# The Ebla Electronic Corpus: Onomastic Analysis

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## 1. The Ebla Electronic Corpus

This article is in the nature of an interim report on a project of ono-mastic analysis of the Ebla personal names, which is in turn part of a larger project called *Cybernetica Mesopotamica*.[1] The purpose of this paper is to out-line the conceptual and technical aspects of the onomastic data base;[2] while a fuller assessment of the system will be possible only upon its publication in a complete version, this interim report will focus on the methodological presup-positions. This seems warranted by the fact that a considerable number of names has already been analyzed[3] and that the linguistic coding of the same has been thoroughly tested. It is especially the linguistic and data-processing as-pects of the project that I intend to illustrate in this article, using by way of ref-erence some of the preliminary results derived from our analysis of the data elaborated so far.[4]

[1] For the most-recent presentation of the project *Cybernetica Mesopotamica* as a whole see Buccellati 1990a.

[2] For a parallel presentation of the graphemic aspects of the *Ebla Electronic Corpus* project, see Buccellati 1990b.

[3] The analysis and data entry of the Ebla texts and names has been undertaken by my stu-dents J. H. Platt, J. M. Pagan, and, in part, M. A. Arrington, who are currently completing their dissertations on Ebla graphemics, onomastics, and name-giving, respectively, and who have been preparing the electronic publication of the data base with the assistance of Alfonso Archi and Lucio Milano. See for now Platt 1988; Platt and Pagan 1990.

[4] I wish to stress that my personal contribution has been in the articulation of the overall system design for both *Cybernetica Mesopotamica* as a whole and the *Ebla Electronic Cor-pus* in particular; in the definition of the linguistic codes illustrated here, with regard to both their internal coherence as a unified linguistic system and their suitability for electronic data process-ing; and in the writing of the programs which allow the preliminary manipulation and publication

I will first address some preliminary issues which pertain to general concepts of data processing of cuneiform texts, as I have been applying them within the framework of *Cybernetica Mesopotamica*. The most-apparent dimension of the project is the publication of data in machine-readable format. Simply put, this means that data are distributed on disk,[5] practically at no cost and with all the attendant advantages made possible through the kind of electronic processing that can be applied to them. But three concomitant factors are, in my view, of even greater significance for such an endeavor to be truly successful. The first is the care taken in designing the format the data should take; the second, the substantive shape of the data themselves; and the third, the identification of channels for proper data utilization.

As for the first point, the coding of the data is much more complex than a simple matching of computer characters with diacritical marks or the introduction of ad hoc codes to express grammatical parsing. To achieve a more-effective manipulation of the data, it is important that the coding be construed as a regular grammar, aiming for both substantive comprehensiveness and structural coherence. It is also important that such coding be as transparent as possible and clearly documented, so that users may handle it to their best advantage and so that updates may easily integrate not only new data but also new codes as part of a coherent and well-designed system. This concern for structural coherence is particularly important if one wishes for the electronic analysis of the data to be far-reaching and fully effective.

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As for the second point, the data that we present in disk format are veritable text editions, with a strong emphasis on the philological dimension. This is apparent in a number of ways. The production of detailed word and sign indexes highlights inconsistencies of transliteration which are either harmonized or corrected, as the case may be; a large number of collations were initiated as part of this process of text editing, and while this has required much time and coordination of efforts with Archi and Milano, it has resulted in a vastly improved documentary base. It also appeared desirable to include in the electronic transliteration system a higher degree of precision in rendering graphic details, whether or not they are of immediate graphemic import—for instance in rendering cuneiform digital notation. While these details render the electronic transliteration more complex than its standard printed counterpart, they may be filtered out at will depending on the degree of precision one wishes in analyzing the data.

As for the third point, the issue is: what kind of utilization can best be made of data published in the electronic medium? Even a minimum of computer literacy indicates that one can easily perform such tasks as word searches, not otherwise possible when data are available only in standard printed format. More complex tasks, on the other hand, require both a certain expertise in data processing and a considerable time expenditure in "massaging" the data, as the lingo puts it, that is, in adapting the continuous text string to the requirements of any given program. It is just such preliminary "massaging" that I intend to perform for the user's benefit. My goal, then, is to accompany the data with a minimum of attendant programs, which will assist users in preparing the data for utilization with other programs of their choice; beyond that, my programs also allow a "turn-key" type of utilization, that is, one that can be implemented without programming expertise by following step-by-step instructions. The first type of program does such manipulation as filtering codes and characters, or formatting the data for utilization with standard word processors and data-base management systems. The second type of program provides indexes, concordances, and simple computations of the type illustrated in part in the printouts given in the tables below. These outputs are fairly rigid in scope, in that parameters are fixed and allow relatively few choices; but they meet the basic needs for which the data base has been designed in the first place, and well demonstrate the real quantum leap that is possible in data analysis through electronic data processing.

One further aspect that distinguishes the *Ebla Electronic Corpus* is that our project is being developed in close concert with the team from the University of Rome that is responsible for the primary publication of the data, and is thus in effect an official publication of the Ebla expedition itself. This guarantees a unique degree of control on the documentary accuracy of the data; it also means that we are able to include names from texts currently being prepared for publication as well as from texts already published. An important consequence of this coordination with the Rome team is that the flow of primary data is on a par with the publication of the texts in the series *Archivi Reali di Ebla: Testi*, making our data base uniquely comprehensive and up-to-date.

Finally, the point should be made that, while the emphasis of the project is on the publication of computer disks, there will also be accompanying volumes (to appear in the series *Cybernetica Mesopotamica: Manuals*) which will serve especially in the initial stages to present in traditional style the data provided on disk and the results which can be derived from the application of the relevant programs. As both aspects (data structure and program application) become more familiar to scholars, one will be able to dispense more and more with the printed version and to rely almost exclusively on disks.

The correlation of the various goals indicated above has entailed a certain delay in the progress of our work. The first objective of the *Ebla Electronic Corpus* is the primary publication of the data. The disks with the electronic version of ARET 1–4 have been ready for a while, except for a number of collations that need to be added. We also need to complete an accompanying volume which will explain in detail the nature of the data on the disks.[6] The volume, ARET 9 (Milano 1990), is accompanied by a disk edition which is distributed simultaneously with the printed volume.

The second objective of the *Ebla Electronic Corpus* is the application of special types of analysis to the data. The two major types underway at present are graphemic and onomastic analysis. It is on the latter aspect that the rest of this article will concentrate.

Work on the *Ebla Electronic Corpus* has been carried out so far with the financial assistance of the Packard Humanities Institute, the Academic Senate of the University of California, Los Angeles, and the Ambassador International Cultural Foundation. Funding is, however, limited, and this has slowed the progress of our project. Fortunately we can count on the very active collaboration not only of graduate students who are working on their dissertations (Platt, Pagan, and Arrington), but also of our colleagues in Rome, Archi and Milano. Pelio Fronzaroli has also indicated his willingness to assist us, as the project advances, in the area of linguistic analysis of the onomastic data. To all these institutions and individuals I wish to express my heartfelt personal gratitude.

