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**Naissance de l'état, naissance de l'administration:
le rôle de l'écriture en Égypte, au Proche-Orient et en Chine**

**Emergence of the state and development of the administration:
the role of writing in Egypt, Near East and China**

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Erratum

Il a été porté à notre attention que deux erreurs se sont glissées dans l'article intitulé «The Significance of Predynastic Canid Burials in Ancient Egypt» publié par Mary Hartley dans le volume 25 (2015) de notre revue. Page 59, à la fin du 5^e paragraphe, l'intention de l'auteur était de faire référence à Van Neer et al. 2004: 120 au lieu de Friedman et al. 2011: 120. Le nom de l'auteur a aussi été mal orthographié («Freidman» au lieu de «Friedman»). La rédaction d'*Archéo-Nil* présente ses excuses pour les désagréments occasionnés.

It was brought to our attention that two errors occurred in the article entitled "The Significance of Predynastic Canid Burials in Ancient Egypt" published by Mary Hartley in the volume 25 (2015) of our journal. On page 59, end of the fifth paragraph, the author's intent was to reference Van Neer et al. 2004: 120 instead of Friedman et al. 2011: 120. The name of the author was also regrettably misspelt ("Freidman") instead of "Friedman"). *Archéo-Nil*'s team sincerely apologises for any hurt or confusion these errors may have caused.

Archéo-Nil est une revue internationale et pluridisciplinaire à comité de lecture («peer review») dans le respect des normes internationales de journaux scientifiques. Tout article soumis pour publication est examiné par au moins deux spécialistes de renommée internationale reconnus dans le domaine de la préhistoire ou de l'archéologie égyptienne. L'analyse est effectuée sur une base anonyme (le nom de l'auteur ne sera pas communiqué aux examinateurs ; les noms des examinateurs ne seront pas communiqués à l'auteur).

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par Yann Tristant

Tablets, Sealings and Weights at Ebla: Administrative and Economic Procedures at the beginning of the Archaic State in Syria

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The extraordinary state of preservation of the Royal Palace G of Ebla (c. 2400-2300 BC) with a large amount of materials sealed by the destruction levels and the presence of central and temporary archives in several rooms of the official wings of the palatial complex allow a detailed analysis of the distribution and types of the various indicators of exchange and the control of exchange.

Economic written documents, sealings (cretulae, bullae and jar-sealings) and balance weights attest to the economic activities conducted within the palace and provide integrated information regarding administrative procedures. Together with these indicators, unworked precious materials (in particular lapis lazuli), imported items, and objects manufactured from imported materials show the palace administration's control over luxury goods production and Ebla's extended interregional exchange network.

In addition to the administrative archives (with thousands of tablets), the manage-

ment and movement of goods is recorded by the use of cylinder seals on sealings and on pottery vessels. In the palace were found around two hundred clay sealings with cylinder-seal impressions and more than fifty storage jars with seal impressions. Cretulae come from various functional contexts, with significant concentrations only in the northern storerooms and central archive, whilst seal-impressed jars were scattered in various quarters, including the northern warehouse, the units of the Central Quarter devoted to processing foodstuffs, and the 'kitchen' which opened at the bottom of the Ceremonial Staircase. The third category of indicators of administrative management of goods is represented by balance weights, a fundamental tool enabling the palace administration to check and record disbursement and incoming quantities of precious materials and objects. More than forty stone weights were retrieved in the palace, with at least two significant concentrations that permit the localization

of weight sets. The evaluation of the archaeological indicators, based on the distribution and associations of these various categories of object, makes readily identifiable the 'places' appointed to house single or multiple parts of the procedural chain of administrative activity: the final stage in the codification of economic transactions consisted of written cuneiform texts on clay tablets; the interim level of recording is represented by the cretulae used to seal goods of various sorts; and the most crucial steps in recording, when goods enter or leave the palace, are distinguished by various forms of weighing operation.

L'état de conservation extraordinaire du Palais Royal G d'Ebla (c. 2400-2300 BC), avec une grande quantité de matériaux scellés par les niveaux de destruction, ainsi que la présence des archives centrales et temporaires dans plusieurs salles des ailes officielles du complexe palatial, permettent une analyse détaillée de la distribution et des types d'indicateurs et de contrôle des échanges.

Documents économiques écrits, scellés (cretulae, bullae et scellements de jarres) et poids, témoignent des activités économiques menées dans le palais et fournissent des informations combinées sur les procédures administratives. En plus de ces documents, les matières premières précieuses brutes (en particulier le lapis-lazuli), les produits importés, tout comme les objets fabriqués à partir de matériaux importés, montrent le contrôle de l'administration palatiale sur la production de biens de luxe et l'étendue du réseau d'échanges interrégionaux d'Ebla.

En plus des archives administratives (qui comprennent des milliers de tablettes), la gestion et la circulation des marchandises sont consignées sur des empreintes de sceaux cylindriques et sur le matériel céramique. Dans le palais ont été trouvées près de deux cents empreintes de sceaux cylindres sur argile et plus de cinquante jarres de stockage avec empreintes de sceaux. Les cretulae proviennent de différents contextes fonctionnels, avec des concentrations importantes uniquement dans les magasins nord et les archives centrales, tandis que des jarres portant des scellés étaient dispersées dans différentes

zones, y compris l'entrepôt nord, les unités du Quartier Central consacré au traitement des denrées alimentaires, et la « cuisine » qui ouvre sur la partie basse de l'Escalier Cérémoniel. La troisième catégorie d'indicateurs de gestion administrative des produits est représentée par des poids, un outil très important pour que l'administration du palais puisse vérifier et enregistrer les quantités de matières premières précieuses et d'objets sortis ou entrés. Plus de quarante poids en pierre ont été retrouvés dans le palais, avec au moins deux concentrations importantes qui permettent la localisation de jeux de poids. L'évaluation des indicateurs archéologiques, considérant leur distribution et leurs associations, rend facilement identifiables les « lieux » désignés pour abriter des pièces individuelles ou multiples de la chaîne opératoire des activités administratives: la dernière étape dans la codification des transactions économiques consistait en textes cunéiformes écrits sur des tablettes d'argile; le niveau intermédiaire de l'enregistrement est représenté par les cretulae utilisées pour sceller des produits de différents types; et les étapes les plus cruciales dans l'enregistrement, lorsque les marchandises entrent ou sortent du palais, se distinguent par diverses formes de pesage.

