 'two'.

My purpose in discussing such variation is of course more than to provide some possibly entertaining, yet anecdotal, material. What I am basically interested in, is the observation that experience shows that speakers of a language frequently have more than one avenue open to them when they set out to express particular numerical notions. A generalization seems called for: as long as the constituents of a complex expression remain recognizable and as long as only known operations are employed, the speaker has a certain amount of freedom of choice.

In present-day English, one and the same speaker may say with equal ease *three thousand five hundred dollars* and *thirty-five hundred dollars*, and a moment later neither he nor the persons spoken to might actually be able to remember which form he used. In other cases, one variant will be the preferred one: I cannot conceive of my ever using *one thousand nine-hundred and twenty-three* for my year of birth, while everybody seems to be talking about the year *two thousand*. Stylistic considerations might lead one to use *four-score-and-ten years* rather than the more natural

*ninety years*, but one would not dare to say that one paid *four-score-and-ten rupees* for a taxi ride. Clearly, acceptability, governed by a variety of criteria, is more of a criterion than intelligibility of a form. But the fact remains that variation within the range of intelligibility is tolerated in principle, and, while it may be the rule that after a period of fluctuation, one variant might win out and become the norm, there are enough cases of a coexistence of variants.

It is a sound tenet of linguistic reconstruction that one should let oneself be guided by observations made with living languages. If we find that variation within the range of intelligibility is tolerated in living languages and that indeed it is a necessary prerequisite for change and its explanation, it is a methodological error to assume that all variation observed in languages of a given family has to be ascribed to later developments while for the parent language a highly consistent pattern should be reconstructed at all cost. To be sure, the building blocks deserve to be viewed as basically stable so that it is very well worth our concerted efforts to try to determine the shape and, to the extent that this can be done, a possible “basic” meaning of the building blocks. But given the variation we observe in living languages in the expression of complex numbers, one has to doubt whether attempts to reconstruct such complex numbers for the parent language can be meaningful at all. At best we can hope to find that several variants have a claim to being old; to single out just one of them as being the primeval form makes one the victim of one’s own prejudices, the more so as the comparative evidence usually does not suffice and internal reconstruction has to take over. Internal reconstruction, however, aims at consistent patterns, and, as has been seen, consistency and variation do not exclude each other, but coexist to an astonishing degree, in living languages.

It makes sense, under the circumstances, to approach the area of complex numerals from an onomasiological point of view: Given building blocks such as ‘nine’, ‘ten’, ‘twenty’, and ‘hundred’, and given the basic arithmetic operations, how could the number ‘ninety’ be expressed?

Using multiplication only, ‘nine times ten’/‘nine decads’ and ‘ten times nine’/‘ten enneads’ could be introduced. Subtraction would lead to ‘one hundred minus ten’. A combination of multiplication and addition could yield, e.g., ‘four-score plus ten’, multiplication and subtraction, e.g., ‘five-score minus ten’. If ‘decad’ was simply implied, ‘ninety’ could be referred to as ‘the decad associated with nine as a multiplier’, and this could be expressed in various ways, i.a., by referring to ‘ennead’.

Multiplication is attested in the following cases:

with 'ten' as the multiplicand, e.g., in OCS *devęti desętę*;

with 'ennead' as the multiplicand, in Goth. *niuntęhund* (with PIE \**t* replaced by \**d* as in Gk. *ennead*-).

Subtraction is found in Russ. *devjanosto* (not all details of the form are clear).

Multiplication plus addition occurs in Fr. *quatre-vingt-dix*; multiplication plus subtraction in Dan. *halvfems*.

The use of 'ennead' is encountered in OInd. *navatiḥ*.

Without ellipsis of the reference to the decad, 'nine', is referred to by the more complex notion 'associated with nine' in Gk. *enenękonta* (the arguments whether we are dealing with 'nine' or 'ninth' here — a central concern of Sommer 1951 and Szemerényi 1960 — are rather pointless: 'ninth' is nothing but a special use of more general 'associated with nine, pertaining to nine'); it should be noted that a *constructio ad sensum* has moved a singular 'decad pertaining to nine' to the plural in the Greek form.

A partial, though formally irregular, reference to the decad is found in Tocharian B *ñumka*, A *nmuk* (and of course in such recent forms as Engl. *ninety* and German *neunzig*).

What all the forms mentioned have in common is the clear reference to 'nine' (even Russ. *devjanosto* introduces it in a rather "illogical" way) whenever the system remains decadic; application of a vigesimal approach, as in French and Danish, of course, of necessity has to make mention of 'four' or 'five', respectively, instead of alluding to 'nine'.

The central role of the decad as a building block is above all indicated by the ease with which it can be implied. OInd. *navatiḥ* 'ninety' has already been mentioned as a case in point. Even more striking an example is the word for 'hundred'.

I am in perfect agreement with Szemerényi (1960: 140) and his predecessors in their interpretation of PIE \**kmtom* as an original genitive, denoting 'of decads'. On the other hand, I see no need to introduce a pre-form \*(*d*)*kṛkmtom* in which then 'because of the frequent usage the antepenult was shortened and the resulting \**kṛkmtom*, by haplology, reduced to \**kmtom*'. Ellipsis plain and simple suffices, so it would seem.

If PIE \*(*d*)*kmtom* could be matched by a fuller form \*(*d*)*kmtom dekmt-* 'decad of decads' (by the way, a neat match of Goth. *taihuntęhund* 'one hundred'), one may well ask whether alternative expressions for the construct 'decad of decads' could be proposed. Considering the affinity,

and often interchangeability, of genitive and adjective, one could well imagine that a variant *\*(d)k̑mtyo- dek̑mt-* (with the ending of the adjective dependent on the gender of the word for ‘decad’) might have existed alongside *\*(d)k̑mtom dek̑mt-*. Ellipsis of *\*dek̑mt-* would lead not to *\*(d)k̑mtom*, but to *\*(d)k̑mtyo-*.

Positing an elliptic construction with an overt adjectival provides for a very simple explanation for the multiples of ‘one hundred’ in Greek, which are characterized by either *-kátioi* or *-kósioi* (cf. Schwyzer 1939: 593): they could be rendered by ‘(decad) of twenties, thirties, forties, etc.’, in close agreement with ‘(decad) of tens’ in ‘one hundred’. Again, as in the case of the forms of the type of Gk. *enenékonta* ‘ninety’, discussed earlier, a *constructio ad sensum* would have replaced the old singular form of *-kátioi/-kósioi* which is to be assumed to have been in concord with the word for ‘decad’.

It is obvious that a discussion of details of more than a few selected forms would far exceed the time limits set for the present paper. However, it does not seem to be too early to try to present a few general conclusions.

We have seen by inspecting a fair number of examples that there is considerable leeway for the construction of complex numerical terms provided the building blocks used remain recognizable or can be inferred with sufficient certainty and the operations used in combining the elements of a complex entity are apt to be discovered by the language user. During times for which we can be sure of historical developments, we can observe variation within these limitations, and we can observe selection from variants which for a given time and a given language may eliminate variation to a considerable extent. The fact that there are wide areas of disagreement among Indo-European languages, not excluding the oldest ones, should lead us to recognize variation in numeral formation as a characteristic of reconstructed Proto-Indo-European. It is better to describe the range of variation and to determine the kind of variation found than to try to reconstruct, without sufficient comparative evidence, a unitary set, say, of multiples of ‘ten’ or ‘hundred’, for Proto-Indo-European. While the interpretation of some of the data — and only some could be discussed here — provides strong arguments against attempts to reconstruct “the” Proto-Indo-European ‘tens’ and ‘hundreds’, it also does away with the opposite extreme: if there are conflicting data, and if these data are at variance to such an extent that all reconstruction would be highly subjective if one wanted to eliminate one set of data and retain the other so that a point could be proved, still there is no need now to claim that numerals such as ‘seventy, eighty, ninety’ did not exist

in Proto-Indo-European. To be sure, one cannot argue as Mańczak (1985: 351) does, that because a term for ‘one hundred’ can be reconstructed, there also had to be established terms for ‘eighty’ and ‘ninety’. Experience with “exotic” languages makes one reluctant to accept reasoning of such a modern type. Judging from what we have encountered in the discussion offered here, we can very well conclude that, although there is not enough solid evidence to reconstruct one Proto-Indo-European term for, say, ‘ninety’, the building blocks and the ways of putting them together were available, which meant that differently structured variants could be created whenever the need arose, conflicting variants, to be sure, but all with a claim to being Proto-Indo-European. After all, there were the building blocks, ‘ten’, ‘hundred’, also ‘twenty’, which could be combined with the available digits using methods of simple arithmetic. Thus, in an unexpected way, everything seems to have been – and to be – quite simple.

### References

- Abaev, Vasilij Ivanovič  
 1958 *Istoriko-ètimologièeskij slovar’ osetinskogo jazyka I* (Moskva – Leningrad: Izdatel’stvo Akademii Nauk SSSR).
- Buck, Carl Darling  
 1949 *A dictionary of selected synonyms in the principal Indo-European languages* (Chicago – London: University of Chicago Press.).
- Frisk, Hjalmar  
 1970 *Griechisches etymologisches Wörterbuch II* (Heidelberg: Winter).
- Henning, Walter Bruno  
 1948 “Oktō(u)”, *Transactions of the Philological Society*: 69.
- Mańczak, Witold  
 1985 “Indo-European numerals and the sexagesimal system”, in: Jacek Fisiak (ed.), *Papers from the Sixth Conference on Historical Linguistics*, 347 – 352. (Amsterdam: Benjamins, Poznań: UAM)
- Møller, Hermann  
 1909 *Indoeuropæiskt-semitisk sammenlignende Glossarium* (in: *Festskrift udgivet af Københavns Universitet i Anledning af Universitets Aarsfest*) (Kjøbenhavn).
- Olsen, Birgit  
 1981 “IE \*Vve/i = Arm. Vve/i (Vve/i)?”, in: *Arbejdsrapporter, Institut for Lingvistik, Københavns Universitet BO*: 1 – 9.

Pokorny, Julius

- 1959     *Indogermanisches etymologisches Wörterbuch I* (Bern—München): Francke).

Schwyzler, Eduard

- 1939     *Griechische Grammatik I* (München: Beck).

Sommer, Ferdinand

- 1951     *Zum Zahlwort* (Sitzungsberichte, Bayerische Akademie der Wissenschaften, Philosophisch-historische Klasse 1950. 7) (München: Bayerische Akademie der Wissenschaften).

Szemerényi, Oswald

- 1960     *Studies in the Indo-European system of numerals* (Heidelberg: Winter).

Vasmer, Max

- 1953     *Russisches etymologisches Wörterbuch I* (Heidelberg: Winter).

Walde, Alois—Johann Baptist Hofmann

- 1954     *Lateinisches etymologisches Wörterbuch*<sup>3</sup> II (Heidelberg: Winter).

Windekens, Albert Joris van

- 1976     *Le tokharien confronté avec les autres langues indo-européennes I: La phonétique et le vocabulaire* (Louvain: Centre International de Dialectologie Générale).

Winter, Werner

- 1969     “Analogischer Sprachwandel und semantische Struktur”, *Folia Linguistica* 3: 29—45.

## Chapter 3

### Anatolian

Heiner Eichner

#### 3.0. Introduction

The syllabic transcription of Hittite cuneiform signs follows J. Friedrich (1960), *Hethitisches Keilschriftlesebuch* II (with *u* replaced by *w* and *i* by *y*) or W. von Soden – W. Röllig (1967), *Das akkadische Syllabar*; for the reading of the ideograms, H. G. Güterbock (1973) “Einige seltene oder schwierige Ideogramme in der Keilschrift von Boğazköy”, *Ottens Fs.* pp. 71 – 86, has also been taken into account. Sumerograms are given in capitals, akkadograms in italic capitals. Sumerian sequences of signs are joined by full stops on the line (e. g. GIŠ.KÍN), Akkadian and Hittite ones by hyphens. Determinatives, rendered by raised small capital or lower-case letters, are not to be read phonetically. Thus we have <sup>URU</sup> with the names of towns, <sup>LÚ</sup> with male names of occupations, <sup>SAL</sup> with female ones and female personal names, <sup>m</sup> with male personal names, <sup>d</sup> with god-names. Determinatives usually stand before the words they refer to, but the signs <sup>MES</sup> and <sup>HI.A</sup>, which serve as plural determinatives, are placed after them (e. g. ŠAH.TUR<sup>HI.A</sup>). In the rendering of Hittite words and word-stems in non-syllabic transcription I largely follow Friedrich (1952), abbreviated as *HW*, without considering satisfactory the procedure made use of there. Restored portions of text are given in square brackets [ ]; signs which are partially damaged are placed in parentheses; severe damage is indicated by a subscript dot. Signs inadvertently missed by the scribe are given in pointed brackets < >, superfluous signs in curly brackets { }. The translation of restored passages is also given in square brackets; e. g., [no single thi]ng (3.1.1.4.2.) means that the first half of the logogram translated by ‘thing’ and the word standing in front of it are restored. Non-literal translations departing markedly from the original text are printed in italics. An unknown or unidentifiable sign is represented by the symbol “x”. Signs (and tablet-columns) that cannot be identified with certainty are indicated by one, respectively, two, su-

perscript question marks. Attention is called to the corrected reading of obvious miswritings by an superscript exclamation mark.

The quotations from cuneiform texts are taken from the editions which have so far appeared (including *Keilschrifturkunden aus Boghazköi* (*KUB*) XLIV and *Keilschrifttexte aus Boghazköi* (*KBo*) XXII), also from the card-index of unpublished tablets of Professor Otten (Marburg). A fully identified quotation contains, in this order, indicators of the edition-series (sigla: *KUB*<sup>1</sup> and *KBo*); the numbering of the volume (roman numbers); the numbering of the tablet (arabic numbers) within the volume; the column-reference if it can be given (roman numbers, or, in the case of one-column tablets o. = obverse, r. = reverse); and the line-number (arabic); in the case of a lost beginning of a tablet with following apostrophe). For instance, “*KBo* III 4 II 27” means *Keilschrifttexte aus Boghazköi*, vol. 3, tablet 4, column 2, line 27. “XIX 7 line 8” means *Keilschrifturkunden aus Boghazköi*, vol. 19, tablet 7, line 8 (no column-indication). Where there is no risk of confusion, a reduced indication may appear; thus “XXIV 8 I 16’, II 3’” means *Keilschrifturkunden aus Boghazköi*, vol. 24, tablet 8, column 1, line 16’, and the same, vol. 24, tablet 8, column 2, line 3’. The plus sign between two references (as *KBo* I 44 + *KBo* XIII) indicates that two fragments of tablets which have been published separately actually join. Frequently only one fragment is mentioned (e. g., XXXII 14 +), especially in the case of complicated joins. Unpublished tablets are cited with sigla such as *VAT* [*Vorderasiatische Texte*], *Bo* [unpublished texts from Boğazköy], .../n, and inventory numbers; thus *Bo* 620, *VAT* 13016, 1103/u, 277/p. From these the specialist is informed as to the origin and place of keeping (Berlin, Istanbul) of the tablets; thus the reference “277/p II? 3” contains, in sequence, the inventory-number 277/p – it tells us that the tablet was found in one of the campaigns of excavation conducted by K. Bittel in Boğazköy in 1957 –, the supposed (but uncertain) column-number (II), and the line-number (3). If, instead of the edition or inventory number, a special text designation is given, e. g. “*Maštigga*”, “*Targašnalli*”, or, abbreviated as (“*BdU*” [*Beschwörung der Unterirdischen*]), this gives an indication of the appropriate discussion in the specialist literature; here will be found information as to further details, which cannot be mentioned in the present chapter.

The quotations from Hieroglyphic Luvian texts essentially follow Laroche (1960), abbreviated as *HH*, and his system. Raised *n* (as in *tuwi<sup>n</sup>za*) indicates the anteconsonantal nasal, which is not written. “M 129”, etc., refer to the sign numbers in Meriggi (1962). Hieroglyphic Luvian logograms are given in capitals and in English translation (as *SPEAK*); for

the logograms which refer to numbers, which can be evaluated as true ideograms, arabic numbers are given.

Lycian inscriptions are quoted according to J. Friedrich, *Kleinasiatische Sprachdenkmäler (Kleine Texte für Vorlesungen und Übungen LXIII; 1932)*.

The oblique stroke as in *nala/i-* indicates that both the interpretations *nala-* and *nali-* are possible.

Phonematic interpretations of Anatolian words are given between slanting lines (as /*duia-*/).

### 3.0.1. General comments on Anatolian numerals

Little is known of the numerals of the Anatolian branch of the Indo-European family, because, in most cases, the texts use numeral-ideograms. Thus, additional information has to be obtained by carefully observing the phonetic complementation of these numeral-ideograms, and by adducing derived words which permit conclusions as to the phonetics, morphology, and inflection of the numerals.

The present chapter represents a first attempt to discuss exhaustively an, admittedly somewhat inextensive, section of the comparative grammar of the Anatolian languages. The material derives from Hittite, Cuneiform Luvian, Hieroglyphic Luvian, and Lycian (A, B – Lycian A is for the most part not expressly indicated); the sources yield nothing for Palaeon and little more for Lydian (but cf. 3.14.2.). Etruscan, as to whose membership of Indo-European Anatolian there is as yet no agreement, is excluded from the discussion. But this does not mean that anything here has been prejudged.

The vocabulary of the Anatolian languages is distinguished by a relatively small store of lexemes, which often show a great range of meanings. This phenomenon is often to be noticed, too, in the domain of the numerals, in which there exist the most favourable preconditions for strict class-formation within the lexicon. For this reason terms such as “numeral”, “cardinal”, “ordinal” are not used here to indicate closed word-classes, the individual members of which have become consistently specialised in respect to specific numeric concepts. Here all the words are included whose spectrum of meaning comprises, among other things, specific numeric quantifiers (such as “one”, “first”, “once”, “a third”); the domain of general quantifiers (such as “many”, “a few”, “some”, “often”) is left out of account.

In the presentation of the phonetic complementation of numeral-signs in Hittite texts, I have been able to rely on the splendid collections of

the Marburg Hittite Thesaurus. My sincere thanks are due to Professor Otten, who, with great friendliness, has made access to this material possible for me, and who has, further, given me information and advice. I am also grateful to Professors Cowgill (Yale), Neu (Bochum), and Watkins (Harvard) for important information from unpublished works.

### 3.1. The Anatolian numerals ‘one’ and their derivatives

#### 3.1.1. The Hittite cardinal ‘one’

The numeral sign “1” appears with phonetic complements.

##### 3.1.1.1. -a-stem

Forms: Singular; Common nom. 1-*aš*

acc. 1-*an*

gen. 1-(*e*-)*el* XXIII 103 r. 5; 1103/u r. 8

dat. 1-*e-da-ni* (old loc 1-*e-da*, see 3.1.1.6.

instr. 1-*e-ta-an-da* *KBo* XXII 203 I 1’? (context fragmentary)

\*1-*e-it*, see 3.1.1.7.

abl. 1-*e-da-az*

1-*e-az*? XIV 1 r. 25; XXX 15 o. 27 (error for 1-*e-da-az*?)

1-*e-iz* *Bo* 620 r. 19’ (bis); 159/w

Singular: Neuter

nom. 1-*e*?, 1-*an*??; no clear examples; *HW* p. 301 quotes 1-*an*; see 3.1.1.4. for this; 1-*e*/*\*1-i* and, above all, *\*1-at* are more likely; see below.

Plural: Common

nom.? (1-*e* would be expected, see 3.1.1.1.2.)

acc. (?) 1-*EN-aš* in the construction 1-*EN-aš*, <1->*EN-aš* VII 1 II 4 (= 1-*EN* 1-*EN-aš* in dupl. XLIII 52 II 12)

gen. — (*\*1-en-za-an* would be expected)

dat. 1-*e-da-aš*

instr. —

abl. —

### 3.1.1.1.1. Notes

3.1.1.1.1.1. For 1-*at-ta* [X] *KBo* XVII 104 II 7 see 3.1.1.7.

3.1.1.1.1.2. 1-*e* *KBo* XVIII 172 o. 16', corresponding to the unknown gender and number (plurale tantum) of the word it qualifies, may be either nominative-accusative singular neuter, nominative plural common, or nominative-accusative plural neuter: 2 <sup>GIŠ</sup>ŠU-RI-EN-NU ŠĀ-BA 1 2 GIŠ.KÍN KUBABBAR 1-*e-ma* 1 GIŠ.KÍN KUBABBAR 'two š.-emblems, of which one with two GIŠ.KÍN of silver, but the other with one GIŠ.KÍN of silver (?)'. An identification as a plural form would be the most convincing from the point of view of the morphology (cf. 2-*e*, 3-*e*), but it is only possible if the qualified word in Hittite is a plurale tantum. Since these are not very common among designations of objects, the force of 1-*e* as nominative-accusative singular neuter must be seriously considered.

### 3.1.1.1.2. Declension

Possibly the same as the normal declension of pronouns, with *e* in most of the oblique cases < PIE \**e* (cf. gen.sg. \**téso* 'this') and PIE \**ey/oy* (cf. gen.pl. \**tóysōm*). The assumption of a half nominal, half pronominal mixed inflection (Friedrich (1940–46: § 130), following Sommer (1932: 164)), which would be comparable with Latin *ūnum*, *ūnūs*, *ūnī* and Vedic *ékam*, *ékasmin*, depends on the assessment of the nominative-accusative singular neuter form (1-*an* would agree in its ending with Latin *ūnum*, Vedic *ékam*). Today this assessment has to take place under changed conditions, because, in the meantime, an -*nt*-stem (to which 1-*an* can belong) has been found to be attested with certainty, and, on the other hand, a possible example of 1-*e* (?) has become known (cf. *ki-e* 'this'; if this form is old, it should be referred to PIE \**ké*; the usual form *ki-i* goes back to something like \**kī*, \**gi*, \**ghi*). We have in addition the fact that 1-*at-ta* (3.1.1.7.) presupposes a nom.-acc. sg. \*1-*at*, that is, it clearly points to pronominal inflection (for the variation 1-*at*/1-*e*, cf. 2-*at*/2-*e*, 3.2.1.1.1.). For instr. 1-*etanda*, cf. instr. sg. *apēdanda* 'that', *kīdanda* 'this'. For the forms 1-*ela*, 1-*eda*, 1-*etta*, taken from the paradigmatic nexus, see 3.1.1.5–7. Acc.pl. 1-*aš* in a text, which, with the corresponding form of the personal pronoun -*a*- 'he, she', uses the variant -*uš* (not -*aš*), is surprising, but not objectionable.