## 2. Onomastic Analysis of Ebla Personal Names: Linguistic Considerations

An in-depth analysis of the personal names from Ebla will provide the single most important resource for a fuller understanding of the linguistic reality at Ebla, since the onomastic data are the major source of information in that respect. While indexes of names are published with every new text edition,

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[6] Platt, Pagan, and Arrington forthcoming. An ancillary publication which is almost completely ready for publication is Platt forthcoming; it contains an exhaustive bibliographical listing of more than one thousand titles of all publication of primary data on Ebla, and all pertinent secondary literature. Those interested in further information on these publications and wishing to be placed on a mailing list for future announcements should write to J. H. Platt, Assistant Editor, Cybernetica Mesopotamica, IIMAS, POB 787, Malibu, CA 90265.

the linguistic interpretation that accompanies them is generally selective. And while important and comprehensive studies on Ebla onomastics have appeared, they either stress the interpretive and linguistic aspects more than the documentary aspect (such as the many important studies of Gelb and Fronzaroli) or they provide a preliminary overview rather than a systematic handling of the data (such as Krebernik 1988). Our project aims at filling this gap by establishing an all-inclusive repertory of text occurrences and of linguistic interpretations for the Ebla corpus as a whole. *Onomastic Repertory of Ebla* is based on a systematic culling of the data from the text editions and of the interpretations from the available secondary literature, with a special effort at integrating the underlying graphemic and prosopographic dimensions.

The *Repertory* is conceived as the publication of a system of interrelated data bases. While publication as such will only be possible at some later date, the criteria which define its format are already well established since they have been designed as a function of data entry, and *vice versa*. In point of fact, the published *Repertory* and the computer data bases are mirror images of each other, or different embodiments of the same conceptual design. In the presentation that follows I will describe this conceptual design by referring to both the *Repertory* as a static published volume and to the data bases as dynamic electronic files.

## 2.1. Primary Data Used

The *Repertory* will include all personal names contained in specified segments of the inventory of the Ebla texts, and it will provide a systematic linguistic analysis for all such names in the measure in which they are understood. While our main interest, and the largest body of evidence in the corpus, pertains to Semitic personal names, we will include in the documentary section all proper names, that is, divine names, geographical names, and month names, as well as personal names. The textual segments, or sub-corpora, chosen for analysis will be closely correlated to the program of publication of definitive text editions, both in printed form as ARET and in electronic format as *Cybernetica Mesopotamica: Texts (CMT)*.

Specifically, the *Repertory* will cull all the names contained in ARET 1–4 and 7–10. We will also excerpt names from other publications of texts, as well as from articles which make available primary editions of specific texts (especially from the journal *Studi Eblaiti*). Some of the ARET volumes in course of publication will be available to the project in manuscript or proof form, in particular volumes 9–10. In every case, we will rely heavily on collations from the original, so as to insure an even philological quality to our collection of names.

The total number of name occurrences which have already been entered in the documentary data file by Platt and Pagan is about twenty thousand items.[7]

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[7] The section from the documentary data base given as table 1 includes 15,039 names, but this particular listing was produced in 1988.

An approximate estimate of the number of names as distinct linguistic items is about five thousand. It is difficult to gauge the eventual total with any degree of precision before the research is actually completed, because the concept of "element," as explained below, includes components of personal names which will be isolated from the names following our research; also, part of the data on which the project will draw is still in course of publication.

The pertinent secondary literature will also be studied systematically, and all acceptable interpretations included and acknowledged. References to such interpretations will be given in the final version of the *Repertory* (they are not included in the samples given below) and will be part of a special section of the data base, so that not only the primary data (i.e., the names themselves) but also the interpretive references will be available on magnetic media for easy updating. Where multiple interpretations are possible, they will all be included side by side, using our judgment as to which ones are most plausible.

## 2.2. *Methods of Analysis*

The following major levels of analysis are being applied systematically to the writing and the language of the names: graphemics, paleography, phonology, morphology, syntax or name formation, and semantics. We include prosopographic information to the extent described below. We only occasionally address questions of semiotics (name-giving)[8] and the like.

*Prosopography* will play a significant role insofar as it will assist in identifying different text occurrences of a name as belonging to the same name-bearer, thus requiring that they be considered as linguistic variants of the same name (except in cases of nicknames, double names, or the like). For instance, when the same individual is called *Iš-da-ma-*[d]KU.RA, *Uš-du-*[d]KU.RA, and *Uš-dum-*[d]KU.RA in three different texts,[9] one must find an onomastic solution for the divergence of forms attributed (prosopographically) to the same name-bearer.

*Graphemic* control is of paramount importance for a correct evaluation of the onomastic evidence, as the evidence just adduced from prosopography makes amply evident. Besides correlation of variant writings for names attributed to the same individual, the more general concern must be to establish patterns of distributional correlations among signs. The fully computerized data base of Ebla texts already at our disposal and on which Platt is currently working provides the best tool for such an assessment of distributional possibilities.

*Paleographical* and *philological* questions that arise from an in-depth onomastic analysis are given particular attention, and in this respect the collaboration of Archi and Milano is especially invaluable. Both through their direct

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[8] My student Mark Arrington is working on a doctoral dissertation dealing with name-giving as found in the third-millennium Semitic milieu.

[9] ARET 9:37, 38, and 40, respectively. The names belong to a list of DAMS of Irkab-Damu, and they occur each time in the same relative position in the list. I owe this example to the courtesy of Platt and Pagan, who have established a long list of such correlations.

oversight of the expedition archives (photographs and files), and through Archi's work at the museums in Aleppo and Idlib where the original tablets are stored, collations are an integral part of the way in which our data base is established.

The *grammatical* analysis is based on a coding system which identifies each significant element on the phonological, morphological, syntactic (i.e., pertaining to name composition), and lexical level. The encoding manual, the use of which is exemplified in the brief samples given below, already has been tested over a relatively long period of time, and should serve well for speedy and effective data entry. In practice, the manual translates (with modifications suited to accommodate Eblaite and Amorite peculiarities) into a coherent system the overall structural understanding of Akkadian which I have developed in my forthcoming *Structural Grammar of Babylonian*. I will not illustrate here the nature and structure of this coding system, because to do so would require an amount of detail clearly beyond the scope of the present article, but full details will eventually accompany the publication of the onomastic data base. The various interpretations found in the literature are being translated into this system, in order to provide comprehensive access to the current scholarly understanding of Ebla onomastics. Beyond that, our own analysis is given wherever possible. The published data base will include both the body of scholarly interpretations and our own, according to selective criteria which will be decided upon as the work progresses. The process of data entry is being carried out by Pagan.

The data are filed in three major, interrelated data bases—one dealing with documentary and prosopographic evidence, the second with whole names as linguistic items, and the third with individual elements as linguistic components of the names. More details on the contents of these data bases and on their interconnections will be given presently. At this point, it may be well to address the issue of the depth and scope of the analysis planned for the names. In general, the approach we propose to follow is situated half-way between that represented by extensive name indexes (such as the Mari *Répertoires*) on the one hand and fully analytical studies on the other (such as my own *Amorites of the Ur III Period*, H. Huffmon's *Amorite Personal Names*, or similar studies on onomastics). It will thus be similar to that followed by Gelb in his *Computer-Aided Analysis of Amorite*, except that it will be more extensive in its linguistic categorization and fully documented for its interpretive choices in terms of comparative materials. In any case, the final result will be much more than a glossary, because it will include a full grammatical categorization, with corresponding sorts by pertinent categories.

