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The Digital Itinerary of the Texts of Ebla

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It took some 4,500 years for the texts of Ebla to come back to light in their physical embodiment as clay tablets, unearthed by archaeology. And it took some 35 years for these texts to acquire a new identity in a digital embodiment. I was actively involved in the itinerary that made this possible, and Lucio was a close companion on the road we traveled. I am delighted to have here the opportunity to recall this itinerary, and to thank him for all that this entailed in terms of a growing scholarly collegiality and a deepening human friendship. There is an important intellectual dimension to the chronicle of this itinerary, and it is this that I want to underscore in this paper, which Lucio and I might as well have written together.

The itinerary goes beyond the scope of a chronologically oriented documentary sequence. Having started with an approach that followed closely the conceptual dimension of a card filing system, the project matured to where the greater potential of digital grammaticality could be properly identified and exploited. This happened early on, and it has remained as a central feature of the system, which has not yet effectively been duplicated. The emphasis was never on technical innovation and state of the art hard- or software, but rather on the conceptual dimension, one that could lay a claim to greater durability than that of computers and programming languages.

In 1977, as a member of the Committee for the Publication of the Texts of Ebla, I was charged with the task of working on the computerization of the data. Between 1968 and 1975 I had worked on one of the first large scale digital projects dealing with cuneiform texts. Known by the acronym OBLAP (Old Babylonian Linguistic Analysis Project), and devoted to the letter corpus that was just being published by F. R. Kraus, it had been funded through one of the first grants from the National Endowment for the Humanities in the area known then as “computer aided” research. It was this same approach that I suggested be used for the proposed new task relating to Ebla. I had elaborated a comprehensive encoding manual for two major aspects of linguistic analysis, graphemic and morphemic, and so in 1977 and 1978 we worked on the data entry of the texts of Ebla according to those criteria. I will give here two examples of the results achieved before starting our work on Ebla: they are indicative both of the technical limitations under which we were operating, and of the already solid conceptual framework within which the system was designed.

The first example is the encoding manual in the 1973 version (Fig. 1). Not only was there no graphic interface, we could not even format the page or use lower case letters. As a result, the manual was handwritten. Also, we were tied

to the size of a punch card, which had 80 columns, so that the input was all in fixed format, without any tabs or cells. This is reflected in the numbering of the columns, which were all nested, meaning that the variant given in any given column conditioned the content of the variables that followed. Thus, in the example given here, the letter V in column 12 conditioned the values of all successive columns: B in column 13 had a different value if it came after V in column 12 than if it came after another code in the same column.

The second example, also from 1973 (Fig. 2), gives evidence of what was then a major breakthrough. Not only did the printout produce upper and lower case (which could still not be shown on a monitor), we also had developed a full set of graphic images representing the individual cuneiform signs. For 1973, this was quite innovative (the program was written by Sal J. Fallone, and the coding to produce the cuneiform set was by Yoshitaka Kobayashi), even if the procedure was rather cumbersome.¹ Unfortunately, the results were never used (not even for the Ebla project), because we were overtaken by technology, which would soon make graphic interface the norm. But the effort is well worth recalling, in that it shows the direction we felt digital analysis would take at a time when hardly anyone in the humanities used computers.

The work was intensive, and it required the purchase of a keypunch machine, which at that time was the only device available for data input. The boxes of keypunched cards would be brought to the central computing office at UCLA, where the data would be processed by the mainframe computer, an IBM System/370. We had to wait for a turnaround time of several hours, generally overnight, and then the output would come through in the form of long fanfold paper outputs, which were spewed out of a slit in the wall on this side of the large computer rooms, inaccessible to the rest of us. Each printout was carefully coded, and it included the cost to be charged to a grant: the ARET 4 concordance, for example, cost \$9.99. Cards and paper outputs provided the only means to relate to data processing, without any direct interface on a screen.

The paper outputs were bulky and cumbersome: they would run into thousands of pages: the full concordance of the Old Babylonian letters ran upwards of ten thousand pages, and that of ARET 4 alone was 961 pages (Fig. 3). Under such circumstances, no thought could be given to any sort of regular distribution, with but few exceptions. Thus a copy of the Ebla concordance was given to the Ebla Expedition, and a copy of the concordance of the Amarna letters (a by-product of our project on Old Babylonian and Ebla texts) was delivered respectively to Bill Moran and Anson Rainey for their research on the translation and the linguistic analysis of the texts. It was on the basis of these results that two of

¹ It is described in detail along with the other technical aspects of the project at this stage, in Buccellati 1977, 385–404. The full text of this and all my other publications cited here is available online at www.giorgiobuccellati.net.

my students completed their doctoral dissertations at UCLA on the graphemic analysis of Old Babylonian letters.²

But it was serious data processing nevertheless. In fact, it may be said that, precisely because the interface was so opaque and the output so unwieldy, the conceptual relevance of the results came across as being all the more significant, and led to an ever increasing concentration on the substance of the process rather than on the technical dimension. The programs, which were also “compiled” as batches of punch cards, delivered results that were clearly on an altogether different qualitative plane than what could ever have been obtained before. I was thus thrust into designing formats that would take advantage of this newly found power of analysis. The first major program, written by John Settles, produced triadic sign concordances in the so-called *kwic* format (“key word in context”), and this offered substantive insights into the graphemic nature of cuneiform writing that were unimaginable with standard file cards (Fig. 4–5). Four types of indices gave totals and percentages for signs arranged according to shape (Fig. 6–7) and reading (Fig. 8–9). These frequencies gave us ways to establish what I called “graphemic profiles”, an important new concept that I used especially in comparing different corpora.³

This led to significant new insights into the nature of graphemics. Particularly important was the realization that the polyvalence of the cuneiform signs practically disappeared once a sign was seen in the contextual setting of a three sign cluster. In other words, within a given triad, any given sign retained only one value, with extremely few exceptions. The example given in Fig. 2 shows one such exception: in the second triad on the page, the signs are read differently depending on a wider context: it would be sufficient to extend the context to a four sign cluster to eliminate polyvalence even in this case. I was able to develop these insights in various studies devoted to graphemics, which brought out not only a more rigorous understanding of the nature of graphemics from a theoretical point of view, but also to elucidate several important aspects of the various corpora to which I was applying the same method of analysis.⁴

In 1978 we “migrated” to a microcomputer with a CP/M operating system, and work progressed steadily on the transfer of the data, which had been stored on tapes used by the mainframe. David A. Holzgang reworked the programs; John L. Hayes, Matthew L. Jaffe, Yoshitaka Kobayashi, Judith R. Paul, James H. Platt, and Joseph M. Pagan worked on the textual data.

² Kobayashi 1975; Gaebelien 1976.

³ Buccellati 1979, 89–100; *id.* 1984, 1–20.

⁴ Besides the articles cited in the previous notes, see my other articles Buccellati 1982, 39–74; *id.* 1990b, 7–26; *id.* 1996, 5–7, and, for the notion of morphographemics, 27, 37, 262.