### 3.1.1.1.3. Reading

Unknown. Goetze (1935) suggests \*šanna-, which Kronasser (1956: 152) also takes into consideration. (Friedrich 1952: 301 is against this.) Later, Goetze (1949: 288 ff.) puts in a plea for \*ašma- (to be rejected; see 3.1.4.). In my view, a reading \*ā- (< \*oyo- or \*oiyo-) is, rather, to be contemplated.

### 3.1.1.2. -i-stem

This stem can only be distinguished from the -a-stem in the nominative-accusative singular.

#### 3.1.1.2.1. Forms

Nom.sg. 1-iš, about twenty examples, of which none are Old Hittite. For instance *KBo* V 2 III 41 (bis); X 34 I 8,9; XVIII 69 r. 11'; *KUB* XIV 1 (*Madd* [*Madduwattaš*] o. 57; XVIII 5 I 15; XXVIII 107 II 1, 6, 9, 12, 15, 18; XXXIII 5 III 10'; XLI 23 II 20', 21'. 1-iš<sup>LÚ</sup> *ME-ŠE-DI* 'one (single) MEŠEDI-man' XI 29 V 11 is in alternation with 1-aš<sup>LÚ</sup> *ME-ŠE-DI* *KBo* IV 9 V 4.

Acc.sg. 1-in 277/p II<sup>?</sup> 3 (1-iš 1-in).

#### 3.1.1.2.2. Reading

The reading is unknown. At least in part of the examples probably only a stem-variant to 1-aš, corresponding to the frequent passage of -a-stems to -i-stems (cf. 1-aš XXVIII 107 I 9, 11, 13, 15: 1-iš XXVIII 107 II 1, 6, 9, 12, 15, 18). In the case of an -a-stem inflected pronominally one must especially consider analogy with the paradigm of the interrogative pronoun (*kuel*, *kuedani* : *kuiš*, *kuin* :: 1-el, 1-edani : 1-iš, 1-in).

### 3.1.1.3. Meaning and use of 1-aš, 1-iš

The phonetically complemented numeral-sign "1" is found mostly in non-attributive use. The boundaries between the meanings given in the following are often fluid.

1) Indication of the singular of specimens of a particular object or of a group of persons: *KBo* V 9 IV 4 1-aš<sup>LÚ</sup> *ME-ŠE-DI* ‘one (single) MEŠEDI man’; XXVIII 107 II 1, 6, 9, 12, 15, 18 1-iš *hal-za-a-i* ‘a single person calls’.

2) Stressing of isolation or uniqueness, ‘single’, ‘alone’, ‘without companion’: *KBo* III 4 II 77 1!-aš *SAG.DU-aš iš!* -*pár-za-aš-ta* ‘(PN) escaped as the only (or a single) one’ (see also XIV o. 57 1-iš); *KBo* V 6 II 9 f. <sup>URU</sup>*kar-ga-miš-aš-pát* 1-aš *URU-aš* (10) *Ú-UL ták-šu-la-it* ‘the town of K. was the only town that did not make peace’; *KBo* IV 14 II 9 <sup>URU</sup>*ni-hi-ir-ya-za-kán* *Ú-UL* 1-aš *ar-ha u-un-na-ah-hu-un* ‘had I not all alone to hurry forth from the town of N.?’ (similarly *KBo* IV 14 II 11; *KUB* XXI 1 II 69’).

3) Stressing of the unity of a combination of two or several parts, ‘one, united, joined into one’: XXXIII 5 III 9 f. *nu-uš-ma-aš* (10) [*iš-ta-an-za-aš-mi-i*]š *ga-ra-az-ši-iš* 1-iš *ki-i-ša-ri* ‘and to them their souls and the inside of their bodies become one’ (similarly *XLI* 23 II 20 f.).

4) Use in repeated placement of 1-a- ... 1-a-, with various nuances of meaning.

4a) Successive-distributive, ‘one after the other, each single one’: *VAT* 13 016 IV? 10 f. *ta* *EN ERÍN<sup>MEŠ</sup>[x]* (11) 1-an 1-an *anda tarnieškizzi* ‘he admits the military commanders one after the other’; VII 1 II 4 f. *nu-uš ha-aš-ša-az* *EGIR-pa iš-pa-an-ni-it* 1-*EN-aš* <1->*EN-aš da-aš-ki-iz-zi* ‘he takes them [sc. the twice seven dumplings] in alternation, the one set after the other [i. e., first the first seven, then the seven others] with a spit from the fireplace [and eats them one after the other]’ (differently, H. Kronasser, *Die Sprache* vii, 1961: 150). With a slightly different nuance we have XIII 4 III 5 1-aš 1-aš ‘the one like the other, each single one’.

4b) Reciprocal, ‘one another, mutual’: *KBo* II 5 IV 18 [X 1]-aš 1-an *ku-wa-aš-ki-it* ‘one killed the other continuously’; *KBo* V 4 r. 3 ff. *nu* 1-aš 1-*e-da-ni li-e i-da-la-a-u-e-eš-zi nu-kán* 1-aš 1-*e-da-aš-ša-an* *İR-iš* (4) [<sup>LÚ</sup>*pít-ti-ia-a*]n-ti-li *li-e pa-iz-zi nu* 1-aš 1-an *ku-na-an-na li-e ša-an-ha* [-zi] ‘(of you three) one is not to think of evil against the other, and one is not to seek his refuge as a servant with the other [i. e., with one of the two others], and one is not to strive to kill the other’; XXI 1 III 76 f. *ki-i-ma A-WA-TE<sup>MEŠ</sup> Ú-UL ku-it-ki* 1-*e-da-az* 1-*e-da-az* (77) *IŠ-TU KUR* <sup>URU</sup>*ha-at-ti-at* ‘these terms of Treaty are in no way mutually [binding]; they are [binding] in respect of the Land of the Hatti’.

### 3.1.1.4. -nt-stem

#### 3.1.1.4.1. Forms

Nom.-acc.pl.neut. Old Hittite 1-*an-ta* ... 1-*an-ta* ‘the ones ... the others’ *KBo* XVII 3 IV 25 (cf. duplicate *KBo* XVII 1 IV 27, both tablets in the “typically old ductus”, see H. Otten – V. Souček, *Studien zu den Boğazköy-Texten* (in future abbreviated *StBoT*) viii (1969: 38), as attribute to <sup>GIŠ</sup>*harpa* ‘heap’ (of logs?). Acc.pl.comm. *harpuš* (H. Kümmel, *StBoT* iii, 1967: 78 n. 8) cannot be adduced as an argument against the identification of <sup>GIŠ</sup>*harpa*, and, with it, 1-*anta*, as nominative-accusative plural neuter, cf. *harpa* : *harpuš* :: *alpa* : *alpuš* ‘cloud’ :: *hašša hanzašša* : *haššuš hanzaššuš* ‘grandchildren and great-grandchildren’ (see E. Neu, *IF* lxxiv, 1969: 240).

Nom.-acc.sg.neut. 1-*an* *KBo* XI 49 I 15; *KUB* IX 31 III 21; 32 o. 8; XIII 4 III 50; XIV 3 III 63; XIX 9 II 21; XXIV 8 I 16’, II 3’; L. King, *Hittite texts in the cuneiform character from tablets in the British Museum* (1920), 1 III 11 can likewise be assigned to the -*nt*-stem.

#### 3.1.1.4.2. Comments

The -*nt*-stem does not point to an entirely different word, but to a derivative of the -*a*- or -*i*-stem; cf. *dapi-* : *dapiyant-* ‘complete, whole’, and probably also *hūmant-* ‘whole, each’. Following from the suggestion made above (3.1.1.1.3.), the reading \**ānt-* (??) is to be assumed. The meaning ‘only a single one, only one’ and ‘something which forms a unit’, clearly distinguishable in the case of the form 1-*an*, deserves notice; see Sommer (1932: 164); in the *Treaty with Targašnalli* II 9 (Friedrich 1926: I.60), Hitt. 1-*an* alternates with Akkadian 1-*NU-TUM* ‘(individual) unit’. As opposed to this, still other nuances of meaning appear to play a part in the case of 1-*aš* and 1-*iš*. If 1-*an* is an -*nt*-stem, this finding can be explained by means of the opposition to the antonymic nom. *dapiyan* ‘whole, complete, altogether’ (-*nt*-stem, cf. H. Eichner, *KZ* lxxxii, 1968: 215 n. 11).

From the point of view of the history of the language, the -*nt*-stem can be variously assessed. On the one hand, the suffix -*nt-* is to be taken into consideration; cf. the adjectives *nekumant-* ‘naked’ (: Av *maynənta-*) : \**neg<sup>m</sup>mó-* (Vedic *nagná-*), *tangarant-* ‘sober’ : \**donkró-* (> German *zanger*), etc.; further also *hūmant-* ‘all, whole, each’ (\**H<sub>2</sub>áw-mo-nt-*). On the other hand a collective or abstract formation in -*and-* (Greek -*αδ-*, \*-*η-d-*) could be present. In Hittite, both types fell together from phonological causes (nom.sg. \**-ant-s* and \**-and-s* > -*anza*, dat.sg. \**-ant-i* and \**-and-i*

> *-anti*, then confusion in other forms too) and were probably also fused semantically. Thus Hitt. \**ānt-* (??) may combine both components (\**ā-nt-* and \**ā-and-*).

*ānt-* is very probably to be established on the basis of the vocabulary *KBo* XIII 10 (Laroche, *Catalogue des textes hittites*, 1971: 309). Here there are the following consecutive lemmata:

o.? 4	[X]	<i>x-iš-ka-aš</i>
5	[X]	<i>ne-ku-uz me-hur</i>
6	[X]	<i>a-a-an-za INIM-aš</i>
7	[X] xx	<i>a-a-an-za INIM-aš ku-e-da-ni e-eš-ta</i>
8	[X IN]IM-aš	<i>ku-e-da-ni NU.GÁL</i>

Since the participle *ānt-* ‘hot’ can hardly be present here, and also because a reading A.A.-*an-za* (something like \**muwanza*) does not seem to make sense, I should like to suggest the translations ‘one (single) thing’ for line 6 and ‘someone who had one (single) thing’ for line 7. Line 8 may be completed as ‘someone who has [no (single) thi]ng’; that the text already begins in the neighbouring rubric on the left is not too surprising in view of the other irregularities of this kind in the vocabularies. And as a support for this interpretation a further vocabulary passage can be added: *KBo* I 44 o. 9 f. NU.GÁL-*kán ku-e-da-ni ku-it* ‘someone/something [nominative or some other case] who does not have anything’ (NU.GÁL = *natta* ‘(is) not’; *kuit* = *kuitki* ‘something’, see W. H. Held on the text, *The Hittite relative sentence (Language Dissertation 55)* (1957: 43), cf. *The Assyrian dictionary of the Oriental Institute of the University of Chicago* (ed. J. Gelb) Z p. 170a (H. Otten, *StBoT* vii, 1968: 9 to be rejected). The circle of the lucubrations closes if, further, we restore the reading X (1?)-*iš(-)INIM-aš* ‘one (single) thing’ in *KBo* XIII 10 o. 4.

The hyperplene writing of the vowel of the first syllable (*a-a-an-za*) finds its explanation in the fact that the initial contraction-vowel ( $\hat{a} < aa < aya$ ) is over-long and is thus phonologically different from the usual initial long vowels; hyperplene writing indicates over-length, normal plene writing normal length. The two theoretically possible alternative readings *aant-* (more accurately *āant-* or *aānt-*, disyllabic, with hiatus) must be eliminated from our considerations. The first, because vowels of the same quality are contracted in Hittite (cf., for instance, 3.2.4., for the shortening of unstressed long vowels derived from contraction); the second because it is not consistent with Hittite scribal habits (A. Goetze *JCS* xvi: 32; *JAOS* lxxiv: 187, to be rejected). On the other hand it is not

possible to decide the question whether the contraction-length ( $\hat{a}$ ) in  $\hat{a}nza$  ( $a-a-an-za$ ) has been regularly preserved or only been based analogically on nom.-acc.sg.neut.  $*\hat{a}n$  (1- $an$ -). For if initial long vowels derived from contraction are regularly shortened before two consonants, the lack of the hyperplene writing in  $a-an-ki$  ‘once’ (3.1.3.) could be phonologically justified. But, on the other hand, in  $a-an-ki$  an inaccurate writing instead of  $*a-a-an-ki = / \hat{a}nki /$  could be present. The same problem is posed in the verb  $\hat{a}$ - ‘to be hot’ (3 pl.  $a-a-an-ta$  with  $\hat{a}$ ), which, possibly, has been restored analogically on the basis of forms such as 3 sg.  $a-a-ri = / \hat{a}ri /$  or nom.-acc.sg.neut.ptc.  $a-a-an = / \hat{a}n /$ .

### 3.1.1.5. 1-*e-la*

1-*e-la* ‘alone, single’ *Bo* [unpublished texts from Boğazköy] 1806 line 7’ and *Bo* 2701 III? 12’ (<sup>d</sup>U AN-E 1-*e-la a-ku-wa-an-zi* ‘they drink to the Weather-God of Heaven alone (as the only one)’): 1-*e-la-aš* (= Akk. *e-te-nu* (*ēdēnū*) ‘single’ in Vocabulary *KBo* I 44 + *KBo* XIII 1 o. 34 (H. Otten – W. von Soden, *StBoT* vii, 1968: 11 line 17).

We are here concerned with the extension of the adverbial genitive 1-*el*\* ‘as a single one’. For this use of the genitive, adverbs of the type *ašandaš* ‘sitting, seated’ ← ‘as sitter(s)’ – singular or plural – are to be compared. The postulated adverbial use of 1-*el* has a firm support in the attested 2-*el* ‘both together, both’ (see 3.2.1.6. – 9.). The form 1-*ela* appears to be an adverbial locative (1-*el* : 1-*ela* on the pattern of *šiuat* : *šiuatta* ‘by day’, *lukkāt* : *lukkatta* ‘on the next morning’?). The secondary -*a*-stem 1-*ela*- ‘single’ could arise (by hypostasis) from 1-*ela* (cf. 2-*ela*-, 3.2.1.6., 3.2.1.9.). In 1-*el*, 1-*ela* (and 2-*el*), which arose correctly, the Hittites perhaps saw, because of a new, etymologically “false” analysis, an adverbial ending -*el* -*ela*, which they carried over into the personal pronouns, cf. *ukel*, *ukela/ukila* ‘myself’, *zikela/zikila* ‘you yourself’, *apašila* ‘he himself, that one’ (singular: *KBo* XIV 8 II 3; plural: see *HW* s. vv.; for acc.pl. *apašilus*, cf. nom.sg. 1-*elaš*), *šumašila* ‘you yourself’. So we have an explanation of these hybrid formations, about which there has been much puzzlement: they start from the numeral, especially from 1-*el*, 1-*ela*. The postulated development would moreover present itself as considerably simpler still, if the suggestion made in 3.1.1.3. as to the initial of the numeral for “1” being  $\bar{a}$  should be correct.  $*\bar{e}l$   $*\bar{e}la$  (secondarily, unstressed  $*\bar{i}l$   $*\bar{i}la$ ) would have to be considered as the reading of 1-*el* 1-*ela*, nom.  $*\bar{a}š$  : gen.  $*\bar{e}l$ , like nom. *apāš* ‘that one’ : gen. *apēl*, nom. *kāš* ‘this one’ : gen. *kēl*. In *ukel ukela ukila* there could then be present a

conflation of the phrase \**uk ēl(a)* ‘I as the only one, I alone’ (→ ‘I of my own initiative’, ‘I in my own person’, ‘I myself’), as similarly in *zikela/zikila* and *apašila; šumašila* (cf. A. Kammenhuber, *KZ* lxxxiii, 275) is, rather, a later imitation.

### 3.1.1.6. 1-*e-da*

1-*eda* ‘on one’s own, isolated’ is an original locative form taken out of the paradigmatic nexus (i. e., no longer freely formable). It is found in *KBo* IV 14 II 60, 64, 70 in the phrase 1-*eda tiyawar* ‘to put oneself in isolation, stay in isolation, keep oneself out of’ (?) in an enumeration of three kinds of breach of duty to assist in case of war. Before the phrase there is *allallā pāwar* ‘to become unloyal’, whereas, after it, there is *pidikan wahnumar* ‘to turn back on the spot’; from this collocation, the meaning of 1-*eda tiyawar* is to some extent defined. A further example of 1-*eda* occurs in the phrase 1-*eda leng-* XXVI 1 III 54 ‘to swear for oneself alone’ in an order concerning people who are absent at the general oath-taking (see Sommer – Falkenstein 1938: 143; E. von Schuler, *Hethitische Dienstanweisungen für höhere Hof- und Staatsbeamte* (Afo Beiheft 10) 1957: 14 ‘together’ is not to be preferred). The difference between 1-*ela* (3.1.1.5.) and 1-*eda* does not lie in the meaning, but in the syntactic use.

### 3.1.1.7. 1-*etta* (1-*ašša*\*)

1-*e-it-ta nai-* ‘to unite someone, make politically one’ (XXI 37 o. 17; XXI 42 II 6 = dupl. XXVI 12 II 30) probably originally means ‘to direct to one particular side, to make into one special party’. The grammatical determination of the form 1-*etta*, so far unsuccessful, depends upon one’s assessment of the syntax. Among the morphologically possible alternatives, the syntactic properties of the verb *nai-* ‘to step forward on someone’s side, to turn to someone’s party (middle reflexive)’ determine the form 1-*etta* clearly as an instrumental. Cf. Goetze, *Ḫattušiliš* (1925: IV 10 f.) ‘and the whole of Hattusa will concur in the matter of thy husband / will take up the party of thy husband’ *IŠ-TU ŠA*<sup>LÜ</sup> *MU-DI-KA ne-ya-ri* (the Akkadian flexion-indicators must here denote a pendent genitive in the function of an instrumental or ablative), and, for a verb related in meaning, *Kup* § 13\* C 7 f. (Friedrich 1926: I. 122; E. Neu, *StBoT*, 1968: 7) *IŠ-TU ŠA*<sup>U</sup> *UTU-ŠI ma[ah-ha-an] ar-ta-ti* (8) *nu IŠ-TU ŠA*<sup>U</sup> *UTU-ŠI-pát EGIR-an ar-hu-ut* ‘as thou (in the past) wast on the

side of The Majesty, so mayest thou in the future be on the side of The Majesty'. Cf., further XIV 1 r. 25 (Goetze, *Madduwattaš*, 1928/68: 27) 1-*e* < -*da*? > -*az ti-ya-mi* [against the land of Hapalla] I will make common cause [with thee], lit. 'I will step forward on one side'.

Since the instrumental ending terminates with *-t* in postvocalic position (*-ta* only postconsonantal), 1-*etta* must be analyzed as \*1-*et* + *-a* 'and, also', and thus leads to positing 1-*ašša* \* '(only) one single one, one and the same'. The difficulties of deriving this meaning from the two elements 1-*aš* 'one, one single one' and *-a* 'and, also' can be eliminated by starting from the negated \**natta* 1-*ašša* 'and not a single one, not even one'. '(Only) a single one, just a single one' is yielded as one of the semantic possibilities of the use of this combination of words in the positive; for another semantic possibility, see 3.1.1.8. The further example 1-*e-it-ta* *KBo* III 4 III 33 (Goetze 1933: 76) is not unambiguous; the context allows the meanings 'everything in one, all together' or 'taken on its own, even alone'.

In conclusion it is to be observed that the interpretation of 1-*etta* as locative (cf. *tamatta* 'somewhere else', *kuwatta* 'whither', *apadda* 'thither'), to be found in the literature, comes to grief on the *e*-vocalism of the form; \*1-*atta* would necessarily be required, or 1-*eda* with a single dental, see 3.1.1.6.

Now a form 1-*atta* is actually recorded *KBo* XVII 104 II 7, but it is to be identified as nominative-accusative singular neuter to 1-*ašša* \*; its meaning is 'ditto, of the same kind, the same' (lit. 'one and the same'). By means of intratextual comparison (lines 8, 9 KI.MIN) and of placing it beside the duplicate *KBo* XI 14 II 8 ff., it follows cogently in fact that 1-*at-ta* is a heterogram for KI-MIN and takes the place of a clause which is to be repeated several times ('give me the sacrificer back'), which is only once written out in full. Nevertheless I should not wish to exclude the possibility that KI.MIN (written KI.2) has still other Hittite correspondences than 1-*at-ta*; those possible are *kīpat* 'the same, exactly that one' (Friedrich 1959, abbreviated as *HG*, i § 64) in alternation with *QA-TAM-MA-pāt*, *apeniššan* 'just so' (see *HW* 311 f.), and *katta* 'likewise, correspondingly' (the question mark after this meaning, *HW* 105, is to be deleted).

*Bo* 2933 II 5' *na-an 1-e-it-ta da-a-i* (*hīli pedai* in front of it) is not clear. Perhaps this example is to be placed with the cases just mentioned and is to be translated 'he puts him on (one and) the same side'. In this case 1-*e-it-ta* would be a further example for the "lateral" instrumental ('on the side of'; see *HG* i § 22 A *kēt* 'this side of') for 1-*ašša* \*.

### 3.1.1.8. 1-ašša

1-aš-ša (1-aš ‘one’ + a- ‘and’) ‘each single one’ occurs XLIII 23 r. 21’. H. Ehelolf (1933: 5), who interpreted the passage (*Orientalistische Literaturzeitung* xxxvi, 5), called attention to *kuišša* (*kwiš* ‘who’ + a- ‘and’) ‘each’, whose semantic history (cf. Latin *quisque*) rests however on conditions (‘whoever it may be’) which cannot be present in the case of 1-ašša. For this reason a further investigation of the evidence becomes necessary.