## 2.3. *The Documentary Data Base (Table 1)*

The structure of the individual data bases and the nature of their interrelationship may be discerned by viewing the tables included with this article. These sample printouts present the data as they will eventually appear in the printed *Repertory*, and are a distillate of the most-important categories contained in the data bases. While they do not exhaust by any means the potentiality of the

TABLE 1. *Documentary Data Base: Text Occurrences and Prosopography*

| Template[a] | Sq#[b] | Reference | Transliteration | Pub[c] | Txt[d] | Prv[e] | Date | Sex[g] | ■a Age[h] ■k Kin ■o Occup[i] ■p Prov[j] | Notes[k] |
|---|---|---|---|---|---|---|---|---|---|---|
| ꝿa₃-da-hu | 15 | 3.800.r.3,6' | ꝿa₃-da-hu | T | txtls | E | | | ■p du-ub | |
| *4 | 16 | 3.2.r.3,7' | ꝿa₃-da-hu | T | txtls | E | | | ■p du-ub | |
| | 17 | 3.63.r.3,6 | ꝿa₃-d[a-hu] | T | txtls | E | | | ■p du-ub | |
| | 18 | 4.19.r.1,5 | ꝿa₃-da-hu | T | txtls | E | | | ■p du-ub | |
| ꝿa₃-da-LUM | 19 | 8.540.v.17,8 | ꝿa₃-da-*LUM | T | txtls | E | | | | |
| ꝿa₃-da-mi-gu | 20 | 1.8.v.7,20 | ꝿa₃-da-mi-gu | T | txtls | E | ITI ZA-*LUL | | ■k ib-dur-da-gan DUMU-NITA ꝿa₃  ■o NAR | |
| | 21 | 7.81.r.1,3 | ꝿa₃-da-mi-gu | T | metals | E | | | ■o NAR | |
| ꝿa₃-da-mi-gu₂ | 22 | 3.498.v.2,2' | ꝿa₃-da-mi-gu₂ | T | txtls | E | | | ■o NAR | |
| ꝿa₃-da-ri₂-ba | 23 | 1.15.r.8,3 | ꝿa₃-da-ri₂-ba | T | txtls | E | ITI ig-za | | ■p ar-ha-du | |
| ꝿa₃-da-rum₂ | 24 | 4.11.r.2,13 | ꝿa₃-da-rum₂ | T | txtls | E | | | ■o LU₂ iš-ra-il | |
| ꝿa₃-da-ša | 25 | 1.4.v.6,6 | ꝿa₃-da-ša | T | txtls | E | | | ■k šeš-2-IB | |
| *72 | 26 | 1.4.v.7,5 | ꝿa₃-da-ša | T | txtls | E | | | ■k LU₂ ib-gi | |
| ꝿa₃-da-še₃ | 98 | 1.2.r.5,6 | ꝿa₃-da-še₃ | T | txtls | E | ITI MAXGANA₂-GUDU₄ | | | |
| *17 | 99 | 1.6.v.5,9 | ꝿa₃-da-še₃ | T | txtls | E | ITI za-*LUL | | ■k šeš-2-IB | |
| ꝿa₃-daš | 120 | 9.66:v.5,15 | ꝿa₃-daš | T | rations | E | | | | |
| *30 | 121 | 9.68:v.8,5 | ꝿa₃-daš | T | rations | E | ITI-ᵈ*AMA-ra | | | |
| ꝿa₃-daš-še₃ | 151 | 3.458.r.4,10 | ꝿa₃-daš-še₃ | T | txtls | E | | | ■k šeš-2-IB | |
| a-a-lu | 536 | 3.644.r.2,5 | a-a-lu | T | txtls | E | | m | ■k A-MU in-gar₃  ■o LU₂-KAR  ■p kak-mi-um | |
| a-bu₃-uš-gu₂ | 786 | 1.4.v.9,12 | a-bu₃-uš-gu₂ | T | txtls | E | | | ■p zu-gu₂-lu | |
| a-mur-da-mu | 1264 | 8.521.r.7,6 | a-mur-da-mu | T | txtls | E | | | ■o LU₂ KAS₄-KAS₄  ■p ma-ri₂ | |
| ar-si-a-hu | 1915 | 8.523.r.7,3 | ar-si-a-hu | T | txtls | E | | | ■o MAŠKIM  ■p gar₃-ga-mi-is | |
| *14 | 1919 | 76.G.2143.r.1,4 | ar-si-a-hu | T | agr | E | ITI za-*LUL | | ■p ib-la | |
| ba-du-lum | 2030 | 2.23.r.2,4 | ba-du-lum | T | anim | E | ITI I₃-NUN | m | ■o UGULA ENGAR | |
| bu-₃-da-*NI | 2553 | 3.460.r.3,4 | bu₃-da-*NI | T | list | E | ITI za-ꝿa₃-tum | | ■o UGULA ŠE ꝿa₃-mi-zu | |
| bu₃-da-na-im | | 1.8.v.13,22 | bu₃-da-na-im | T | txtls | E | | | ■p *HUB₂.*KI u₃-ti-gu₂ | |
| da-hir₂-li-im | 2828 | 75G.1452.r.4,2 | da-hir₂-li-im | T | legal | E | | f | ■k DUMU-MI₂ i-ri₂-ik-da-mu  ■p ib-la | |
| du-bi₂-zi-kir | 3518 | 3.59.r.6,4' | du-bi₂-zi-kir | T | txtls | E | 1 MU TIL ma-ri₂ | | ■o UGULA KA₂ kak-mi-um | |
| du-bu₃-i-sar | 3802 | 1.17.r.9,9 | du-bu₃-i-sar | T | txtls | E | | | ■k DUMU-NITA il₂-zi  ■o LU₂ du-nu | |
| *2 | 3803 | 3.59.r.7,3' | du-bu₃-i-sar | T | txtls | E | ITIgi-*NI | | ■k DUMU-NITA *NE-zi  ■o LU₂ du-nu | |
| du-si-gu₂ | 3896 | 3.660.r.2,1' | du-si-gu₂ | T | txtls+ | E | | f | ■k AMA-GAL EN  ■p ib-la | |
| en-na-BE | 4210 | 3.585.r.2,5 | en-na-BE | T | metals | E | ITI i-si | m | ■o UGULA SIMUG | |

