Archeologia e Calcolatori
Supplemento 6, 2014, 217-230

ANALYSIS ON THE CUNEIFORM TEXTS OF EBLA. AN EXPLORATORY POINT OF VIEW

1. Introduction

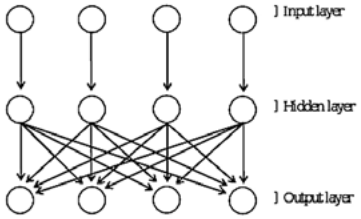
The excavation of the Royal Archives of Early Syrian Ebla, carried out in 1975, represented a truly remarkable discovery for the study of pre-classic Western Asiatic cultures. The findings which came to light since that year in a number of rooms located around the Audience Court of the Royal Palace G actually were, and still are, a starting point for a wide range of reflections and works in the fields of economic, cultural and political history. Their noteworthy implications in these fields are probably still far from being exploited in their most heuristic potential. The largest part of the found documents comes from the Great Archive L. 2769, located by the eastern porch of the Court. Most of those documents consist of economic-administrative tablets; some others are school tablets, works of literature, ritual texts, legal documents, or other kinds of texts (Matthiae 1976, 203-209; 1977, 12-13; 1986a, 60-66; 1986b, 46-49; 1995, 222-232; 2010, 118-126; Archi 1996, 66-73).

The tablets may have different appearances and dimensions, depending on their function and content. Large quadrangular tablets contain monthly accounts of assignations of goods; smaller tablets with rounded corners and convex faces bear accounts related to cult activities and tributes; very small roundish tablets can have different contents; very big rectangular tablets contain the lexical bilingual repertoires or literary texts; other very large tablets are yearly or monthly accounts of metals or textiles (Matthiae 1986a, 62-66; 1986b, 50-52; 1995, 227-228; Archi 1986; 1996, 73-75; Ramazzotti 2014). The study here presented investigates the chance to locate elements and clues that can be useful to understand as much as possible the basic features of the structure of cuneiform documents' drafting process. The main target is thus here any feature which could become useful to understand, locate and integrate uncertain, damaged or incomplete texts and which does not emerge from a traditional epigraphic analysis. The group of Eblaite periodic accounts of assignation and transfer of textiles is among the richest ones and is also a class of documents that present a recognisable and linear inner structuring. Because of their number, state of conservation, dimensions, and low degree of complexity, texts related to this category are particularly suitable for an experimental research on the inner structure of the administrative documents produced by the scribes of the Royal Palace G of Ebla.

2. Algorithms adopted and relevant reasons

The approach to the Eblaite administrative documents that has been adopted for this research work is based on observations and viewpoints of linguistic nature, which imply the structural analysis of primary data. Fundamental, in this perspective, is thus not much the content of the documents, nor the economic and administrative phenomena they refer to. It is rather the use and the spatial organisation, within the physical frame of the document, of the cuneiform signs and the contents they express, especially when arranged in more or less long combinations which express specific meanings in terms of administrative accounting. Such an approach must necessarily face the complete absence in scientific literature of works that follow a comparable perspective, and so also the scarce availability of data that could usefully integrate the information that can be found in existing publications or can result from archaeometric explorations. As well known, in the latest years the complicated inner political situation of the Syrian Arabic Republic involves also the impossibility to have access to the collections that are guarded in its museums. This means also the impossibility to collect directly on the artefacts data that were not recorded before. This is clearly a lost opportunity for the enrichment and the strengthening of an investigation like the one that is being presented here, but nowadays available data allow to form a good and coherent starting database. Anyway, for this first experiment available data proved themselves both quite useful and sufficient.

The positions on the inscribed surfaces of the greater components of the document, like sections, as well as those of its minor elements, like single signs, play a constantly central role in the analysis. This is true both for the relative and for the absolute position. The main aim of this strategy is to start an investigation on the logical and perceptive principles underlying the preparation and the drafting of the documents. The coding procedure was based primarily on data related to the syntax and the semantic structuring of both the elementary components (signs) and the larger parts (sections) of a sample of administrative documents containing monthly accounts of textiles (see *infra*). The use of an algorithm like that of the Neural Network "Auto-Contractive Map" (Auto-CM) is precisely due to the basic questions of this investigation and to its linguistic perspective. It is a kind of bottom-up approach which allows to avoid that specific prearranged values or qualities could be attached to any of the observed and coded features. The logics and the coding methods adopted here are thus structurally very similar to those underlying the use of quantitative methods in the study of Mesopotamian glyptic iconographies and use of seals in administration by the author of this



$$[1] \quad E = Min\left\{\sum_{i}^{N}\sum_{j}^{N} u_i \cdot u_j \cdot \sigma_{i,j}\right\}$$

$$[2] \quad E = Min\left\{\sum_{i}^{N}\sum_{j}^{N}\sum_{k}^{N}\sum_{q}^{M} u_i^q \cdot u_j^q \cdot u_k^q \cdot A_{i,j} \cdot A_{i,k}\right\};$$

$$\mathbf{A} = \left(1.0 - \frac{\mathbf{w}}{C}\right);$$

N = Number of Variables (Columns);

M = Number of Patterns (Rows).