XLIII 23 r. 19’ ff. *nu-za* 1 ŠAH *ma-a-ah-ha-an* (20’) ŠAH. TUR<sup>HI.A</sup> *me-ik-ku-uš ha-aš-ki-iz-zi ki-e-el-la-az ŠA* <sup>GIŠ</sup>SAR. G[ĒŠTIN] (21’) 1-aš-ša <sup>GIŠ</sup>*ma-a-ah-la-aš* ŠAH-aš *i-wa-ar mu-u-ri-uš* (22’) *me-ik-ku-uš ha-aš-ki-id-du* ‘Just as one sow usually bears many piglets, so also is each single vine of this vineyard to bear many grapes just as the sow does’. (The attraction of the comparandum to the comparatum is typical of the style of Hittite comparisons.) Therefore the meaning given by Ehelolf is plausible; since the particle -a ‘and, also’ is already present with *kēl* ‘of this’ (genitive singular), taking 1-ašša to be a separate lexeme (and not just as a word-connection) should be justified (cf. *HW*, 302). The meaning of this lexeme is explained most simply if, once again, we start from negative formulations (cf. 3.1.1.7.). The material for demonstration can be extracted from the Hittite texts themselves.

XIII 4 III 51 f. *nu wa-as-túl ku-iš i-ya-zi na-aš QA-DU NUMUN-ŠU* (52) *har-ak-zi-pát ku-e-ša-at-kán ku-i-e-eš im-ma ŠĀ É DINGIR-LIM nu* 1-aš-ša (53) *TI-nu-ma-aš Ú-UL e-eš-zi* ‘... so he who trespasses must nevertheless (-pat) perish. And of all those who are still in the temple as well, not one single one must be left alive’. Since the expression ‘not one single one’ is synonymous with ‘no single one’, the remaining 1-ašša can, after taking out the negation, be taken as ‘each single one, each separate one’. So the two meanings of 3.1.1.7. and 3.1.1.8. depend on the fact that, to the negative concept ‘not a single one, no single one’, there corresponds, on the positive side, not only ‘a single one’ but also ‘every single one’.

### 3.1.1.9. 1-li (?)

An apparent Old Hittite 1-*li* *KBo* VII 14 (old ductus) o. 8 is a constituent of PN <sup>m</sup>LI.KASKAL-*iš* (Laroche 1966, no. 1750) — Professor Neu has kindly called my attention to this fact; 1-*li* *KBo* XX 21 line 7’ f. does not belong here. The abbreviation 1 *LI* for Akk. 1 *LI-IM* ‘1000’ (cf. von

Soden (1965–81: 553)) could be present: [X 1? L]I 5 ME ERÍN<sup>MEŠ</sup>-aš ha-a-li-iš 20-iš 5 ME <sup>NINDA</sup>ha[x] ('8') [X + ?] 1 LI NINDA <sup>HLA</sup> 30-iš 1 LI NINDA? ... [X]. Unfortunately the entire tablet is broken in such a way that it is not possible to determine with certainty to what word 1-li / 1 LI refers.

### 3.1.2. The Hieroglyphic Luvian cardinal 'one'

The numeral-sign "1" is used with phonetic complements (cf. Meriggi, *Glossar*<sup>2</sup> 1962: 165).

#### 3.1.2.1. Forms

Singular: scc. 1-na, 1-ti-na  
dat.abl. 1?-ti-na

#### 3.1.2.2. Comments

Further examples are obscure. The reading is unknown. With some reservations the coexistence of an unextended stem and one extended by *-nt-* (or derived by means of *\*-and-*) can be postulated, as in Hittite, perhaps *\*a-* (??) and *\*anti-* (??). An argument for the establishment of a stem *\*a-* 'one' in Hieroglyphic Luvian could be seen in the writing Kululu 2 B *arha* '1' -*wa-há-a?*, if the meaning 'I came out' and the reading *arha awaha* (in my view, rather *awiha*; WA = wa, wi) could be assumed. It should be a rebus-like writing; for the form *awaha*, see J. D. Hawkins, *RHA* xxix (1966: 129). But this argument vanishes if, with Meriggi *Manuale* ii (1967: 46), the sign WA in this place has a "thorn", i. e., a little oblique stroke added, as actually the photograph H. T. Bossert, *Jahrbuch für kleinasiatische Forschung* (1950: Plate XXX) suggests. [Hieroglyphic Luvian *nala/i-* 'nullus' (Meriggi 1962: 86) is a wrong reading for *\*hantili-* 'prior, former' (J. D. Hawkins, *Anatolian Studies* 25, 1975: 148–150), therefore not to be analysed as *\*ne oyolo-*.]

#### 3.1.3. Hittite *ānki*

The hitherto unrecognized hittitogram for 1-ŠU ~ 1-*an-ki* 'once' occurs in *a-an-ki* KUB IV 2 IV 36, 38 (in alternation with 1-ŠU and 1-*an-ki*). The sequence *\*ān* which remains after the removal of the adverbial suffix *-ki* is to be regarded as nominative-accusative singular neuter. This form

can belong to an *-nt-* stem, *\*ānt-*, or continue directly an old nominative-accusative singular neuter with *-n* < *-m*. The unextended stem *ā-* probably contains a long vowel due to contraction, and points to *\*oy-o-* or *\*oy-yo-*, and is thus a derivative of PIE *\*oy*, meaning something like ‘one, single’ (adverb), somewhat different from the well-known stems *\*oy-ko-*, *\*oy-wo-*, *\*oy-no-* which are represented in the non-Anatolian branches of Indo-European (Pokorny 1959: 286). *\*oy* lying at the base of it is probably to be regarded as an old locative singular *\*o-i* ‘with the one, in the one, on its own’ of the pronoun *e-/o-* ‘this, the, the one mentioned’, from which the semantic constituent ‘one, alone’ is derivable from the grammatical function of the Indo-European singular.

Further reflexes could be present in Hitt. *āšma* ‘firstly’ (see 3.1.4.) and – quite uncertain – in the word *ayawala-* XIV 3 I 12, which is probably not true Hittite but comes from some dialect, if this is to be taken as something like ‘of equal birth’ (*\*‘being of one and the same rank’*; *\*oyo-wo-lo-* – for the formation cf. Vedic *kévala-* ‘alone; whole, complete’).

### 3.1.4. Hittite *āšma*

Hitt. *āšma* ‘firstly, on the first occasion (?), for the first time (?)’ is always written *a-aš-ma*.

XXXIII 120 I 31 ff. in the series *āšmatta ... dānmatta ... 3-annatta* ‘at first/firstly ... but secondly ... and (finally) thirdly [have I impregnated thee]’; XXXIII 106 IV 13 *āšma-an hullanun* ‘first I struck him’. Further possibly XXIV 8 II 14, where the translation is perhaps ‘for the first time’ (sense something like ‘for the first time the Sun-god comes to visit us! Has something dreadful happened?’). *x-ma-an-da* XXXIII 120 II 78 probably does not belong here (against H. G. Güterbock, *Kumarbi (Istanbuler Schriften XVI)*, 1946: 79).

There are two possible explanations:

(1) Connection with *ānki* ‘once’, *\*ā-* (??) ‘one’. Stem *\*ā-*, or, more probably, loc. *\*ā* ‘at the one’ (formed like *kā* ‘here, hither’) was extended by a particle-like element *-š-* (something like PIE *\*sé/\*só*, cf. Vedic *sá yathā* ‘as’; also in Hitt. *kāša*, *kāšma* ‘look here’ and *naššu ... našma/naššuma* ‘either ... or’, something like *\*no-se/o-we*) and by emphatic *-ma* (cf. *aru-mma* ‘excessively’, *imma* ‘over and above’ < *\*id-ma* or *\*im-ma*). Phonologically, the form *āšma* derives either by the route *\*āše* > *\*āš* (regular loss of final postconsonantal *-e*) with later addition of *-ma*, or by the alternative route *\*āšama/\*āšema* > *\*āšma*, with syncope of the vowel of the middle syllable after a long first syllable. In the series ‘to

one ... to another ... to a third' a semantic shift → 'in the first place ... in the second place ... thirdly' could easily occur; cf. also Goetze's reference to Akkadian (Goetze 1949: 297 n. 46). The conjectural meaning 'firstly, on the first occasion (?)' is also easily explainable.

(2) \**ō-smō*, lit. 'at the one', from prep. \**o* [\**o-H<sub>1</sub>*] = Vedic *ā* 'to, around', and a case-form of PIE \**sem* 'one'. This interpretation is suggested by E. Neu, *StBoT* xviii (1974: 98 n. 210); it presents no difficulties and, moreover, finds support in further Hittite material.

### 3.1.5. Hittite *hantezzi(ya)-*

*hantezziya-* / *hantezzi-* 'first, anterior' is used as an ordinal. The word was apparently coined as an antonym to the perhaps inherited *appezziya-* / *appezzi-* (\**ope-tyo-* 'last, posterior, later', cf. Vedic *āpatya-* 'progeny' or \**opi-tyo-*, cf. Greek *ὀπίσσω*; whether the Hittite word had *e* or *i* in the second syllable is not determinable); cf. J. F. Lohmann, *IF* li (1933: 324). Hitt. *hantezziya-* cannot derive directly from ?*H<sub>2</sub>anti-tyo-* (cf. Greek *ἀντί* Latin *ante*), as is often said in the literature, because, in this case, \**hanizziya-* would have to be expected. It is probably an innovation starting from the dative, which had already fallen in with the locative, which happened at a time when \**H<sub>2</sub>ntéi* had already become \**hantē* 'in front' (see H. Eichner, *MSS* xxxi, 1973: 77), but had not yet undergone the further development of final \**-ē* (< \**-ey*) to *ī* (cf. Hittite adv. *ha-anti-i* 'separate', originally 'front, to be found in the first place, especially'). [Or was \**H<sub>2</sub>ante-tyo-* due to the influence of \**ope-tyo-*?]

There are some derivatives to *hantezziya-* / *hantezzi-* (verb *hantezziyahh-* XXXI 147 II 21; noun d. *hantezumni* 'in the front room'); of these, *hantezzili* XXX 39 II 4 (*HW*, 53 'at the first time, at first') is the only one with a numeral concept.

#### 3.1.5.1. Cuneiform Luvian *hanteli-*

In Luvian the equivalent is *hanteli-* 'first' (Laroche 1959: 40), the corresponding ordinal. Just as in Hittite, a dative-locative form \**hantē* (< \**H<sub>2</sub>ntéy*), to which the suffix *-li-* has been added, probably underlies it. For the method of formation, the name of the originally second Roman month is, in my view, to be compared: *aprīlis* (ls. \**apere/oy* + *-li-*). There also occurs a (not necessarily Luvian) PN *Hanteli* / *Hantili*; see Laroche (1966: no. 275); for the motive for giving such a name, one may want to consider joy at the birth of the first son (in this case, then, with the

meaning of the ordinal), but also the wish for high social position of the bearer of this name (in this case, then, with the meaning ‘foremost, high in rank, of the first rank’). For Lycian, closely related to Luvian, from *χñwatawat-* ‘ruler, king’ (dat.loc. *-a*; for the formation cf. the Hittite suffix *-att-*, also Cuneiform Luvian *handawati-* ‘ruler’) we can construct a denominative verb *\*χñtawa-* (for the formation, cf. Hittite *-ai-* verbs, e. g., *hantai-* ‘to arrange’ and *appai-* ‘to be finished’) ‘to be a leader, find oneself in front’; and further adj. *\*χñtewe* (or *\*χñtawa-*) ‘foremost, first, leader’, which is derived, by means of the suffix *-we-* (*-wo-*), from an adverbial *a*-locative *\*χñta* (this would be something like a Hitt. *\*handa*). Hitt. *hantezzi(ja)-* is to Lycian *\*χñtewe-* as is Hitt. *šanizzi-* ‘pleasant’ to Hieroglyphic Luv. *sanawa-* ‘good’ (see 3.1.6.). A Lycian equivalent of Luvian *hanteli-* ‘first’ can be assumed, as Professor Neumann (Würzburg) has pointed out to me, in gen.sg. *χñtlah*, which is probably used as a surname [Hier.-luv. *\*hantili*, 3.1.2.2.].

### 3.1.6. Hittite *šanaiš\** / *šaniš\**

Hitt. *šanai-?* / *šani-* ‘one and the same, a single one’ raises complicated problems. For the most part several possibilities call for consideration in the interpretation of the quotations; there is an additional complication by reason of the possibility of confusion with Akk. *šanû* ‘second’.

Old Hittite *KBo* III 22 (E. Forrer, *Die Boghazköi-Texte im Umschrift [Wissenschaftliche Veröffentlichungen der Deutschen Orient-Gesellschaft XI, XII]*, abbreviated as *BoTU*; 7, old ductus) o. 10 *ša-ni-ia ú-it-ti* could mean ‘in the same year’, ‘within the space of a year’, or ‘in the first year’. Further, the meaning ‘in the next/second year’ is not to be excluded, but, then, the necessary assumption of an akkadogram *ŠANIYA* would not yield a correct syntagma (adverbial accusative singular masculine or suffixed pronoun of the first person singular in the genitive – both are little used). *KBo* III 20 o. 60 *ša-ni-ya ši-wa-at-t[i]* is best interpreted as ‘on one and the same day’. In the Laws § 191 (II § 97) *ša-ni-ya pi-di* ‘(if they) (are) at one and the same place’ alternates with XXIX 34 IV 16’ *2-el pi-di* ‘(if they) both (are) on the spot’, whereby the same content is given in another formulation. The reading *2-el* (not *1-el*) is certain according to Otten (Friedrich, in *Pagliario Fs.* ii, 1969: 139 n. 1). The meaning ‘one and the same’ for Hitt. *šani-* is made certain by the passage from the Laws (see *HG* II § 97).

Recently E. Neu, *StBoT* xviii (1974: 20 f.) has taken up a position with regard to Hitt. *šaniya*; essentially, I follow him. He puts in a plea for an

akkadogram *ŠA-NI-I pi-di KBo IV 9 I 15* (otherwise *HW*) and *ŠA-NI-E pi-di XII 50*, line 10' (with duplicate). Admittedly the context does not permit a perfectly clearcut decision. According to Neu, the form *ša-a-ni-ta* does not belong here, as not certainly attested; otherwise Goetze (1949: 291 and n. 19).

### 3.1.6.1. Etymology

Kronasser (1956: 152) and Neu (op. cit.) (1974: 98 n. 210) suggest a connection with PIE *\*sem-* 'one'. Kronasser's derivation *\*sm-ni* should have yielded *\*samni-* or *\*šanni-*, not *šani-*, but this is hardly tenable, while Neu's referral to a neuter *\*san-* (with *-n* from *-m*) is unobjectionable. The protoform *\*šan* may constitute an equation with Greek *ἕν*, if weak stress can be assumed to here caused Hitt. *a* instead of *e*. Whether in *\*šani-* there is a functionless stem-extension (transference of a consonant-stem to the *-i*-stems) or a derivative from an adverbial *šan*, cannot be decided. Also analogical shaping of a *\*šami-* (*-i*-stem for *-a*-stem) 'the same' (cf. Vedic *samā-* 'just, like, the same', Pokorny (1959: 904)) on the basis of nom.-acc.sg.neut. *\*šan* or *\*šen* should be considered (protoform something like *\*smó-*).

#### 3.1.6.1.1. Additional remarks

The neuter *\*sem* is probably also reflected in adv. *kiššan* 'thus, in the following way', which can be interpreted as a conflation (univerbalisation) of an expression *\*ki šan* < *\*ki šen* (*\*kí/gí/g<sup>h</sup>i sém*) 'in this one way, exactly so'. Adverbs such as *eniššan* 'thus, in the manner mentioned', *apeniššan* 'thus, in that way', *keniššan* 'thus, in this way', were then formed (always with *šš*) in addition to *kiššan* (which is best considered as a sequence of two nominative-accusative neuter forms). In the adverb of time *kuššan* 'when?' (beside *annišan* 'formerly') we must correspondingly assume a conflation of the old locative *\*k<sup>w</sup>u* 'where, when?' (in Vedic *kvà* 'where?', *kúha* 'where?' = Old Church Slavonic *kúde*) with adv. *\*sém \*sóm*. In its turn *\*sém \*sóm* is probably also a locative ('in one' = 'together'). The Hittite particle of place *-ššan*, too, goes back to adv. *\*sém \*sóm*.

On the other hand, in my view, the following words do not belong here: *šannapi šannapi* (*āmreḍita*) 'each for itself, separate, scattered' (with derivative *šannapili-* 'empty, alone; not impregnated'); *šanezzi-* / *šanizzi-* 'pleasant, first class' (correspondingly Hieroglyphic Luv. *saniwa-*), which are no doubt to be assigned to *\*sen-i-* 'on its own, separated' (Pokorny 1959: 907).

## 3.2. The Anatolian numerals ‘two’ and their derivatives

### 3.2.1. The Hittite cardinal ‘two’

The numeral-sign “2” is found with phonetic complements.

#### 3.2.1.1. Forms

The stem-class is not certain, but there are indications of an *-a*-stem (cf. *2-at*).

Plural common nom. *2-e* (probably *Bo* 3542 II 10’ *ku-i-e-eš* ‘the two, which’)

(*2-uš*, see *HW*; cf. however 3.2.1.6.)

*2-at*, see 3.2.1.2.

*2-ah-hi* ??, see 3.2.1.3.

acc. (*2-e* ??, see 3.2.1.1.1.)

gen. *2-(e)-el* (?), see 3.2.1.5.

dat. *2-(e-ta)-aš*, see *HW*

abl. *2-az*, see 3.2.1.4.

neuter nom.-acc. *2-e* e. g., *KBo* XVII 11 I 21’, a tablet in typically old ductus; also in later duplicate 74 I 36’, see E. Neu, *StBoT* xii (1970: 14); further *Bo* 2410 *2-e huppar* GEŠTIN ‘two bowls of wine’, and XXX 41 II 9’; see also 3.2.1.1.1.

For *2-at* ?, see 3.2.1.2.

#### 3.2.1.1.1. Notes

*2-e* is taken by Friedrich as accusative plural common for a series of quotations which are listed *HW* 302 (*KBo* XVII 74 II 14, II 8’; E. Neu, *StBoT* xii, 1970: 18, 24 are to be added). If this interpretation were right, it would be possible, or indeed necessary, because of the coincidence of nominative and accusative *-e*, to consider *2-e* the descendant of an Indo-European dual form, having in mind the Indo-European masculine dual ending *-e* (or to be put as *-H<sub>1</sub>e* in ablaut to *-H<sub>1</sub>ə* – fn. *iH<sub>1</sub>*, with secondarily accreted *i*?). Admittedly this ending would have to be taken over on to the numeral “2” only secondarily, since the Indo-European form is to be put as *\*d(u)wóH<sub>1</sub>* *\*dóH<sub>1</sub>* (traditionally *\*d(u)wō* *\*dō*), and, beside it, with a still obscure extension in *u*, *\*d(u)wóH<sub>1</sub>u*? etc. or

\**d(u)wōw* (PIE final  $^{\circ}oH,w > IE \ ^{\circ}ōw?$ ), from which, in Hittite, a descendant with final  $^{\circ}ā$  or  $^{\circ}au$  would regularly result.

The quotations for 2-*e* are in expressions of the following kind. *KBo* IV 9 III 16f. LUGAL-uš GUB-aš 2-*e* e-ku-zi (17)  $^dhal-ma-aš-šu-ut-tu_4$   $^dZA.BA_4.BA_4$  ‘standing, the King drinks (to?) two: to the goddess of the throne and to Zababa’; from other passages it is seen that the names of the gods are in the accusative; for *eku-* + accusative ‘to drink to someone / in honour of someone’, see J. Puhvel, *MIO* v (1957: 32) – Engl. *to toast somebody* fits; XX 19 III 4f. LUGAL-uš KISLAH-ni a-ri 2-*e* ir-ha-a-iz-zi (5)  $^dše-pu-ru-ú?$   $^dte-li-pi-nu-ú$  ‘the King comes to the threshing-floor and completes (?) two (i.e. given operations); to the honour of Šepuru and Telipinu’; or, better, ‘... he memorializes two in common, Šepuru and Telipinu’ – other passages show the accusative of the god-names; *irhai-* perhaps similar to *kalutiya-* ‘to sacrifice in common / in one round’. In expressions of this kind, 3-*e* occurs too instead of 2-*e* (XI 30 IV 7; *IBoT* I 2 III 10); it must originally have been formed analogically on 2-*e*.

The determination of the forms 2-*e*, 3-*e* as nominative-accusative plural neuter is more probable than Friedrich’s view (*HW* 302) of these forms as accusative plural common. Then there are two possibilities of interpretation:

1) There is ellipse of a neuter substantive, of which the meaning would be something like ‘drink, draught of honour’. Neu, who inaugurated this view (*StBoT* xii 1970: 19, 25, 39), thinks of ‘beaker’ (Hitt. *zeri-* n.), but, against this, there is the fact that, in many cases, only a single vessel seems to be used (also *KUB* I 17 I 4f.).

2) 2-*e* (in the event, 3-*e*) refers to the gods honoured. Kammenhuber (1971: 143 ff.) emphatically proposes this solution. Admittedly its basis is surprising: in Old Hittite the difference in gender in the (lower) numerals is, she says, weakly developed (1971: 147). It is not clear what is to be understood by this. The missing gender-concord is however quite easily to be explained from a particular function of the Hittite neuter, one that may be called “complexive”. The complexive neuter is usually still coupled with the (collective) singular; but, in the case of the numerals, this interpretation is really excluded because of their special meaning. It is to be remembered here that the replacement of the Old Hittite form of the anaphoric pronoun of the third person, nom.pl.common -*e*, by the original form of the nominative-accusative singular neuter, -*at* (< -*ed*), in Modern Hittite can only be explained from these syntactic conditions; that only the nominative plural common, and not the accusative plural common

too, is affected by this, must be due to a difference in the placing of the subject- and object-pronoun, which has not been sufficiently investigated.