# TABLE 1. (cont'd.)

| Template[a] | Sq#[b] | Reference | Transliteration | Text | | | | Name-bearer[f] | | | | | Notes[k] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Pub[c] | Txt[d] | Prv[e] | Date | Sex[g] | ■a Age[h] | ■k Kin | ■o Occup[i] | ■p Prov[j] | |
| *84 | 4265 | 75G.1353.v.1,7 | en-na-BE | T | metals | E | | m | | ■k šeš $ri_2$-ma | ■o ha-su-wa-an | | |
| en-na-da-gan | 4311 | 75.G.2367.r.1,2 | en-na-da-gan | T | letter | M | | m | | | ■o EN $ma$-$ri_2$ | ■p $ma$-$ri_2$ | |
| en-na-*NI | 4642 | 1.1.v.9,5 | en-na-*NI | T | txtls | E | | | | | ■o DI-$KU_5$ | | |
| *6 | 4643 | 1.1.v.9,9 | en-na-*NI | T | txtls | E | ITI za-*LUL | | | | | ■p ma-za-lum du-lu | |
| | 4676 | 2.6.r.4,4 | en-na-*NI | T | metals | E | ITI za-*LUL | | | | ■o MAŠKIM SAGI | | |
| | 4816 | 4.15.r.10,10 | en-na-*NI | T | txtls | E | | | | | ■o da-nu | | |
| gal-iš-hi | 5647 | 75.G.1233.r.7,2 | gal-iš-hi | T | metals | E | | | | | | ■p $MA_2$-HU mu-nu-ti-um | |
| i-da-ki-mu | 6792 | 75.G.521.v.6,2 | i-da-ki-mu | T | rations | E | | | | | | ■p ib-la | |
| i-$de_3$-ni-ki-mu | 6866 | 1.8.v.8,6 | i-$de_3$-ni-ki-mu | T | txtls | E | ITI ŠE-$GUR_{10}$ | | | ■a *NE.*DI TUR | | | |
| i-sa-ni-ki-mu | 7319 | 1.17.r.9,14 | i-sa-ni-ki-mu | T | txtls | E | ITI gi-*NI | | | ■a $LU_2$ $gu_2$-*LUM | ■o SA-$ZA_0$(LAK384) | | |
| i-ti-$^d$eš$_4$-dar | 7578 | 1.5.5.v.11,23 | i-ti-$^d$eš$_4$-dar | T | txtls | E | ITI gi-*NI | m | | ■k DUMU-NITA wa-ra-an | | ■p bur-ma-an | |
| i-za-iš-lu | 7976 | 2.44.v.3,2 | i-za-iš-lu | C | metals | E | ITI za-*LUL | | | | | | |
| $ir_3$-$am_6$-da-mu | 9783 | 3.877.v.1,3' | $ir_3$-$am_6$-da-mu | T | txtls | E | | | | | | ■p $LU_2$-KAR a-la | |
| $ir_3$-$am_6$-$gu_2$-nu | 9816 | 8.527.r.12,2 | $ir_3$-$am_6$-$gu_2$-nu | T | txtls | E | | | | | ■o MAŠKIM ki-ti-ir | ■p a-du-$bu_3$ | |
| $ir_3$-kab-da-mu | 10109 | 75.G.2342.r.4,6 | $ir_3$-kab-da-mu | T | letter | E | | m | | | ■o EN ib-la | ■p ib-la | |

a. The word *template* refers to the transliteration without breaks, emendations, punctuation marks, and the like. For names which share the same template, the template itself appears only in the first line, followed by the total number of text occurrences.

b. "Sq#" refers to the internal sequential number of name occurrences. At this point, the number is that of our preliminary list of 15,309 name occurrences. The selection of names given here was so chosen as to give an idea of the organization of the material.

c. "Pub" refers to the type of publication available for the text in question.

d. "Txt" refers to the type of text to which the text in question belongs. Categories given here are self-explanatory. It is expected that finer differentiations will be made in the final version of the *Repertory*.

e. "Prv" refers to the provenience of the text: in the present sample only E for Ebla and M for Mari are given. In the final version, finer differentiation will be made, as far as possible: for instance, a distinction will be made between the archival provenience within Ebla itself.

f. Prosopographic information is given here. Since one hardly ever finds information about each of the subcategories listed below, they are lumped together in sequential order, separated only by a distinctive graphic marker. The data base on disk has of course different field entries for each subcategory.

g. This is not the grammatical gender of the name, but the sex of the name-bearer when known.

h. Direct or indirect notes about age as apparent from the text.

i. The profession or occupation of the name-bearer as given in the text.

j. Provenience of the name-bearer as explicitly given in the text.

k. A further field of remarks will be added here in the final version of the *Repertory*. The actual remarks will be given in a separate text file to which an appropriate number will refer in this column.

electronic exploitation of such data bases, they serve to convey an image of their configuration.

The first major component contains the documentary data base. As seen in table 1, this data base provides an alphabetical list of all name occurrences, with textual and prosopographic information. Names are subsumed under individual graphemic "templates," that is, a standardized form of transliteration which omits information about textual details such as paleographical variations, breaks, or emendations. Where more than one text occurrence is found for a template, the total is given. It must be noted that such a template is not necessarily identical with the concept of a name as a linguistic item; rather, it must be understood as a graphemic concept, which subsumes textual, but not phonemic variants. Thus from the examples given in table 1, the graphemic templates *ʾa₃-da-ša, ʾa₃-da-še₃, ʾa₃-daš*, and *ʾa₃-daš-še₃* may all correspond to an individual onomastic item, but they are graphemically distinct, and are so identified in the data base.

Text occurrences are sorted by publication reference within templates (some occasional discrepancies in the sample on table 1, e.g., the entry with sequential number 15, reflect the fact that the list used for the sample is taken from our actual working files, which have not yet been fully edited). An internal sequential number is assigned to each text occurrence, for ease of reference.

Details of textual information are listed in tabular form under the categories of publication type, text type, provenience of the text, and date of the text (a brief explanation of these categories is provided in the footnotes to table 1). The final edition will, of course, contain a full discussion of these categories, as well as a listing of the codes for each category. An interesting utilization of this kind of information for onomastic analysis is provided in table 7, which shows the distribution of names that occur exclusively or prevalently in the "small" archive at Ebla. (This table is an indication of the type of specialized elaboration that users will be able to perform on the data distributed as electronic files on disk.)

Prosopographic details are contained under the heading "Name-bearer" in table 1. In the interest of space economy, these data are not listed in tabular form, since it is seldom that information is actually found for each of the categories envisaged. The format of the final publication may change even further in this respect if it turns out that available information is so scarce that too much empty space would occur on each page. An alternative way of presenting this information might then be in the form of footnotes.

An important category omitted in the present layout of table 1 is a column referring to notes (see tables 2–3). These will be presented in discursive format at the bottom of each page and will either expand on coded information as tabulated in the charts, or contain information about categories which cannot be conveniently presented in tabular form.

### 2.4. *The First Onomastic Data Base: Names (Table 2)*

The second major component contains two interrelated data bases, which deal with onomastic analysis proper. The first onomastic data base includes the

names as linguistic terms (an example of this format is found in table 2). The names are here listed by graphemic template, split into its component elements. Doublets, that is, multiple graphemic templates of what is assumed to be the same name, are so identified. Alternative linguistic interpretations are possible, on two levels, graphemic or phonemic. As an example of alternative graphemic interpretation one may quote *I-bi$_2$-Si-piš* and *I-bi$_2$-Zi-kir* (this example is used only for the sake of argument, since the former reading is no longer plausible). As an example of alternative phonemic interpretation one may quote *ʾamur-Damu* (with short *a*, for the imperative) and *ʾāmur-Damu* (with long *ā*, for the preterite). While our working data base contains all possible interpretations, the published version will be edited so as to avoid fanciful and improbable interpretations.