Fig. 1 – Structure and algorithm formula of the Auto-CM.

contribution (Di Ludovico 2005, 2010, 2011, 2012, 2013; Di Ludovico, Ramazzotti 2008).

The Auto-CM Network is made of three layers, of which one is the input layer, one the hidden layer, and one the output layer (Fig. 1). Every entry is coded and described in the dataset as a succession of values, each corresponding to a specific observation. The amount of nodes is in each computational layer of the Auto-CM the same of the variables used to describe each entry. The signal is first transmitted from a layer to the following one, and then it is optimised and fine-tuned (Buscema *et al.* 2008), until it reaches the final equilibrium, which corresponds to the energy optimisation. The criteria of similarity and closeness among the entries are fundamental to measure the distances and find the path which requires the minimum energy; such criteria are outlined by the Network on the basis of the inner composition of the datasets. As it will be shown later on, this investigation has been carried out on two datasets, the dimensions of which are respectively 6163×323 and 277×124; the latter was also investigated in its transposed form, 124×277. This means that the relevant Auto-CM processing used, respectively, 969, 372, and 831 total nodes, with 104,652, 15,500, and 77,006 connections between the three layers. A very expressive and useful representation of the processing results is that of the graph tree known as Minimum Spanning Tree (MST), which shows the most economic (in terms of required energy) system of edges that keeps together all nodes. Besides it, one can take advantage also of the Maximally Regular Graph (MRG), which shows the most important cycles, expressing particularly strong and regular connections.

3. Coding of the material

Two different codings were prepared for this investigation, corresponding to two different points of view in the interpretation of structure and content of the texts. A first coding was based on the way cuneiform signs were concretely used: the position of each sign in the tablet was recorded as a place located in a face (obverse, reverse, or minor face), column, section and line. This led to fill up a 6163×323 large matrix expressing the locations of signs in the tablets under examination. This matrix meets the requirements involved by the perspective of investigating the spatial distribution of all signs used within a quite homogeneous *corpus* of documents, so that the structure of their use could be outlined.

The second coding was based on the sections and is justified since each section can be considered a logical unit which bears an inner coherence: in fact, it originated from an independent record. The coding of the sections aims at expressing in a proper way their fundamental traits and any feature having to do with their spatial position within the document which collects them. What is coded is thus both quality and quantity of the mentioned goods, as well as their destination and the date of the transactions. The resulting matrix is 277×124 large, and was thought and investigated in the perspective of the comprehension of the logical frame and spatial organisation of the different kinds of records collected in a monthly account document. In both cases the starting point of the coding adopted is so, unavoidably, the way the surfaces of the tablet were used and internally subdivided. The investigation, however, is centred in the first case on the basic unit that is the cuneiform sign, while in the second case it is centred on the section, which can be seen as a basic aggregate of features related to content and form, rather than a true basic unit.

4. Results of the investigation

4.1 *Sections dataset*

Based on what the MST shows, Tablet T_1 seems quite compact, and only few of its sections are placed distant from its other components (Fig. 2). This phenomenon seems not to be directly related to the (large) dimensions of the tablet, or to the high number of sections it contains. Actually, a little lower degree of compactness can be observed among the nodes referred to the sections of Tablets T_25 and T_19, which form few series of neighbouring nodes and some isolated ones, generally placed in peripheral regions of the graph. The sections which report the monthly total accounts are represented by nodes grouped in peripheral positions. In one group there are the nodes of the sections bearing the AN.ŠÈ.GÚ formula, while in another one we find those of the sections which really close the tablets (Fig. 3). The exception to