Finally we must consider the question of stem-formation, which is decisive for the assessment of 2-*e*. Here I would like to put forward for discussion the question whether it would not be better to separate 2-*e* (and 3-*e*) from the basic stem, and assign it to the *-nt*-stem (thus 2-*e* = \*2-*ante*). From the point of view of the meaning, a collective formation (*-and-*) ‘two in common’ would fit excellently. For the ending *-e* in the nominative-accusative plural neuter, reference may be made to the occasionally recorded *waššante* ‘covered’ (*KBo* XI 29 o. 7). It would thus have remained as a nominal ending in the ritual formula 2-*e* *ekuzi* / *irhaizzi*, whereas, otherwise, it has — as is generally the case in the nominative-accusative plural neuter — been eliminated in favour of the competing ending *-a* to such an extent, that it merely occurs as a very rare variant. The cause of this lies in the striving for differentiation of nominal (*-a*) and pronominal (*-e*) declension. That *-e* has a firm place precisely in the case of \*2-*ante* in the ritual language would not come as a surprise. The regular descendant of the Indo-European dual ending of the thematic stems must appear in Hittite as *-e* (nom.-acc. neuter dual < Proto-Anatolian *-e* < PIE *-o-iH<sub>1</sub>*), corresponding to *-i* (< *-iH<sub>1</sub>*) in the stems ending in a consonant (cf. nom.-acc.pl.neut. *aniyatti* *IBoT* II 130 r. 5 from *aniyatt-* ‘instalment, priestly dress of the Hittite king’). The confusion of the ending of thematic and consonant-stems corresponds precisely to the linguistic development of Hittite, which I cannot discuss here; a dual form \*2-*ante* would be just as possible as the singular form (accusative common) which \*2-*antan* actually is (with ending *-an* < *-om* instead of *-un* < *-m*). When, after the — possibly very late — merger of the dual and plural categories, the endings *-e/-i* (dual *-o-iH<sub>1</sub>/-iH<sub>1</sub>*) and *-a* (from plural *-a-H<sub>2</sub>/ə<sub>2</sub>*) became functionless variants, which were, however, in part distributionally kept apart, \*2-*ante* might at first retain its dual ending. In the later process of the elimination of \*2-*ante* in favour of \*2-*anta* (attested in the writing 2-*ta*, see 3.2.1.5.) in historical Hittite, the ritual form then remained excluded; this stylistic peculiarity of the ritual terminology could then bring about the imitation \*3-*ante* *ekuzi* / *irhaizzi*.

So we see how Neu’s suggestion as to the dual origin of 2-*e* is indeed vindicated by the assessment of this form as \*2-*ante*. While the ending *-e* quite corresponds to the norm in the pronominal declension, which the *-nt*-stems follow, it is something unusual, and its consistent use precisely in the case of \*2-*ante* must have a special cause.

In support of the interpretation of 2-*e* as \*2-*ante* I may adduce an example of a different kind: *KBo* XI 49 I 14' ff. 3 <sup>NINDA</sup>*par-šu-ul-li* (15') *tâg-na-aš* <sup>4</sup>*UTU-i iš-ta-na-ni ZAG-na-az 1-an GÛB-la-az-ma 2-e da-a-i* 'he puts two crumble cakes on the altar of the sun-divinity of the earth, that is, one (one specimen) on the right side, and two (two specimens) on the left side'. Since in view of 1-*at-ta* (3.1.1.7.), 1-*an* should be considered as nominative-accusative singular neuter of the -*nt*-stem, 2-*e* should also be an -*nt*-stem. Therefore the example shows (with good probability) that the writing 2-*e* is actually used instead of \*2-*ante*.

A further possible support for \*2-*ante* is yielded from the passage *KUB* IV 1 II 10f. *ma-ši-ia-an-te-ma-aš-ma-aš a-aš-šu* (11) *nu a-pi-ni-eš-šu-wa-an a-ku-wa-an-zi* (E. H. Sturtevant, *Language* x, 1934: 272 f.) 'as many [nom-acc.pl.neuter] as seem good to them, that many they drink'. This formation is of course patterned after the usual syntagma 2-*e*/3-*e akuwanzi*; it is crucial that here it is not the basic stem but the -*nt*-stem. Nom.-acc.sg.neuter *āššu* is syntactically correct, since the predicative adjective can appear in the neuter singular independently of the gender and number of the noun that goes with it; *apinieššuwān* is a "complexive" neuter singular. The emendation of *mašiyante* to \**mašiyanki* put forward by A. Goetze, *Neue Bruchstücke zum großen Text des Hattušiliš und den Paralleltexen* (1930: 36) and Sommer–Falkenstein (1938: 165 n. 1) is unnecessary.

### 3.2.1.2. 2-*at*

XXX 41 II 7' *nam-ma-kán 2* <sup>GIŠ</sup>*zu-up-pa-a* [n X] (8') *šu-un-na-i 2-at-kan wa-al-[hi-it]* (9') *2-e-ma-kán ta-wa-li-it šu-un-na-an-zi* 'Further they fill two *zuppa* in pairs. They fill two with *ualhi*, the other two with *taual*'. That *zuppa*- here shows neuter gender – otherwise only common gender is recorded, see H. Otten, *StBoT* xv (1971: 5) – need not be assumed, because of the possibility of a regular gender-discord (complexive-anaphoric neuter); the point is that 2-*at* here can be regarded as \*2-*ante* + -*at* (nom.pl.common 'they'), and so does not present a nom.-acc.pl.neuter \*2-*at*, which, in itself, would be conceivable. But 2-*at* is recorded with certainty as nominative plural common, *KBo* XX 83 I 4' *2-at 2-at* (context fragmentary), something like '(they march) in groups of two, one behind the other; two by two' (cf. 1-*an 1-an* 'one after the other'). Nom.pl. common 2-*at* is formed to nom.pl.common, 2-*e* on the pattern nom.pl. common -*e* 'they' (older): nom.pl.common, -*at* 'they' (later). [2-*at* also 114/d I 11'].

### 3.2.1.3. 2-AH-hi

*KBo* XVII 74 II 31, non liquet. E. Neu, *StBoT* xii (1970: 21, 41, 92), operates with a 3 sg. pres. ‘he doubles’, i. e., ‘takes double, takes twofold’, Hitt. \**dayahhi* (?). On the other hand C. Watkins, *Akten der 5. Fachtagung der Indogermanischen Gesellschaft*, Regensburg (1974: 369), sees here the continuation of an Indo-European dual (-*aH<sub>2</sub>iH<sub>1</sub>*), cf. Latin *duae*, Old Church Slavonic *dŭvě*. This view is decidedly favoured by the parallels to the passage adduced by Neu (1970: 41). The new example *KBo* XXI 14 o. 8’ 9-an 9-AH-ha iš-pi-ir-te-en ‘nine (or nine times?) ninefold have you spread out’ makes the assumption of a special, non-verbal numeral-formation in -*hh*- necessary, but creates a problem in that, now, the locative to a numeral-abstract \*2-*ahh*- ‘duality, doubleness’ is rather to be envisaged (‘in duality’, i. e., ‘divided’ or ‘doubled’; for the word-formation cf. *maninkuyahhi* XXIV 9 I 18 ‘in the neighbourhood’). A reading 2-*ih-hi* seems to me less suitable; for the consequences of this view for the assessment of the morphology, see (3.7.2.; 3.9.1.5.).

In this connection I may further call attention to the remarkable passage VII 1 II 9 f. It reads *ma-a-an* <sup>LÜ</sup>MAŠDÁ-*ma nu ka-ra-a-du-uš ku-wa-pi* (10) *ú-e-mi-ia-az-zi nu 2-ŠU 3-ŠU nu-uš e-iz-za-i* ‘if he (i. e. the sacrificer) is however a poor man, as soon as he finds (gets) entrails, thus ... and then he eats them’. A finite verb is missing in the part of the sentence left untranslated, but the assumption of an ellipse (cf. A. Goetze, *Die Sprache* viii, 1962: 10) would be very difficult. The problem is solved if for 2-ŠU, 3-ŠU we introduce the reading \**t/dayahhi* (or the like; in the event, \**t/danki*), \**teriyahhi* (3 sg.), for then we obtain a parallel to II 1 f. – ‘he makes twice three portions out of it’ – to be recommended on the basis of the text-structure *nu 2-ŠU 7 ša-la-kar DUMU-li i-e-iz-zi za-nu-uz-zi* ‘and then, for the child, he makes twice seven *šalakar* and roasts them’. The representation of the verbal form *teriyahhi* (to the verb *teriyahh-*, see 3.3.6.) ‘he divides into three portions (?)’ by 3-ŠU (really, ‘thrice’) becomes intelligible if there are locatives \**t/dayahhi* (or the like) ‘in twoness, twofold, double’ and \**teriyahhi* ‘in threeness, threefold’, which are homonyms with finite verbal forms of the meaning ‘he divides into two, respectively, three parts’ (or the like). Kronasser’s translation of this passage (*Die Sprache* vii, 1961: 151) “sobald er die Eingeweide findet, dann isst er sie zwei mal und drei mal” goes against the Hittite sentence-boundary which is marked by *nu* and is also not a possible representation semantically – the entrails can only be eaten *once*.

### 3.2.1.4. 2-az

617/p II 10' ff. *ma-a-an 2-az-ma* (11') [KASKAL-*az na-aš-ma*] 3-az 4-az 5-az 6-az 7az KASKAL-*az* (meaning not clear); perhaps the assignment of this ablative form to the cardinal is not quite certain (= abl.sg. *damedaz*, 'other').

### 3.2.1.5. -nt-stem

Nom.-acc.pl.neut. *2-ta* <sup>GIŠ</sup>*šar-pa* 'two <sup>GIŠ</sup>*šarpa*' *KBo* XIII 172 o. 10'. Because of *KUR-e-ta-aš* 'of the lands' XXIV 8 II 15 (-*nt-stem*), *2-e-ta-aš* could also theoretically belong to the -*nt-stem*, but the probability of this is extremely small because of the -*e-*, which would then be hard to explain. On the other hand, the examples for *2-e* (= \**2-ante*) discussed in 3.2.1.1.1., probably do belong to the -*nt-stem*. For the mode of formation in general, see 3.1.1.4.2.

### 3.2.1.6. 2-el, 2-ela / 2-ila

This, meaning 'two together, both in common', is used in the meaning given by way of a pendent genitive; cf. *1-el*, *1-ela*, 3.1.1.5. Attestations allow an exposition of its use.

1) In the function of a nominative:

XIX 7 (*BoTU* 43) line 8 f. *na-at 2-e-la A-NA A-B[U-IA X]* (9) *kat-ta-an ú-e-ir* 'they came two together / both in common to my father'; *KUB* I 6 II 8 (= Goetze, *Hattušiliš*, 1925: II, 14) *2-e-el iš-pár-zi-ir* 'they came away from there two together' (i. e. they were the only two); *HG* II § 97 (= § 191) j (= *KBo* VI 26) *tak-ku 2-el pí-di* 'if they (the girls) are on the spot two/both together' as a variant to the older (0<sub>6</sub> = XXXIX 34) *tak-ku ša-ni-ia pí-di* 'if they are in one and the same place'.

2) In the function of an accusative:

XIII 9 III 18 *2-i-la-pát ša-ku-wa-an-zi* 'the two of them will be looked at' (i. e. called to account, or the like).

3) Hypostasized, with flexional ending (cf. *1-elaš*, *apašiluš* 3.1.1.5.):

VIII 50 III 18' f. (E. Laroche, *RHA* xxvi 1968: 20) *na-at-kán 2-e-lu-ušpát A-NA* <sup>GIŠ</sup>*MÁ ša-ra-a* [*pa-a-ir?*] (19') <sup>d</sup>*GIŠ.GÍM.MAŠ-uš* <sup>m</sup>*ur-ša-na-bi-iš-ša* 'thereupon they (-*at*) went the two of them / both together on board the ship, Gilgameš and Uršanabi'. The complete parallelism of the use suggests that the form cited *HW*, 302, npc. *2-uš*, as short for *2-eluš*, should be included here too (so already Kronasser 1962: 363). XIII 4 II

50 *2-uš-pát-at ak-kán-du* and XIII 4 III 83 *2-uš-ša-at* (= *2-uš* + *-a* + *at*) *ak-kán-d[u]* ‘two together both of them, they (*-at*) must die’. (XIII 4 II 49 dative plural is however not relevant.) Matters are perhaps different with regard to *2-uš* XVI 29 line 25 (*bis*), but the syntax of the damaged passage is not clearly recognisable.

Whether the form *2-el* continues a genitive form contained in the paradigm of the cardinal (cf. *anzel* ‘of us’, *šumel* ‘of you’) or represents a direct imitation on *\*1-el*, *1-ela* and cannot stand attributively cannot be decided out of hand.

### 3.2.1.7. Declension

The declension is pronominal. For the analogically formed *2-at*, cf. 3.2.1.2. The possibility of a direct reflection of the dual offers itself, if the grammatical determination of *2-e* as accusative plural common and *2-AH-hi* as plural common / nominative neuter is right. However, this is not very probable, because of better alternative possibilities. On the other hand a completely clear reflex of the dual would be present if *2-e* were to be taken as nominative-accusative plural neuter of the *-nt*-stem, as is suggested in 3.2.1.1.1.

### 3.2.1.8. Reading

The reading is unknown. Etymological attempts would lead to the establishment of *\*da-* (< *\*dó-*), *\*duwa-* (< *\*dwó-*) or *d|tuma* (< *\*duwó-*); they can be supported (see 3.2.2. – 3.2.4.) but not rendered sure. The probability that an inherited word is present in the Hittite cardinal is however to be estimated as considerable. The view (*HW*, 302) that a phonetic realisation *\*dā-* from *dān* ‘second’ and *dāiuga-* ‘two years old’ is directly to be inferred, is erroneous; see 3.2.3. – 3.2.3.5. It is merely that certain variations in the phonetic form of these words permit an indirect reference to an analogical influencing by the cardinal, which may be shown to have *d-* as initial.

### 3.2.1.9. Meaning

While ‘two’ is a certain meaning, it cannot be decided whether the numeral-sign “2” also stands for a continuation of the Indo-European special indicator for ‘both’ (Pokorny 1959: 34f.). The attempt to attribute the meanings ‘two’ (*2-e*) and ‘both’ (*2-uš*) to different formations, which

the data *HW*, 302 suggest, leads to the surprising result that 2-*uš*, at least in the quotations mentioned *HW*, may represent an abbreviation for 2-*e-lu-uš* (3.1.1.5.; 3.2.1.6.).

### 3.2.2. Forms of the Hieroglyphic Luvian cardinal ‘two’

The accusative plural common is *tu-wa-i*; see Meriggi (1962: 138 and 1966: 128, 1967: 59). According to recent opinions, *tuwa<sup>n</sup>za* or *tuwī<sup>n</sup>za* (initial *t* or *d*) is to be read, for which I have received strong suggestions from Professor Neumann. The further phonetic complementations (1962: 164) 2-*i-a*, 2-*i*, 2-?-*ī*, are in agreement with this finding.

### 3.2.3. Hittite (\*)*t/dā* ‘second’

To be compared is adv. *t/dān* ‘for the second time’. This almost obsolete word stem seems once to have functioned as an ordinal. In addition, etymological attempts allow a stem \**duiia-* or \**duia-* to be postulated, but a reflex of it seems to be confined to Luvian. The usual Hittite ordinal is *t/damai-*, see 3.2.4. – 3.2.4.1.

#### 3.2.3.1. Locative *tā*

A remnant of the inflected paradigm is formed in dat.-loc. *tā*: XXXII 123 III 5 *ha-an-te-iz-zi UD-ti ... ta-a UD-ti* ‘on the first day ... one the second day’; Old Hitt. *KBo* III 46 (*BoTU* 17, later copy) o. 14 *ta-a-ma ú-it-ti* ‘but in the next year’.

For the formation of the form *tā*, cf. *kā* ‘here, hither’. In the first passage there could be an error (*HW*), in the second, nasal reduction from \**tānma* (E. Neu, *StBoT* xviii, 1974: 98 n. 210). But the two quotations mutually support one another and contain a correctly formed and properly used form. In *IBoT* II 97 line 7<sup>n</sup> *da-a-an UD-ti*, the adverbial form *dān* (with the later phonetic realisation *d-*) has spread into the correct old syntagma *tā UD-ti*. For this cf. further *KBo* IV 4 III 58 *da-a-an KASKAL-ši* ‘for the second time’ (Goetze 1933: 130 f.); 2-*an* (+*za*) *pidi* 3.3.3.2.1.

#### 3.2.3.2. Adverb *tān/dān*

The form is an isolated nom.-acc.sg.neut. *tān*, *dān*, *HW* 209; older writing *tān*, according to H. Otten, *StBoT* xi (1969: 20) (with examples).

1) Adverbial use in the meaning ‘for the second time, secondly, again’; examples for the independent use, see *HW*. Also with enclitic *-a*, f. i. *KBo*

XX 40 Col. *b* 6' *ta-a-na* 'at the second time, secondly' ... 8' *te-ri-an-na* 'and (finally) at the third time'; cf. also *KBo* V 2 II 59 *2-an-na* (later *3-an-na*, *4-in*, *5-na*, *6-na*, etc.).

2) The word group *dān pedaš*, something like 'of the second rank, second-ranking' has attracted much attention. It might be imagined that this expression could have arisen in syntagmas such as 'so-and-so is of the second rank / the second choice (*dān pedan*)' and was then used as an indication of quality either parenthetically ('it is the second choice', nominal phrase with no subject pronoun) or in the attributive or predicative genitive, in which case only the second part would be inflected, because, in the meantime, the stem *t/dā-* had become obsolete, apart from the fossilised form *t/dān*. Indeed some passages allow it to be supposed that there arose a new adjective (*\*)dānpeda-* (written with a space, *dān peda-*) 'of the second rank, second class, of the second quality', as a semantic opposition to *hantezzi(ya)-* 'of the first rank, first class, of the first quality' (cf. *HW* 1 *Ergänzungen*, 1957: 20), but clearcut examples are lacking. Cf. *KBo* III 1 + 68 (*BoTU* 23A) II 36 ff. *tāk-ku DUMU.LUGAL* (37) *ha-an-te-iz-zi-iš NU.GÁL nu ku-iš ta-a-an pi-e-da-aš DUMU-RU nu LUGAL-uš a-pa-a-aš* (38) *ki-ša-ru* 'If there is no king's son of the first rank, then shall someone who is a son of the second rank become king' (variant *da-a-an pi-e-da-an* in dupl. *KBo* XII 4 II 6'); X 13 III 4 ff. *A-NA* <sup>LÚ</sup>SANGA 1 TÚG *ha-an-te-i[z-zi-in]* (5) *pi-an-zi* <sup>LÚ</sup>*ta-az-zi-e[l-li-ya?]* (6) 1 TÚG *da-a-an pi-e-da-an pi-[an-zi]* (7) <sup>LÚ</sup>*ha-mi-na-a-i* 1 TÚG (8) *da-a-an pi-e-da-an pi-an-zi* 'To the *sanga*-priest they give a garment of the first quality, to the *tazzielli*-priest a garment of the second quality, to the chamberlain (??) a garment of the second quality'; *Bo* 3371 line 8 ff. (see H. Otten *AFO* xxiii, 1962: 38 n. 18) <sup>LÚ</sup>KAŠ<sub>4</sub>.E (sic) *tar-ah-zi ku-iš UŠ-G[I-EN]* (9) *ta-a-an pi-e-da-aš-ša* <sup>LÚ</sup>KAŠ<sub>4</sub>.E *ku-iš* (10) *LU-GAL-i UŠ -GI-EN* 'the runner who wins (in the race) may bow, and also the runner who comes in second place (lit. he who is of the second place / rank) may bow before the king' (cf. also *IBoT* I 8 II 4–6; I 13 V 14 ff.).

The verb *tān pedaššahh-* (Goetze, *Madduwattaš*, 1928/68) does not belong here, for it does not mean 'to make someone of the second rank' (so *HW*, 168, 209), but 'to put someone again (*tān*, § 39.1) in this place / in his rank'; see already H. Otten, *StBoT* xi (1969: 20). The verb *pedaššahh-* is based on a hybrid stem *\*pedašša-*, which can be abstracted from the — predicatively used — genitive *pedaš-šaš* 'of his place', for *pedaššahh-* is equivalent to *\*pedaš-šaš iya-*, lit. 'to make someone of his place'. In other texts *pedaššahh-* (without *t/dān*) has the meaning 'to bring to the spot' (cf. H. Otten, *Hethitische Totenrituale* (DAWBIO

XXXVII) 1958: 143); this use is clearly to be brought into connection with the expression *pe/idišši* ‘on the spot’, lit. ‘in its place’.

3) A univerbalisation with *dān* is probably present in the word <sup>UZU</sup>*dān-hašti-* (neuter), which Neumann (1964: 51) (cf. *HW 3 Ergänzungen*, 1966: 31) has interpreted as ‘double bone’. The univerbalisation may be relatively old, for neither member appears any longer in historical Hittite with the presupposed form (nom.-acc.sg.n. *hašti* with *-i* < *-ei* or *-i* against *haštai* with *-ai* < *-ēi* or *-ōi*) or meaning (*dān* ‘\*doubled’).

### 3.2.3.3. *tāuga-*, *t/dāiuga-*

The stem *t/dā-* which is comprised in the compound *tāuga-* (thus the phonologically correct form; beside it *tāiuga-*, *dāiuga-*) ‘two years old’ has placed an important part in the determination of the numeral “2” in Hittite; see Hrozný (1917: I, 93); Friedrich *HW* (1952: 302), Kronasser (1962–66: 362). Identification of the first element *t/dā* with the expected descendant of PIE *\*d(w)ó-* (stem) or even nom.acc.masc.dual *\*d(w)óh<sub>1</sub>*, is, however, not convincing; since the compound must be relatively old, the Indo-European compound-stem *\*dwi-* (cf. Greek *δι-* Latin *bi-*, Vedic *dvī-*, etc.) should appear in the first element. Kronasser’s comparison with Greek *δῶδεκα* is not apt; the latter is a dvandva not a bahuvrīhi like Hitt. *tāuga-*. For a better explanation, see 3.2.3.4.