The study of the relationship between the circulation of consumer and prestige goods, modes of exchange and methods of centralized administration in Mesopotamian and Syrian cultures during the Early Dynastic/Early Syrian period (c. 2900-2300 BC) is crucial for an understanding of economic growth immediately following the urban revolution in the ancient Near East.

The number of single contexts containing objects which can be analysed in order to reconstruct the procedures and processes of administration, exchange and redistribution of goods at different levels of the social hierarchy – and are also in reliable physical association – is extremely low.

This makes it difficult to obtain a consistent, detailed picture and obliges us to combine information from different sources. Thus, single segments of palace and temple administrations have been reconstructed on

the basis of written documents (e.g. Prentice 2010 for the archive of Lagash), centralized management methods of goods and raw materials identified for several cities (Matthews 1991; Oates 1993), the operative system of economic exchange on the basis of the value of goods and their equivalents outlined (Milano 2003a), and a model proposed for the long-distance exchange of prestige assets and objects (Lamberg-Karlovsky 1975; 2009). But many uncertainties still remain regarding the functioning of and interrelations between economic and administrative sectors in the various political/territorial entities present in Sumer to the south, as well as in Syria and Upper Mesopotamia.

Hence the evidence concerning the kingdom of Ebla in the Mature Early Syrian period (c. Early Bronze IVA, c. 2500-2300 BC) offers a rare opportunity to integrate textual information from the State Archives and archaeological data from the capital's royal palace (Matthiae 2008; 2010a: 64-188). The building's exceptional state of conservation and the presence of a widespread final destruction deposit which sealed material *in situ* mean that an analysis of the distribution and types of the various archaeological indicators of exchange and the control of exchange may be conducted with reference to their functional contexts (**Fig. 1**) (Peyronel 2006).

Among the tens of thousands of finds found in direct association with floors and collapsed structures, some categories of artefacts are clear indicators of the centralized management of certain goods and provide integrated information regarding administrative procedures. In addition to economic documents, it is above all sealings (*cretulae*, *bullae* and jar-sealings) and balance weights that attest to the economic activities conducted within the palace.

Together with these indicators, unworked precious materials (in particular lapis lazuli, but also quartz and shell), imported items (such as alabaster vessels from Egypt and Southern Levant), and objects manufactured from imported materials (silver and gold, semi-precious stones, steatite/chlorite,

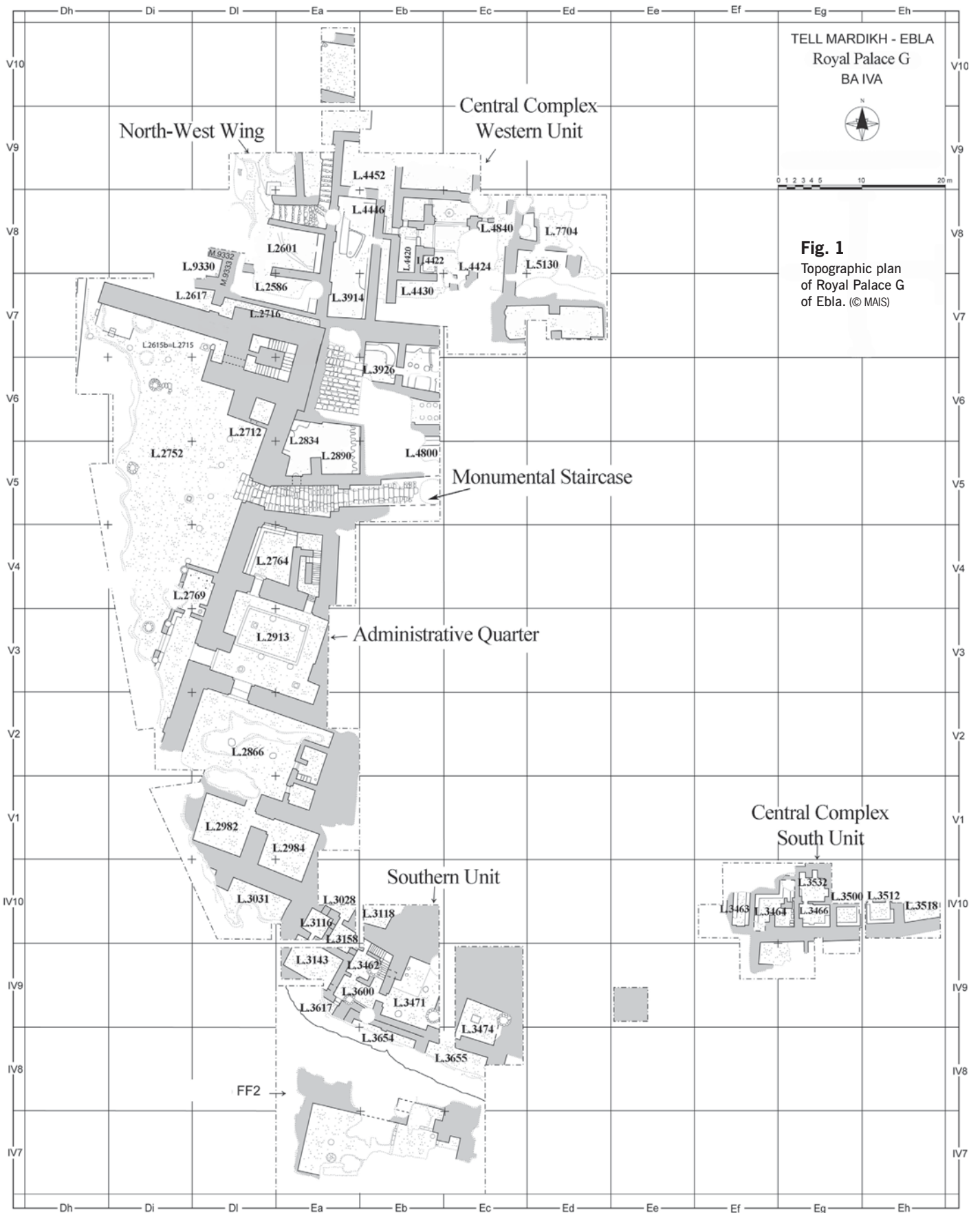
calcite, jasper, shell etc.) show on one hand the palace administration's control over luxury goods production, and on the other, Ebla's extended interregional exchange network (Pinnock 1991; Peyronel 2012).

Copper and tin were alloyed to make bronze; textual sources record percentages of tin ranging from 8 to 17%, which match with the optimal tin:copper ratio of 1 to 9 (Archi 1993a). The results of analysis performed on samples of bronze items from the palace show that some artefacts had similar percentages (Palmieri & Hauptmann 2000; Felici & Vendittelli 2013). Gold was always alloyed with silver and in some cases also with copper, again offering interesting comparisons with the different qualities of gold mentioned in the texts (Peyronel 2012: 478-479).