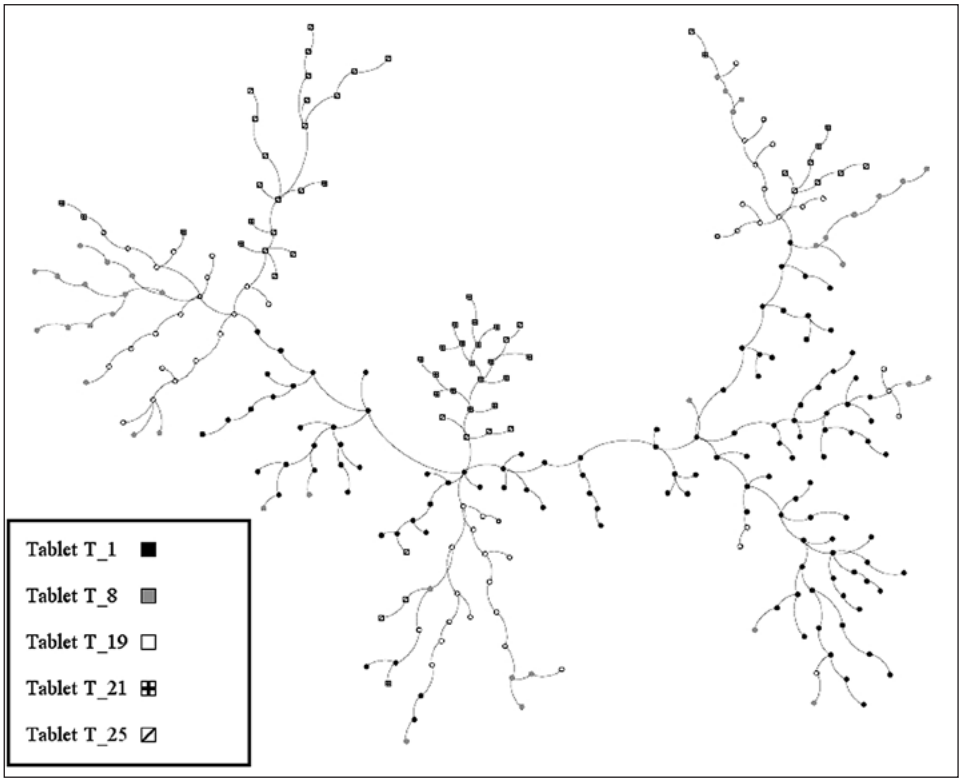


Fig. 2 – MST of the sections dataset: positions in the tree of the tablets' sections.

this is in the neighbouring placement of the two closing sections of Tablet T_1, in the region of the AN.ŠÈ.GÚ-sections, but bound to each other by a very weak edge.

In general, a first overview gives also the impression that the arrangement and the quality of the sections on the reverse of the tablets are more compact and homogeneous in comparison to that of those pertaining to their obverse faces. Such an impression would need further confirmation by an enlarged dataset, but it is already signficant that the obverse sections of tablets that are so different from each other as for the dimensions are all represented in the tree as a block of contiguous nodes. This might suggest that the reverse of these documents was generally drafted with a more intense care dedicated to its structural homogeneity, if compared to the obverse. Of the nodes referred to the variables, the one related to the destination of goods is placed in a remarkable position: it has many connections with other nodes and is in