### 3.2.3.4. Etymology

With regard to the etymology of *t/dā-* I follow (with an inessential modification) a suggestion made to me by Professor Cowgill (Yale). Hitt. *t/dā-* goes back to *\*doyó-* (his *\*dwoiyo-*) ‘twofold, double’, a phonological variant of PIE *\*dwoyó-*, cf. Greek *δοίος* and Old Church Slavonic *dŭvŏjĭ* (initial *dŭv-* perhaps originally from *dŭva*). Adv. *tān* < *\*doyóm* (Greek *δοίόν*) represents a correct form of the paradigm (nominative-accusative singular neuter). The slight semantic shift is simply explained; for instance, ‘to make something doubled’ is, in many situations, equivalent to ‘to do an action twice / for the second time’; similarly ‘to give something twofold’ = ‘to give something twice’; cf. XIII 9 + IV 7f. (E. von Schuler, *Festschrift Johannes Friedrich zum 65. Geburtstag am 27. August 1958 gewidmet* (1959: 448, 451) *na-aš-za ku-it ku-it da-a-an har-zi* (8) *hu-u-ma-an ta-a-an pi-eš-ki-iz-zi*, where one is tempted to translate ‘whatever he has taken for himself, he must replace everything twofold (not: again)’,

although, according to Hittite interpretation, *tān* here = 2-ŠU ‘twice’, as follows from other texts. The compound *tāuga-* must thus originally have meant ‘having the yoke twofold / for the second time’ or ‘having the time-span \**H<sub>1</sub>iugó-* twofold’, that is then ‘two years old’ or ‘just over two years old’.

Little attention has hitherto been paid to the cause of the variation of the initial writing TA/DA. If *d-* > *t-* has come into being regularly initially before unstressed *a* (at the stage \**dayá-* or \**daá* > \**tayá-* or \**taá* with secondary contraction to *tā*), as I would assume – only this assumption will correspond to the complicated graphical data, cf. *tan-garant-* ‘sober’ < \**donkró-nt-* = German *zanger* – then the dominant Modern Hittite form of the initial with *d-* must be due to analogical influence of the cardinal, which may then unambiguously be determined as the descendant of PIE \**d(w)ó-*. Before directly following accent, initial media (and media aspirata) stay preserved at least before *a*, cf. *dāi* ‘takes’ (root *deH<sub>3</sub>*) and *dāi* ‘puts down’ (\**d<sup>h</sup>óH<sub>1</sub>yei*); occasional deviant writings can easily be explained on the basis of this assumption. So Professor Cowgill’s etymology permits a satisfactory explanation both of the morphology and also of the varying phonetic form of *t/dā-* and *t/dān*, is thus well based, and is to be preferred to the thoroughly unsatisfactory earlier assumptions.

### 3.2.4. Hittite *t/damai-*

Hitt. *t/damai* ‘other, second’ is an extension of the wordstem discussed in 3.2.3. – 3.2.3.4. The anachronistic form \**doyomōi-* obtained by transposing this into Indo-European terms allows the formation and phonology clearly to be recognised. Undoubtedly we have a suffix *-mo-*, which reappears in various languages in ordinals, cf. e. g., the Vedic new formation *pañcamá-* ‘fifth’ (5.2.5.). Whether this suffix was obtained secondarily by false division from ordinals such as \**sebdmó-* ‘seventh’ and then carried over other ordinals, or is to be identified with the suffix in words such as \**medhyo-mo-* ‘middle’, \**upo-mo-* ‘uppermost’ can be left out of account. Passage to the *ai-*stems no doubt happened late by analogy with other pronouns (*dapi-* ‘whole’, *tagai-\** or *taki-\** ‘other’). From \**doyomōi* there developed \**taamái-* (finally \**tāmái-*) via \**dayamái-*; the long vowel of the first syllable, due to contraction, was not shortened in the unstressed position until after the development of intervocalic *m* to *mm* after a short syllable in the neighbourhood of the accent was com-

pleted (cf. H. Eichner, *MSS* xxxi, 1973: 100 n. 88). An occasionally appearing *mm* was no doubt originally taken over secondarily from the pronoun of the first person; cf. for instance the opposition XIII 35 II 3 f. *am-me-el* ‘of me’: *ta-me-el* ‘of another’. The occasional long vowel of the first syllable is decidedly secondary (f. i. *KBo* VI 5 III 1 *da-a-me-e-da-ni* ‘to another’ as a Modern Hittite variant writing for *ta-me-e-da-ni*, *HG* I § 28); it has been taken over from *t/dān* (3.2.3.2.). One must be clear on the point that the single *-m-* of *t/damai-*, which, because of the lack of parallel formations, can hardly have originally been introduced analogically, shows a late – Primitive Hittite – shortening of an unstressed long vowel which is due to contraction. Unstressed inherited long vowels (from Indo-European long vowels or short vowel + tautosyllabic *y*, *w*, *H<sub>1/3</sub>*) were already shortened in Primitive Anatolian time, long before the development *-m-* > *-mm-*, which even appears in Primitive Hittite *m* originating from *w*. With this, the etymology put forward in 3.2.4. may be sufficiently proved. Initially, *ta-* is phonologically regular; for *da-* the same source as for *dān* (3.2.3.2.) is to be assumed. See now O. Carruba, *RLL* cviii (1974: 590) on Hitt. “*damai-* ‘altro’, che etimologizziamo, dividendola nei suoi componenti *\*duwa-ma-i-*, con tematizzazione in *-i* di un antico *\*duo-mo-* ‘secondo, altro’”.

### 3.2.4.1. Inflection

The inflection is pronominal, gen. *tamēl*, dat. *tamēdani*, etc.; in all forms the accent is situated consistently on the second syllable (paradigm with deuterostatic accent); its vowel can be written plene, which is not the case for the vowel of the next following syllables (*tamēdāni*, etc.). In the dative(-locative) there is an old secondary form *tamatta* (e. g. XLIII 23 o. 5 *ta-ma-at-ta-ma* KUR-e ‘in another land however’), which is to be compared with *kuwatta* ‘where, whither’ and *apadda* ‘there, thither’, and, further, with Lycian *eptte* ‘to them’ (< *\*ābātās*, see H. Eichner, *MSS* xxxi, 1973: 81).

### 3.2.4.2. Meaning

As to the meaning of *tamai-*, the only peculiarities which I point out here are *Maštigga* III 5 (L. Rost, *MIO* i, 1953: 358) ‘one again, one new one’ and XXX 10 r. 15 (with dupl. 11 r. 11’) *ta-ma-at-ta pi-e-di* ‘at a repeated time, repeated again and again’.

### 3.2.4.3. Derivatives

*tameuma(n)*- ‘belonging to other people / to the enemy, enemy (adj.)’ (cf. *HW* 208 — *KBo* XVI 46 o. 11’ is to be added) is a derivative of *tamai*-, further the verbs *tameumeš*- and *tameummahh*- (mid.) ‘to alter (intr.)’; the additional meaning ‘to be angry, become annoyed’ (examples see E. Neu, *StBoT* v, 1968: 166) is a calque on Akk. *nakāru* (von Soden 1965–81: 718 ff.); cf. *KBo* I 11 r. 23 *šarru ut-ta-ka<sub>4</sub>-ar* ‘the king gets into a rage (?)’.

The adjective *damme/ili*- ‘fresh, undisturbed, unworked’ (so Güterbock with convincing arguments, see *HW* 3 *Ergänzungen*, 1966: 31) does not belong to *tamai*- (against N. van Brock, *RHA* xx, 1962: 122) but to the family of *dammeda(r)* ‘plenty, abundance’; it must have been used originally of wild, proliferating plant-growth in nature. The *-mm-* of the word is justified only with this derivation, which is also semantically without objection. It must however be admitted that the expressions *dammili pedi* and *tamedani pedi* have, to a great extent, mutually approximated; cf. the examples cited by E. Neu, *StBoT* xviii (1974: 21); also, e. g. XL 17 IV 19’ *gi-im-ri ... ta-me-e-da-ni pi-e-di* ‘in the plain ... at another place’; an example such as VII 13 I 26’ *ta-me-li* could be explained from this (with *t-* and *-m-*; but cf. *ta-mi-e-ta* VIII 22 III 3).

This short conspectus of the derivatives of *tamai*- makes plain how far this word is from being limited to its function as an ordinal. For the most part the meanings of Hittite words appear to us to have a very wide range. It is precisely in the case of the lower numerals that we must not expect that the concept — in some sort apt for modern languages — of the semantic categories “cardinal” and “ordinal” can materialize in Anatolian as lexeme-classes (of which the individual members have in the first place or exclusively pure numeral concepts attached to them).

### 3.2.5. Hittite *tagaiš*\*/*takiš*\*

Dat.sg. *takiya ... takiya* (correlative, *HG* §§ 77, 82) too belongs to a word *tagaiš*\* or *takiš*\* ‘other, second’, which is to be regarded as a derivative of *tā*- (3.2.3.). At the base of it there is a formation *\*doyo-ghó-* (parallel to *\*doyo-mó-*, 3.2.4. — 3.2.4.1.; less probably, *\*do-ghó-* directly from the cardinal), which contains a suffix which is doubtless present in Gothic *manags* ‘many’ (*\*mon-o-gho-*) and Old Church Slavonic *mūnogŭ* (*\*mŋ-o-gho-*). The initial writing *tā*- and the absence of plene writings in the first syllable correspond to what is phonologically to be expected. The word

became extinct early and is no longer affected by the workings of analogy which are present in the case of *tamai-*.

The nature of the use deserves attention; it departs markedly from that which we see in Latin *alter ... alter*. HG ii § 77 *ka-a-aš-ma ta-ki-ya ut-ne-e ka-a-aš-ša ta-ki-ya ut-ne-e-ya* '(if) the one is in the one land and the other in the other land'. Here *kāš ... kāš* functions as the normal correlative distributive; *takiya ... takiya* stands as an additional correlative for emphasising diversity. In English what is meant must be reproduced in the following way: 'if the one is in a land *other* than where the *other* one is'. The Hittite formulation is a consequence of the circumstance that, in this language, there is no direct possibility of expressing relations such as 'bigger than' and 'other than'. The etymological connection with *tā-* (3.2.3.) is thus correct; a connection with PIE *\*two-* ... *two-* (as in Vedic and Avestan) would leave unexplained the type of use which is characteristic of *takiya*.

### 3.2.6. Hieroglyphic Luvian *tu-wa-na*

For this form Meriggi (1962: 135, 1966: 59) proposes the meaning 'secundum' or 'duplicem', which is perfectly possible. The series of signs can be interpreted as *tuwān* (< *\*dwoyóm* cf. Hitt. *t/dān*, or *\*dweyóm*, cf. Vedic *dvayá-*) or *tuwin* (initial *t* or *d*), cf. Lycian *kbi* (3.2.7.).

### 3.2.7. Lycian *tbi*, *kbi*

Lycian B *tbi*, A *kbi* 'another, second' (G. Neumann 1969: 394) is an *-i*-stem from an original *-ya*-stem, as can indeed be seen from the derivative A *kbijehi-* 'foreign' (< *\*dwiyasi-*); for an old *-i*-stem, *\*kbehi-*, would be expected as the derivative (otherwise E. Laroche, *Bulletin de la Société de Linguistique de Paris* lxii, 1967: 47). The protoform *\*dwi(y)o-* can be analysed as *\*dwi-ó-* or *\*dwi-yo-*. Both possibilities are plausible; for *-o-*, cf. *\*sebdmó-* / *septmó-* 'seventh'; for *-yo-*, *\*alyo-*, *\*anyo-* 'other'. It is important that the stem *\*dwi-* functions as the basis of derivation, as in Indo-Iranian (Vedic *dvitīya-*, Gāthic *daibitiia*, YAv. *bitiia* 'second'). Elsewhere this stem is very rare; it has its place in composition (as front element) and in adv. *\*dwiš* 'twice' (gen.abl.sg.), also in some derivatives (cf. 4.). But originally *\*dwi-* must have stood beside *\*dwo-*, as *\*k<sup>w</sup>i-* is found beside *\*k<sup>w</sup>o-* in the question-pronoun. The semantic difference between such stem-doublets has not been sufficiently investigated. For the retreat of the stem *\*dwi-*, in spite of support by *\*tri-* 'third', must be

due to some special circumstance. It is to be supposed that this circumstance is to be seen in the fact that the special meaning of the stem *\*dwi-* overlaps with one of the types of use of the Indo-European dual (the “natural”, “anaphoric”, “elliptic” dual), and that, therefore, the stem *\*dwi-* was replaced by the use of the dual by itself. So precisely those cases of the survival of *\*dwi-* can be understood to whose assessment Lycian offers an important contribution. The possibility of explanation sketched here is intended more as a call for further investigation than as a concrete suggestion as to solution. *kbijēti* 44c4 is a derivative of *kbi-*; a further derivative, used as a personal name, is *kbijētezi huzeṭēi*, from a newly-discovered inscription, see G. Neumann, in: J. Borchardt et al. (eds.), *Myra (Istanbuler Forschungen XXX)* (1975: 152). He compares the personal name(s) *trijētezi* 7,2; 8,2, which is derived from *\*tri-* ‘third’ (?).

### 3.2.8. Hittite *duianalli-*

Hitt. <sup>LÚ</sup>*duianalli-* ‘officer of the second rank’ (Güterbock, see *HW 2 Ergänzungen*, 1961: 25) is, in my view, a loan-word from Luvian; for justification, see 3.3.3.4. – 3.3.3.5.2. Here we are concerned with a derivative by means of the suffix *-alli-* from a basis *\*duiana-* ‘to be found in the second place’ (ord. *\*dwiyo-* ‘second’, cf. 3.2.7. + *-no-* suffix indicative of position – cf. Vedic *dakṣiṇá-* ‘right’), or *\*dwiyan* ‘secondly’ (adverbial nominative-accusative singular neuter). It is not necessary, with N. van Brock, *RHA* xx (1962: 111 No. 209), to postulate a word *\*duyana-* ‘deuxième’. Having in mind the etymology, there is no need for */dwia-/* or */dwiya-/* to be read, for *w* (consonantal *u*) in such a position has perhaps become *u* (vocalic *u*) for Hittite; see H. Eichner, *MSE* xxxi (1973: 82). So the no doubt careless reading *duyanalli-*, *HW*, 227, could be right.

F. Sommer’s old postulate (*IF* lix, 1948: 205 ff.) *\*duya-* ‘quartus’ < *\*dur(i)ya-* = Vedic *turīya-* rests of an understandable misinterpretation and seems, indeed, in the meantime generally to have been abandoned.

### 3.2.9. Lycian *tbiṣu*, etc.

Lycian B *tbiṣu* 44 c 41, 64; A *kbiḥu* 44 b 6, 7 (bis) – Neumann (1969: 394) – presumably means ‘twice’. Probably we have here before us an endless locative, *\*dwiṣwé* ‘twice’, of a *-wo-*derivative to *\*dwiṣ* ‘twice’, with which Old High German *zwiro* ‘twice’ and, quite probably also Av. *bižuuat* ‘twice’ (*\*dwiṣ-wṛnt* – cf. 8.3.1.6.) is to be compared. If we only consider Lycian, an adverbial nominative-accusative of a syncopated *-wa-*

stem would also seem possible (-wan > -un > Lycian -u), but a Hieroglyphic Luvian piece of evidence (3.3.4.1.) is in opposition to this explanation, which might at first sight be preferred to the one given first.

Lycian B *tbiplē* (multiplicative, distributive, or the like) could be derived from *\*dwiplom* (cf. Latin *duplum*) or *\*dwipelom* ‘twofold, double’. For another possibility, see Neumann (1969: 394).

The lack of syncope in *tbišu* / *kbihu* and *tbiplē* causes difficulties. Probably the initial has been analogically affected by *tbi/kbi* ‘other, second’ (3.2.7.), perhaps especially by an adverbial nominative-accusative singular neuter *\*tbi/\*kbi* ‘for the second time’. It is less probably a matter of a derivative of the stem *\*dwi(y)o-* right from the beginning.

For Lycian *kbišāni* and *tupmme*, see 3.13.1.1.

### 3.2.10. Miscellaneous Hittite items

These are written with the numeral sign “2” with Hittite phonetic complements, in diverse value.

#### 3.2.10.1. 2-an-ki, 2-ki

The meaning is ‘twice, to a double level’ (*HW*, 302); the reading uncertain, possibly *\*t/dānki*.

#### 3.2.10.2. 2-an, 2-anna

*2-an* and *2-anna* occur with a meaning ‘the second, secondly, the second time’. The Hittite reading is presumably *t/dān* and *t/dānna*. The complex *2-an-na* is to be analysed as *2-an* + *-a* ‘and, but’ (geminating) and should not be regarded as a special numeral formation in *-anna*, as has hitherto happened (*HW*, 302, according to Sommer 1932: 272 n. 1). Cf. 888/z IV 7’ *2-an-za pi-di ... 3-an-na pi-di ... 4-an-za pi-di* (particles *-za* and *-a* on the numerals); *KBo* V 2 II 59 ff. *2-an-na ... 3-an-na ... 4-in ... 5-na ...* etc.

#### 3.2.10.3. 2-iš

*2-iš* ‘twice’? XXXI 143 II 1, 8, 15 f.; cf. E. Laroche, *JCS* i (1947: 205). If the meaning is correctly determined, a variant of *2-an-ki, 2-ki* (3.2.10.1.) could be taken into account – thus something like *\*t/dānkiš*. Theoretically, a reading *\*duiš* would come under consideration as a descendant

of PIE *\*dwis* ‘twice’ (Latin *bis*). The form *\*duiš* (instead of the phonologically regular *\*duš*) would have been retained or restored in analogy with the other multiplicatives in *-iš*; cf., further, analogical *kuiš* ‘who, which?’, beside the rarely evidenced phonologically regular *kuš* (< *\*kuiš* < *\*k<sup>w</sup>is*). If we consider such a possibility, we must at all events be aware that it is not very probable.

#### 3.2.10.4. *takšan*

*2-an* = *takšan* (reading made certain by alternative parallel passages) in the expression UTÚL<sup>HI.A</sup> *tak-ša-an* (or *2-an*) *šar-ra-(at-)ta-ri* ‘the things to eat are halved (?)’; see the quotations *HW 2 Ergänzungen* (1961: 32) and E. Neu, *StBoT* v (1968: 153) below. Probably the juxtaposition *takšan šarra* here shows a semantic shift from ‘to divide into two parts, to halve’ to ‘to divide into (as many) parts (as you like), distribute, divide out’, similar to German *entzwei* (J. L. C. and W. G. Grimm, *Deutsches Wörterbuch*, 1854–60: ii. 672). At all events this meaning seems to me to fit better in the situation of use – distribution of the portions of food to the religious “gathering” – than ‘to halve’ (so E. Neu, *StBoT* v 1968: 153). Nevertheless for *takšan šarra* the meaning ‘to divide into two parts, to halve’ (Friedrich 1959: i § 31) is also evidenced in *takšan arha šarra* ‘to divide (youths) into two groups’ (XVII 35 III 9). *takšan šarran* ‘half-share, half; piece?’, too, is perhaps originally nominative-accusative singular neuter of the participle (Kronasser 1962–66: 532); but an *-a*-stem *takšan šarra* (*HW* 204: *-aš* XIII 4 I 56, now rendered sure by dupl. XL 63 I 5) is attested. For its part *takšan* could equally be nominative-accusative singular neuter to *takš-* ‘to join together’. Originally *takšan* was certainly used, like Greek σύμβολον, for the indication of two pieces, which, joined together, gave a complete whole. So in Anatolian territory a new formation came into being, which shows semantic properties similar to Proto-Indo-European adj. *\*sēmi-* ‘half’ (Pokorny 1959: 905 f.), originally probably ‘belonging to a unity, forming a whole’ (word-formation difficult; perhaps double *vṛddhi*-derivative, zero-grade stem *\*sm-* ‘one’, to which *\*\*semó-* ‘unit’, to which *\*sēmi-* ‘forming a unit’), cf. Gonda, *Reflections on the numerals ‘one’ and ‘two’ in the ancient Indo-European languages* (1953: 35 ff.) (with a partly differing semantic argumentation). In *takšan* we have the only directly palpable Anatolian term for a fraction.

Whether adv. *takšan* (*HW* 204) ‘in common, together, two together’ is also a participle, or an endless locative of a substantive (*\*)takšan-* ‘connection, juncture’ may be left undecided. If IX 34 III 29 *ták-ša-ni*

(not clear to me) were to mean, not ‘in the middle’, but ‘in common’, there would be an argument in favour of the latter possibility. We must be clear that the homonymy of *takšan* ‘half, a half’ and *takšan* ‘(also) two together’ (e. g. XXXII 135 I 9; Friedrich 1959: i § 53) has led to the first word being written with the numeral sign “2” (*2-an*). Admittedly “ $\frac{1}{2}$ ” also occurs in the meaning ‘a half’ ( $\frac{1}{2}$ -*AM* XV 31 II 28, Goetze, *Verstreute Boghazköi-Texte*, 1930: 24 I 38 f.);  $\frac{1}{2}$ <sup>HLA</sup> XVII 28 IV 48, *Bo* 1078 III 7’ ff.), but up to now there are lacking Hittite complementations – XX 99 II 11 contains only particles – or parallel passages with the phonetic writing *takšan*. So it is not to be precluded that there exists a further word for “a half” (not homonymous with *takšan* ‘two together’ and thus not written *2-an*).

I have not investigated whether in ornithomantic texts *2-an* really means ‘half-way’ (a suggestion of Sommer’s, see *HW* 302). At all events easily misleading comments *HW* 302 and *HW* 2 *Ergänzungen*, 32 (as if *2-an* ‘half-way’ = *takšan* were proved) are to be modified.