It is worth mentioning that, in the same year, we also brought a micro-computer to our excavations at Terqa: it was still very bulky hardware, with two large 8 inches floppy disks, but it marked the beginning of a parallel experience where the reflection on method turned from texts to stratigraphy. In both instances, philology and archaeology, my interest in computers was looked at by colleagues with benign condescension, because the intellectual dimension of the enterprise seemed minimal at best. Instead, the difficulty inherent in the whole process helped me look more and more in the direction of the conceptual dimension of “digitality”, beyond the lure of “state-of-the-artness”.

The more immediate leap forward was in the way in which the data were to be made available. Floppy disks could now be distributed where large printouts could not.⁵ In 1987, on the occasion of the Meeting at UCLA of the American Oriental Society, I prepared a floppy disk, now reduced to 3.5 inches in size but still with a capacity of only 1.2 MB, which contained the concordances of AR-ET 2 (Fig. 10). Most people who received it would still not have familiarity with computers, so the gesture was perhaps more symbolic than substantive. But part of the message was that the data, and the results of their analysis, could be made available at no cost. It was not something that could pass unobserved. Paper outputs and sorts could now be printed directly (Fig. 11).

With these data, graphemic analysis of the Ebla texts was developing even further.⁶ I was also pursuing the morphemic analysis of the Semitic of Ebla, along the lines of what I had done for Old Babylonian.⁷ In the case of Ebla, this was limited to the Semitic personal names. I described the methodological scope of the research⁸ and in 1994 one of my doctoral students completed his dissertation on this subject, which was published as part of the official series of the Ebla archives.⁹ It contained a diskette with the digital data base: the physical size of the medium had now shrunk to a mere 3.5 inches, from floppy it had become rigid, but the capacity was still rather low, at only 1.44 MB (Fig. 12).

Between 1982 and 1987 I had the good fortune of having Lucio Milano come to UCLA, and in 2000 I visited him at the University Ca' Foscari of Venice for a brief research period. It was an intense and most fruitful collaboration that was decisive for the continuation and conclusion of the project. Lucio's essential contribution was in overseeing the quality of the input data and in steering us

⁵ For an early description of the project goals, especially as they relate to distribution disks, see my article Buccellati 1990b, 23–32.

⁶ See the UCLA doctoral dissertation by Platt 1993, and his earlier article Platt 1988, 245–248.

⁷ We applied the same approach to western Akkadian, and this found its best outlet in the important UCLA doctoral dissertation by Hayes 1984.

⁸ Buccellati 1992, 107–128.

⁹ Pagan 1998. My preface is on pp. ix–10.

towards new publication outlets. The research on the Semitic of Ebla had been pursued by another doctoral student at UCLA,¹⁰ and this led to the production of the newer version of an external storage device, a compact disk. With a capacity of 700 MB, this represented a clear qualitative jump in the way in which digital content could be distributed. The result was the publication of ARED 1, in 2011. This was the result of a collaborative project with a large number of contributors who, over the years, had worked on this project: we owe this accomplishment to Lucio's initiative and determination. The production of this CD (Figg. 13–14) was made possible through the institutional collaboration of the Research Technology Group at Brigham Young University. It contained the full extent of the textual data for nine volumes of the Royal Archives of Ebla, and a variety of search functions.

This led to the final stage, which is the online version of the data. A preliminary version was opened in 2012, and the site is currently being prepared for final release. Following in the footsteps of his teacher Lucio Milano, it is now Massimo Maiocchi who is playing a central role in the project. Access to the Ebla material is through the website www.cybernetica-mesopotamica.org. In addition to the texts in sequential order, it reflects the two major areas that I had covered since the beginning: graphemic and morphemic analysis (Fig. 15).

Maiocchi has rewritten the graphemic programs that were used earlier, and they offer a new version of the triadic index for all the texts, along with indices (Figg. 16–17): the visual quality is vastly enhanced and the flexibility of the system on an altogether different level from what it was at the time of paper outputs.

The morphemic analysis of the Semitic personal names reproduces, in a different format suited for a browser presentation, the content of the diskette distributed earlier as part of the volume ARES 3 (see note 90). The coding system is quite different in appearance from the one elaborated forty years earlier, as a comparison of the section on verbal inflection will show (Figg. 1 and 18). But the substance of the formalization was not substantially different. As for the data, one will find first the complete list of personal names, in alphabetical order, and then a number of different sorts by clusters of morphemic categories, where one can find the full list of attestations for given combinations of morphemes (Fig. 19; I should stress that the initial tagging is all merit of J. M. Pagan). By exporting the data onto any current spreadsheet program, one can produce any other sort by any desired cluster of morphemic features, as exemplified by the printout given as Fig. 20.

The longevity of the substantive results that were first obtained with the early experiments back in the seventies is indicative, because in practice nothing simi-

¹⁰ Szink 2005.

lar has as yet been attempted.¹¹ There has indeed been an explosion of text publications,¹² but the analytical approach to both the graphemic and the morphemic aspects of the data has been lagging behind.

Thus the digital itinerary of the texts of Ebla reflects a long standing confrontation with new techniques that have deeply impacted our modes of thought, in general as well as in the humanities. But we can also see how the conceptual dimension of the effort overrides the technical properties, and ultimately gives greater depth to the very potential of the technique. It is, perhaps, one of the distinguishing traits of the humanities, which, even when becoming digital, retain the dimension of value and permanence that lie at their core.

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¹¹ The only exception is the Electronic Text Corpus of Sumerian Royal Inscriptions (ECTSRI), which contains full morphological tagging for Sumerian; no systematic indices have been produced for this corpus.

¹² For a recent comprehensive overview see Charpin 2014, 331–357.