The excavated portion of the palace did not however include workshops, although administrative writings refer to craftsmen (weavers, smiths, carpenters) working in squads under the control of overseers (Archi 1988; Peyronel & Vacca 2013: 436-444).

Grinding of cereals and flour milling was carried out by female workers (*dam kikken*) in specific quarters of the building (Archi 1999) and a wide sector of the so-called Central Quarter (the North and West Units) was in fact devoted to processing and storing foodstuffs on a large scale (olive oil, barley and other cereals), as demonstrated by the presence of pottery equipment, installations and facilities and botanical remains (Peyronel et al. 2014: 4-17).

The epigraphic records of Ebla's State Archives are largely composed of various formats of administrative documents dealing with diverse topics (Matthiae 2008: 79-91). Analysis of the types of accounting of the goods entering and leaving the palace reveals that the palace bureaucracy used diversified and clearly-defined registration procedures, with certain types of material summarized in monthly accounts (mainly textiles), others in annual reports detailing incomings and outgoings (precious metals, precious metals and textiles), and yet others recorded less frequently, featuring in only several dozen documents (livestock, agri-



cultural produce) (Archi 2003a). Single and partial registrations – recorded on lenticular tablets – were progressively eliminated, in favour of other small summary tablets giving annual totals and, especially, large monthly and annual tablets. It is also highly probable that further sectors of the city's economic life were based in portions of the building as yet unexcavated, as in fact would seem to be indicated by five tablets from the Southern Unit of the Central Complex, which list goods and property of the palace (Archi 1993b).

The distribution of the archives within the sections of the palace demonstrates the diversification of the various groups from the Administrative Quarter and rooms annexed to the Audience Courtyard (in first place the Archive Room L.2769, **Fig. 2**), with archives organized largely according to content and chronological order (Matthiae 1986; 2008: 63-77; Archi 1986; 2003a). The great majority of texts document the last forty years of the kingdom and refer to the reigns of the city's last three sovereigns (Igrish-Khalab, Irkab-Damu and Ishar-Damu). The relative text sequence was drawn up using three major groups of administrative texts, the monthly groups of administrative texts, the monthly accounts of distribution of textiles (**Fig. 3**), the annual accounts of distribution of metals and textiles and the annual deliveries to the palace. The history of the Ebla kingdom during the period of the State Archives has been outlined, not without controversy on some issues, on the basis of the references to historical events in administrative texts, cross-checked with information obtained from a tiny number of other texts (Biga 2003a; 2008; 2015; Matthiae 2008: 95-110; Archi 2015, with previous bibliography).

The definitive overall archive L.2769 that opened onto the east portico of the Audience Courtyard functioned together with vestibule L.2875, where texts were probably drawn up and prepared, and where several distinctive kinds of document (such as letters and legal documents) were kept for a limited period. Other primary, but probably temporary, archives were located in the trapezoidal room L.2764 in the northern



Fig. 2
Cuneiform tablets
fallen down on
the floor in the
archive L.2769.
(© MAIS)

sector of the Administrative Quarter and in small rectangular room L.2712 in the north-west corner of the Audience Courtyard, arranged on wooden shelves or open plastered counters. Other minor section might be divided into primary contexts for temporary consultation (like the tablet group in jar L.2586 or the fifteen or so documents in compartment L.8496, on the east side of the Reception Room L.2866 in the Admin-

Fig. 3
Monthly account
of textiles
(TM.75.G.1345)
from L.2769.
(© MAIS)



istrative Quarter) and various types of secondary documents (such as the twenty-one tablets found on a carbonized wooden table in the Audience Courtyard, which were abandoned there at the moment the palace was sacked; Matthiae 1986: tav. 15) and the various fragmentary tablets scattered in the colonnaded court (L.2913) inside the Administrative Quarter.

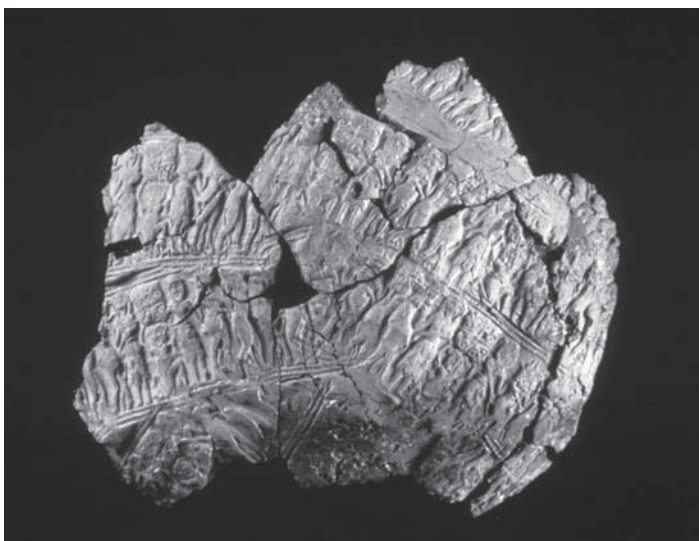
Thus the ways in which the texts were stored varied according to archive location function and archive specificity (wooden shelves in L.2769 and L.2712, plastered bench in L.2764 and also in L.2875, jars and baskets in L.2586 and also in L.2769 under the wooden shelves) and document categories seem to correspond to precise organizational criteria of the final and temporary archives (Matthiae 1986). Thus, archive L.2712 conserved documents regarding the delivery of quantities of foodstuffs (oil, flour, beer, less frequently also metals and textiles) to palace functionaries, with accounts mainly for the palace's last months of activity; in L.2769 the economic texts were above all monthly textile accounts (more than 550 tablets), annual textile and metal accounts (incoming and outgoing), lenticular tablets with annual summaries regarding metals, and a few documents concerning livestock and estate management; vestibule L.2875 contained important official documents, letters and royal orders, as well as economic documents, perhaps destined for transferral to

the central archive, since they referred to the administration of the current year; in L.2764 lenticular texts with registrations of precious metals and animals, and texts recording consignments of barley and other cereals from villages, predominate: accounts of the year's agricultural production; the L.2586 tablet group was kept in a jar for interim consultation, and almost all texts referred to consignments of silver and gold objects, while the texts discovered in room L.8496, next to the large reception room L.2866, are fairly homogeneous: they are related to a palace administration section under the control of the official Enzi-Malik, and record especially deliveries of gold and silver to palace personnel (Matthiae 2010b: 273).