### 3.3. The Anatolian numerals ‘three’ and their derivatives

#### 3.3.1. The Hittite cardinal

The number is written using the numeral sign “3”, or sequence *teri-*, both with phonetic complements. No clear evidence can be adduced for an *-nt*-stem.

##### 3.3.1.1. Forms written with the numeral sign

Plural common nom.	3- <i>i-e-eš</i> X 55 line 12 3- <i>e-eš</i> XV 31 I 6; <i>IBoT</i> I 36 II 35, III 13
acc.	3- <i>uš</i> IX 31 I 11 (in the margin); <i>KBo</i> XII 85 I 48
gen.	3- <i>aš</i> , see 3.3.1.1.1.1.
dat.	3- <i>ta-aš</i> 1175/u r. 7’ ( <i>-nt</i> -stem?)
instr.	—
abl.	3- <i>az</i> , see 3.3.1.1.1.
Plural neuter nom.-acc.	(3- <i>e</i> , see 3.3.1.1.1.2.)

### 3.3.1.1.1. Comments

**3.3.1.1.1.1.** Gen. 3-*aš* and abl. 3-*az*. *IBoT* II 5 r. 4 ff. [<sup>NINDA</sup>*t*]a-pár-wa<sub>a</sub>-šū-uš ŠA UDU. [NITÁ] (5) [še-i]<sub>r</sub> 3-*aš* <sup>UZU</sup>ÚR-az n[a-*aš*-ta?] (6) šar-ra-an-zi ‘A *taparwa*<sub>a</sub>šū-loaf (‘men’s virility loaf’) from rams. On top it is covered with the penises (<sup>UZU</sup>ÚR ‘penis’) of three of them. It is divided (distributed?)’. (Not understood by A. Goetze, *Journal of Cuneiform Studies* ii, 1948: 31 and *HW*: <sup>UZU</sup>ÚR.) Cf. XX 78 III 5’ ff. <sup>NINDA</sup>ta-pár-wa-šū-uš-wa <sup>d</sup>U-*aš* NINDA har-ši-iš (6’) še-ir-wa-kán UDU.NITÁ-az 3-az (7’) <sup>UZU</sup>ÚR-az ‘t.-bread is the normal bread of the weather-god. On top it is covered/to be covered with three ram-penises’. The ablative UDU.NITÁ-az (instead of the genitive) is part of a badal construction or is due to case-attraction. Whether 3-*az* belongs to <sup>UZU</sup>ÚR-az or to UDU.NITÁ-az is unimportant. For the titbits <sup>UZU</sup>ÚR cf. also IX 32 o. 20 f. (H. Kümmel *StBoT* iii, 1967: 120 below) and *KBo* IV 2 II 10. E. Laroche (1967: 170 n. 31) gives the quotations for the *taparwa*<sub>a</sub>šū-bread; for the operation of the covering which is described *KUB* II 10 IV 16 ff. (cf. *KBo* XX 67 III 20 ff.) in all details, cf. above all XI 13 V 11 f. še-ir-ra-aš-ša-an ŠA UDU.NITÁ (12) 3 <sup>UZU</sup>ÚR wa-aš-šū-u-ar! (13) wa-aš-šū-wa-an-zi ‘And on it three ram-penises are to be put as a covering’ (figura etymologica). As a consequence of these parallels the forms 3-*aš* and 3-*az* may, despite the elliptic (or brachylogical) mode of expression, be clearly determined from the actual quotations.

**3.3.1.1.1.2.** Nominative-accusative plural neuter 3-*e*: IX 30 IV 7 3-*e*! ir-ha-a-iz-zi; *IBoT* I 2 III 10 f. LUGAL-uš 3-*e* (11) ir-ha-a-u-wa-an-zi ‘The King has task of bestowing a round of three’ (for the construction cf. Friedrich 1940–46: i § 274 n.); 355/t r. 8’ 3-*e* irha[X]; *Bo* 2692 V 23’ 3-*e* e-ku-zi; 428/s II 3’. Possibly 3-*e* belongs to the -*nt*-stem; for discussion of the problem, see 3.2.1.1.1.

### 3.3.1.2. Forms written with *teri-*

Plural gen. *te-ri-ia-aš* UD-*aš* XLIII 60 (*Bo* 2533) I 9’ ‘(a distance) of three days’ (Güterbock 1957), see *HW* 2 *Ergänzungen* (1961: 25).

### 3.3.1.3. Inflection

The pattern is nominal or mixed nominal-pronominal. Gen. *teriyaš* (3-*aš*) follows the nominal pattern, dat. 3-*ta-aš* and nominative-accusative neuter 3-*e* the pronominal, unless both forms belong to the -*nt*-stem. The

pronominally inflected forms, if these exist, are nearest to the paradigm of *kuiš* ‘who?’ (dative pl. *kued/taš*, nominative common pl. *ku-i-e-es*, occasionally *ku-e-eš*, nominative-accusative neuter pl. *ku-e*, rarely *ku-i-e*).

### 3.3.1.4. Etymology

Hitt. *teri-* is clearly a descendant of the Proto-Indo-European cardinal *\*tri-*. The nominative masc. *\*tréyes* should regularly result in Hitt. *\*teréš*, which was altered to *\*teriéš* (written 3-*i-e-eš*; in the *-i-*stems *-iēš* in general replaces the ending *-ēš* < *-éyes*). Gen. *\*triyóm* (with *iy* instead of *y* by Sievers’ Rule) or *\*tryóm* should really give *\*tariyan* or *\*tariján* > ? (probably *\*tariyan* rather than *\*tarriyan*). The old ending *-an* is, as usual, replaced by *-aš*. For the variation in the anaptyctic vowels cf. nom. *gerēz* ‘flood’ (K. K. Riemschneider, *Otten Fs.*, 1973: 279); gen. *karittaš* < PIE nom. *\*gróyts*, gen. *\*grítós* (J. Schindler 1972: 35) or nom. *karaiz* (equivalent to *\*gróits*). The other variant of genitive *\*tréyōm* should lead directly to Hitt. *\*teriyān*, *teriyaš*. The initial of the original nominative appears to have been introduced analogically into the whole paradigm. PIE *\*trins* must have led to Hitt. *\*tariš*; as elsewhere, the ending is altered to *-iuš*. The marked feminine forms (n. *\*tis(o)res*), which were perhaps not obligatory in Indo-European, have been eliminated in Hittite, in accordance with the general course of development.

We must allow for the possibility that forms of a word nominative-accusative singular neuter *\*teriyān* < *\*tereyān* < *\*treyóm* ‘group of three’ merged with the paradigm of the Hittite cardinal. Anyone who, because of 3-*e* and 3-*aš*, wants to assume a pronominal type of inflection, could in such a way explain the deviant gen. *teriyaš* (3-*aš*). *\*treyóm* ‘group of three’ would be a substantivized adjective *\*treyó-* ‘consisting of three, threefold’ (Vedic *trayá-*), which is derived by means of a thematic vowel and Kuryłowicz *vřddhi* from *\*tri-*. In this connection the existence of a *vřddhi*-derivative with another position of the stem-infix *e*, *\*teryo-*, too, would be theoretically possible, but without support from non-Anatolian material.

Finally it may be noted that the widespread rejection of an anaptyctic vowel in words like *teri-* has never been sufficiently supported, in particular the assumption of “Pleneschreibungen für nicht gesprochene Vokale” (Kammenhuber 1968: 204) is completely unfounded. It has for long been supposed that the writing of the Aryan numeral compound *ti-e-ra-wa-ar-ta-an-na* (initially, consistent *ti-e-*, otherwise with variants) could depend upon the influence of the Hittite word for “3”; see Mayrhofer, *Indo-*

*Arier* (1966: 16 n. 1, 19 with n. 1). The unexpected plene-writing is perhaps to be explained by the fact that the anaptyctic vowel came secondarily under the word-accent; a cause for the use of the initial TI instead of TE is however not apparent.

### 3.3.2. The Hieroglyphic Luvian cardinal

The numeral-sign “3” appears with phonetic complements; see Meriggi (1962: 164). The accusative 3-*i-a* is probably to be read as \**tari*’*za* (or \**tri*’*za*); cf. 3.2.2. 3-*i*, too, is possibly \**tari*’*za/i*. It should be noted that the numeral-sign “3” (beside its variant augmented by a “thorn”) can also be used as a phonetic sign. In Laroche (1960: no. 388), the values *tara/i* or *tra/i* are assigned for “3” and (no. 389) the values *tar* or *tra* for “3” + “thorn” (for which Meriggi 1962: no. 370 has only *tar*). For systematic reasons, it is, however, preferable that the values *tara/i* should be assigned to either sign; if either of the two vowels assumes zero value, *tar(a/i)* or *t(a)ra/i*, the signs represent *tar* and *tra*/\**tri*. In particular the non-recognition of the value *tari* for “3” + “thorn” on the part of Meriggi and Laroche leads to bizarre readings, e. g. *tar-su-u* ‘thrice’ (Lycian *trisu*!), SPEAK *ta-tar-ā* (Cuneiform Luv. *tatariyaman*-!).

### 3.3.3. The Hittite ordinal and related material

#### 3.3.3.1. *teriya-*

*KBo* XVI 49 IV 2’ *nu a-pa-a-aš te-ri-aš-mi-iš* (context fragmentary) ‘(±) that one is the third of them’; for the surprising use of the personal pronoun (lit. ‘that one is their third’, cf. *KBo* III 20 I 4 [*ha-a*] *n-te-iz-zi-ya-aš-mi-iš* LUGAL-*uš* ‘my earlier king’ i. e. ‘the king previous to me’; *KBo* XX 32 III 13 *ha-an-te-iz-zi-ya-aš-mi-iš* ‘their first’, i. e. ‘the first of them’. *KBo* V 2 II 60 *3-an-na hu-up-ru-uš-hi-in* ‘and the third tureen (he libates for Kumarbi)’. The analysis 3-*ann* + *-a* ‘and’ (cf. already Hrozný 1917: 95 f.) is necessary; Sommer (1932: 272 n. 1) is to be rejected. See also *teriyala-*, 3.3.3.3.

#### 3.3.3.2. *terijan, terin*

##### 3.3.3.2.1. Forms

*terijan, teriyann* + *-a* (3-*an*, 3-*an-na*, 3-*na*), *terin* (\*3-*in*) ‘thirdly; at / for the third time’.

*KBo XX 40 V 4' ff. [nu?] 3.TA.ÀM tar-ku-wa-an-zi[-] // (5') LÚ.MEŠ<sup>z</sup>zi-in-hu-u-ri-eš<sup>SAL.MEŠ</sup>zi-in-t[u-hi-ša?] (6') SÌR-RU ta-a-na hu-u-ma-an-ti-iš (7') tar-ku-wa-an-zi<sup>SAL.MEŠ</sup>zi-in-tu-hi-e-eš (8') Ú-UL SÌR-RU te-ri-ya-an-na (9') iš-hi-ma-na-an ap-pa-an-zi (10') GÌŠ<sup>d</sup>INANNA<sup>HI.A</sup> ha-az-zi-ya-an-zi (11') [GÌŠ<sup>a</sup>]r-ga-mi wa-al-ha-an-zi '(±)' 'They dance three times. // (First) the zinhuri-men (dance and) the zintuhi-women sing. At the second time they all dance, but the zintuhi-women do not sing. And (finally) at the third time they seize a rope, pluck the <sup>d</sup>INANNA-instruments and strike the tambourine (?)'.*

*KBo III 18 (BoTU 4B) r. 4 ff. [ha-a]n-te-iz-zi-ya pal-ši ... t[a-a-an] ... [te-ri-]ya-an-na, for which dupl. 16 (BoTU 4A) r. 1 has [ha-an-te-iz-]zi pal-ši ... ta-a-an ... 3-na 'At the first time ... at the second time ... and (finally) at the third time'; XXXIII 120 I 33 3-an-na-at-ta 'and (finally) thirdly' (32: da-an-ma-at-ta 'at the second time ...'.*

*KUB II 10 IV 33' nam-ma 3-an pí-di 'at the third time again' (i. e. if the third penis is laid on the taparwa<sub>a</sub>šū-loaf); in IV 24 there corresponds nam-ma da-a-an 'at the second time again', 888/z 3-an-na pí-di (between 2-an-za pí-di and 4-an-za pí-di); KBo XIII 145 o. 3' te-ri-in 4-in (context fragmentary); the duplicate KBo XI 14 II 15 ff. gives the full wording, but in a condition difficult to read: zi-iq-qa<sup>d</sup>UTU-uš i-(it?) nu t(e!)ri-in(4)-in(5)-in[-] (16) ú-e(e!)-i(lu?)-i(kan?) (na?)-(ya?) (??; or °i(tu)-ri-(ya)?) etc. 'But thou, sun-god, get up and drive for the third time, for the fourth time, for the fifth time, around the plain! Unharness (thereupon) the tired (draught animal) and harness a rested one'. The attempt at an interpretation, which does not yet give perfectly correct Hittite, should only allow the sentence-structure to be approximately recognised; that *terin* belongs under 3.3.3.1. is not entirely excluded.*

### 3.3.3.2.2. Inflection

The inflection is that of *-ya*-stems. The form *terin* must show syncope (cf. H. Eichner 1968: 215 n. 11) if has been correctly identified as a nominative-accusative singular neuter.

### 3.3.3.2.3. Word formation

We must posit either a derivative from the cardinal *\*tr-i-* by means of the suffixes *-o-* (<sup>+</sup>*tri-ó* → *\*triyó-* / *\*trýó-* or *-io-* (<sup>+</sup>*tri-ió* → *\*triyó-*) or else a direct derivative of the "numeral root" *\*t(e)r* by means of the suffix *-io-* (<sup>+</sup>*tér-io-* → *\*téryo-* or <sup>+</sup>*tr-ió-* → *\*triyó-* or *\*trýó-*). That both

alternatives really have to be admitted is shown by the comparison with Latin *tertius* and Gothic *þridja* (*\*trityón-*, from the cardinal) and Vedic *ṛt̥tīya-* (from the “root”). In addition a vṛddhi derivative of the cardinal would seem possible (*+ter-io-* → *\*teryo-*). Since the sound changes to be assumed have not yet been fully elucidated and analogies with the cardinal could play their part, no decision can be reached. As the most probable phonological development we might assume

<i>*tṛyó-</i>	(← <i>+tri-ó-</i> / <i>+tr-ió-</i> )	>	Hitt. <i>*tariya-</i>
<i>*triyó-</i>	(← <i>+tri-ó-</i> / <i>+tri-ió-</i> / <i>+tr-ió-</i> )	>	Hitt. <i>*tariya-</i>
<i>*téryo-</i>	(← <i>+tér-io-</i> / <i>+téri-o-</i> )	>	Hitt. <i>*tériya-</i>

Thus the postulates *+tri-ó-* and *+tr-ió-*, in their coincident realisations *\*triyó-* and *\*tṛyó-*, would yield Hitt. *tariya-* (perhaps still preserved as a variant of a derivative, see 3.3.3.3.). Hitt. *teriya-* could not have arisen in a phonologically correct manner in this way; it must have taken its *e* from the cardinal. Reconstructed *+t(e)r-io-*, with its two ablaut doublets *+tér-io-* → *\*teryo-* and *+tr-ió-* → *\*triyó-* / *\*tṛyó-* (essentially already Benveniste 1962: 87), would yield all the Hittite phonetic forms in question (*teriya-* and *tariyala-*), but is doubtful on other grounds.

### 3.3.3.3. Hittite *teriyalla*, *tariyala*

Ehelolf recognised that the derivative *teriyalla* / *tariyala*, a drink, belongs here (see *HW*, 221). There are the following attestations: *KBo* V 1 IV 35 f. *nu ši-ip-ta-mi-ya te-ri-ya-al-la ši-pa-an-da-an-zi* ‘They libate *šiptamiya* and *teriyalla*’; *Bo* 4951 [X] 3-*ya-al-la 7-mi-ia ši-pa-an-ta-an-zi* ‘do.’; *Bo* 2375 (with dupl. *Bo* 553) III 14 1 GAL GIR<sub>4</sub> *ta-ri-ya-la* ‘a vessel of fired clay (?) with / for *tariyala* (?)’.

#### 3.3.3.3.1. Inflection

If it is not just the stem-form that is used (as is probably the case at least in *Bo* 2375), *teriyalla* is to be identified as nominative-accusative plural neuter of an *-a-* or an *-i-*stem.

#### 3.3.3.3.2. Word formation

Because of parallel *šiptamiya*, a derivative from the ordinal is probably present. The basic meaning would then not be ‘drink from three ingredients’ (cf. English *punch*, Hobson-Jobson 737–738) but something like

‘drink of one-third’, whatever may be implied by that. Friedrich’s reference (*HW* 194) to Akk *šikar šalultum* ‘“one-third” beer’ supports the suggestion. Perhaps in *teriyalla* and *šiptamiya* there is an indirect attestation for Anatolian fraction-formations. The morphological analysis leads either to an *-alli*-derivative or a (typologically older) *-la*-derivative from the ordinal *teriya-* / *\*tariya-*; the single *l* in *tariyala* can have been influenced by other *l*-formations.

### 3.3.3.4. Hittite *teriyala-* ‘mediator’

In the Old Hittite ritual (Laroche, *Catalogue des textes hittites*, 1971: 416), we find II 56 (= *KBo* XVII 3 II 13’, old ductus) a group of signs *te(?) -ri-ia-la-aš-mi-iš* for which H. Otten and V. Souček venture the interpretation (*StBoT* viii, 1969: 29 n. 9) ‘my/our third’ and further suggest that a circumlocution for the “mediator” (intermediary) is to be seen in the term “third”. This suggestion fits the context of the passage extremely well and has important support in Hieroglyphic Luv. *tariwana/i-* (3.3.4.–3.3.4.1.). The word *teriyala-* (this reading of the initial is virtually certain because of a lack of suitable alternatives) can now be analysed in two ways:

- 1) As a derivative of the ordinal *teriya-* (3.3.3.1.) by means of a formant *-la-*. In this case there could be identity with the material of 3.3.3.3., as already suggested by Otten and Souček.
- 2) As a nomen agentis, derived by means of the formant *-ala-* (Friedrich 1940–46: i § 46 c) from a verb *\*teriya-* ‘to be the third, to function as third’ or also directly from the ordinal *teriya-*.

### 3.3.3.5. Hittite *tarriyanalli-*

This adjective, meaning ‘of the third rank, to be found in the third place; of third quality’, has long erroneously been regarded as an ordinal (*HW*, 214, with literature). The correct determination of the meaning goes back to H. G. Güterbock, see *HW* 2 *Ergänzungen* (1961: 24).

#### 3.3.3.5.1. Attestation

Nominative singular common <sup>LÚ</sup>*tar-ri-ya-na-al-li-iš* *IBoT* I 36 I 38; dat. *-li* I 37 ‘man (officer) of the third rank’ or ‘man in the third place’; further 4 TÚG *tar-ri-y[a-na-liš]* *KBo* XVIII 181 r. 3’; 3 TÚG *tar-ri-ya-na-liš* r. 8; 6 TÚG *tar-ya-na-liš* (abbreviated writing because of lack of space);

186 left margin 4 ‘third-quality garments’ according to a suggestion of H. G. Güterbock, *KBo XVIII*, p. VII. (The writing with the sign LIŠ in *KBo XVIII* is to be assessed as an “abbreviated” writing, similar to, e. g., *kiš-an* for *ki-iš-ša-an* ‘as follows’; what is meant phonetically is most probably Hitt. as in *IBoT I* 36.)

### 3.3.3.5.2. Linguistic assessment

Just as in the case of *duianalli-* (3.2.8.) an *-alli-* derivative is probably present. As the basis we must infer *\*tarriyana-* ‘to be found in the third place’ (ord. *\*tarriya-* + suffix *-na-* indicating position) or perhaps also an adv. *\*tarriyan* ‘thirdly’. If, as has hitherto been usual, it is desired to consider the word as of Hittite origin, the explanation of the *-rr-* — about which it is indeed believed that one should not worry — would cause the greatest difficulties. PIE *r* gives Hitt. *r* between unstressed vowels (cf. H. Eichner 1973: 100 n. 86), as also after stressed etymologically short or long vowel (cf. *hāraš* ‘eagle’ < *\*H<sub>2</sub>árō*, *pēru* ‘rock’ < *\*pērwr*, *pēran* ‘in front’ < *\*pērom* or *\*pērām*; in *arraš* ‘arse’ < *\*H<sub>1</sub>órsos* the *rr* goes back to *\*rs*, not *\*r*). As a consequence, the position before directly following accent is the only possible condition for *rr* < *r* (*warri-* ‘helpful’ must thus tentatively be derived from *\*worí-*, *šarrizzi* ‘transgresses’ from *\*soréyeti*, etc.). This is however certainly not the case if the Hittite vowel preceding the *r* has been inserted in an original group of consonants by anaptyxis (cf. *geréz*, *karáiz* ‘flood’, *pará* ‘forward’ < *\*proH<sub>1</sub>*, *karáuar* ‘pair of horns’). The only remaining possibility is at best to posit *\*tṛyó-* < *\*təryá-*, provided the change *\*ṛ* > *\*ər* took place very early (earlier than the development of an anaptyctic vowel in *\*tr-*), and, further, that postvocalic *\*r* was doubled before *y* too: *\*təryó-* > *\*tarriya-*. For the latter hypothesis reference could indeed be made to *anturriya-* ‘inland’ (beside *anturiya-*). But this assumption, too, loses probability if words such as *tūriya-* ‘to harness’ (< *\*dhwṛh-yé-*) are adduced, particularly when *rr* of *anturriya-* can have been taken over analogically from *katterra-* ‘lower’ (anachronistically *\*kṛnt-eró-*, a replacement of *\*ṛd<sup>h</sup>ero-*; beside it also *kattera-* with a different accent, or analogical *r*).