The name transcription encapsulates the linguistic interpretation of the name, which is given in more detail for each component in the element data base (see §2.5).

The next column identifies the structure of the name, by indicating the nature of the elements and their sequential order. The elements are identified as to the part of speech (verb, noun, etc.) with some additional information (e.g., the person for a finite form of the verb), depending on the frequency of each type.

Since hypocoristic afformatives are to be understood at the level of the name as a whole rather than as separate elements, they are identified in a separate column within this data base.

Interpretive references are added wherever pertinent. These references will also include sigla of individual contributors to the project when their interpretation is considered to be significantly personal.

One last column (which is missing in the sample given on table 1) will contain references to discursive notes on specific topics which cannot otherwise be given in tabular form. The notes will appear eventually at the bottom of the page.

## 2.5. *The Second Onomastic Data Base: Elements (Table 3)*

The second onomastic data base of the individual elements as linguistic components of the names is found in table 3. The elements are listed alphabetically according to their graphemic template. Where graphemic boundaries do not overlap with phonemic boundaries, a vertical bar | is used; for example, within the name *a-mu-rum$_2$* we may isolate a hypocoristic ending *-um* which does not correspond to an autonomous grapheme; hence the template for the name will be rendered as *a-mu-r|um$_2$*.

Primacy is given to the graphemic template rather than to the transcription for two reasons. First, this maintains a clearer distinction between the interpretive and the documentary level. Second, it will be easier to relate each element to the documentary data base, where full information can be found for textual and prosopographic matters (to test for instance whether certain linguistic features occur only with certain types of name-bearers or certain types of texts).

TABLE 2. *Onomastic Data Base: Names*

| Template[a] | | | | Db | Gr | Mr[b] | Transcription[c] | NmStr[d] | Notes[e] |
|---|---|---|---|---|---|---|---|---|---|
| Elem. 1 | Elem. 2 | Elem. 3 | Hypoch. | | | | | | |
| *a-ha* | *ka* | *il* | | | | | *aha-ka-il* | n–pp–dn | |
| *a-mu-r\|* | | | *\|um$_2$* | 1 | | a | *ʾāmur-um* | v1–HY | |
| *a-mu-r\|* | | | *\|um$_2$* | 1 | | b | *ʾamur-um* | v2–HY | |
| *a-mu-r\|* | | | *\|u$_{12}$-um* | 2$^f$ | | a | *ʾāmur-um* | | |
| *a-mu-r\|* | | | *\|u$_{12}$-um* | 2 | | b | *ʾ-amur-um* | | |
| *dar-kab* | *da-mu* | | | | | | *tarkab-damu* | v3–dn | Fronzaroli 1979: 275 |
| *i-bi$_2$* | *da-mu* | | | | | | *ibbi-damu* | v3–dn | |
| *i-bi$_2$* | *ku-ra* | | | | | | *ibbi-kura* | v3–dn | |
| *i-bi$_2$* | *ZI-*KIR | | | | A$^g$ | | *ibbi-sipiš* | v3–dn | cf. Gelb 1981: 21–22 |
| *i-bi$_2$* | *ZI-*KIR | | | | B | | *ibbi-zikir* | v3–dn | |
| *ir$_3$-kab* | *ar* | | | | | | *irkab-ar* | v3–dn | |
| *ir$_3$-kab* | *da-mu* | | | | | | *irkab-damu* | v3–dn | |
| *ir$_3$-kab-b\|* | | | *\|u$_3$* | | | | *irkab-u* | v3–HY | |
| *iš-ma$_2$* | *da-mu* | | | | | | *išma$^c$-damu* | v3–dn | |
| *iš-ma$_2$* | *gar$_3$-du* | | | | | | *išma$^c$-qardu* | v3–dn | |
| *iš-ma$_2$* | *il* | | | | | | *išma$^c$-il* | v3–dn | |
| *iš-ma$_2$* | *li-im* | | | | | | *išma$^c$-lim* | v3–dn | |
| PUZUR$_4$-RA | $^d$*ma-lik* | | | | | | *ṣilli-malik* | n–n | |
| *ra-i-z\|* | | | *\|u* | 1 | | | *rāʾiṣ-u* | n–HY | Krebernik 1988: 6 |
| *ra-i-z\|* | | | *\|u$_2$* | 2 | | | *rāʾiṣ-u* | | |
| *ra-i$_3$-z\|* | | | *\|u$_2$* | 3 | | | *rāʾiṣ-u* | | |

TABLE 2. *Notes*

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a. The transliteration template is identical to the one found in the Documentary Data Base (table 1), except that the elements are split and placed in different columns. Where the boundary between elements does not match graphemic boundary, then the divider | is used. For example, $r\|um_2$ is to be read as a single sign $rum_2$. Small capitals in transliteration preceded by an asterisk are used to identify readings with unknown or alternative graphemic values. They are thus to be distinguished from the small capitals used for logograms. All the conventions used to render as closely as possible the graphemic structure of the data are fully discussed in the user's manual.

b. Db = doublet: double (or multiple) writing of the same name, with sequential numbering. Gr/Mr = graphemic/morphemic alternate interpretation: different readings of the same name occurrence, yielding different name items (lettered sequentially in upper case for graphemic, and lower case for morphemic variants).

c. The elements are here given in phonemic transcription, identical to that found in the Element Data Base (table 3), where one will find full lexical and grammatical information about each individual element.

d. Name Structure: v1/2/3 = finite verbal form, 1st/2d/3d person; dn = divine name; n = noun; pp = preposition; HY = hypochoristicon. The final version will contain a full typology of name formation, and the codes will be fully explained.

e. In the final version of the *Repertory*, notes will contain full discursive information about treatments of the names in secondary literature, comparative data, and the like. They will be placed at the bottom of the page.

f. The second occurrence of a doublet may be traced back to the first occurrence (where not in immediate proximity, as is the case here) through the transcribed form of the name. The name structure, however, is not repeated.

g. The *Repertory* will contain readings which are not considered plausible, such as this one, whenever it is deemed that they deserve special mention. The footnotes will indicate in some detail what the various degrees of probability are, and will refer to pertinent discussions.

