

Passing the baton: The bone tool materials from the archaeological site of Arslantepe Tell in Türkiye

Le passage de témoin : les outils en os du site archéologique d'Arslantepe Tell en Turquie

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Abstract: Long-term excavations hold an enviable potential for producing deep and detailed investigations. The excavated surfaces recovered tend to be large, producing artifacts from comparable and well-understood contexts. Such excavations, however, pose theoretical and methodological challenges. Discontinuity and unplanned transitions in research practice can produce biased results or even actual loss of data, not to speak of loss of scholarly insight gained from long years of experience. Such gaps in professional continuity undermine comparisons between old and new datasets, ultimately representing a loss to the archaeological understanding of the site. The University of Rome's excavations at the tell site of Arslantepe (prov. Malatya, Türkiye) have been continuous for 64 years. The long years of excavations also saw many methodological changes, especially in recording, documentation and digital mapping practices. Focused bone tool research only began in the mid-1980s. With the present changing of the “bone tool guard”, the authors have concentrated on establishing a bridge between former research protocols and the new research vision to transform challenges into opportunities. The assemblage will now be studied from a variety of both new and old perspectives. The aim is to avoid loss of old information and avoid contradictions in data management. In this paper, special attention is devoted to how transitions between the original, experienced specialist and the up-coming new specialist have been planned, and the challenges, both positive and negative, that have been encountered. Some new, preliminary data from Arslantepe's worked hard osseous animal materials from the Late Chalcolithic, Period VII (3800-3400 BCE), will be presented to illustrate what of former theoretical and methodological practices can be preserved and what will be changed while maintaining collegial communications.

Keywords: Late Chalcolithic, bone tool, research transmission, hard animal materials, bone technology, zooarchaeology.

Résumé : Cette contribution aborde la question du passage de témoin entre chercheurs dans le cadre de fouilles de longue durée. Elle discute de la nécessité de préparer soigneusement la succession entre les différentes générations de spécialistes, et des principes éthiques qui devraient guider ce processus, avant de suggérer des méthodologies appropriées pour les mettre en place pendant la transition. Ce thème est développé autour d'une étude de cas : la fouille d'Arslantepe (pr. Malatya, Turquie), et plus particulièrement le passage de témoin en cours dans l'étude des matières dures d'origine animale.

Arslantepe – un site archéologique dont les traces de fréquentation s'échelonnent des premières phases du Chalcolithique récent (4300-4200 avant notre ère) jusqu'au Moyen Âge – représente l'étude de cas idéale. Ici, la Missione Archeologica Italiana in Anatolia Orientale (MAIAO), dirigée par l'université La Sapienza de Rome, et ses collaborateurs internationaux mènent des investigations annuelles continues depuis 1961. La longue durée de cette mission de fouilles et la continuité de la direction rendent particulièrement prégnante l'inévitable question du passage de témoin entre chercheurs.

Les deux auteurs sont la spécialiste chargée de l'étude des matières dures d'origine animale (MDA) depuis les années 1980 jusqu'à très récemment (prof. A. Choyke) et la doctorante récemment chargée de l'étude d'une sélection spécifique de ce matériel (C. Sabbini). L'article retrace ainsi l'histoire de la recherche à Arslantepe à travers les notions méthodologiques et les thèmes qui l'ont distinguée, tout en situant le travail d'A. Choyke dans le projet plus large d'étude des phases proto-urbaines entre Anatolie et Caucase qu'elle a entrepris au fil des ans. Les stratégies employées pour assurer la continuité de l'étude du matériel d'Arslantepe sont ensuite décrites à la lumière de l'implication de C. Sabbini, en soulignant ce qu'il a été jugé nécessaire de préserver de l'approche précédente et ce qui a été retravaillé.

pour répondre à de nouvelles questions de recherche, pour l'instant concentrées sur la Période VII (Chalcolithique tardif 3-4 ; 3900-3400 avant notre ère), qui est le sujet de l'actuelle thèse de doctorat. L'objectif, en effet, est de passer de la compréhension de l'évolution techno-typologique des outils en os sur une longue période chronologique à celle du système techno-économique d'une phase spécifique afin de mieux définir les relations entre les différentes composantes sociales qui constituaient cette société. Les différents objectifs de cette recherche nécessitent des adaptations de la stratégie avec laquelle ils sont poursuivis, tout en maintenant les pierres angulaires qui permettent le dialogue entre les anciennes et les nouvelles données.