But all problems are resolved if *tarriyanalli-* is considered an originally Luvian word. Luvian *rr* is a normal correspondence of Hitt. *r*, to which, above all, B. Čop, *IF* lxxv (1970: 86 f.) has called attention. The textual evidence (clear luvisms in *IBoT I* 36!) and the word formation (suffix *-alli-* more productive in Luvian than in Hittite in the case of such words

as *mawalli-*, 3.4.4.1.) are reconcilable with the hypothesis that *tarriyanalli-* is Luvian. We then obtain the correspondences Hitt. *dān pedaš*, *\*teriyān* / *\*teriyāš pedaš*: Luvian *duianalli-*, *tarriyanalli-*.

Hitt. *teriya-* and Luvian *\*tarriya-* ‘third’ can be equated on the basis of (Proto-Anatolian or Common Anatolian) *\*ter(i)ya-*. If the *e* of this form goes back to PIE *e*, Luvian *tarriyanalli-* would be the only word in the whole of the Indo-European material which requires a form *\*teryō-* with *e* after *C<sub>1</sub>-* and thus provides proof for Benveniste’s reconstruction *\*teryono-* (1962: 87).

But, as far as I can see, there is no cogent ground for the assumption that Luvian *rr* next to an accent – this condition must not be overlooked – could not have arisen after an anaptyctic vowel, too (*šarra* ‘on’ corresponds to Hitt. *šarā*, at first < *\*šrā*?). In Luvian *atari-*: Hitt. *etriya-* ‘to nourish’, Luvian *hattarai-*: Hitt. *hatrāi-* ‘to write’, Luvian *huppara-*: Hitt. *hupra-* ‘sort of girdle’, Luvian *immari-*: Hitt. *gimra-* ‘field, plain’, Luvian *iššari*: Hitt. *keššar* ‘hand’ (see Laroche 1959), the *r* does not necessarily occur after an originally stressed vowel (*\*H<sub>1</sub>ed-ri-yé-* ‘to nourish’, *\*H<sub>2</sub>atraH<sub>2</sub>-yé-* ‘to scratch’, *\*ghésṛ* ‘hand’). Initial stress in *\*gémra-* ‘plain’ is probably indicated by Hittite dat. *-ri* (not *-ri-i*). Luvian *pari* (Laroche 1959: 78) on its part, can no longer be directly equated to Hitt. *parā*, and, for Luvian *kuranni-* ‘section (??)’ (Laroche 1959: 57), original final stress, an aberrant development *kurá-* < *\*k<sup>w</sup>rá-*, or borrowing from Hittite must be assumed. Even this short sketch makes it probable that Benveniste’s reconstruction *\*teryono-* is not unavoidable.

From the data the conclusion may be drawn that the Luvian cardinal (*sic*) “3” is to be posited as *\*tarri-* < *\*tri-*; as in Hittite, it is the phonological form of the cardinal that became decisive, and probably caused a reshaping of the ordinal *\*tariya-* (< *\*triyó-*, by far the most probable protoform) to *\*tarriya-*. In its turn, *\*tarriya-* is attested by *tarriyanalli-*, indirectly to be sure, but nevertheless undoubtedly.

### 3.3.4. Hieroglyphic Luvian *tariwana-*

The very common Hieroglyphic Luvian epithet of the ruler, *tariwana-* (perhaps to be put phonetically as *\*tarriwanni-* – but this question is not significant in our connection) has been approximately identified by Meriggi (1962) and Laroche (1960: i. no. 371) (both read *tarwana-*) as ‘righteous one’ or ‘judge’; the two meanings are best joined together as ‘righteous judge’. The sphere of meaning is in any case fixed by the

related abstract *\*tariwana-* ‘righteousness’ (a meaning assured by the Phoenician translation), probably originally as *ya*-derivative (*-aya-* > *-a-*) like Hitt. *pittuliya-* ‘anxiety’ to *pittula-* ‘noose’. A word ‘judge’ as the title of a prince naturally does not surprise us; Laroche calls attention to the political meaning of Semitic *šp̄t*; we need only think of the rôle of the “judges” in the Old Testament.

If it is assumed that the basic meaning is ‘impartial person, arbitrator’, the etymology is of course clear: *tariwana-* denoted the impartial “third”, who — in certain circumstances on account of his power and of the regard in which he is held — has to settle the dispute of two parties in a law suit (not the criminal judge). For the historical importance of the office of arbitrator as early as the time of the Hittite Great Kingdom reference should be made to the “Arbitrament of Muršili II in respect of Barga” iii, 27 f. (H. Klengel, *Or.* N.S. xxxii, 1963: 38, 44, 53), where “the Priest” (epithet of Telipinu of Aleppo) is named as the competent court for any disputes between Muršili’s Syrian vassals. Perhaps it is no coincidence that this rule concerns precisely a region which belongs to the area in which, later, the *tariwanas* officiated.

### 3.3.4.1. Word formation

If fundamentally there are no objections to raise against positing *\*tri-wo-n-* ‘third’ (with characteristic *-n*-suffix) or *\*tri-wo-no-* ‘to be found in third place’ (cf. Vedic *pūr-vá-* ‘first’, also Lycian *χ̣ñtawati* ‘ruler’), it is worthy of thought that, in the Luvian domain, there should be a further formation too, *\*tarriwa-* or *\*tarriwana/i-*, beside *\*tarriya-* ‘third’ (= Hitt. *teriya-*) or *\*tarriyana-*. But all doubts can be eliminated by reference to a further Anatolian word, to which *tariwana-* can have been assimilated (see 3.4.6.).

For the details of the reading, see 3.3.2. Under no circumstances can the controversial state of affairs lead to doubt about the etymology. Those researchers who want to read *tarwana-* also interpret the multiplicative *tar(r)iš(š)u* as *tarsu*, see 3.3.2. and 3.3.5.1.

### 3.3.5. Luvo-Lycian multiplicative adverbs, etc.

**3.3.5.1.** Hieroglyphic Luv. *tarisu* ‘three times’ (?) (= *\*tarriššu?*), see Meriggi (1962: 165); Laroche (1960: i. no. 388). The writing is *tari-su-u*, with the first sign “3” + “thorn”.

Lycian B *trisu* 44c 51, d 70 ‘three times’ (?), A *\*trihu*, corresponds to Hieroglyphic Luv. *tarisu*; for possible syncope, cf. Lycian *hri* = Hieroglyphic Luv. *šarri* ‘above’. To be derived from  $\pm$  *\*tris-wé*; for an explanation see 3.2.9.

**3.3.5.2.** Lycian B *trpplē* 44 c 53 (beside *tbiplē*), derived from  $\pm$  *\*triplom* or *\*tripelom*; after the syncope of the *i*, *p* was regularly doubled in the position after a consonant. For the word formation, see 3.2.9.

**3.3.5.3.** Lycian *trppeme* 109,5 (numeral ??): *hrppibeije : tātu : epñte : trppeme* ‘so afterwards they must be enjoined *trppeme*’. The form is thus to be identified as nominative-accusative plural neuter (admittedly dative plural would also be possible). It is hard to say whether a meaning ‘ $3\frac{1}{2}$ ’ or ‘ $2\frac{1}{2}$ ’ would be apt. All the same, because of *tuprñne* and *muprñme*, this possibility must be considered. See 3.13.1.6.. For the proper name *trijē-tezi-*, see 3.2.7.

### 3.3.6. Miscellaneous Hittite items

The writing is with the numeral sign “3” with various Hittite phonetic complements.

**3.3.6.1.** *3-an-ki* ‘three times’ Goetze, *Verstreute Boghazköi-Texte* (1930: 111 III 22’); 482/z line 2; to be read *\*teriyanki* (??).

**3.3.6.2.** *3-iš*, *3-kiš* ‘three times’ (?); see *HW*, 303; to be read *\*teriyankiš* (??). For *3-iš* the assumption of a direct continuation of PIE *\*tris* (> Hitt. *\*tariš*, analogically *\*teriš*) would be improbable. For *3-kiš* there is a quotation on a tablet in typically old ductus (*KBo* XVII i I 3’).

**3.3.6.3.** *3-li* (?) *KBo* III 56 (*BoTu* 19) line 13’ (or *3-li-(x)[X]*).

**3.3.6.4.** *3-yahh* and *4-yahh* (verb-stems); according to *HW*, 303 ‘to make threefold’ and ‘to make fourfold’; but the meaning is not clear. The quotations for *3-iahhahh-* and *4-iahhahh-* (IX 4 II 35) are possibly to be regarded as dittographic (with *HW*), but, on the other hand, we can also seek a connection with verbs such as *teriyahh-* (*\*teriyahhahh-* would be the normal factitive to the participle *\*teriyahhant-*) or with the numeral formations in *-hh* (cf. 3.2.1.3.).

One could attempt to connect 3 pl.pret. *te-ri-ir* XXXIII 60 r. 14 (Laroche, *RHA* xxiii, 1968: 154) with a verb *\*teriya-* ‘to divide into three parts, to be one of three (or the like)’ because of the shortly preceding (r. 11) 3 DUMU<sup>MEŠ</sup>-ŠU ‘three children from him (from her?)’. However we probably have here just the third plural preterite of the verb *tar-* ‘to speak’, which is not recorded elsewhere.

### 3.4. The Anatolian numerals ‘four’ and their derivatives

#### 3.4.1. The Hittite cardinal

##### 3.4.1.1. Forms written with the numeral sign ‘4’

The phonetic complements indicate both root-stem and *-nt*-stem.

Plural common acc.	4- <i>uš</i> <i>KBo</i> XVII 1 II 8’ (Otten — Souček, <i>StBoT</i> viii, 1969: II 22’), tablet in typically old ductus
dat.	4- <i>ta-aš</i> XXXIII 51 line 7’ ( <i>-nt</i> -stem?)
instr.	4- <i>it</i> 1238/v line 11’; 941/z r.? 5’
abl.	(4- <i>az</i> 617/p, see 3.2.1.4.)

Plural neuter nom.-acc. 4-*ta*, see 3.4.1.1.1.2.

##### 3.4.1.1.1. Notes

**3.4.1.1.1.1.** 4-*aš* (?) *IBoT* II 97 line 4 (*HW*, 303) does not exist. Instead of this we should read [X <sup>GIŠ</sup>ZA.LAM.] GAR-*aš-ma kat-ta-an tar-na-an-zi* ‘they put a tent up’; cf. line 3’. <sup>GIŠ</sup>ZA[.LAM.GAR.X].

**3.5.1.1.1.2.** Plural neuter nom.-acc. 4-*ta*: *KUB* V 7 o. 30 4-*ta TA-PAL EZEN ITU.KAM ku-it kar-ša-an e-eš-ta* ‘which concerns the fact that four pairs of month-festivals have been neglected’. The form belongs to the *-nt*-stems (\*4-*ant-*). The writing of the next line but one, 4 *TA-PAL ITU.KAM*, shows that, in the case of numerals too, the graphic indication of the *-nt*-stem can be entirely omitted.

**3.4.1.1.1.3.** On the problem 4. (KI.) GUB ‘standing with four legs’ (*HW*, 303, 2 *Ergänzungen*, 1961: 32) light is thrown by *Bo* 6514 IV 3’ f. (H. G. Güterbock, *Oriens* x, 1957: 361) *IŠ-TU BI-IB-RI GUD.AMAR* 4-*i*[*t* <sup>MES</sup>GİR-*it*?] (4’) *a-ra-an-te-it a-ku-wa-an-zi* ‘they drink out of a calf’s rhyton standing on (all) four feet’; cf. 1238/v line 11’ 4-*it* GİR-*x*[X] and X 89 I 20 f. 4 *arantet* (O. Carruba, *Kadmos* vi, 1967: 93).

**3.4.1.1.1.4.** [X](*x*) 4-*at irhaizzi Bo* 7967 line 5’. A passage which poses a riddle. If correctly read, 4-*at* would have to be compared with 2-*at* : 2-*e* and 1-*at* : 1-*e* (an instrumental in *-at* is excluded). Is it a special kind of numeral? Since the accusative is required syntactically, 4-*at* must formally be the nominative-accusative singular neuter. The explanation of this form will only be possible with additional material and will have consequences for the assessment of other forms (e. g., 2-*e*).

### 3.4.1.2. Forms written with *mieu-*

Hitt. *mieu-*, *miu* denotes ‘member of a group of four; four?’ (according to H. G. Güterbock, see *HW 2 Ergänzungen* 1961: 18).

Plural common nom. *mi-e-wa-aš*- *ABoT* 44 I 54

*mi-e-ia-wa-aš* I 55

acc. *mi-e-ú-uš* I 52

gen. *mi-i-ú-wa* <*-aš*> *XLIII* 60 I 11.

#### 3.4.1.2.1. Notes

*ABoT* 44 shows the word applied to the sun-god’s four-in-hand: I 52 ff. *nu mi-e-ú-uš ku-i-uš tu-u-ri-ya-an har-ši* (53) *nu-uš-ma-aš ka-a-ša DUMU.NAM.LÚ.ULU<sup>LU</sup>-aš hal-ki-in šu-uh-ha-aš* (54) *nu mi-e-wa-aš-ti-iš ka-ri-ip-pa-an-du nu ku-it-ma-an* (55) *mi-e-ya-wa-aš-te-eš hal-ki-in ka-ri-ip-pa-an-zi*, etc. ‘Look, the mortal man has heaped up grain for the four which thou hast yoked! Now may thy four eat! And while thy four eat the grain – mayst thou live, O sun-god! – look, then will the mortal man, thy servant, address the word to thee and will listen to thy words’. Hitt. *mieu-* stands here without additional substantive for the parties concerned in a collective of four: the quadriga of the sun-god. A corresponding content may be present in the further passage, in which admittedly an assessment of *mi(e)u-* as a simple numeral is also possible: *XLIII* 60 I 10 f. *NIM.LÁL te-ri-ya-aš UD-aš* (11) *mi-i-ú-wa* <*-aš*> *UD-aš KASKAL-an pa-a-an-du* ‘the bees shall put behind them a journey of three days, of four days’. Perhaps here the idea of the nature of a ‘three-days’ journey’, ‘four-days’ journey’ is intended, and not simply ‘three journeys of a day’, ‘four journeys of a day’. For the time being, then, the situation does not yet permit the definitive statement that *mieu-* is the normal Hittite cardinal; it could be a case of a special collective nomenclature.

#### 3.4.1.2.2. Inflection

The pattern is that of a *-u*-stem with traces of suffix-ablaut as found in the “proterodynamic” inflection, which, in Hittite, for the most part occurs in adjectives. But in respect to the typology of the ablaut, the substantive *he(i)u-* ‘rain’ is comparable, too. The form of the nominative plural common *mieyawaš* is decisive for the determination as a *-u*-stem; in the case of an *-a*-stem, *miewa- miwa-*, as we should normally posit it (cf. Laroche’s *mauwa-* for Luvian – see 3.3.3.5.2.), the ablaut would

come as something of a surprise. The ending *-aš* is to be assessed as an archaism or hyperarchaism merely conditioned by the text – originally *-aš* belongs to the *-a*-stems, PIE *-ōs*, cf. I 61 *ú-e-<ri->te-ma-aš* ‘the terrors’.

### 3.4.1.2.3. Etymology

Cf. A. Heubeck, *Die Sprache* ix (1963: 201 f.); G. Neumann, *Innsbrucker Beiträge zur Kulturwissenschaft*, Sonderheft xxiv (1967: 24 f.).

We must start out from a Proto-Indo-European adjective stem *\*méyu-* ‘little, small’. *\*meyu-* became Hitt. *miu-*, *\*meyw-*, Hitt. *\*mēw-*; by mixture of these, *mīw-*, *miew-*; Proto-Indo-European forms such as nominative plural masc. *\*meyowes* > Hitt. *\*mīyaw-* or *\*m(i)-yéwes* > Hitt. *miew-* are to be considered. Heubeck suggests convincingly that a designation of the “little” hand (without the thumb) is to be seen in *\*meyu-*. The word formation is most easily to be understood if a substantivized neuter adjective *\*méyu-* is assumed (type *\*pélH<sub>1</sub>u* > Gothic *filu* ‘much’), to which there would belong a thematic derivative *\*meiw-o-* ‘(plural) belonging to the little hand’, i. e., ‘the four long fingers’, and transferred, ‘the members of a group of four; the four’. In Hittite the two formations would be conflated.

The postulated adjective, *\*meyu-*, is directly derived from the root *mey-* ‘to be little, small’ (cf. Pokorny 1959: 711). A denominative *n*-present *\*minéwti* ‘to make less, make smaller’ served as a Proto-Indo-European factitive to this adjective. (I owe the hint for this important assumption to Professor Klingenschmitt.) Parallel to it a denominative *n*-present to a substantive *\*m(e/o/0)y-eH<sub>2</sub>* ‘lack, diminution’ was formed, *\*minéH<sub>2</sub>ti* ‘to cause diminution’, Vedic *mināti* ‘to harm, diminish, injure’; we must be clear that, in the case of *\*minéwti* and *\*minéH<sub>2</sub>ti* with *n* as stem-infix, a very old type of formation in present, which, in contradistinction to the well-known type with *n* (or *ne/n*) as root-infix, must be primary, for root-infixation is not consonant with the structure of Indo-European morphology elsewhere, whereas for stem-infixation, reference can, after all, be made to the morpheme *-e-* of “vr̥ddhi-derivation” (which does not start from the root but from a stem). Starting from *\*minéwti* a new adjective *\*minu-* ‘(too) small, less’ was formed still in Proto-Indo-European times, evidenced by the reflexes found in Greek, Latin, Celtic(?), Germanic, Slavic. (A secondary formation of the same type is Vedic *dhṛṣṇú-* ‘bold’ beside *dhṛṣṇóti* ‘to the bold’; the old adjective is represented by Greek θρασύς.) But if, beside *\*méyu-*, there was the new formation *\*minu-*, it may be suggested that, already in Indo-European, *\*méyu-* could

have developed its special use as a numeral, thus PIE *\*méyu-* ‘1. little; 2. (substantivized neuter) little hand’: PIE *\*minu-* ‘less, (too) small’. The Anatolian languages preserve thus something very old in Hitt. *mi(e)u-* together with its Luvian correspondences, as should have become clear after this excursus into questions of word formation; *\*méyu-* must be older than *\*minéwti* and this again older than the adjective *\*minu-*, and even this must be a Proto-Indo-European form. And even without a consideration of the background, it would be difficult to assume a Hittite-Luvian innovation, since there is no other trace of the relevant Indo-European root in Anatolian (Laroche 1959: 70).

### 3.4.2. The Cuneiform Luvian numeral ‘four’

**3.4.2.1.** Forms written with the numeral sign ‘4’ with phonetic complements: nominative plural common 4-*zi*?; instrumental plural 4-*ti* (= *māuwāti*), see 3.4.2.2.

**3.4.2.2.** Forms written with phonetic signs plus complements. The stem is *mauwa-* (or *mauwi-* *mau-*?). Instrumental plural *ma-a-u-wa-a-ti pa[-a-a-]r-ta-a-ti* XXXV 54 III 10 ‘of/with the four sides’; likewise *ma-a-u-wa-ti p[a X]* XXXV 21 r. 4; in alternation with 4-*ti* p. 43 II 12 III 24, 33 III 7 (restored); XXXII 14 + line 6.

**3.4.2.3.** Discussion. The phonological development is hard to assess: *\*meyaw-* > *\*maaw-* > *māw-*, but also *\*meyw-* > *\*mew-* > *\*maw-* (Heubeck) may have to be considered. It is hardly possible to argue here from the plene writings, since the attested forms are too few and occur in passages where one must certainly reckon with emphatic lengthenings (conjunction-formulae!); the emphatic lengthenings are quite obvious in XXXV 54 III 10 (see above; twice double-plene). It is not clear whether by-forms *\*mu(wa)-* (< *\*mau* < *\*meyu-??*) and *\*miu*, *\*miwa-* are to be assumed. And no certainty is to be attained concerning the stem-formation (stem *mawi-*?; the instrumental *-ati* would be regular for this stem too). However, in any event, because of the connection with the Hittite, we must posit a *-u-* stem as original for Luvian also — which was secondarily extended to an *-i-* or *-a-* stem — and not seek some direct connection with Old Icel. *mær miór* ‘slim, narrow’ and Tocharian B *\*maiwe* ‘young’ (*\*moywo-*).

### 3.4.3. The Hieroglyphic Luvian numeral ‘four’

Written with the numeral sign “4” with phonetic complements (Meriggi 1962: 165; *HH* I, No. 391).

Accusative plural common 4-*i* (two examples), 4-*i-a*, to be read 4-*za*, 4-*za-a* (see 3.2.2.) = \**mawī*ʹ*za*?

### 3.4.3.1. Discussion

The numeral sign “4” has also the phonetic values *mi*, *ma*, which have been derived from the numeral according to the acrophonic principle. The value *mi* agrees with Hitt. *mieu-*, *miu-*; since it is already attested in the time of the Great Kingdom, it could derive from the Hittite numeral (?). With due caution, notice should be taken of a possible phonetic variant \**muwa-* indicated by WOMAN – M 129 4-*tà* (= [1 +]3-*tà* according to a brilliant suggestion of Mittelberger’s in Meriggi 1962: 85) ‘woman’s power’ i. e. ‘weakness’; the word is in opposition to M 129 *mu-wa-a-tà-na* ‘(man’s) power’; for the passage, see Meriggi (1967: 67 f.); for the realia see also Goetze, *Verstreute Boghazköi-Texte* (1930: 24 I 28 f.).

### 3.4.4. Miscellaneous forms derived from stems studied in 3.4.1. – 3.4.3.

3.4.4.1. Accusative singular common *mawalli-* XXXI 66 IV 14 (Laroche 1959: 70), in reference to a horse, perhaps ‘belonging to a four-in-hand’ (?). The word is obviously of Luvian origin.

3.4.4.2. Hitt. (?) *mi-u-wa-ni-ya-an-t-* and *mu-u-wa-n[i-ya-an-t-]* (of horses), perhaps ‘harnessed in fours’ (??), according to a suggestion by Kammenhuber see *HW 2 Ergänzungen* (1961: 18). The alternative, that there is a connection with a higher numeral derived from “four” (‘forty, four hundred’, something like ‘accomplishing a distance of four hundred measuring units’), which comes to mind because of the Lycian type *kbisñtāta*, *nuñtāta* (ending *-nta*), does not seem applicable.