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Figures

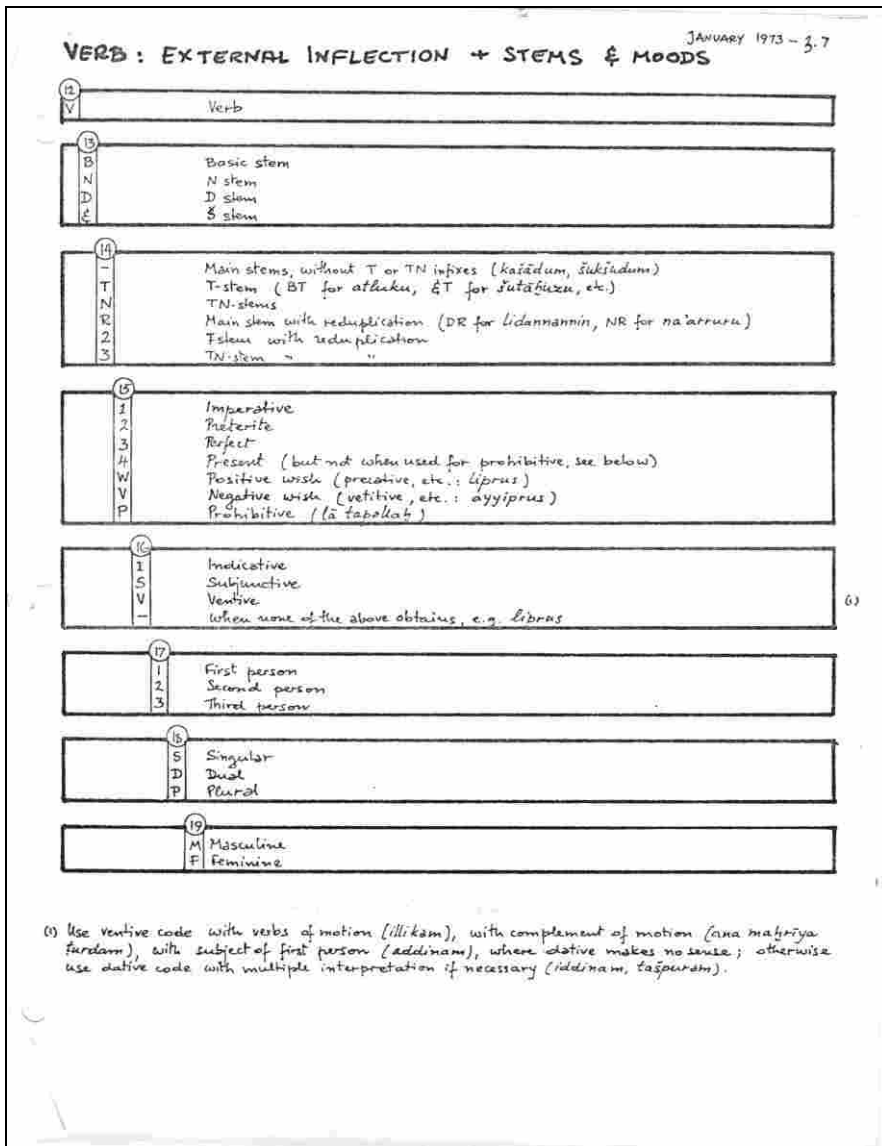


Fig. 1. Morphological encoding manual (1973). Long before computers could display upper and lower case letters and offer any type of graphic formatting, the text had to be handwritten

GRAPHEMIC ANALYSIS OF CUNEIFORM TEXTS					
ABB2	55	11	da-na-nu-um / i-na he-re-e-em	li-ik-mi	𒀭 𒀭 𒀭
MCS1	5	12	nu / a-na KA, DIN(GIR-RA)-R[] / li-ik-mi-s[u]-n[i]m. / [... / a-	li-ik-mi-su.	
UCP9	30	13	a-an-di-na-ni-a-sim, / u, ul ni-le-eq-qi, [su] / is-tu-m[a] n[i	le-eq-qi,	𒀭 𒀭 𒀭
ABB2	33	16	/ wa-ar-ki e-bu-ri-im / i ni-il-li-ik",* / ki-a-am iq-bu-kum-ma /	li-ik-ki	
ABB2	56	12	tu 2 KUS, a-di 4 KUS, GID, DA / li-ik-ki-su-ni-ik-k[u]m-ma 5 / su		
ABB2	56	22	ak-ki-su. / GIS wa-ar-qa, am-ma li-ik-ki-su, / ar-hi-is GIS-AB-BA		
ABB4	42	3'	u...]. / pu-uh, A SA, su, sa i-l[e-eq-qi,], / A SA, ma-ak-ra-am	le-eq-qi,	𒀭 𒀭 𒀭
ABB2	38	10'	, tu, / ki-ma ka-ia-an-tim-ma / li-ri-is. / 'DINGIR-na-bi-um-na-	li-ri-is	𒀭 𒀭 𒀭
ABB4	40	32	S-TUKUL sa DINGIR a-na A SA, im li-ri-id-ma / at-tu-nu a-lum u, sa	li-ri-id	𒀭 𒀭 𒀭
ABB4	83	9	u, nu / ku-ul-li-im-su-nu-ti, / li-ri-su-u, ma / a-na ne-eb-ri-ti	li-ri-su	𒀭 𒀭 𒀭
ABB2	23	6	SU DINGIR-SIS-KI-ma-an-si, / sa li-tim sa qa, ti-ka, / sa is-tu a	li-tim-sa	𒀭 𒀭 𒀭
ABB4	86	5	eb-bu-tim / a-na U -UDU-HI-A sa li-tim KI-TA / su-ub-qu, mi-im /	li-tim-KI	
ABB4	166	9'	lim, / sa, i-nu-ma ERIN, am sa li-tim KI-TA x-x-x-x-tu, / a-na D		
ABB4	23	11	/ sa a-na PA-TS-SI-tim, / sa e-li GUN im-ti, DINGIR-EN-LIL, / a-	li-GUN-im	𒀭 𒀭 𒀭
TCL17	63	7	a-wi-le-e / a-na ZU, SI-GA / sa li-i-tim KI-TA / su-ub-qu, mi-im	li-i-tim	𒀭 𒀭 𒀭
UCP9	30	25	/ be, e-el-ni a-pa-lam u, ul ni-le-i. / i ni-il-li-ik-ma / ul-li-	le-i-i	𒀭 𒀭 𒀭
VAB6	64	22	S]KUR, S[a id-du-u,], / a-na wa-li-i LU, NIM-MA / NIG, su be-la-	li-i-LU,	𒀭 𒀭 𒀭
ABB4	82	14	r-hi-is A SA, x[...] / i-na su-li-i-im [...] / la-ma x[...] / u	li-i-im	𒀭 𒀭 𒀭
PBS1	12	7	-m[s] mi-im-ma sa ih-li-qu, su-li-i-im / sa is-ta-ap-ra-ak-ku-nu		
ABB2	66	10	-NA x-x-x-x] / e-ge-di-im u, su [li]-i-i[m ha-aš-hu] . / ki-ma DU		
UCP9	30	40	ta-aš-pu-ra-nim; / "a-na be, e-li-ia aš-ta-pa-ar," / R[U, -BABB]A	li-ia-aš	𒀭 𒀭 𒀭

Fig. 2. Triadic concordance of Old Babylonian letters (1973).
An early experimental printing with upper and lower cases and graphic rendering of cuneiform: the output could only be printed, not displayed on the screen