## TABLE 3. *Onomastic Data Base: Elements*

| El | Template[a] | Gr | Lx | Mr[b] | NmStr[c] | Pos[d] | Transcr[e] | Translation | Internal Inflection | | | St[h] | T[i] | External Inflection | | | | Notes[k] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | LPT[f] | Root/Base | Meaning[g] | | | P | N | G | C[j] | |
| *a-mu-r\|* | | | | a | v1–HY | 1 | *ʾămur* | I see | s v * | *ʾmr* | to see | b | 2 | 1 | s | c | | |
| *a-mu-r\|* | | | | b | v2–HY | 1 | *ʾamur* | see! | s v 1 | *ʾmr* | to see | b | 1 | 2 | s | m | | |
| *da-mu* | | | 1 | | v3–dn | 2 | *damu* | clan | s n p | *dam* | blood | 1a | n | | s | m | n | Krebernik 1988: 80 |
| *da-mu* | | | 2 | | v3–dn | 2 | *damu* | Dumu | ? n 1 | *dumu* | Dumuzi | | n | | s | m | | Krebernik 1988: 80 |
| *i-bi₂* | | | | | v3–dn | 1 | *ibbi* | he called | s v d | *nb:* | to call | b | 2 | 3 | s | m | | |
| *ir₃-kab* | | | | | v3–dn | 1 | *irkab* | he rode | s v * | *rkb* | to ride | b | 2 | 3 | s | m | | |
| *iš-ma₂* | | | | | v3–dn | 1 | *išmaᶜ* | he heard | s v * | *šmᶜ* | to hear | b | 2 | 3 | s | m | | |
| *ra-i-z\|* | | | | | n–HY | 1 | *rāʾiṣ* | helper | s n * | *rʾṣ* | to help | pa | n | | s | m | | |
| *ZI-*KIR | A | | 1 | | v3–dn | 2 | *zikir* | name | s n * | *zkr* | to name | 4i | a | | s | m | | |
| *ZI-*KIR | A | | 2 | | v3–dn | 2 | *zikir* | male | s n p | *zikar* | male | 4ia | a | | s | m | | |
| *ZI-*KIR | B | | 3 | | v3–dn | 2 | *sipiš* | sun | w n p | *sipiš* | sun | 4i | a | | s | m | | |

The layout given here, as with that of the other two data bases, reflects as much the structure of the data base in its current formulation, as a preliminary draft for the final publication in book format. The element data base presented on this table is more indicative of the data-base format than of its published version counterpart. In particular, there are too many codes which cannot be resolved without taking up too much space. A more proper use of these codes is illustrated below in the tables which present the different possibilities of data-base utilization in computer format. Once the data base is completed, and after it has been used on an in-house basis while preparing the data base itself, we will be in a better position to make a decision as to the proper selection of information to be retained for presentation in the published version of the data base. It must also be borne in mind that a proper utilization of the vast amount of information provided in the data base can only be had with reference to the user's manual, where the codes (and their underlying logic) are fully explained. These tables must be viewed only as indicative of method. In this respect it may further be noted that the few examples shown are meant to reflect the variety of different cases which the data-base system is set up to handle, and do not have any particular substantive value.

TABLE 3. *Notes (cont'd.)*

a. The transliteration template is identical to that found in tables 1–2. As in table 2, in those cases where the boundary between elements does not match graphemic boundary, the divider | is used. For instance, the full grapheme is $rum_2$ or $ru_{12}$-$um$; the graphemic readings may be obtained from the name data base (table 2).

b. Gr/Mr = graphemic/morphemic alternate interpretation (see table 2 note b). Lx = lexical alternate interpretation: this includes alternate interpretations of the root or base, and as such it is found only here at the level of the element, and not in the name data base.

c. Name Structure: see table 2 note d.

d. Position of the element in question within the name structure given in the preceding column: thus for instance *da-mu* is the second element (position 2) in a name of the structural type v3–dn.

e. This transcription matches the one given in the name data base (where elements are combined to form a whole name).

f. L stands for linguistic affiliation of the element in question: s = Semitic, w = West Semitic, ? = unknown. P refers to the part of speech: v = verb, n = noun, p = pronoun, x = preposition. T stands for the type of word within the part of speech: p = primary (unmotivated) noun, l = loanword, * = strong root, 1/2/3 = 1st/2d/3d weak root, d = double weak root.

g. This column gives the meaning of the lexeme, which is occasionally different from the meaning of the element occurring in the name. This may result from the fact that a root is inflected in the name, or that the meaning of a word within a name is assumed to differ from the meaning of the lexeme as reconstructed through etymology (e.g., *damu* 'blood' as an etymon, but 'clan' within the context of a theophoric name).

h. Stem/pattern: with verbal forms, this column contains codes for the stem, i.e., the verbal conjugations (e.g., b = Basic or G stem). With nominal forms, this column identifies the pattern for nouns derived from roots (e.g., 1 refers to the pattern *pVr*, and 1a indicates vocalism a, hence *par*); it also identifies the shape for unmotivated primary nouns (other than loanwords), e.g., 4i refers to the shape *piris* for *sipiš*.

i. T refers to the tense (for a verb) or state (for a noun). Thus, e.g., 1 = imperative, 2 = preterite, n = normal, a = absolute.

j. P = person (for verbs and pronouns), N = number, G = gender, C = case (for nouns and pronouns only).

k. As with the other data bases, notes will be extensive and will include, especially, references to secondary literature, comparative material, and argumentation. They will be at the bottom of the page.

Next follows a reference to the structural type of name within which the element is attested. This information qualifies each morpho-lexical element in terms of its "syntactical" environment, as it were, by reference to the type of name formation within which it occurs. The full list of actual names which match this structural definition and which contain that particular element is to be found in the name data base described above (see table 2).

The next column gives the phonemic transcription and the translation of the element in question. Where alternate interpretations are possible, these are numbered sequentially within each template. For example, two different transcriptions and translations are registered for $a\text{-}mu\text{-}r|um_2$ and two different translations are registered for $da\text{-}mu$.

The next column identifies the linguistic affiliation of the element in question. While in most cases this might be "Semitic" at best or "unknown" at worst, it will be of interest to note here incidences of West Semitic or Sumerian presence, or the like.

The next six columns deal with the element viewed as a word (internal inflection): part of speech, type of word, root or base, pattern (stem for the verb, noun formation for the noun), and state (for the noun) or mood/tense (for the verb).

Finally, details of external inflection are tabulated in the last four columns (extending notes in the last column): person, number, gender, case. As with the previous two data bases, discursive notes will be appended at the bottom of the page as needed. The footnotes for this concordance will be especially important because they will contain comparative references to other Semitic languages.

*2.6. General Indexes (Tables 4–5)*

Different types of indexes complete the utilization of the data base. General indexes provide a sort of certain types of information in such a way as to make the published data bases more useful. For instance, an index to the name data base will list all name transcriptions in alphabetical order, with a reference to their respective name templates. Similarly, there will be indexes for elements in their phonemic transcription (see a minimal sample in table 4) and for roots (see a minimal sample in table 5), bases of unmotivated nouns, patterns, structural types of name formation, and the like.

Selected tabulations will also be provided (not illustrated in this article). They will contain, for example, computations about frequencies of phonemes (such as are given in Gelb's *Computer-Aided Analysis of Amorite*), morphemes, and lexemes.