In addition to the administrative archives, the management and movement of goods is recorded by the use of cylinder seals on sealings and on pottery vessels. In the palace were found around two hundred clay sealings with cylinder-seal impressions and seven inscribed *bullae* ('hanging nodules') without seal impressions. These constitute the clearest archaeological evidence of control and management operations with regard to goods and places on the part of the palace administration machinery (Peyronel 2006: 262-266; Micale & Nadali 2010; Pinnock 2013). All the *cretulae* from Royal Palace G bear on their surfaces one or more cylinder-seal impressions, always made by the same seal (but in at least one case a sealing was attached above another such, but stamped with a different seal: Micale & Nadali 2010: 13, fig. 8). The number of different seals represented by their imprints is quite low: fifteen seals with the complete scene and a few with fragmentary figurative pattern. Four seals were inscribed with the names of palace officials: Rei-Na'im (one seal documented by 12 sealings) and Ibdulu/a (three different seals with 21, 18, and 5 sealings), both attested also in cuneiform administrative records (Micale & Nadali 2010: tab. 1). All sealings are un-inscribed except two bearing short cuneiform texts (Fig. 4). The latter are both sealed with one cylinder seal of Ibdulu/a, who is mentioned in some cuneiform texts from the archive in

Fig. 4

Cretula
(TM.76.G.827+842)
with cuneiform
inscription
(TM.76.G.827+842)
with cuneiform
inscription. (© MAIS)



L.2764 as an overseer (*ugula*) of agricultural and husbandry activities. They perhaps sealed baskets (as indicated by impressions of twisted strands of plant material on the backs) containing receipts and accounts of levies paid by village communities or palace farms, as indicated by inscriptions giving quantities of livestock (Archi 1996: 29-35, nos. 8-9; Micale & Nadali 2010: 15). In this respect, from a functional point of view they resemble the seven inscribed *bullae* ('hanging nodules') without seal impressions, which are perforated and ovoid in shape. These were affixed to containers of goods as described on the inscription or containers of various tablets and records. Four come from the central archive L.2769 (it is possible that they were kept here as administrative documents) and the others from L.2913, L.2586, and L.2917 (Archi 1996: 29-35, nos. 1-7).

The total number of sealings is not enormous compared to figures from other contemporary cities (e.g. Oates 1993; 2001 for Tell Brak/Nagar; Jans & Bretschneider 2012 for Tell Beydar/Nabada; Martin & Matthews 1993 for Abu Salabikh), and it seems plausible that the centralized warehouses and related seal dumps were located in areas of the building that have not been excavated. This hypothesis seems confirmed by the distribution of the material: almost all the sealings come from just two adjacent rooms, L.2716+L.2617, located at the back of the northern wall of the Audience Courtyard.

These are long, narrow storerooms in which storage jars and other containers were kept under the control of the palace administration. Room L.2716 contained ten or so jars and the burnt remnants of wood and vegetable fibres, remains of wooden containers and baskets; in the eastern part of narrow room L.2617 were found no less than 24 ovoidal jars with swollen rims, with tripod or simple convex base, lying on their sides with necks towards the south wall (probably empty when the palace was destroyed), more than seventy goblets piled up in the north-western corner, and some jars and vessels in the south-western part (Mazzoni 1982: 152). About seventy sealings were discovered strewn over the floor of L.2716,

variously associated with the jars and other containers, while a further 32 sealings were gathered together just beyond the threshold of the storeroom L.2617; in all likelihood they were a temporary goods sealings archive kept inside a perishable container. Probably then, the external storage room was used for redistributing the products kept in the jars and in the entranceway to the corridor-storeroom some of the broken sealings had been collected, while in the interior empty jars were deposited.

The functional analysis of this group of ceramic vessel sealings reveals the existence of three general types: the strip-sealing with triangular cross-section applied to the jar neck where a cloth was wrapped over the mouth, closed with a clay stopper, was held in place by a knotted rope or string; the large cap-shaped *cretula* (Fig. 5), sealing the mouth and neck of the jar; and the jar stopper sealing with one to three impressions on the upper side. The first type is generally predominant, while a few examples of the other two are known (Matthiae 1995: 101-103; Pinnock 2013: 66-67).

Cretulae were mainly applied to storage jars, but are also documented on other kinds of containers such as baskets or wooden boxes, while door-sealings (with pegs and string impressions at the back) seem to be lacking in northern storerooms. Just two very fragmentary *cretulae* found in L.2769 could be interpreted as door-sealings (see *infra*) and so we have no reliable archaeological



Fig. 5
Cretula
(TM.75.G.588)
from L.2716.
(© MAIS)

evidence for the existence of sealed storerooms, and the interpretation of rare references to the closure of doors with ropes and pegs in Eblaite texts is controversial (Biga 1985; *contra* Mander 2000: 39).

With the exception of sporadic finds in rooms of the Administrative Quarter – evidently referable to sealed perishable containers that held objects or tablets (from L.2913, L.2764, L.2906+L.2917, L.2866), as indicated by the presence of ‘thin band’ types with string marks that would have been affixed to lightweight goods of small bulk, functionally similar to the ‘hanging nodule’ – the only concentration of sealings comes from the central archive L.2769 (24 exemplars, including 4 inscribed hanging *cretulae*). The presence of these sealings, of which a couple might be from door-sealings, suggests two alternative explanations: the hanging seals (inscribed) seem to have functioned as archive documents after their original usage (that is, the sealing/labelling of containers for tablets or objects/other goods), although it is also possible that at least one of them was employed *in situ* on a basket containing small lenticular tablets in the archive, placed under the wooden shelving. It is more difficult to evaluate sealings without writing applied to jars and other containers and closed doors; it seems improbable that large quantities of goods in containers were present in the central archive, so these sealings must have been kept in L.2769 for some motive connected with the written recording of economic operations involving them. The door-sealings might also belong to the post-use archive category, whereas the hypothesis of their direct function as an instrument of control of access to the archive would appear unlikely.

A recent analysis of 56 *cretulae* bearing the impressions of the two inscribed seals of Re-Na'im and Ibdulu/a (Micale & Nadali 2010) showed an interesting correlation between the distribution of sealings, types of sealed container, and the administrative activities of the seal's owners. Thus Ibdulu/a used one seal on *cretulae* from archives L.2769 and L.2764, which sealed wooden boxes (also containing cuneiform tablets?), and was

probably in charge of the administrative control of crops and livestock, while he also had two other seals for redistributive control of foodstuffs kept in jars stored in the northern warehouse (L.2716+L.2617). The seal of Re-Na'im was found on jar impressions in the latter storerooms and he must therefore have been one of the officials involved in the control of the storerooms.