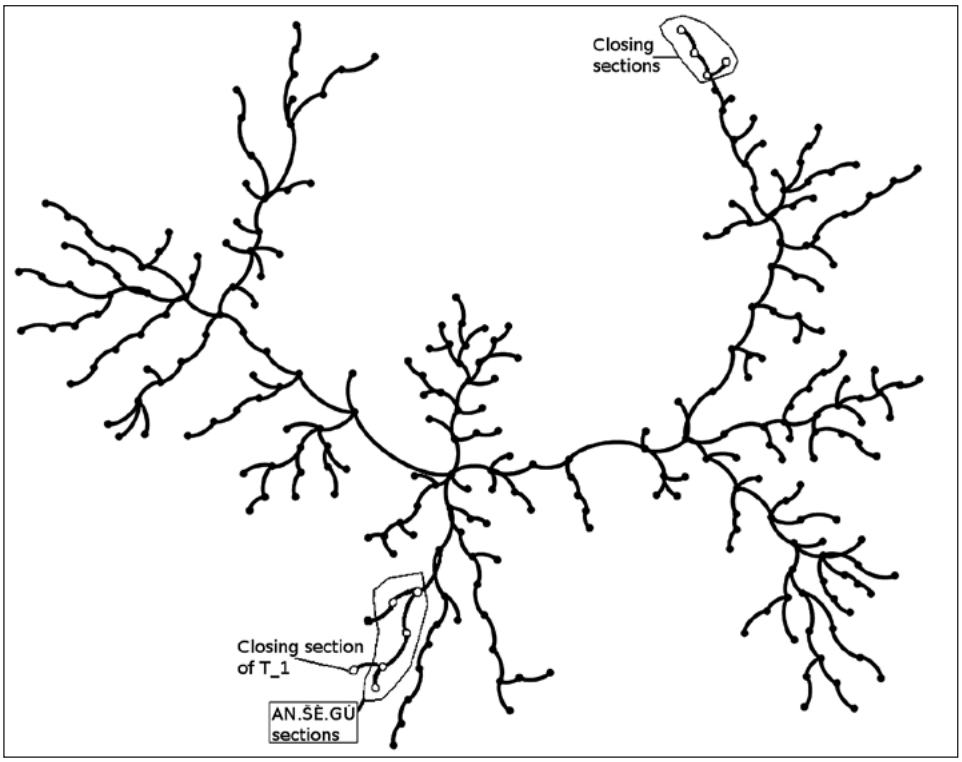


Fig. 3 – MST of the sections dataset: positions in the tree of the sections with the AN.ŠÈ.GÚ formulas and those with the totals.

direct relation to the node which represents the position of the section in the reverse of the document; the latter is also one of the most important nodes, considering the structure of the graph.

Considering the nodes which refer to specific months, the most central in the graph is the one related to the month gi-NI, and very central is also the node which represents the absence of month indication (this is, anyway, a quite obvious phenomenon, which can be similarly detected for the nodes that indicate the absence of traces of erasure). Nodes expressing the identity or quality of the consignee of the goods are in quite peripheral positions, except for the one related to persons that are mentioned with the formula including name and qualification, which is quite central, and directly bound to the node of the position in the obverse face. The kinds of textiles are represented by nodes placed in mid-central regions of the graph. They are especially located close to the node which refers to the position in the reverse face of the tablet.

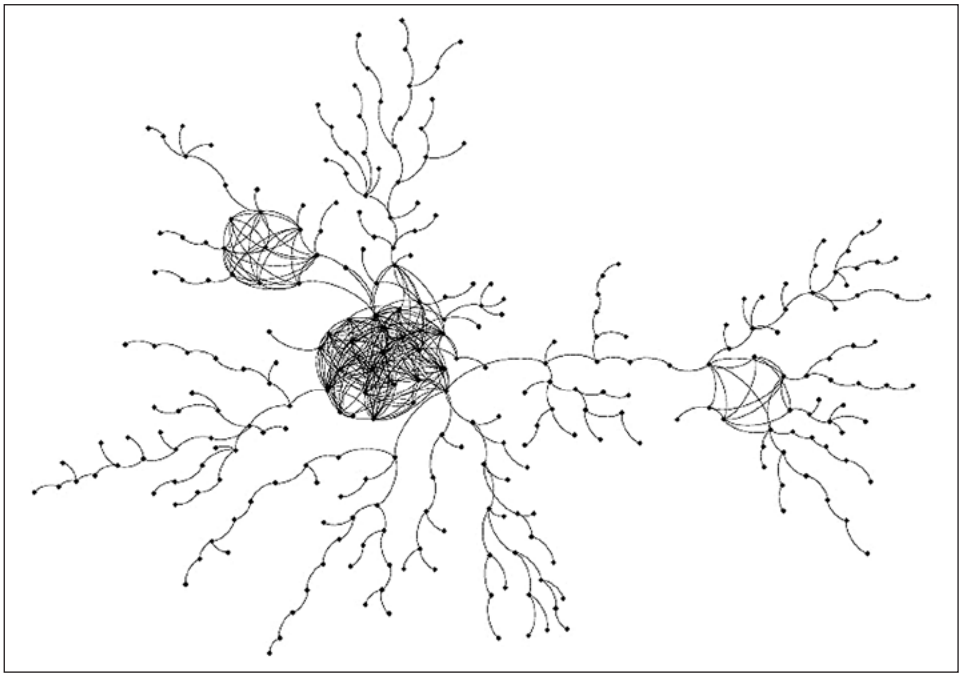


Fig. 4 – MRG of the sections dataset.

Quite peripheral, on the other hand, are the nodes that express in a general form the nature of the assignations, that is, if they concern textiles or other goods.

The relevant MRG shows a similar picture, strengthening the idea that the inner structure of T_1 is particularly compact (Fig. 4). The nodes which refer to its sections form two adjoining diamonds (the term diamond means here any region in the MRG in which the cycles are concentrated, so the whole set of nodes and edges that form that region) and some small branches connected with them. A minor diamond is made of four nodes related to T_19 and three ones related to T_8. As one could have expected, the nodes related to the sections containing the totals are quite distant from the diamonds. The figures emerging from an analysis of the betweenness centrality call the attention especially to the nodes concerning: the position on the reverse of the tablet; the month gi-NI; the assignation of textiles; the type of textile SAL.