### 3. Onomastic Analysis of Ebla Personal Names: Data-Processing Considerations

Both the *Ebla Electronic Corpus* and *Cybernetica Mesopotamica* (the former is a part of the latter) are obviously heavily committed to a computer-oriented

TABLE 4. *Index by Elements*

| Element | Pos[a] | NmStr[b] | Template |
|---------|--------|----------|----------|
| *aḫa* | 1 | n–pp–dn | *a-ḫa-ka-il* |
| *ʾamur* | 1 | v2–dn | *a-mur-da-mu* |
| | 1 | v2–HY | *a-mu-rum$_2$* |
| | 1 | v2–HY | *a-mu-ru$_{12}$-um* |
| *ʾāmur* | 1 | v1–dn | *a-mur-da-mu* |
| | 1 | v1–HY | *a-mu-rum$_2$* |
| | 1 | v1–HY | *a-mu-ru$_{12}$-um* |
| *ʾar* | 2 | v3–dn | *ir$_3$-kab-ar* |
| *damu* | 2 | v1–dn | *a-mur-da-mu* |
| | 2 | v3–dn | *dar-kab-da-mu* |
| | 2 | v3–dn | *i-bi$_2$-da-mu* |
| | 2 | v3–dn | *ir$_3$-am$_6$-da-mu* |
| | 2 | v3–dn | *iš-ma$_2$-da-mu* |
| *ibbi* | 1 | v3–dn | *i-bi$_2$-da-mu* |
| | 1 | v3–dn | *i-bi$_2$-ku-ra* |
| | 1 | v3–dn | *i-bi$_2$-\*ZI-\*KIR* |
| *il* | 2 | v3–dn | *iš-ma$_2$-il* |
| | 3 | n–pp–dn | *a-ha-ka-il* |
| *irʾam* | 1 | v3–dn | *ir$_3$-am$_6$-da-mu* |
| *irkab* | 1 | v3–dn | *ir$_3$-kab-ar* |
| | 1 | v3–dn | *ir$_3$-kab-bu$_3$* |
| | 1 | v3–dn | *ir$_3$-kab-da-mu* |
| *išma$^c$* | 1 | v3–dn | *iš-ma$_2$-da-mu* |
| | 1 | v3–dn | *iš-ma$_2$-gar$_3$-du* |
| | 1 | v3–dn | *iš-ma$_2$-il* |
| | 1 | v3–dn | *iš-ma$_2$-lim* |
| *ka* | 2 | n–pp–dn | *a-ha-ka-il* |
| *kura* | 2 | v3–dn | *i-bi$_2$-ku-ra* |
| *lim* | 2 | v3–dn | *iš-ma$_2$-lim* |
| *malik* | 2 | n–dn | PUZUR$_4$-RA-$^d$*ma-lik* |
| *qardu* | 2 | v3–dn | *iš-ma$_2$-gar$_3$-du* |
| *rāʾiṣu* | 1 | n–HY | *ra-i-zu* |
| | 1 | n–HY | *ra-i-zu$_2$* |
| | 1 | n–HY | *ra-i$_3$-zu$_2$* |
| *sipiš* | 2 | v3–dn | *i-bi$_2$-\*ZI-\*KIR* |
| *ṣilli* | 1 | n–dn | PUZUR$_4$-RA-$^d$*ma-lik* |
| *tarkab* | 1 | v3–dn | *dar-kab-da-mu* |
| *ṭūbi* | 1 | n–dn | *du-bi$_2$-\*ZI-\*KIR* |
| *zikir* | 2 | n–dn | *du-bi$_2$-\*ZI-\*KIR* |
| | 2 | v3–dn | *i-bi$_2$-\*ZI-\*KIR* |
| *zikar* | 2 | n–dn | *du-bi$_2$-\*ZI-\*KIR* |
| | 2 | v3–dn | *i-bi$_2$-\*ZI-\*KIR* |

a. position of the element within the name.

b. Structure of the name. The sort is by position and name structure first, and then by name.

TABLE 5. *Index by Roots*

| Root | Type[a] | Element |
|------|---------|---------|
| ʾmr | 1 | ʾamur |
|  |  | ʾāmur |
| nb: | d | ibbi |
| rʾm | * | irʾam |
| rkb | * | irkab |
|  |  | tarkab |
| šmᶜ | * | išmaᶜ |
| ṭ:b | 2 | ṭūbī |
| ẕkr | * | zikir |

a. Type of root: * = strong; 1/2/3 = 1st/2d/
3d weak; d= double weak.

approach, but with the following provisos. In the first place, our commitment is, if anything, even greater with regard to the substantive aspect of the data. Linguistic considerations set the rules for coding and analysis, and embodiment of these in an electronic format is done simply in order to make use of a better tool, certainly not as an end in itself. Where the tool affects the scholarship is in certain intellectual aspects which are often not sufficiently appreciated when dealing with electronic data processing. At the level of analysis, the rigor of formal correlations, which the electronic medium encourages, calls for greater lucidity in the articulation of grammatical structure. At the level of documentation, we can reach through a vast capillary system to the most-minute bit of information while retaining at the same time a full view of the whole. At the level of the utilization of the data, scholars will find an immensely wider range of opportunities for personal inquiry by pursuing interactive searches with the electronic data bases. Much as a microscope leads to a refinement of any theory based on empirical observation, so the computer leads to a much-heightened ability to correlate data and thereby to a dramatic refinement of our analytical powers. This all goes to say that the intellectual impact of the computer is not so much in the technique itself, but rather in the way in which it leads to a substantial restructuring of our scholarly mental categories.

A second proviso which derives naturally from the first is my concern not so much with state-of-the-art software or hardware, but rather with the most broadly based common denominator in the way of both equipment and programming.[10]

[10] At an earlier stage of the onomastic project we had envisaged a more ambitious system of programming support, which O. Rouault was going to develop and which he has described in 1988. For a number of reasons we have fallen back to a simpler set of programs, which will serve some basic research needs, in the expectation that the highly structured configuration of the data will lead others to develop their own programs.

TABLE 6. *Analytical Elaboration: Reflex.RXD Files*

(Sample elaboration performed on data files provided on computer disks; not intended for publication)

Sort by Part of Speech and Pattern

| PrtSpPtrn | | Root/Base | Meaning | NmStrct |
|---|---|---|---|---|
| i | | ka | like | np–pr–dn |
| total: 1 | | | | |
| n | 2a | aḫ | brother | np–pr–dn |
| | 2i | il | god | np–pr–dn |
| | 4a | qrd | to be heroic | v3–dn |
| | 4a:i | rʾẓ | to help | n–hy |
| | 4ai | mlk | to counsel | v3–dn |
| | 4i | zkr | to name | v3–dn |
| total: 6 | | | | |
| u | 2a | dam | blood | v3–dn |
| | 4i | spš | sun | v3–dn |
| | 4ia | zikar | male | v3–dn |
| | ? | Dumu | Dumu(zi) | v3–dn |
| | ? | kura | ? | v3–dn |
| total: 5 | | | | |
| v | b | ʾmr | to see | v3–hy |
| | b | ʾmr | to see | v1–hy |
| | b | nb: | to call | v3–dn |
| | b | rkb | to mount | v3–dn |
| | b | rkb | to mount | v3–dn |
| | b | ryb | to replace | v3–dn |
| | b | šmᶜ | to hear | v3–dn |
| total: 7 | | | | |
| total words: 19 | | | | |