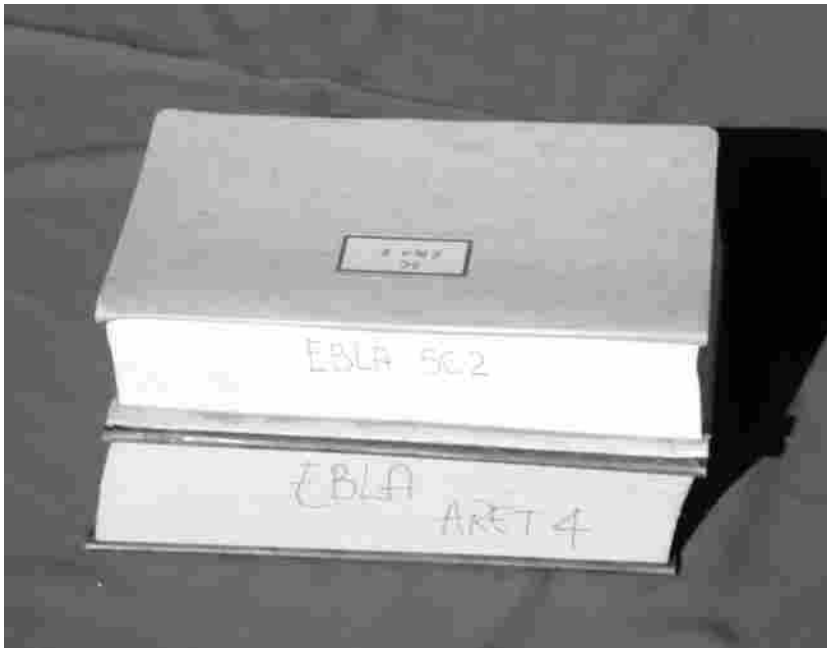


Fig. 3. The printouts (1980) of the sign concordances of ARET 4 (for a total of 961 pages) and of a selection of texts and personal names from Ebla (for a total of 845 pages)

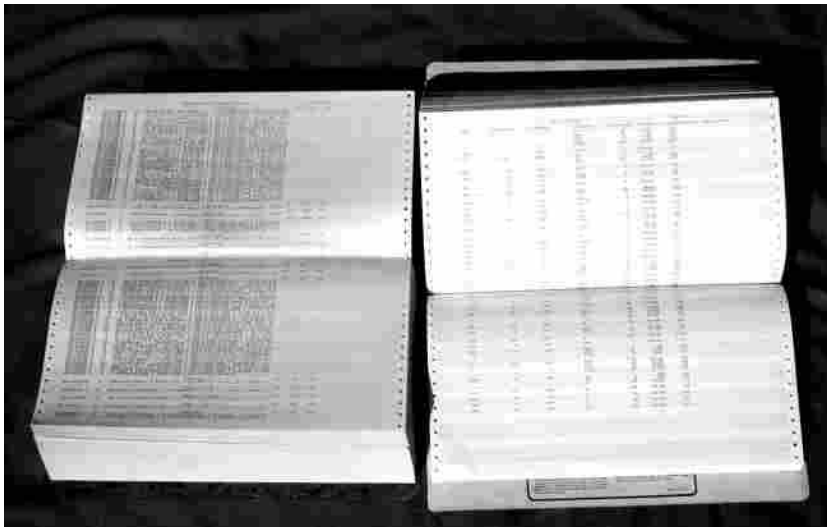


Fig. 4. A view of relevant pages of the two concordances (1980)

The image shows a detailed view of a document titled "CONCORDANCE OF SIGNIFORM SHAPES". It contains a grid of alphanumeric codes, likely representing different sign shapes and their relationships. The codes are arranged in rows and columns, with some cells containing numbers and others containing letters and symbols. The document is a scan of a physical document with a hole punch on the left side.

Fig. 5. A detail of the sign concordance (1980)

NUM	CONCORDANCE	CONCORDANCE	CONCORDANCE	CONCORDANCE	CONCORDANCE	CONCORDANCE	CONCORDANCE
001	22	480	000	2	10000	000	000
002	15	480	000	20	10000	000	000
003	1	480	000	1	10000	000	000
004	114	480	000	238	10000	000	000
005	88	480	000	65	10000	000	000
006	03	480	000	65	10000	000	000
007	22	480	000	3	10000	000	000
008	03	480	000	20	10000	000	000
009	01	480	000	14	10000	000	000
010	422	480	000	100	10000	000	000
011	64	480	000	2	10000	000	000
012	03	480	000	21	10000	000	000
013	03	480	000	12	10000	000	000
014	03	480	000	1	10000	000	000
015	03	480	000	17	10000	000	000
016	65	480	000	22	10000	000	000
017	07	480	000	27	10000	000	000
018	10	480	000	10	10000	000	000
019	1	480	000	1	10000	000	000
020	88	480	000	88	10000	000	000
021	158	480	000	2	10000	000	000
022	03	480	000	104	10000	000	000
023	03	480	000	13	10000	000	000
024	0	480	000	9	10000	000	000
025	1	480	000	1	10000	000	000
026	1	480	000	3	10000	000	000

Fig. 6. Index of sign shapes in ARET 4, by sign number (1980)

SIGN	OCCURRENCES	% OCCURREN	SIGN FREQUENCIES		SIGN TOTAL	
			READING	OCCURRENCES	% OCCURREN	TOTAL
000	001	0.0%	00	001	0.0%	001
001	000	0.0%	00	000	0.0%	000
010	001	0.0%	01	001	0.0%	001
011	000	0.0%	01	000	0.0%	000
012	000	0.0%	01	000	0.0%	000
020	000	0.0%	02	000	0.0%	000
021	000	0.0%	02	000	0.0%	000
022	000	0.0%	02	000	0.0%	000
030	000	0.0%	03	000	0.0%	000
031	000	0.0%	03	000	0.0%	000
032	000	0.0%	03	000	0.0%	000
040	000	0.0%	04	000	0.0%	000
041	000	0.0%	04	000	0.0%	000
042	000	0.0%	04	000	0.0%	000
050	000	0.0%	05	000	0.0%	000
051	000	0.0%	05	000	0.0%	000
052	000	0.0%	05	000	0.0%	000
060	000	0.0%	06	000	0.0%	000
061	000	0.0%	06	000	0.0%	000
062	000	0.0%	06	000	0.0%	000
070	000	0.0%	07	000	0.0%	000
071	000	0.0%	07	000	0.0%	000
072	000	0.0%	07	000	0.0%	000
080	000	0.0%	08	000	0.0%	000
081	000	0.0%	08	000	0.0%	000
082	000	0.0%	08	000	0.0%	000

Fig. 7. Index of sign shapes in ARET 4, by frequency (1980)

SIGN	OCCURRENCES	% OCCURREN	SIGN FREQUENCIES		SIGN TOTAL	
			READING	OCCURRENCES	% OCCURREN	TOTAL
00	001	0.0%	00	001	0.0%	001
01	000	0.0%	01	000	0.0%	000
02	000	0.0%	02	000	0.0%	000
03	000	0.0%	03	000	0.0%	000
04	000	0.0%	04	000	0.0%	000
05	000	0.0%	05	000	0.0%	000
06	000	0.0%	06	000	0.0%	000
07	000	0.0%	07	000	0.0%	000
08	000	0.0%	08	000	0.0%	000
09	000	0.0%	09	000	0.0%	000
10	000	0.0%	10	000	0.0%	000
11	000	0.0%	11	000	0.0%	000
12	000	0.0%	12	000	0.0%	000
13	000	0.0%	13	000	0.0%	000
14	000	0.0%	14	000	0.0%	000
15	000	0.0%	15	000	0.0%	000
16	000	0.0%	16	000	0.0%	000
17	000	0.0%	17	000	0.0%	000
18	000	0.0%	18	000	0.0%	000
19	000	0.0%	19	000	0.0%	000
20	000	0.0%	20	000	0.0%	000
21	000	0.0%	21	000	0.0%	000
22	000	0.0%	22	000	0.0%	000
23	000	0.0%	23	000	0.0%	000
24	000	0.0%	24	000	0.0%	000
25	000	0.0%	25	000	0.0%	000
26	000	0.0%	26	000	0.0%	000
27	000	0.0%	27	000	0.0%	000
28	000	0.0%	28	000	0.0%	000
29	000	0.0%	29	000	0.0%	000
30	000	0.0%	30	000	0.0%	000