3.4.4.3. Luvian *ma-a-wa-ni-in-ta* (Kammenhuber 1961: 152) can be the Luvian or luvianizing correspondent of *miuwaniyant-*. The textual surroundings perhaps contain further related expressions, but the beginnings of the lines are lost: *x ta-aš-ta-a-ri-in-ta 2 ME gipeššar* ‘... *taštārinta* (\**ta-* “double” at the beginning of the word?), two hundred ells’ and [X]*x-an-ti-in-ta 3 DANNA* ‘x (containing “three” in the lost beginning?), three miles’, then finally our [X 4 ?? DAN]NA *māuwaninta* ‘[x 4 ?? mi]les *māuwaninta*’.

3.4.4.4. Hieroglyphic Luv. 4-*su-u* ‘four times’ (?); see Meriggi (1962: 165); cf. 3.2.9.

3.4.4.5. Hitt. 4-*iahh-*, 4-*iahhahh-*, see 3.3.6.4.

3.4.4.6. Hitt. 4-*iš*, see *HW*, 303.

### 3.4.5. The Hittite ordinal and related material

The words earlier included here (*HW*, 303) must now in part be assessed differently. For <sup>LÜ</sup>*duianalli-*, see 3.2.8.; for *4-na* (*IBoT* II 91 III 9, before it III 5, 7 3-ŠU, meaning ± ‘a fourth time’?) and *4-in* (*KBo* V 2 II 61; *KBo* XI 14 II 15; *KBo* XIII 145 o.? 3’), cf. 3.3.3.2.1.

### 3.4.6. Hittite *kutruwan-* ‘witness’

This form, originally an *-n*-stem, secondarily also *-a*-stem, is, according to what has been said in 3.3.4., to be analysed as *\*k<sup>w</sup>tru-(y)ó-n-* or as *\*k<sup>w</sup>tr̥w-(y)ó-n-(?)* ‘the fourth’. It is a derivative formed by means of a suffix *-o-* or *-io-* to the zero-grade stem of the cardinal *\*k<sup>w</sup>tru-* (cf. Greek τρυφάλεια, Avest. *caθru-*, Latin *quadru-*); a protoform without the metathesis of *w* and *r* but with dissimilatory loss of the *w* perhaps also calls for consideration (*\*k<sup>w</sup>-tw̥r-wó-n-* > *\*k<sup>w</sup>tr̥-wón-*).

This etymology poses an interesting phonological problem. The descendants of Indo-European labiovelars (before consonant and word-boundary) are generally not written plene in Hittite; at all events in the checking of about a thousand passages for forms like *ku-na-an-zi* ‘they strike’, *ku-ra-an-zi* ‘they cut’, *e-ku-zi* ‘drinks’, *tak-ku* ‘if’, *ne-ku-ma-an-za* ‘naked’, I could not detect a single plene writing. All but one of the examples of *kutruwan-* – and its derivatives – conform to this rule too; nevertheless there occurs *KBo* IV 4 IV 7 (late tablet) the writing *ku-u-ut-ru-wa-a-iz-zi* ‘he declares it before witnesses’ (Friedrich 1959: 56 f.). In my view, this isolated plene writing is on a par with *KUB* VI 46 I 39 *i-iš-ta-ma-aš-ša-du* ‘they shall hear’ (apart from this the prothetic vowel *i* is never written plene – in hundreds, indeed perhaps thousands, of examples). Just as, because of this isolated spelling, a derivation of *ištamaš-* from a protoform beginning, not with *st-*, but with *ist-* or *eist-* has little to recommend it, so can the writing *ku-u-ut-* not be adduced as an argument against a protoform *\*k<sup>w</sup>t-*. On the other hand, in my view, it proves the existence of a pronunciation *kut-* (instead of or beside *k<sup>w</sup>t-*) just as well as the spelling *i-iš-ta-ma-aš-ša-du* decides the question of the phonological reality of the prothetic vowel in the positive sense (to add Friedrich 1940–46: § 24); against the assumption of plene writings of unpronounced vowels, cf. 3.3.1.4. According to a view often presented, the labiovelars are however preserved as consonants (monophonematically) in Hittite – see, above all, F. O. Lindeman, *Revue hittite et asianique* lxxvi (1965: 29–32). This view may be supported by writings such as *e-*

*uk-zi* ‘drinks’, *e-uk-ta* ‘drank’, *e-uk-ši* ‘you drink’ (*KBo* XXII 1 o. 28), which are occasionally to be encountered; from the variation *e-uk-zi* ~ *ekuzi* etc. we assume a phoneme *k<sup>w</sup>* (written KU, UK). This conclusion is however not certain, for the variation of the *eukzi* ~ *ekuzi* cases may be based on the differing position of an anaptyctic vowel (*taruhzi* ‘defeats’ ~ *tarhudu*, see *HW*, 123; from this first, *tarukzi* ~ *tarkuzi* ‘dances’, from the root *terk<sup>w</sup>*- ‘to turn oneself’; then *eukzi* ~ *ekuzi*), cf. secondary *me-uh-ni* (VIII 21, 8, thus to be read in my view) against *me-hu-ni* from *mehur* ‘time’ – the assumption of spelling mistakes, confusion of the signs KU and UK, etc., would be very improbable for these cases). On the other hand the fixed points for the phonological disintegration of the labiovelars (*watkut* ‘jumped’ from the root *tek<sup>w</sup>*-; *kuiš* < *kwiš* < *\*k<sup>w</sup>is* ‘who?’, 3.2.10.3.), which have been little considered in the discussion so far, are really hard to discount; in addition, the form *kūtruwāizzi* ‘he declares it before witnesses’ would come as a further argument. It cannot however be passed over in silence that, as an alternative, a pre-Anatolian postulate with schwa secundum (*\*k<sup>w</sup><sub>e</sub>tru-*) also comes into question, just as, for instance, it is unavoidable for Latin *quadru-*. The reflex of the schwa secundum as *u* is conditioned by the vicinity of the labiovelar (*\*k<sup>w</sup><sub>e</sub>t-* > *\*k<sup>w</sup>ut-*, in the event further to *kut-*); cf. Greek κύκλος < *\*k<sup>w</sup><sub>e</sub>k<sup>w</sup>los*, etc.; for the assimilatory labialisation of secondary vowels in Hittite, cf. my suggestions put forward in *MSS* xxxi (1973: 76). And, too, whichever of the two alternatives (*\*k<sup>w</sup>t-* or *\*k<sup>w</sup><sub>e</sub>t-*) one decides on, the consequences for the phonology are, in each case, considerable.

For prehistoric Anatolian we thus obtain the following word-range: the two contracting parties before a court are denoted by one word, which survives in Hitt. *hannitalwan(a)-* (? word formation); the judge functions as an impartial third, *\*teriyan-* (altered to *\*teriwan-*), and, as ‘fourth’, the witnesses, *\*kutruwaneš*, are brought in. Thus it is clear how the difference in the nomenclature as against Latin *testis* came about.

C. H. Carruthers, *Language* ix (1933: 152) first proposed the etymology of Hitt. *kutruwan-* presented here; he also discussed the semantics: “If the judge is considered as a major party in the case, he will normally be the *third* person present, and the witness, when called, will obviously be the *fourth*” (in addition a very improbable semantic hypothesis, going back to Sturtevant, was given as an option). Carruthers was certainly wrong in the matter of the word formation, for he lets “Hitt. *kutrus*” derive from “*\*q<sup>w</sup>tru-*”; as we know today, the stem *kutru-* (instead of *kutruwan-*) is secondary in Hittite; further, PIE *\*k<sup>w</sup>tru-* belongs to the cardinal, not the ordinal, and could also not be used as nominative in

the ablaut-grade attested. Despite this misconception, the sharp rejection which Carruthers' suggestion has experienced, on the part of H. Pedersen *Archiv orientální v* (1933: 178) and Benveniste (1962: 110) ("H. Pedersen a fait justice de ces fantaisies") is not justified at all.

Pedersen's connection of *kutruwan-* with Lith. *gudrùs* 'clever, cunning, wily' can now be dismissed. The Lithuanian word was perhaps secondarily altered from *gudras* to a *-u*-stem; in its turn, *gudras* may be a relatively late Baltic innovation as could be formed at any time, which then would have little relevance for comparative reconstruction (*gudrùs* must be viewed ultimately as derivative of *gùsti gundù* 'be accustomed, obtain experience' (Fraenkel, *Litauisches etymologisches Wörterbuch* 1, 1962: 141).

## 3.5. The Anatolian numerals 'five' and their derivatives

### 3.5.1. Hittite data

These data are extremely scanty. Synopsis of the material:

**3.5.1.1.** Cardinal. *5-az* (?), see 3.2.1.4.; it is not clear whether there is a phonetic complement in *KBo* XX 67 III 15 f.

**3.5.1.2.** Ordinal and related material. (*ṣ*?)*-in* *KBo* XI 14 II 15, see 3.3.3.2.1. (probably syncopated from \**5-yan*); *5-an* VIII 62 IV 8' (?); *5-an-na* XVII 1 II 7' 'and/but (*-a*) for the fifth time'; *5-na* *KBo* V 2 III 1 'and the fifth', see 3.2.3.2.; 3.3.3.2.1.; not clear: MU.3.KAM (*ṣ*)*-ia* ITU-*mi* *Bo* 6828 IV 9 (dative ending or *-ia* 'and?').

**3.5.1.3.** *5-an-k* [*i* X] *KBo* XXII 79 line 1'; see also *HW*, 303.

**3.5.1.4.** *5-li-eš* XXXVI 89 o. 5' 'containing five units of measure' (of loaves) (?); see *HW* 1 *Ergänzungen* (1957: 30).

### 3.5.2. Hieroglyphic Luvian data

The forms are written with the numeral sign "5" with phonetic complements.

Acc.sg. *5-wa-sà-pa-* (before a consonant) 'fivefold' (?); *5-na-a* can be a shorter writing for this (see Meriggi 1962: 165, where taking a clear stand is avoided — probably intentionally. Cf. however Meriggi 1966: § 108 n. 2).

If, with Meriggi (1966: § 108), a suffix *-apa-/api-* (or *-aspa-/aspi-* too, possibly even *-asampa/i-*) is assumed, the initial bit *5-w(a)-*, shows a word that, in its final, can be compared with PIE *\*pénk<sup>w</sup>e*; *\*pa<sup>n</sup>ku* would be expected.

### 3.5.3. Hittite *panku-*

A discussion of the suggestion that Hitt. *panku* ‘whole, all, totality, generality, etc.’ should be connected with PIE *\*pénk<sup>w</sup>e* can be omitted here, for, according to this suggestion, Hitt. *panku-* would not be the reflex of a Proto-Indo-European numeral, but merely that of a root from which, in Proto-Indo-European, a numeral had been derived. See E. C. Polomé, *Pratidānam. Indian, Iranian and Indo-European studies presented to Franciscus Bernardus Jacobus Kuiper on his sixtieth birthday* (1968: 98 ff.), and N. van Brock, *Mélanges de linguistique et de philologie grecque offerts à Pierre Chantraine (Études et commentaires LXXIX)* (1972: 266 f.).

## 3.6. The Anatolian numerals ‘six’ and their derivatives

### 3.6.1. Hittite data

3.6.1.1. Cardinal. *6-az* (?) 617/p II 11’; see 3.2.1.4.

3.6.1.2. Ordinal and related material: (6?)-*an* VIII 62 IV 17’; *6-an-na-za* XVIII 1 II 9’ ‘and for the sixth time’ (= *6-ann* + *-a* + *-za*); *6-na* *KBo* V 2 III 2 ‘and/but the sixth’, see 3.2.3.2.; 3.3.3.2.1.

### 3.6.2. Cuneiform Luvian data

(6?)-*un* (?) *KBo* XI 145 II 11-3 (ter, Laroche 1959: 125); reading of the numeral in all three cases uncertain, emendation to (9)!-*un* should be considered.

## 3.7. The Anatolian numerals ‘seven’ and their derivatives

### 3.7.1. Hittite data

The forms are written with the numeral-sign “7” with phonetic complements.

3.7.1.1. Cardinal. *7-an* ~ *UH<sub>4</sub>-an* XXVII 29 I 28’; *KBo* XI 11 II 5f. *ki-e-iz 7-an pa-ah-hur ki-e-iz-zi-ya* (6) *7-an pa-ah-hur pa-ri-ih-hi* ‘one the

one side I kindle seven fires and on the other side seven fires'; 297/d V 4<sup>f</sup>. *nu 7-an 7-an an-da iš-hi-iš-kán-z[i X]* (5<sup>r</sup>) *nu iš-hi-ya-tar AN.TAH.ŠUM<sup>SAR</sup> i-ya-an[-zi X]* 'they bind seven at a time onto it and make a bundle from A.-plants' (?); 7-az 617/p II 11<sup>r</sup>; see 3.2.1.4. The complementation 7-an could point to \**se/iptan-*. Phonologically this phonetic form could not go back to PIE \**septm̥* (\*-m̥ > -un, proved by the first person singular preterite of the athematic verbs), but possibly to \**septmt-*. The final -an could also have been taken over from other numerals, for instance from "10", where a Proto-Indo-European form \**dekm̥t-* 'decad' beside \**dék̥m̥* '10' is well attested (Old Church Slavonic locative *deset-e*, etc.; see Pokorny 1959: 191). It would thus present a problem similar to that of Germanic "7" (Gothic *sibun*, etc., with preserved -n). On the other hand 7-an can belong to the -nt-stem; because of the examples just given ('seven here' ... 'seven there', 'seven at a time'); I would give preference to this possibility.

**3.7.1.2.** Ordinal and related material. 7-an-na-za-kán XXVII 11 II 11<sup>r</sup> 'and/but for the seventh time' (7-ann + -a + -za + -kán); 7-na KBo V 2 III 3 'and/but the seventh'; perhaps Hitt. \**šiptama-* or \**šiptamiya-*.

**3.7.1.3.** 7-an-ki XXXIII 105 I 5<sup>r</sup>–8<sup>r</sup> (quarter).

**3.7.1.4.** 7-iš KBo XVII 50 r (?) 5<sup>r</sup> (tablet in old ductus); perhaps = \*7-ankiš (?).

### 3.7.2. Hittite *šiptamiya-*

*šiptamiya* KBo V 1 IV 35 in alternation with 7-miya (discussion of the examples, 3.3.3.3.), as the name of a drink, is a derivative of an original ordinal \**šiptama-* < \**sebdmó-* (or from a secondary, but perhaps still Proto-Indo-European, \**sebdmó-*), or, more probably, \**septmó-* (\**septmó-*), with *pt* analogically restored from the cardinal (Hittite writing with TA, not DA). For the semantics, see 3.3.3.3. The attempt, often undertaken, to infer a cardinal \**šiptam* on the basis of *šiptamiya* (e. g. Kronasser 1962–66: 365; also HW 303, with a question-mark) represents a gross error; a Hittite word, as is well-known, cannot end in -m. Every attempt to wish to see in *šiptamiya* an intra-Hittite derivative of the cardinal comes to grief because of the regularity of the sound change -m > -n (also in -m̥ > -un).

If *šiptamiya* is anachronistically expressed by a Proto-Indo-European formula, \**septmeyo-* (\**septm̥eyo-*) or \**septmiyo-* (also \**septm̥yo-*?) would result. In the first case the Old Indian type *dvi-maya-* 'containing the double, consisting of something in two parts out of three' (Wackernagel,

*Altindische Grammatik*, 1896–1957: II/2, 770, with literature; *-maya-* in my view by “suffix-extension” from *-a-ya-* would be comparable). In the latter case *-iyo-* would be a Sievers variant of the suffix *-yo-*; the suffix traditionally postulated as *-iyo-* can be disregarded, as Hitt. *-ihha-* (*-iH<sub>2</sub>o-*) should correspond to it (perhaps attested in 9-*AH-ha* = 9-*ih-ha*?, 3.9.1.5.). Typologically perhaps the Roman name *Septimius* is comparable.

In *\*septmiyo-*, *i*-umlaut would probably occur (cf. *\*mélit* > Hitt. *milit* ‘honey’), but the writing of the initial with the sign ŠI (instead of ŠE), which occurs only once, can be otherwise explained, and can hardly contribute anything to the decision of the question of the word formation.

A further indirect piece of evidence for the Hittite ordinal is probably present in the Cappadocian female PN *ša-áp-ta-ma-ni-ga* (Laroche 1966, No. 1111), which can be interpreted as ‘the seventh (*šaptama-*) sister (*niga-*)’. Cf. G. Neumann in: M. Mayrhofer et al. (eds.), *Gedenkschrift H. Güntert* (1974: 279). Above all it is the vocalism of the first syllable that remains obscure (dialectal sound-change *e* > *a* or assimilation to the vowels of the following syllable?).

### 3.8. The Anatolian numerals ‘eight’ and their derivatives

#### 3.8.1. Hittite data

The forms are written with the numeral sign “8” with phonetic complements.

**3.8.1.1.** Cardinal. 8-*ta-aš* XXXI 143 II 1.8 etc. (E. Laroche, *JCS* i, 1947: 205 f.), probably, rather an *-nt*-stem than a direct reflex of PIE *\*H<sub>2</sub>októ-*.

**3.8.1.2.** Ordinal. 8-*na* *KBo* V 2 III 7 ‘and/but the eight’.

**3.8.1.3.** 8-*anki* *KBo* XXI 90 o. 11 ‘eight times’.

**3.8.1.4.** 8-*iš* (4-ŠU follows) 913/z IV 6’.

#### 3.8.2. Hieroglyphic Luvian data

The writing is with the numeral sign “8” with phonetic complements (Meriggi 1962: 165). 8-*wa-a-ī* = ± 8-*ua<sup>n</sup>zi/a*. Etymological attempts lead to the reconstruction of *\*hak<sup>?</sup>taud<sup>n</sup>zi* (?), which implies a *\*haktau* (derived from PIE *\*H<sub>2</sub>oktōu*) carried over into the plural. Thus the dual ending *ōw*, which would be hard to explain on the basis of the laryngeal theory, is, for the first time, required by Anatolian; perhaps PIE *\*ōw* goes back to earlier *\*oH<sub>1</sub>w* (*\*w* would be a deictic particle, cf. Vedic *u*).

On the other hand the Hieroglyphic Luvian form could be influenced by the numeral “9”, see 3.9.1.

**3.8.3.** Hitt. 8-*in-zu* in the passages given *HW*, 303 is not clear.

### 3.9. The Anatolian numerals ‘nine’ and their derivatives

#### 3.9.1. Hittite data

The forms are written with the numeral sign “9” with phonetic complements.

**3.9.1.1.** Cardinal. Dat.sg. 9-*an-ti happešni* ‘to/on the nine limbs’ *KBo XXI* 14 o. 13<sup>o</sup>; 9-*an-ti-ma KASKAL-ši IBoT II* 128 r. 5<sup>o</sup>, see 3.9.2.3.; abl.sg./pl. 9-*za KBo XIII* 109 II 3<sup>o</sup>; gen.pl. 9-*aš XXXVI* 89 r. 4 (see V. Haas, *Der Kult von Nerik, Studia Pohl IV*, 1972: 150 f.); dat.pl. 9?-*an-da-aš happešnaš šer* ‘on the nine limbs’ *Bo* 2533 I 23; 9-*aš (?) KBo XVII* r. 7<sup>o</sup>; XXXVI 49 I 9<sup>o</sup>, 89 r. 4 (?).

**3.9.1.2.** 9-*an*: – *KBo XI* 10 II 17<sup>o</sup>; 72 III 28; *KBo XII* 70 II 11<sup>o</sup>, 16<sup>o</sup>; *KBo XIII* 94 line 4<sup>o</sup>; *KBo XVII* 1 I 9<sup>o</sup> (typically old ductus); 88 III (?) 9<sup>o</sup> (bis); *KBo XX* 59 line 15<sup>o</sup>; *KBo XXI* 14 o. 8<sup>o</sup>; Goetze, *Verstreute Boghazköi-Texte* (1930: 58 IV 12<sup>o</sup>). Several passages are enigmatic; in others, a form of the cardinal could be present (3.9.1.1.), e. g. *KBo XII* 70 II 11<sup>o</sup>. The meaning ‘ninefold’ (*HW* 303), too, would fit some passages, e. g., *KBo XI* 72 III 28; Goetze, *Verstreute Boghazköi-Texte* (1930: 58 IV 12<sup>o</sup>).

**3.9.1.3.** Ordinal. 9-*na KBo V* 2 III 8<sup>o</sup> ‘and/but the ninth’; (9?)-*ti-(ma?) MU-ti XXXIII* 120 I 12 ‘but in the ninth year’. The second example could contain the cardinal, if, in dates, the construction ‘in the year 9’ should also be possible; then we should not have to postulate the coexistence of base-stem and -*nt*-stem for the ordinals, too. An analogical argument applies to *BdU II* 60 E (*IBoT II* 128 r. 5<sup>o</sup>) 9-*an-ti-ma KASKAL-ši* ‘but at the ninth time’.

**3.9.1.4.** 9-*al-li-uš Bo* 5149 line 7 (Sommer 1948: 206 n. 1), 9-*li 9/y* line 5<sup>o</sup>, 654/z line 2<sup>o</sup>; here perhaps also 9-*iš VII* 17 line 12<sup>o</sup> (\*9-alliš?). Not clear: 9-*at* = 9-*la!* (?), see *HW 1 Ergänzungen* (1957: 30) (against it Kronasser 1962–66: 365).

**3.9.1.5.** 9-*AH-ha KBo XXI* 14 o. 8<sup>o</sup> [X] 9-*an 9-AH-ha iš-pi-ir-te-en* ‘... ye have spread out’, for the construction cf. *KBo XIII* 94 line 4<sup>o</sup> 9-*an 9-an-ki še-eš-zi* ‘... he sleeps (with?)’. For the assessment of a form