Sort by Part of Speech and Root/Base

| PrtSp | Root/Base | Meaning | NmStrct | Element |
|---|---|---|---|---|
| i | ka | like | np–pr–dn | ka |
| total: 1 | | | | |
| n | aḫ | brother | np–pr–dn | aḫa |
| | il | god | np–pr–dn | il |
| | mlk | to counsel | v3–dn | Malik |
| | qrd | to be heroic | v3–dn | qardu |
| | rʾẓ | to help | n–hy | ra:ʾiẓ |
| | zkr | to name | v3–dn | zikir |
| total: 6 | | | | |
| u | dam | blood | v3–dn | damu |
| | Dumu | Dumu(zi) | v3–dn | Dumu |
| | kura | ? | v3–dn | Kura |
| | spš | sun | v3–dn | sipiš |
| | zikar | male | v3–dn | zikir |
| total: 5 | | | | |
| v | ʾmr | to see | v3–hy | amur |
| | ʾmr | to see | v1–hy | a:mur |
| | nb: | to call | v3–dn | ibbi: |
| | rkb | to mount | v3–dn | tarkab |
| | rkb | to mount | v3–dn | irkab |
| | ryb | to replace | v3–dn | iri:b |
| | šmᶜ | to hear | v3–dn | yišmaᶜ |
| total: 7 | | | | |
| total words: 19 | | | | |

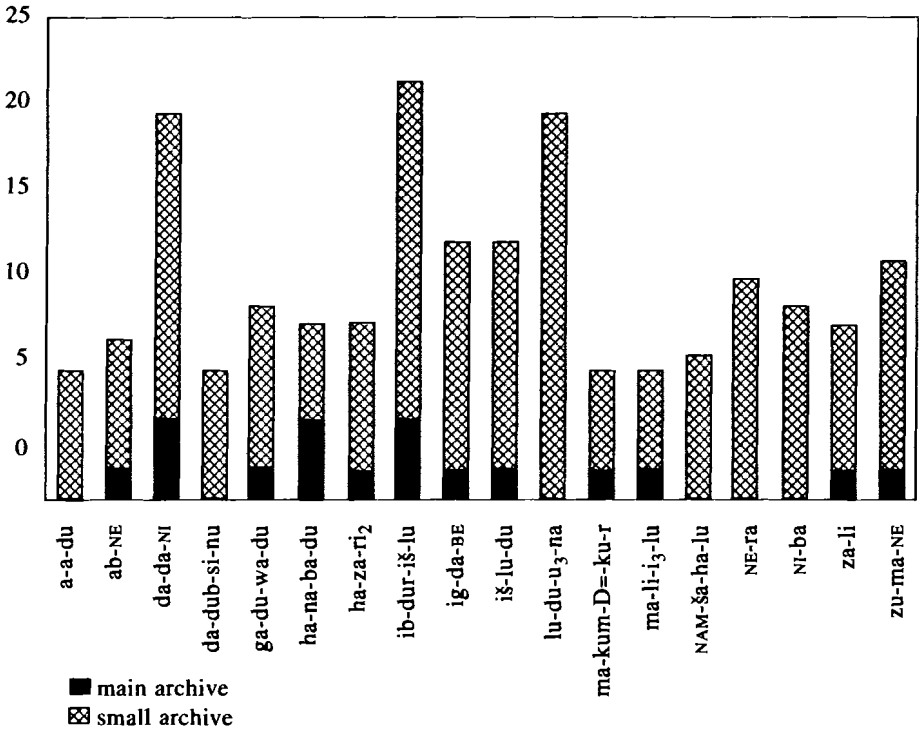TABLE 7. *Statistical Elaboration: Reflex.RXR and .RXP Files*

(Sample elaboration performed on data files provided on
computer disks; not intended for publication)

Distribution of names according to archive

| Name | e1 (main) | e2 (small) | Notes |
|---|---|---|---|
| a-a-du | 0 | 6 | |
| ab-NE | 1 | 6 | |
| da-da-NI | 4 | 16 | |
| da-dub-si-nu | 0 | 6 | |
| ga-du-wa-du | 1 | 9 | |
| ha-na-ba-du | 2 | 7 | |
| ha-za-ri$_2$ | 1 | 8 | |
| ib-dur-iš-lu | 2 | 20 | |
| ig-da-BE | 1 | 12 | text from e1 is a ration text |
| iš-lu-du | 1 | 12 | |
| lu-du-u$_3$-na | 0 | 20 | |
| ma-kum-D=-ku-r | 1 | 5 | |
| ma-li-i$_3$-lu | 1 | 5 | written ma-li-i$_3$-a in e1 |
| NAM-ša-ha-lu | 0 | 7 | |
| NE-ra | 0 | 12 | |
| NI-ba | 0 | 10 | |
| za-li | 1 | 8 | |
| zu-ma-NE | 1 | 11 | |

The real quantum leap vis-à-vis traditional scholarship, it seems to me, is in the restructuring of the data for electronic data processing. Even a simple computer utilization of the data so structured is superior by an order of magnitude to standard (non-electronic) data processing. Hence it seems more useful to aim our system to computer configurations and users' skills at the low end of the spectrum, so as to serve the widest possible range of scholars. The printed output that will be part of our publications especially in the early stages will hopefully be viewed as an inducement toward a more-aggressive exploitation of the data than any merely printed version could ever make possible, however large in size and internally differentiated in structure.

With this in mind, I will describe briefly the nature of the data as distributed on disk. The three data bases described above will be made available on computer disks. The fields for these data bases correspond essentially to the columns as found in the paper edition described above, with the notes appended in separate text files, keyed to the individual entries in the data bases. The obvious difference between the electronic and the printed editions is that the electronic edition will be susceptible to a practically infinite number of correlations that can be established dynamically within the data base itself and, eventually, with other data bases to which it can be related. Two minimal examples of such cor-

main archive
small archive

relations are offered in tables 6 and 7: in a purely indicative manner, these two tables show how special sorts and special statistical tabulations may be created, by using a very simple (and inexpensive) commercial program (Reflex).

The user's manual, which will accompany the disk edition, will not only explain details of the format and of the encoding, but will also show how to prepare the data for their utilization with commercial programs, as just mentioned. The manual will be written in such a way as to assist colleagues who are even minimally acquainted with established data base management systems to concretely make use of the data as proposed in the exemplifications provided.

Explicit statements will be provided about the data structure of the data bases (both for the ASCII and the DBMS versions), so that full independent manipulation of the data will be possible by the users.

Some of the simple programs included will perform a few formatting and indexing operations of the type we are currently using for in-house processing of the data. This includes, for instance, utilities to perform the following tasks: convert double, low ASCII characters to single, high ASCII characters for letters with diacritical marks (e.g., to convert s^ to $\check{s}$); convert numeric sign indexes to subscripts (e.g., rum12 to $rum_{12}$); sort on files with special characters; download special character fonts for dot matrix and laser printers.

Since the disk edition will also include all subsidiary materials given in the printed edition, such as introductions and descriptive chapters, it is apparent that any user with a laser printer will be able to reproduce exactly the text of the

printed volume as published separately. Obviously, this will deal a major blow to the commercial chances of the printed edition—which is precisely why it is expected that we will not be publishing paper editions for very long. After all, no one better than an Assyriologist ought to know that, if we have come a long way from using clay, we can go an equally long way in trading paper for disks!

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