A little lower are the figures of the position on the obverse and the type of textile gu-dùl, and much lower are those of the nodes referring to: the assignee, mentioned by name (sometimes followed by his, or her, qualification);

the type of textile gada; the recording, in the section, of the actual destination of the assignation. Furthermore, the average degree analysis shows quite high figures by the nodes relevant to the report of the total monthly amount (introduced with the formula AN.ŠÈ.GÚ) of the assigned goods, as well as to the annotation of the destination of the assignation and to two distinct types of textiles: gada and siki. Meaningful figures which emerge from this analysis are also those related to the mention of the name (that can be followed by the qualification) of the assignee and to the position on the tablet's obverse.

4.2 *Signs dataset*

The investigation on the variables leads to highlight the central role played by obverse and reverse, as well as the peculiarity of the formal structure of tablet T_1. This also emerges from a general observation of the nodes (Fig. 5). The highest figures in betweenness centrality are actually bound to the three nodes, in order (from the highest to the lowest): Obverse, Reverse, and T_1. Although very high, the figures of the latter are anyway much lower than those of the former two. Much lower, but still meaningful, are the betweenness centrality figures that were recorded by the following nodes, all related to the location of the signs (in decreasing order):

1) the section progressive number falls between 16 and 19;
2) column progressive number 7;
3) tablet's line progressive number falls between 145 and 170;
4) the section progressive number falls between 28 and 32;
5) tablet's line progressive number falls between 406 and 476;
6) tablet's line progressive number falls between 171 and 200.

Besides the mentioned ones, 18 nodes related to the position of the line in the tablet and to the section show relatively low figures of betweenness centrality. A null betweenness centrality figure emerges with a large number of other nodes, that is some nodes which could be attached to the same categories of these, as well as all nodes related to columns different from the seventh one, to tablets different from T_1, and to single signs.

The peripheral position of the nodes related to columns, except for that of column 6, seems quite interesting. On the other hand, one has to remark the relatively central location of the nodes expressing the progressive number of the line within the section. Finally, the nodes of the absolute progressive number of the tablet's lines are generally in peripheral positions. The nodes referred to the specific names of the signs are all in the peripheral areas of the graph, and they are distributed in a quite uniform way around those of obverse and reverse, with the only exception of few of them that are placed close to the node of Tablet T_1. It is important to stress here also that the three central nodes are bound to those of the sign names through very weak edges.

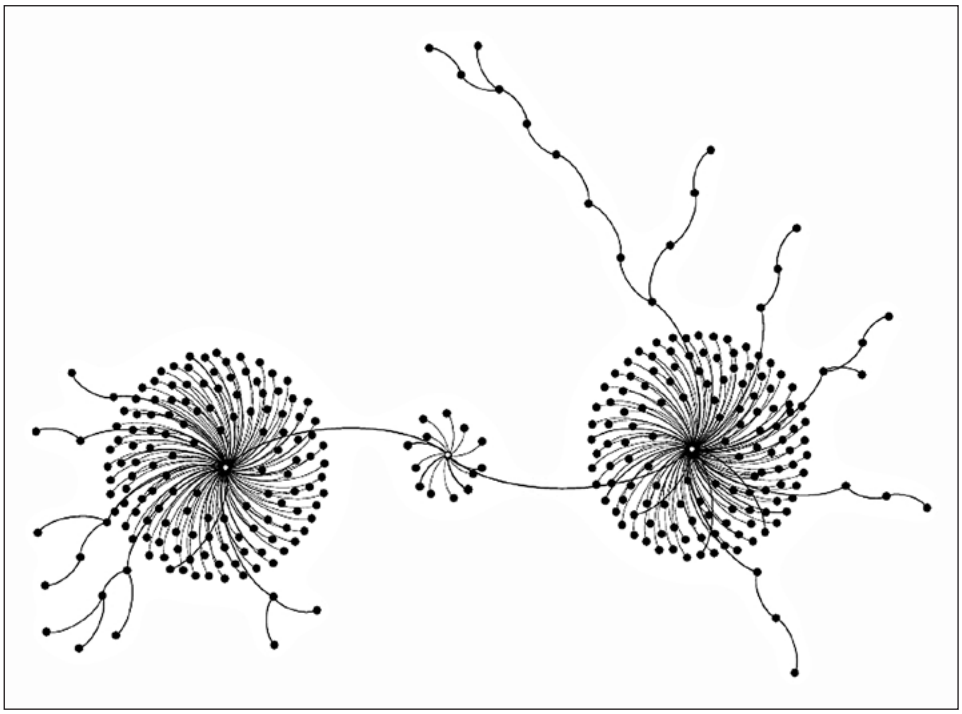


Fig. 5 – MST of the signs dataset. White nodes are related to: position on the obverse (right); Tablet T_1 (centre); position on the reverse (left).