The seals of the two functionaries and those without writing, which undoubtedly belonged to senior administrative officials, were produced in Eblaite glyptics workshops and depicted contest scenes in a distinctive courtly Early Syrian style, in which figures of the Mesopotamian Early Dynastic repertoire, like the bull-man, the lion, the bull, the deer, are combined with others exclusive to the Early Syrian artistic milieu (the frontal female deity, frontal detached animal and human heads, and supra-natural kneeling hero holding a symbol made up of four heads) (Matthiae et al. 1995: 384-388, nos 222-231; Matthiae 2010a: 173-178).

The only original cylinder seal from the palace glyptics workshop thus far discovered was found in a room of the northern quarter at the back of the Audience Courtyard (L.9583) (**Fig. 6**). It is a white limestone seal with golden caps and a gold revetment of the perforation, depicting in the lower register a contest scene with two groups of figures (a frontal female deity holding the hind legs of two downturned lions which are also grasped by a male and female human personage, probably the king and the queen, with a bull-man holding the tail and mane of a lion which bites the neck of a deer) and an upper frieze with a series of animal and human heads (Matthiae 2010b). The upper register features as well a short cuneiform inscription with the name Ushra-Samu, obviously the seal's owner, who is also mentioned in some administrative documents and may thus be identified as a high official. Another use of cylinder-seals documented in the palace is that of imprinting pottery containers before firing. The Eblaite corpus includes more than fifty exemplars, all with different cylinder-seal impressions, usually on the vessel rim or shoulder (Mazzoni



Fig. 6
Cylinder seal
(TM.07.G.200)
of Ushra-Samu.
(© MAIS)

1992; 1993; 2013). Two main types of containers are thus stamped at Ebla: ovoid corrugated jars and ovoid jars with swollen rim and tripod base (Fig. 7). The cylinder seal impressions always feature a linear cursory style with plant and geometric motifs combined with schematic animals or humans, mainly related to herding scenes.

The presence of several seal-impressed jars in the royal building might have been generally indicative of the process of centralization and redistribution of products in the Ebla kingdom; the practice was widespread in the northern and southern Levant during

the Early Bronze III-IV (c. 2700-2000 BC). Different possible explanations have been proposed for the occurrence of seal-impressions on specific classes of pottery containers: a system to indicate the products or the quality of products stored in the vessels, the use of the containers, the location of the pottery workshop, as well as symbolic or merely decorative meanings (Mazzoni 2013; Peyronel et al. 2014: 20-27, with previous bibliography).

Summing up, Royal Palace G *cretulae* come from various functional contexts, with significant concentrations only in the northern

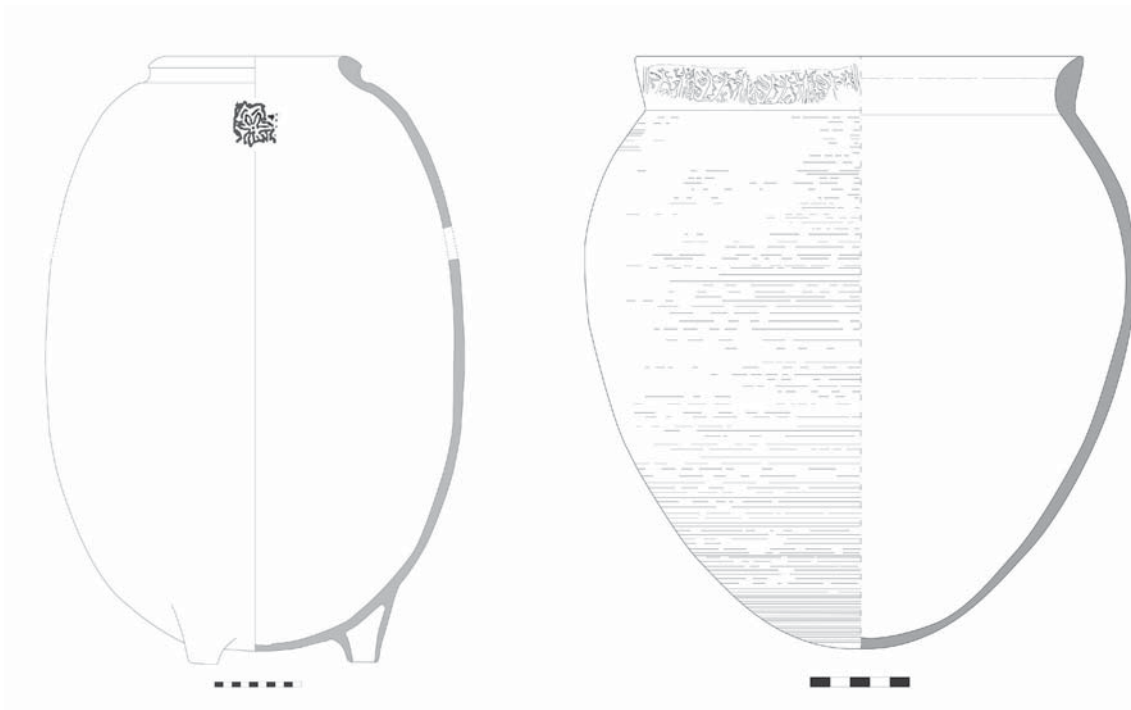


Fig. 7
Seal impressions
on grooved jar
(TM.89.G.383-1)
and ovoidal tripod jar
(TM.75.G.280-18).
(© MAIS)

storerooms and central archive: the contexts reveal two unusual types of use and archiving in the palace: the stores contained sealings *in situ* still in association with the jars and other containers that they sealed, as well as a temporary archive set aside near the door that joined the two rooms, the easternmost of which was a narrow corridor containing empty storage jars; the group of sealings and *bullae* from the central archive L.2769, on the other hand, demonstrates the conservation of such items after their initial use as documents for checking economic transactions; whilst the possible presence of a group of *cretulae* for controlling access to the archive cannot be ruled out, it seems rather unlikely.

Seal-impressed jars were scattered in various quarters, including the northern warehouse, the North and West Units of the Central Quarter, devoted to processing foodstuffs, the South Wing of the Central Quarter, and the 'kitchen' (L.2890) which opened at the bottom of the Ceremonial Staircase, certainly the place where special kinds of beverages were prepared for consumption in the large Audience Courtyard, as revealed by the variety of wild plant species including several with medical and/or psychoactive properties (such as *Euphorbia*) (Peyronel et al. 2014).