Dans ce cadre, quelques résultats préliminaires concernant l'étude des artefacts en MDA de la période VII sont présentés. Certaines caractéristiques générales de l'assemblage d'artefacts sont ensuite présentées, mettant en évidence sa composition générale, caractérisant les éléments et les aspects de continuité et de discontinuité par rapport aux phases immédiatement précédentes et ultérieures, connues grâce au travail d'A. Choyke. Des aspects relatifs aux types attestés, aux matières premières, à la fabrication et à la distribution horizontale des artefacts sur le site sont ensuite brièvement abordés. Des comparaisons avec d'autres sites contemporains et postérieurs sont également présentées afin de mieux situer cet ensemble dans son contexte régional.

Enfin, les auteures évaluent les principes qui les ont guidées sur le chemin de la confrontation et de la communication intense qui a conduit à la structuration de l'orientation actuelle de la recherche, y compris l'ouverture et l'intégration des différentes écoles de pensée : la focalisation sur les données archéozoologiques dans l'école d'Europe centrale, l'attention au geste dans le cadre de l'étude technologique à la française, l'inclusion des résultats dans un cadre plus large de réflexion anthropologique enracinée dans l'approche américaine. Tout cela n'est possible que si l'on se base sur une transparence d'intention et de communication de part et d'autre, à l'intérieur d'un processus de formation lent et planifié qui permet, en même temps, de valoriser les meilleurs résultats recueillis par la génération précédente et de les transmettre via la formation à la génération suivante.

Mots-clés : Chalcolithique final, outil en os, transmission de la recherche, matières dures d'origine animale, technologie osseuse, archéozoologie.

INTRODUCTION

In 1961, the beginning of an Italian archaeological excavation at the multilayered tell site of Arslantepe (pr. Malatya) in Southeastern Türkiye (fig. 1a) led to unearthing a prehistoric sequence at this massive tell site of unparalleled archaeological significance. These various occupation levels have been continuously investigated for the past 64 years under the direction of four different head archaeologists in charge of excavation policy and research (fig. 1b).

These years saw the growth of generations of Italian and international scholars who have contributed to how the site is understood today through their various fields of research expertise, obviously influenced by the spirit of their time. These long-term research conditions offer both advantages and drawbacks for research if not carefully managed. Issues of continuity in research methodology and style are particularly fraught. In this paper, the perspective of the Hard Animal Material finds (henceforth, HAM) will be used to reflect on managing research transitions as well as introduce new results from different, more modern methodologies. Some preliminary discussion on the archaeological context and the history of research at Arslantepe will be useful.

Although not the first to excavate the site (previous expeditions were led by L. Delaporte and C. Schaeffer between 1932 and 1951, with interruptions due to World War II and other constraints), P. Meriggi and S. M. Puglisi resumed the tell's exploration in 1961. Their expectation was the same as that of their predecessors: the site was expected to yield material from significant Late Bronze Age and Iron Age levels. P. Meriggi (Pavia University), a glottologist, had high expectations that clay tablets would

come to light, a hope that was soon frustrated. However, the work of S. M. Puglisi (Sapienza University in Rome), revealed a rich and continuous prehistoric sequence (fig. 1b) reaching deep into the Late Chalcolithic, inspiring further studies. Since then, the stratigraphic sequence attested to a very long occupation, probably beginning in the first phases of the Late Chalcolithic (Period VIII) with Roman and medieval elements appearing on the top of the tell (Period I; Frangipane, 2011; Frangipane et al., 2021). Puglisi directed his focus on the Bronze Age and pastoralist phenomena, a research direction enhanced under A. Palmieri who shifted the focus to the different forms of interaction between various cultural and social groups, within the settlement and across the region. Meanwhile, excavations progressed, reaching Late Chalcolithic 5 layers. Those levels became the core of M. Frangipane's long period of direction (1990-2020). It was in this area of the site that she recognized the beginnings of State level societies in the earlier, final Chalcolithic, Palatial Complex. Although her work was not limited to Period VIA, her name is mostly associated with the dynamics of formative States, the reasons behind their success or—as at Arslantepe—for their fall. She also studied the social and political instability that followed the disruption of this system: Arslantepe offered an excellent example with the discovery of an Early Bronze Age pastoralist occupation (Period VIB1) that sat on the still visible ruins of the Burnt Palace as well as a new disruption in cultural continuity represented by construction of a new village with an agricultural economy (Period VIB2). In 2020, F. Balossi Restelli took up direction of excavations. She invested much of her energy into research on the earliest known occupation levels on the tell, Period VII (Late Chalcolithic 3-4) and Period VIII (Late Chalcolithic 1-2). Research shifted slightly from the study of major collec-