Fig. 8. Index of sign values in ARET 4, by reading, alphabetically (1980).
The ampersand sign (&) stands for shin, which in the ASCII sequence occurs at the beginning

HEBRI-8	OCCURRENCES	HEADINGS FREQUENCIES			OCCURRENCES	PAGE NO.
		N	YEAR	W		
1	272	1271	9110	470	257	
ADU	221	127	9129	437	261	
EA	274	128	9172	335	221	
EA	210	124	10000	441	218	
Z	272	1271	12800	470	272	
KA	218	127	10000	342	225	
MU	224	122	9642	461	224	
MINER	221	128	9244	418	227	
MINER	227	127	9522	330	224	
NA	218	128	10000	370	222	
NI	221	124	10000	429	224	
A	218	127	9872	378	218	
OC	221	128	9715	389	218	
AA	227	122	10000	229	222	
ADJ	218	127	11000	342	212	
OU	227	124	9501	228	229	
I	227	122	10000	140	227	
O	222	124	10000	342	222	
UN	222	123	10000	224	220	
ZZ	222	128	9807	324	222	
UL	222	122	9817	221	222	
TI	222	127	9708	312	222	
IA	212	121	10000	140	212	
EA	222	121	9745	222	212	
MINER	222	122	9200	429	212	
BBP	122	127	10000	124	122	
LCF	122	122	9712	379	222	
SI	122	122	10000	122	222	
SI	122	127	10000	222	122	
A	222	121	9729	222	222	

Fig. 9. Index of sign values in ARET 4, by frequency (1980)

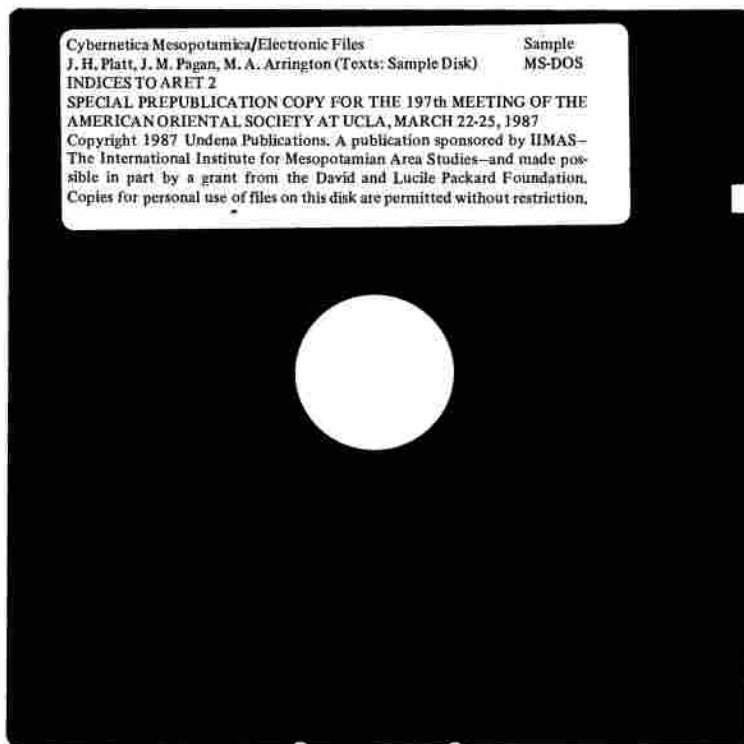


Fig. 10. The 5.25 inches floppy disk of ARET 2, distributed at the AOS meeting (1987)

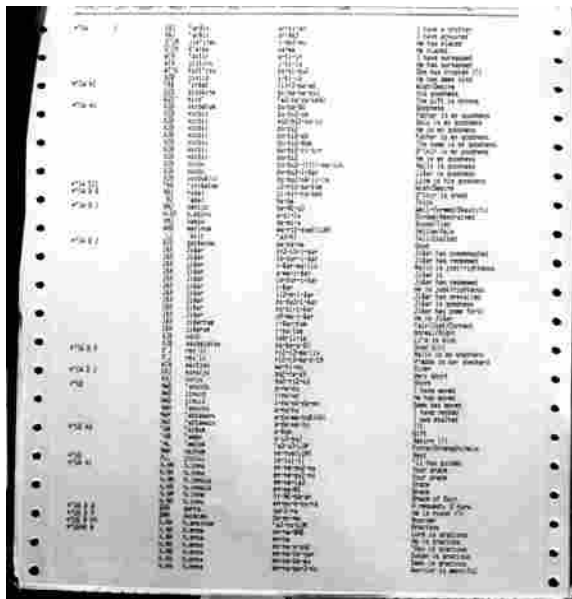


Fig. 11. Printout from micro-computer, with lower case characters (1980es)

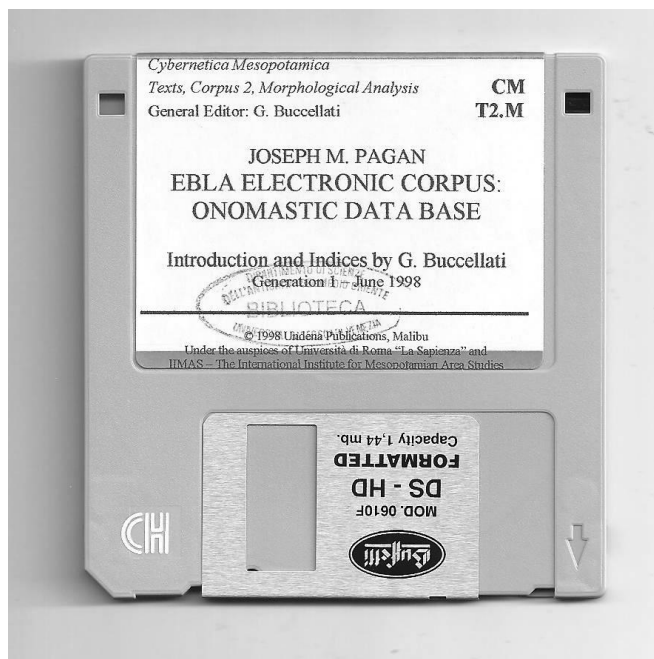


Fig. 12. The 3.5 inches diskette accompanying the volume by Pagan (1998)