5. Overall interpretation of the outcomes

A first important symptom emerging from this investigation lies in the exceptional cohesion of the group of nodes related to the sections of Tablet T_1, as well as in the quite compact distribution of the groups of nodes referred to those of the other documents. As just shown above, this picture is especially evident in the MRG. Together with the outcomes of the betweenness centrality analysis that have been discussed above, this suggests that the monthly textile account tablets were prepared as a whole, globally, and not just as collections of contents that had been recorded through a relatively limited and short timespan.

This means that they were probably developed and drafted according to new, and typical for them, inner logics. So, the investigation's outcomes allow to think that the monthly administrative tablets dealing with assignations of textiles were very probably not just collections of a number of isolated recordings. In the relevant preparation and drafting works the central idea

was probably that of a document which was completely autonomous, besides being of a different kind and following different logics, compared with the smaller records from which it borrowed the contents. It might mean that the textile assignations belonging to a certain month might have been collected in more than one summarising tablet.

This is anyway difficult to be ascertained, since any clues which could permit to identify the year of the tablet's drafting are missing. According to this perspective, the logics on which the drafting of the "summarising" monthly tablet was based could have been grounded mostly on specific inner structuring criteria pertaining only to the monthly accounts, besides the relevance of the single assignations to a same month. The remarkable compactness of the nodes of Tablet T_1 could also be due to its dimensions and to the varied and diversified content of its sections, since of the ones included in this investigation it is also the largest document. In fact, this could have favoured the fulfilment and respect of the inner coherence criteria of the document. If this interpretation is correct, the reason why the other tablets included in this investigation – of smaller dimensions – show a lower inner compactness in the graph is that the relevant content would not be large enough to accomplish quite well the organisational principles underlying the drafting of the monthly document. There is probably no direct relation between the dimension of the document and its inner logical compactness. The latter could be more easily obtained (and observed) in larger documents, but it must be considered primarily in relation to the specific kind of contents and to the quality of the single contributions which were used to build the "summarising" monthly document.

Such a picture seems to be confirmed by data like those pertaining to the structural homogeneity of the different reverse faces of the monthly account documents. This part of the tablet is actually associated to figures that reveal a quite more abstract planning of the sections' arrangement. Of the sections that form the monthly accounts the recording of the totals stand out. In each document they are structured in two parts, distributed through two sections: the first one is introduced by the formula AN.ŠÈ.GÚ, while the second one (which closes the document) mentions the month, the total amount of goods and very often also, separately, the total amount of the gu-mug textiles. In the graph there were two groups, respectively related to the nodes of the AN.ŠÈ.GÚ sections and to those closing the document. These different positions signal the fundamental difference existing between the two last sections of the documents, as well as the – quite evident – qualitative difference between both and all sections that do not report the totals. Data concerning the sections which report the totals are doubtless responsible for an increase of the global complexity of the graph. The nodes relevant to the destination of goods suggest, with their position in the graph, that the recordings of assignations addressed to people or high-level offices of the Eblaite state – like king, queen,

or ugula – were deliberately kept distinct from all other transactions, though the monthly recordings collected them together.

The relevant nodes are, actually, all in peripheral positions. This might be a symptom of a basic logical principle of economy and synthesis: in the monthly summarising accounts some occasional assignations were recorded besides the ordinary transactions of textiles, which were very likely the central subjects of those documents. The sporadic assignations of metals and precious goods that are included in some of these documents can be explained in a similar way. The node related to such assignations is in the graph in a peripheral position that can be considered in opposition to that of the nodes referred to the kinds of textiles; the importance of the latter is furthermore highlighted in the graph by the outcomes of the analyses of degree and betweenness centrality (both mentioned above).

6. Current assessments and future perspectives

The investigation presented here allowed to understand and explain concisely and clearly some opportunities to enlarge the research horizons while dealing with a quite homogeneous *corpus* of cuneiform texts. The main issues on which the development of these potentials is grounded are based primarily on the inner organisation and structure of the document, on its global spatial arrangement, and on the relationships existing among the different parts which form, at different levels, the document itself. The administrative document can only bring a fragmentary testimony of the concrete relationship between the space and the written cuneiform sign within a particular cultural context. This relationship was here considered as the shape that a specific sensory framework gave to an administrative attitude. Of this shape, which bears in itself the perceptive complexity of the bureaucratic and management culture of the Eblaite Palace, only shreds and variously disjointed surviving fragments remain to us. The use of models and methodologies based on linguistic principles gives the opportunity to consider under a critical point of view both the perspective adopted in non-philological investigations by the contemporary scientific observer (who, in fact, is hardly involved in studies on cuneiform documents that have neither a philological, nor an epigraphic nature) and the concrete possibility to outline at least partially, starting from the available evidence, the organisational and perceptive dynamics that were actual in ancient times.