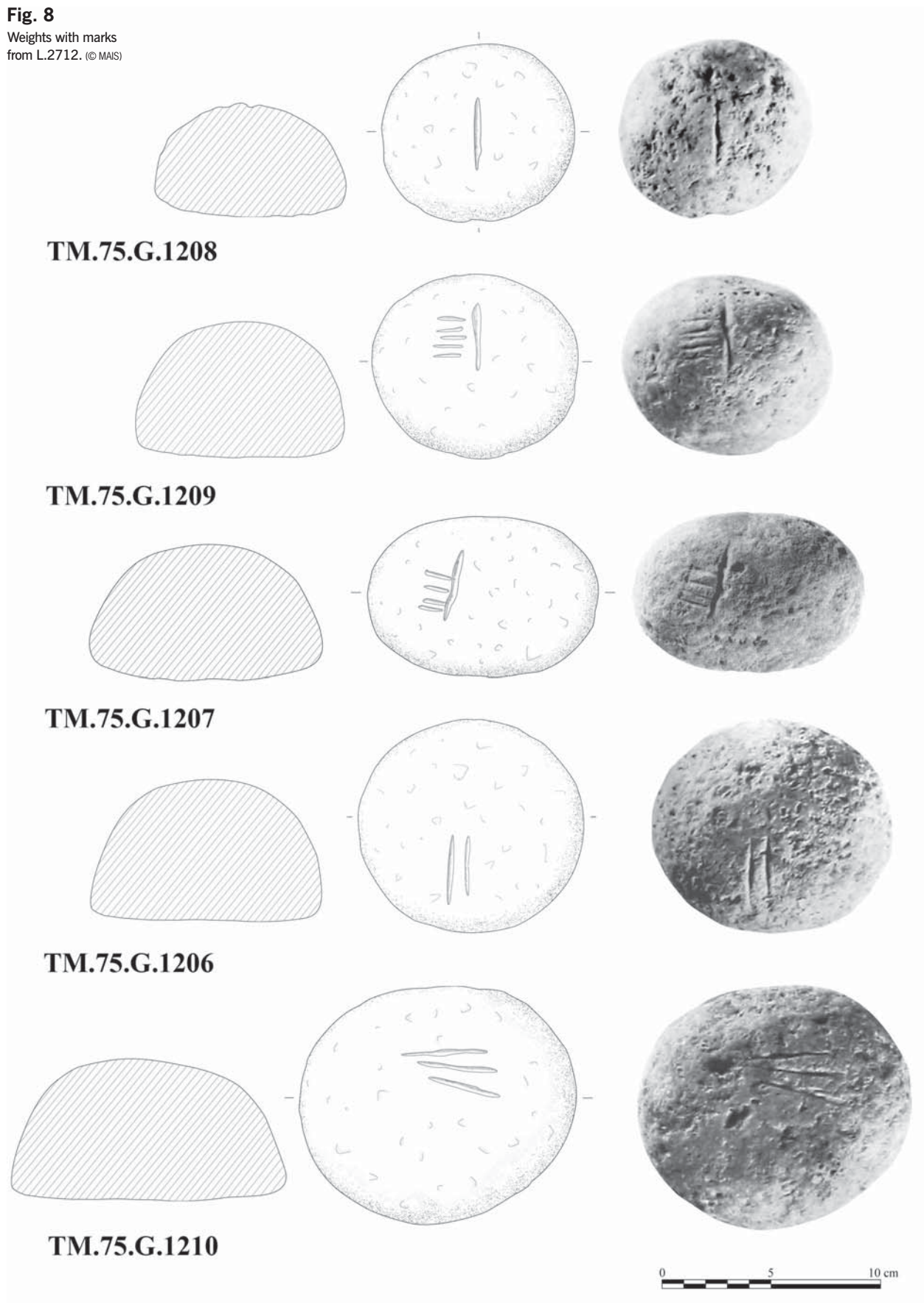
The third category of indicators of administrative management of goods in the palace is represented by balance weights (Ascalone & Peyronel 2006). These were a fundamental tool enabling the palace administration to check and record disbursement and incoming quantities of precious materials and objects (and their value). They were also certainly used for product redistribution and the consignment of raw materials to be worked. This precious archaeological indicator thus furnishes information regarding the levels of both 'internal' and 'external' exchange: the study of weighing reference systems and any weights with inscriptions and incisions may reveal the conversion factors used for goods originating from zones where systems different from the local one were used. During the epoch of the archives at Ebla the so-called 'western' system was

in use, based on the light mina of c. 470 g, made up of 60 shekels of c. 7.8 g. The other two 'subsystems' of the western area were also known: the 'Levantine' with a shekel of c. 9.4 g and the 'Anatolian' with a shekel of c. 11.7 g. These originated in the coastal Levant and Anatolian regions respectively, and were connected by a shared mina which was equivalent to 50 units in the first case and 40 in the second (Archi 1987; Ascalone & Peyronel 2006: 80-121). Epigraphical records confirm the use of the sexagesimal system, supply the terms used for the various subdivisions of the shekel (Chambon 2011: 58-61) and also inform us of the existence of a structured system of measurement units for wool (Zaccagnini 1986), used for calculating the quantity of the unworked raw material.

Some weights might be related to a unit of 6.3-6.8 g, and its 10-fold and 100-fold multiples, showing the presence of a system probably used for weighing wool and/or textiles, which could correspond to the measures indicated in the texts (Peyronel 2014: 126-128).