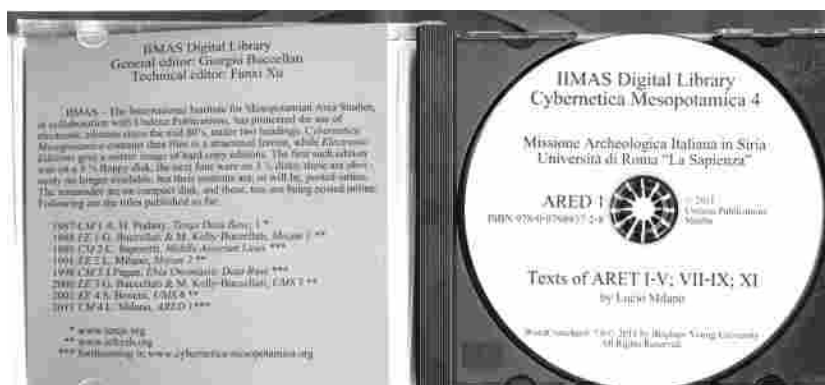


Fig. 13. The CD of ARED 1 (2011)

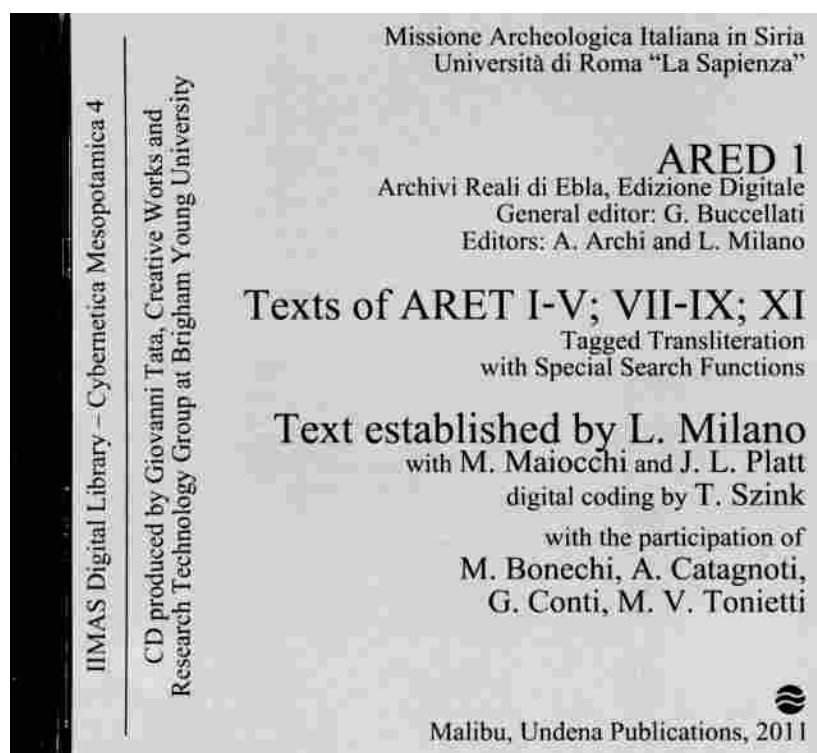


Fig. 14. The case of ARED 1 (2011)

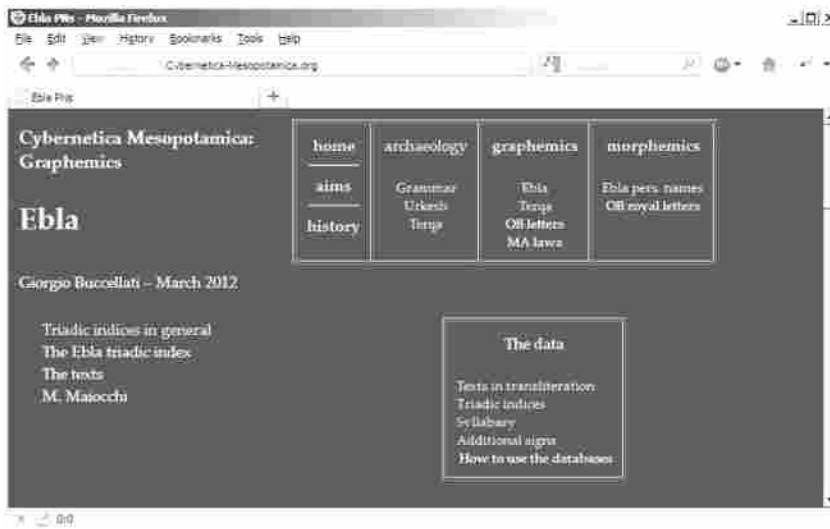


Fig. 15. Online digital edition of Ebla texts, home page (current)

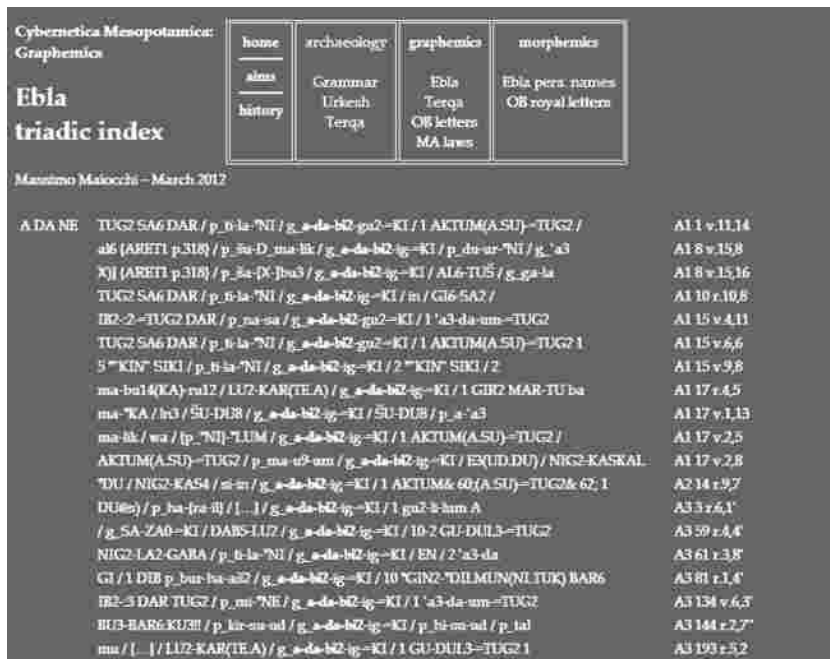


Fig. 16. Online triadic sequence (current)