In the experimental research that was presented here a sample of not very large administrative texts dealing with textiles transactions has been examined. It was anyway sufficient to test the potentials of the Auto-CM algorithm in relation to the relevant issues. It is especially evident the possibility to glimpse the overall logical project which works as a background for the monthly summarising account documents of the assignation of textiles. The

formal framework of these documents is organised on inner compositional strategies that are definitely different from those of a mechanical juxtaposition of contents. Within this general project some peculiarities that increase the global complexity of the document stand out. Examples of such features are some specific kinds of assignations and some atypical sections, like those which report the totals of the monthly account, which have really distinctive features. Currently, investigations like the one that has been showed and discussed here must still face wide-ranging limits and problems.

First, it is important to remark the difficulties in enlarging the sample of documents that can be included in the investigation. On one hand, the intrinsic limits of the epigraphic *corpus* have to be faced: an enlargement of the *corpus* is limited to the nowadays published documents, many of which are fragmentary or very damaged and full of gaps, otherwise it can be accomplished only through occasional and fortuitous findings. On the other hand, a too large *corpus* requires processing machines which could be enough powerful to manage the enormous amount of calculations needed to complete the processing cycle. Besides using avant-garde and appropriate technologies, this second issue could be faced by a refinement of the algorithm's programming.

Another fundamental issue persistently emerges from one of the most ambitious perspectives that can be disclosed by this research course: it is the possibility to prepare a model which could permit to formulate sound integration proposals for the gaps in the documents. For this purpose it is of great importance the problem of fund raising. Resources are needed to start projects in which scholars in the Humanities and mathematicians could give birth to a fruitful and productive dialogue. It is important to find the occasion to elaborate and partly reformulate the algorithms employed, so that the outcoming model would be properly calibrated on the specific tasks and needs of the kind of textual archaeology that is being here promoted. Currently, the results of the preliminary experimental study that has been the subject of this article seem to be definitely encouraging, and foster the expectations for the next steps of this investigation course.

Alessandro Di Ludovico
Dipartimento di Scienze dell'Antichità
LAA&AAS
Sapienza Università di Roma

REFERENCES

Archi A. 1986, *The Archives of Ebla,* in Veenhof 1986, 72-86.

Archi A. 1996, *Gli archivi di Ebla (ca. 2400-2350 a.C.)*, in P. Matthiae (ed.), *Gli Archivi dell'Oriente Antico*, Archivi e Cultura 29, Numero Speciale, 57-85.

Biga M.G, Milano L. 1984, *Testi amministrativi: assegnazioni di tessuti (archivio L. 2769)*, Archivi Reali di Ebla. Testi IV, Roma, La Sapienza.

Biggs R.D., Myers J., Roth M. 2008 (eds.), *Proceedings of the 51st Rencontre Assyriologique Internationale (Chicago 2005)*, Studies in Ancient Oriental Civilization, 62, Chicago, Oriental Institute Publications.

Buscema P.M. 1995, *Self-Reflexive Networks. Theory, Topology, Applications*, «Quality & Quantity», 29, 339-403.

Buscema P.M., Grossi E. 2007, *A novel adapting mapping method for emergent properties discovery in data bases: experience in medical field*, in Y. Nakamori, Z. Wang, J. Gu, T. Ma (eds.), *Proceedings of the Institute of Electrical and Electronics Engineers International Conference on Systems, Man, and Cybernetics (Montreal 2007)*, Institute of Electrical and Electronics Engineers Omnipress, 3457-3463.

Buscema P.M., Grossi E., Snowdon D., Antuono P. 2008, *Auto-Contractive Maps*: *An Artificial Adaptive System for Data Mining. An Application to Alzheimer Disease*, «Current Alzheimer Research», 5, 481-498.

Buscema P.M., Petritoli R., Pieri G., Sacco P. 2008, *Auto-Contractive Maps*, Technical Paper, 32, Rome, Aracne.

Di Ludovico A. 2005, *Scene-in-frammenti: una proposta di analisi delle "scene di presentazione" dei sigilli a cilindro mesopotamici orientata all'elaborazione statistica ed informatica dei dati*, in Di Ludovico, Nadali 2005, 57-95.