More than forty stone weights were found on the internal floors of the palace building, with at least two significant concentrations that permit the localization of weight sets, probably preserved in – or in the vicinity of – the places where they would normally have been used (Ascalone & Peyronel 2006: 179-204). The most interesting contextual evidence concerns without doubt the archive-room L.2712, where six basalt and limestone weights, marked with grooves or incisions, were found together (**Fig. 8**) (Ascalone & Peyronel 2006: 186-189, nos. 8, 48-52). Although there are various interpretations of the ponderal significance of the signs on these weights (see Peyronel 2014: 127), there is general acceptance that a dome-shaped specimen marked with a groove on the top is referable to a mina of c. 470 g, and that there is a series of multiples with masses from c. 575 g to c. 2230 g: marked by a groove with five perpendicular incisions (574.3 g), a groove with four incisions (666.1 g), two (860 g) and three (1332 g) grooves, and without ponderal

Fig. 8
Weights with marks
from L.2712. (© MAIS)

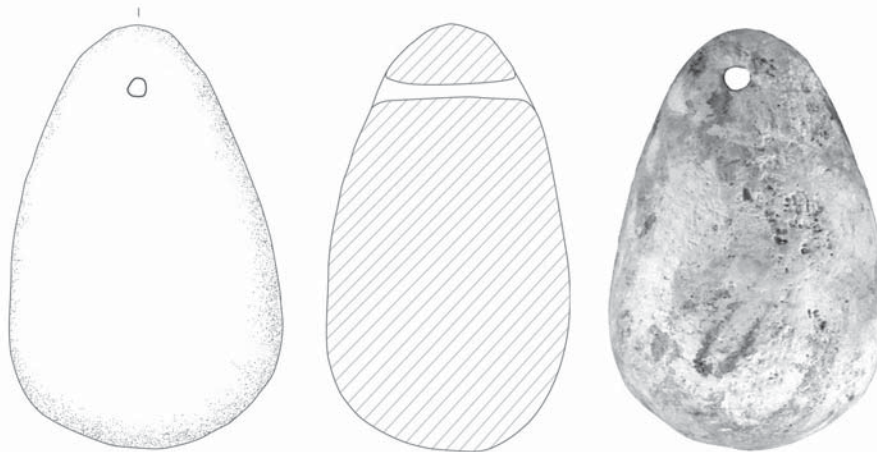


marks (2232 g). Members of this group have in common shape (semiovoidal), material (local limestone or basalt) and ponderal marks (grooves and incisions); it seems likely that they were used to weigh goods distributed within the court and recorded in written documents kept in the same room. According to A. Archi (1987: 48) the weights might be 1, 1+1/5, 1+2/5, 2, 3, and 5 western minas (but the last three exemplars refer to an under-weight mina, between 430 and 446 g), while A. de Maigret (1980: 167) proposed a set in which the first two weights

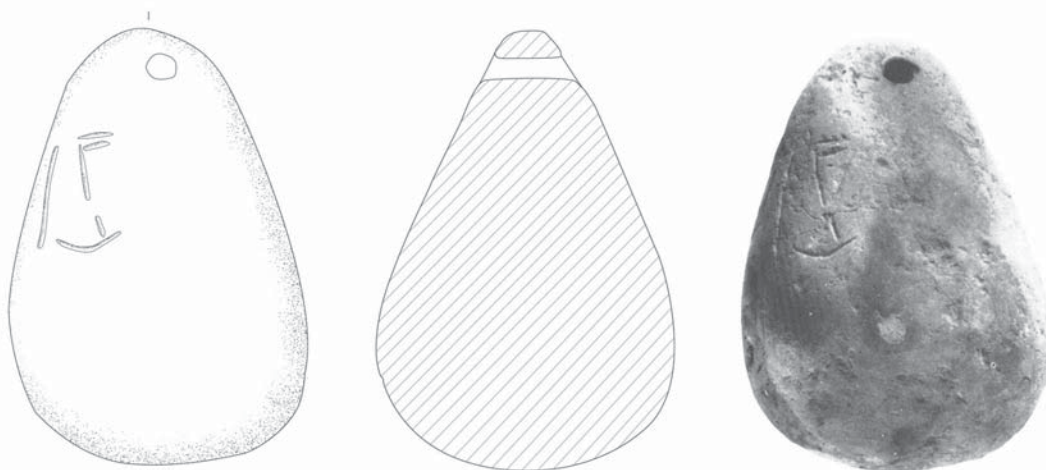
correspond to 1+1/6 and 1+2/6 mina, and C. Zaccagnini (1999-2001: 40, 48-49) correctly pointed out that the set also included exemplars which might be related to a mina of c. 660 g.

The majority of the other exemplars are small, carefully manufactured iron oxide weights (hematite, goethite and magnetite), evidently used on balances with two bronze pans for the precision weighing of precious and semiprecious materials. Two shapes predominate: barrel-shaped with or without a flat base (sphenonoids) and spherical.

Fig. 9
 Pear-shaped weights
 from L.2982
 (TM.03.G.676) and
 L.2906 (TM.77.G.640).
 © MAIS



TM.03.G.676



TM.77.G.640



Sphendonoids came from the Administrative Quarter, and were found in courtyard L.2913 and understairs L.2906/L.2917. The latter must be considered a sort of small storeroom for objects and instruments, as indicated by the number of artefacts discovered inside it, while probably the isolated presence of weights in vestibule L.2875 and courts L.2866 and L.2764 may be attributed to their dispersion as a result of the sack of the palace.

A concentration of seven spherical hematite weights occurred in room L.3532 in the South Unit of the Central Complex, a wing mainly used for storing pottery and food-stuffs, although the scale-set indicates that metrological operations were carried out too in the quarter (Ascalone & Peyronel 2006: 201-202, nos. 27, 31, 35-37, 41, 44). It is noteworthy that the group is mainly related to a 6.6 g unit.

Finally, another very distinctive group of weights was found in the palace, with five exemplars, two of which came from the Administrative Quarter (L.2906 and L.2982) and were associated with pieces of lapis lazuli (Ascalone & Peyronel 2006: 73, cat. nos. 71-75, pls. 21-23). These were large weights in polished limestone, conical or pear-shaped and pierced by a horizontal hole near the apex (**Fig. 9**).

Four conical weights have masses that fit perfectly with a double western mina of c. 470 g, while the exemplar from L.2906 bears the inscription $na_4 \text{ } \check{s}a-da-su^{ki}$ ('weight of/from Shadasu') and might be considered a double 'hybrid' mina of 564 g (mass 1107 g = 120 shekels of 9.22 g), which probably was a foreign mina, making necessary an inscription indicating the provenance (Ascalone & Peyronel 2006: 119).

The discovery of a carbonized wooden rod next to another pear-shaped weight, surrounded by chunks of rough lapis lazuli that were either scattered or still in groups (of lumps, fragments and chippings, in some cases roughly-worked with cut grooves; Pinnock 2006), allowed the identification of the balance with which the lapis lazuli was weighed, and the inference that this kind of pear-shaped weight was used by

the administration for measuring the quantity of chunks of the mineral accumulated in the palace and consigned to craft workshops for the production of small statues and ornaments (Peyronel 2011: 110-111). Weighing would have involved the use of a balance with the weight at the end of one arm (attached by means of the perforation) and a container of perishable material at the other in which the lapis lazuli was placed. It is thus possible to envisage a system whereby a number of lumps of unworked lapis lazuli (about a kilogramme in total weight) were weighed on a balance without pans, whereas the consignment of small quantities to craftsmen may have been done using a classical balance with bronze pans and small hematite weights.