A DA MA	a-da-ma	+6
	a-da-ma-lik	+2
	DINGIR=a-da-ma	+7
	DINGIR=a-da-ma-um	+2 **17
A DA MI	a-da-mi	+4 **4
A DA MU	a-da-mu	+12
	a-a-da-mu	+2
	gi-a-da-mu	+7
	i-a-da-mu	+2
	ib-kar(TEA)-da-mu	
	il'-a-da-mu	+2
	iš11-a-da-mu	
	ki-a-da-mu	
	ma-a-da-mu	
	ti-a-da-mu	+4 **23
A DA NA	LU2-KAR(TEA) / da-na-aš2=KI	+2
	LU2-KAR(TEA) / da-na-šu=KI	**3
A DA NE	a-da-bi2-gu2<=KI>	
	a-da-bi2-gu2=KI	+16
	a-da-bi2-ig=KI	+39
	a-da-bi2-zu2	
	a-da*NE-du=KI	+2 **59
A DA NE@	a-da-bi2-zu2	**1
A DA NI	a-da*N1	+2
	a-da-ki-lum	**3

Fig. 17. Online index to the triadic sequence (current)

Tags for verbal forms								
Columns F through S after 'V' in col. E								
PART OF SPEECH	TYPE	INTERNAL INFLECTION			EXTERNAL INFLECTION			
		col. J	col. K		col. M	col. N	col. O	col. P
col. E		STEM	PRIM MOOD/TENSE		SEC MOOD	PERSON	NUMBER	GENDER
v. verb:	1 strong trivalent root	b- Basic	1 imperative		e energetic	1 first person	c collective	z zimmān
	2 weak root	bh- Basic h- causative	2 preterite		i indicative	2 second person	d dual	f feminine
	3 strong root	bt- Basic t	3 perfect (East Semitic)		s subjunctive	3 third person	p plural	m masculine
	4 weak root	bth- Basic th	4 present-future		v. ventive		a singular	
	5 strong quadrivalent	n- N stem	5 perfect (West Semitic)					
	6 weak quadrivalent	nm- Nm stem	6 imperfect					
	7 strong intransitive	d- D stem	7 positive wish					
	8 weak intransitive	dt- Dt stem	8 negative wish					
	9 grammatical root	dth- Dth stem	9 prohibitive					
		s- š stem						
		st- štn stem						
		sth- štn stem						
		r- R stem						

Fig. 18. Online morphemic tagging for verbal forms (current). Compare with the equivalent page of the 1973 encoding manual in Fig. 1

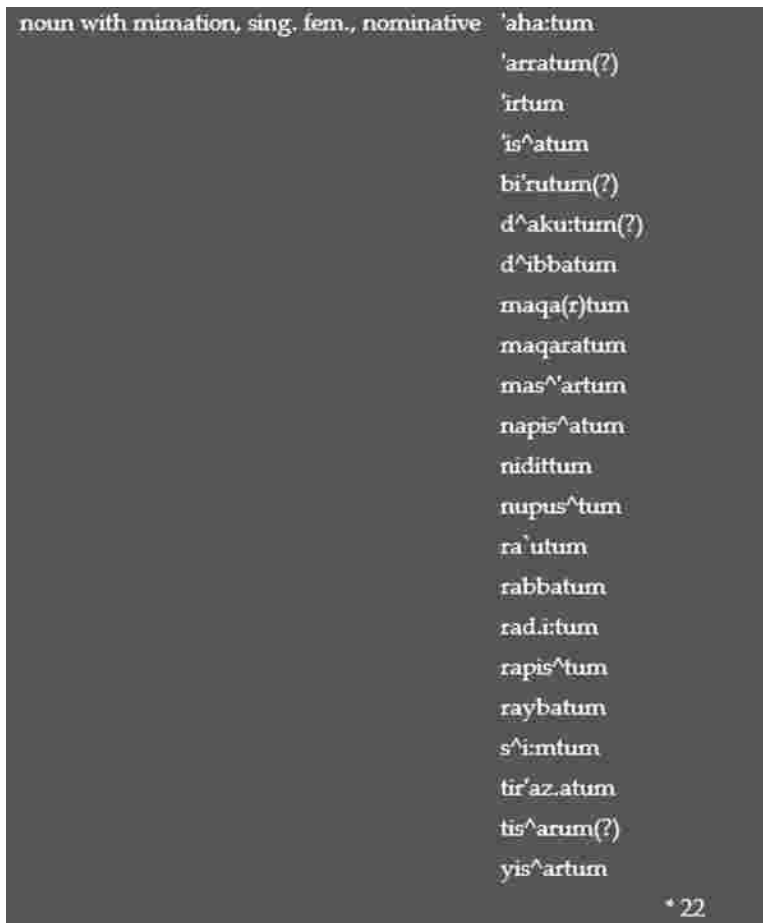


Fig. 19. Online index of a given morphological category (current)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
210	210 'ah(?)	n brother		v	n	p	'ah-		brother	01 a	p					
211	211 'ah-ku	tent		v	n	p	'ah-ku-		tent/settlement/city	07 aa	n					
212	212 'ah-ku-m	tent		v	n	p	'ah-ku-		tent/settlement/city	07 aa	m					
213	213 'ah-ku-d	regiment		v	x	g	'ah-ku-	g	to shoot/boast	h 2	d					
214	214 'ah-ku-tu(?)	beloved		w	n	q	'ah-ku-	t	to love	h pp	n					
215	215 'aha	brother		v	n	p	'ah-		brother	01 a	e					
216	216 'aha	brother		v	n	p	'ah-		brother	01 a	e					
217	217 'aha	brother		v	n	p	'ah-		brother	01 a	p					
218	218 'ah-ku-tum	sister		v	n	q	'ah-		brother	01 a	m					
219	219 'ah-ru	late		v	n	l	'ah-	r	to be after	h j	a					
220	220 'ah-ru	the late one		v	n	l	'ah-	r	to be after	h j	e					
221	221 'ah-ru	n late		v	n	l	'ah-	r	to be after	h j	p					
222	222 'ah-ru-tu	late		v	n	l	'ah-	r	to be after	h j	m					
223	223 'ah-ru-w	left behind		v	n	l	'ah-	r	to be after	h j	n					
224	224 'ah-ru	late		v	n	l	'ah-	r	to be after	h j	e					
225	225 'ah-ru	n late		v	n	l	'ah-	r	to be after	h j	p					
226	226 'ahu	brother		v	n	p	'ah-		brother	01 a	e					
227	227 'ahu	brother		v	n	p	'ah-		brother	01 a	e					

Fig. 20. Printout from the online version of the texts in spreadsheet format, sorted alphabetically by word (current)

Libiamo ne' lieti calici

**Ancient Near Eastern Studies Presented
to Lucio Milano on the Occasion of his 65th
Birthday by Pupils, Colleagues and Friends**

edited by
Paola Corò, Elena Devecchi, Nicla De Zorzi,
and Massimo Maiocchi
with the collaboration of Stefania Ermidoro
and Erica Scarpa

Alter Orient und Altes Testament

Veröffentlichungen zur Kultur und Geschichte des Alten Orients
und des Alten Testaments