Di Ludovico A. 2010, *La glittica della fine del Terzo Millennio e il sentimento di immortalità del potere in Mesopotamia*, in R. Dolce (ed.), *Quale Oriente? Omaggio a un Maestro. Studi di Arte e di Archeologia del Vicino Oriente in memoria di A. Moortgat a trenta anni dalla sua morte*, Palermo, Flaccovio, 241-261.

Di Ludovico A. 2011, *Experimental Approaches to Glyptic Art Using Artificial Neural Networks. An Investigation into the Ur III Iconological Context*, in E. Jerem, F. Redő, V. Szeverényi (eds.), *On the Road to Reconstructing the Past. Proceedings of the 36th International Conference on Computer Applications and Quantitative Methods in Archaeology (CAA) (Budapest 2008)*, Budapest, Archaeolingua, 135-146.

Di Ludovico A. 2012, *The Uses of the Cylinder Seal as Clues of Mental Structuring Processes inside Ur III State Machinery*, in Wilhelm 2012, 275-289.

Di Ludovico A. 2013, *Symbols and Bureaucratic Performances in Ur III Administrative Sphere. An Interpretation through Data Mining*, in Garfinkle, Molina 2013, 125-151.

Di Ludovico A., Ramazzotti M. 2008, *Reconstructing Lexicography in Glyptic Art: Structural Relations between the Akkadian Age and the Ur III Period*, in Biggs, Myers, Roth 2008, 263-280.

Di Ludovico A., Nadali D. 2005 (eds.), *Studi in onore di Paolo Matthiae presentati in occasione del suo sessantacinquesimo compleanno*, Contributi e Materiali di Archeologia Orientale X, Special Issue, Roma, Sapienza.

Garfinkle S., Molina M. 2013 (eds.), *From the 21st Century B.C. to the 21st Century A.D., Proceedings of the International Conference on Sumerian Studies (Madrid 2010)*, Winona Lake, IN, Eisenbrauns.

Matthiae P. 1976, *Ébla à l'époque d'Akkad: archéologie et histoire*, «Académie des Inscriptions et Belles-Lettres. Comptes rendus des séances de l'année 1976», 190-215.

Matthiae P. 1977, *Le palais royal et les archives d'état d'Ébla protosyrienne*, «Akkadica», 2, 2-19.

Matthiae P. 1986a, *The Archives of the Royal Palace G of Ebla. Distribution and Arrangement of the Tablets according to the Archaeological Evidence,* in Veenhof 1986, 53-71.

Matthiae P. 1986b, *Scoperte di archeologia orientale*, Roma-Bari, Laterza.

Matthiae P. 1995, *Ebla. Un impero ritrovato. Dai primi scavi alle ultime scoperte*, Torino, Einaudi (3rd ed.).

Matthiae P. (ed.) 1997, *Gli archivi dell'Oriente Antico*, Roma, Centro di Ricerca.

Matthiae P. 2010, *Ebla. La città del trono. Archeologia e storia*, Torino, Einaudi.

Neumann H., Dittmann R., Paulus S., Neumann G., Schuster-Brandis A. (eds.) 2014, *Krieg und Frieden im Alten Vorderasien*, *Proceedings of the 52e Rencontre d'Assyriologie Internationale (Münster 2006)*, Alter Orient und Altes Testament Veröffentlichungen zur Kultur und Geschichte des Alten Orients und des Alten Testaments, Münster, 651-672.

Ramazzotti M. 2013, *Mesopotamia antica. Archeologia del pensiero creatore di miti nel Paese di Sumer e di Accad*, Roma, Editoriale Artemide.

Ramazzotti M. 2014, *Royal Administration During the Conquest. New Archaeological and Epigraphic Discoveries in the Royal Palace G at Ebla-Tell Mardikh*, in Neumann *et al.* 2014, 651-672.

Veenhof K.R. (ed.) 1986, *Cuneiform Archives and Libraries. Papers Read at the 30e Rencontre Assyriologique Orientale (Leiden 1983)*, Uitgaven van het Nederlands Historisch-Archaeologisch Instituut te Istanbul, 57, Istanbul, Nederlands Historisch-Archaeologisch Instituut te Istanbul.

Wilhelm G. (ed.) 2012, *Organization, Representation, and Symbols of Power in the Ancient Near East, Proceedings of the 54th Rencontre Assyriologique Internationale (Würzburg 2008)*, Winona Lake, IN, Eisenbrauns.

ABSTRACT

A sample of administrative texts from the Early Syrian state archives of Ebla were coded and processed through the model known as Auto-Contractive Map (Auto-CM). The results of this study led us to focus on some basic issues related to the structure of the Eblaite administrative records which deal with transactions of textiles. This first step is oriented toward the development of a methodology which would allow us to outline some concrete proposals for reconstructing the content of badly preserved tablets.