A notable quantity of lapis lazuli – more than 43 kg – was found in the Administrative Quarter, scattered on the floor of courtyard L.2913 and concentrated in the two rooms (L.2982 and L.2984) at the back of reception room L.2866, probably the palace treasury (**Fig. 10**) (Peyronel 2006: 270-271; Pinnock 2006). However, lapis lazuli appears rarely in Eblaite texts, and always with reference to small quantities, so it is clear that the records we possess do not relate to the trading of this mineral; it is also possible that the court registry was not particularly interested in written records of the material that entered, while the functionaries responsible for weighing operations undoubtedly would have been (as indicated by the piriform weights, cf. *supra*). In the

Fig. 10
Lapis Lazuli from
L.2982. (© MAIS)



light of the known written evidence it would seem that there was a special relationship involving Mari and the supply of the mineral by Eblaite merchants, evidence that the Euphrates route was the main axis of the lapis lazuli trade (Archi 1985: 68).

This short outline of the main functional categories of administrative tools has highlighted a number of internal distributive features for each class, but it is especially by comparing the different location models and artefact associations that a better understanding may be gained of how administrative procedures and economic operations were conducted in relation to the architectural geography of this large Early Syrian palace building.

The majority of economic, commercial and political affairs were carried out in the Audience Courtyard, often in the sovereign's presence, while the concrete results of these were managed, recorded, administered and formalized by means of processes whose archaeological indicators were distributed in locations near to the court. Four different sectors may be identified on the basis of the exchange, redistributive and administrative activities that regard the materials considered here, each of which relates to the architectural focus of this part of the palace, the central court (Peyronel 2006: 272-273, tab. 1).

The northern sector, entered through a doorway positioned near the dais on which the king's throne stood, housed the depositories of storage jars and foodstuffs. These were controlled and administered by high palace officials by means of sealings on the jars, wooden boxes and baskets. In the courtyard itself were located two final archives of cuneiform tablets: the 'Small Archive' L.2712 in the north-west corner contained records of the redistribution of foodstuffs (probably those kept in the northern storerooms), textiles and stocks of precious metals for functionaries and other palace personnel (cuneiform tablets) (Milano 1990; 2014) just beyond it weighing operations concerning the goods indicated on the tablets were performed (weight set with marked exemplars in L.2712). On the western side, next to the Administrative

Quarter, was the final archive of general palace administration records L.2769 (tablets, *bullae*, *cretulae*). Sealings found there might be considered either administrative documents *per se* or may have sealed perishable containers of cuneiform documents.

The Administrative Quarter was the fulcrum of the palace's economic management: it was devoted to central administration – as shown by tablets kept there for temporary consultation, the administrative control of goods (*cretulae*), exchange (scale weights), and the storage of general goods and precious materials (lapis lazuli, precious objects, etc.). This most important portion of the palace may be divided into two zones, northern and southern, between which was situated the reception or throne room L.2866, where activities in part similar to those of the Audience Courtyard would have been conducted, thus duplicating reception area operations. In the northern part interim administration (tablets, *bullae*), administrative goods control (sealings and *bullae*), and exchange controls (weights) were performed, and precious goods stored (understairs, upper floor). The southern administrative area comprised two rooms, L.2982 and L.2984, used as deposits for precious goods and materials, as well as for merchandise control operations (weight checking) – or at the very least balances were kept there too. These subdivisions correspond to various different activities – or with the precise location of indicators of these – which followed or were subsidiary to the conduction in a unified site of most of the operations. The 'central' places of different portions of the palace's economic administration were the two reception areas, the large Audience Courtyard, on the north side of which stood the podium for the sovereign's throne, and room L.2866 in the administrative quarter, which also contained cuneiform tablets in the compartments on its western side. These two reception areas were joined by ramped staircases to the upper floor where the residential quarter would have been.

The management of Ebla's economy in the Early Syrian period has been exhaustively

analysed on the basis of the information contained in the written documents, with regard to both primary production and managed exchange (see especially Biga 2014; Archi 1982; 1984; 1988; 1991; 1999; 2003b; 2011; Milano 1996; 2003b).

An evaluation of the archaeological indicators discussed above, based on the distribution and associations of these various categories of object, also makes readily identifiable the 'places' appointed to house single or multiple parts of the procedural chain of administrative activity. The final stage in the codification of economic transactions consisted of written cuneiform texts on clay tablets, of which both intermediate forms (lenticular tablets, temporary archives), and final ones (monthly and annual summary tablets, the final archive) are seen in the archaeological record. *Bullae* (pendent sealings) stand at the margin between written record and administrative control by means of sealing, and occur both as 'labels' for groups of other written documents (a registration of registrations) and of goods containers. The interim level of recording is represented by the *cretulae* used to seal goods of various sorts; these indicators are found in 'exclusive' contexts where they regard only the goods that are sealed (northern wing storerooms), and also more rarely in locations where multiple activities were carried out (Administrative Quarter), while their principal role as administrative tools (used for checks conducted subsequent to their original use) is shown by the discoveries in the central archive. The most crucial steps in recording, when goods enter or leave the palace, are distinguished by various forms of weighing operation (as outlined above); these may be 'internal'

(distribution of goods to functionaries and craftsmen) or 'external' (weight checking and the conversion of different metrological units, weighing lapis lazuli etc.). In the case of the northern storeroom wing, where the measures were determined by the jars themselves, or at any rate not by means of balance weights, the sealing is clearly also the basic record found as direct archaeological evidence.

These procedural sequences must ultimately be considered in relation to how the economic administration functioned. At Ebla there is clear evidence of the simultaneous presence of different modes of exchange: whereas redistribution (storerooms with sealings, archive L.2712, the weight set in L.2712, various kinds of written record) and reciprocity (especially written records, but also imported precious objects; Archi 2011) are reflected both by concrete archaeological and epigraphic evidence, the presence of forms of trade not managed by the palace administration is glimpsed only through the use of certain specific terms and references to festivals and fairs, where there was more possible opportunity for 'private business' (Biga 2003b).

The continuing publication of archive texts and a detailed study of the archaeological finds, thanks also to archaeometric determinations of raw-material provenance, will undoubtedly enable us to understand the functioning of Ebla's economy and administration in increasing detail, but only through the careful integration of specific epigraphic and archaeological data will it be possible to establish its distinguishing characteristics, operational methods and the activities and actions attested by written records and physical remains.

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