Band 436

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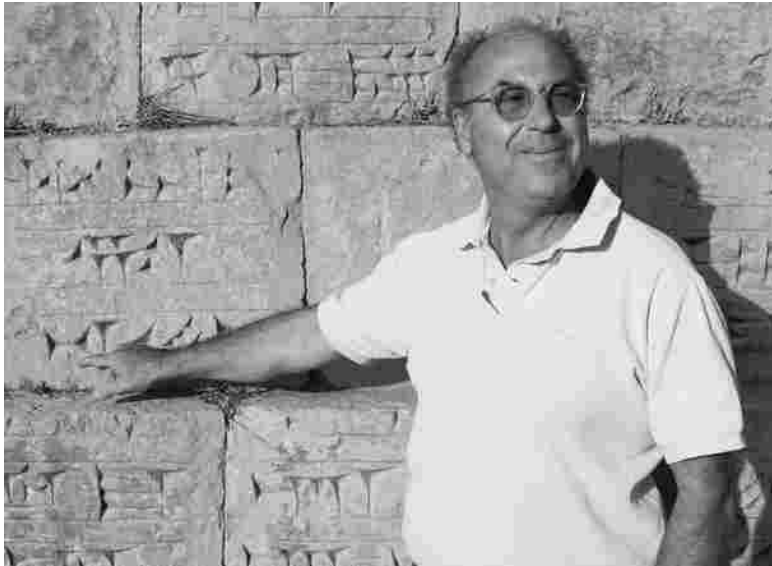
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Lucio at Jerwan (October 2013)

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Foreword

This book celebrates Lucio Milano's many scholarly achievements in the field of Ancient Near Eastern studies. As former pupils of his who have all greatly benefitted from his wide-ranging scholarship, guidance and support, we felt it was time for us to reciprocate by presenting him with this collection of essays from pupils, friends, and colleagues, as a token of our gratitude and affection on the occasion of his 65th birthday. On the other hand, we could also imagine his reaction: "*Oh ragazzi!*... what are we celebrating? It's too early for my retirement!". Our excuse is that in offering the present volume to Lucio at this time, we arbitrarily picked his 65th birthday as one occasion among the many special events that could have been chosen instead. We have no doubt that there will be many other celebrations for our dear friend Lucio in the future.

Although Lucio's Assyriological interests are manifold, we sought to narrow the scope of this volume to topics that over the course of his career have grown particularly close to his heart.

Lucio's wide-ranging work and interests reflect his intellectual formation. He studied Classics at "La Sapienza" University in Rome and graduated *summa cum laude* in 1975 with a thesis on "Viticoltura e enologia nell'Asia anteriore antica", written under the supervision of Mario Liverani. Appointed in 1977 to the Institute of Ancient Near Eastern Studies ("Istituto di Studi del Vicino Oriente") in Rome, he continued to work at "La Sapienza" University as "ricercatore universitario confermato" (1981–1993) at the Department of History, Archaeology and Anthropology ("Dipartimento di Scienze Storiche, Archeologiche e Antropologiche dell'Antichità") and as Professor of History of the Ancient Near East (1984–1987) for the post-graduate course in Oriental Studies ("Corso di Specializzazione in Studi Orientali"). In 1993 he moved to "Ca' Foscari" University in Venice as Associated Professor and since 2001 he has held at that university the chair of History of the Ancient Near East as Full Professor.

Lucio's research focuses on the social, economic, and political history of the third millennium BC, with special focus on Syria and northern Mesopotamia, especially Ebla and Tell Beydar, an area on which he has published extensively. His scholarly publications include several text editions and studies on a wide range of topics, which he explores through a multi-faceted approach, ranging from linguistics to prosopography, to digital tools for the study of the Ancient Near East. He is a leading scholar in the history of palaeonutrition, to which he has contributed articles and congress volumes, as a director of research projects and as a supervisor of doctoral theses. Since the early part of his career he has been heavily involved in archaeology as well, participating as an epigraphist in the expeditions to Ebla, Tell Ashara, Tell Mozan, Tell Leilan and Tell Beydar. In addition, he was active between 1997 and 2010 as director of the "Ca' Fosca-

ri” team at the Syro-European archaeological mission of Tell Beydar. Always ahead of his time, he has worked in digital humanities since the early 1980s, taking part in 1982–1983 in the “Project in the Computer Analysis of the Ebla Texts” initiated by G. Buccellati at the University of California, Los Angeles. Since 2010, he has been the chief editor of the project “Ebla Digital Archives” at “Ca’ Foscari” University.

Lucio has not only been a prolific researcher. Over the years, he has invested an enormous amount of time and energy in activities aiming at the divulgation of knowledge on the Ancient Near East to a wider audience, stimulating at the same time pertinent research. All of the undersigned – and many besides us – have benefitted from his inspirational teaching, from general courses for undergraduates to specialized seminars for doctoral and post-doctoral students. He has succeeded in establishing his own “school” of Ancient Near Eastern studies at “Ca’ Foscari” University. The defining characteristic of our “Venetian school” is not a single theme – far be it from Lucio’s mind to impose a single area of specialization on those who study with him – but is rather its *spiritus rector*’s historical methodology and openness to different approaches to elucidating the multifaceted realities of the Ancient Near East. This attitude is exemplified by Lucio’s endeavours under the auspices of the “Advanced Seminar in the Humanities: Literature and Culture in the Ancient Mediterranean: Greece, Rome and the Near East” at the Venice International University, which he has co-organized since 2005. A volume recently published under his editorship, *Il Vicino Oriente antico dalle origini ad Alessandro Magno* (2012), is on its way to becoming a standard manual for Ancient Near Eastern and Egyptian history in Italian universities. Mention must also be made of the journal *Kaskal*, founded in 2003, of which Lucio is co-director, and which has grown into an internationally recognized and increasingly influential forum for the multi-disciplinary study of Ancient Near Eastern cultures.

International recognition for Lucio’s scientific achievements is reflected in his activities, under various titles, at “Ca’ Foscari” University, as well as at universities outside Italy, such as UCLA, Cornell University, and the École Pratique des Hautes Études.

Lucio’s contagious enthusiasm, gentleness, and wit immediately captivate all those who work with him. Only he – as students, colleagues, and friends have learned – could turn brisk walks with him through the Venetian *calli* towards Venice’s railway station into unique opportunities to discuss Assyriology and the vagaries of life. Moreover, his advice is delivered not only in this peripatetic form, but also in the many toasts offered during the numerous informal dinner parties held at his home for welcoming visiting scholars, or for celebrating shared successes.

All this is clearly reflected, we believe, in the contributions to this volume, which stand as a token of appreciation, certainly of Lucio Milano as an out-

standing scholar, but also, and perhaps more significantly, of Lucio as a *Mensch*.

Thus, once more, let us stand and raise our glasses to celebrate Lucio's 65th birthday. *Salute!*

Venice, Turin, Vienna
March 30th, 2016

Paola Corò
Elena Devecchi
Nicla De Zorzi
Massimo Maiocchi