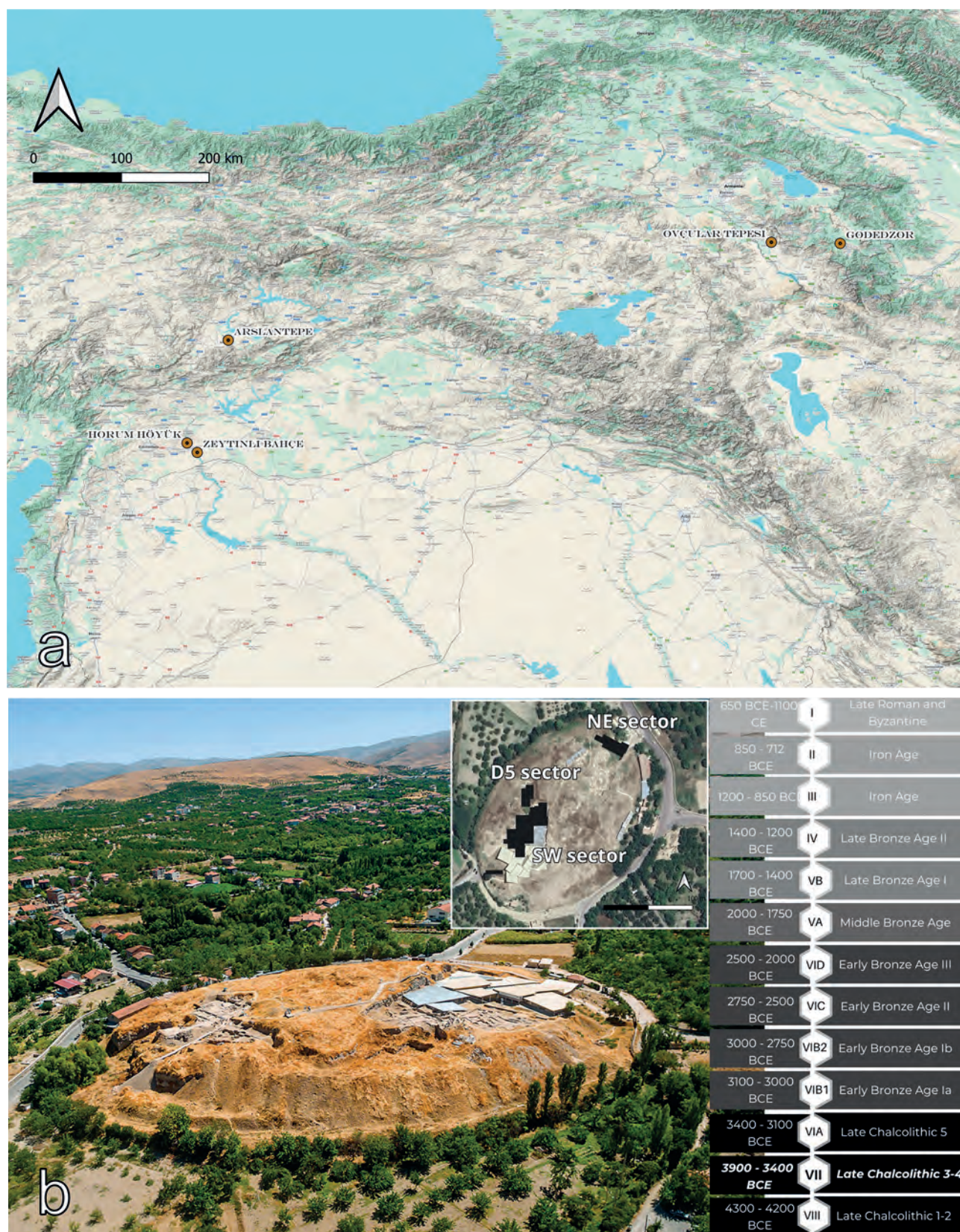


Fig. 1 – Spatial and chronological contextualization on the site of Arslantepe. 1a) Distribution of the sites cited in the text. 1b) The tell site of Arslantepe rising above the Malatya plain, not far from the Euphrates, with the dates of the chronological periods present there and the location of the three excavated sectors (photo from the MAIAO Archive, modified).

Fig. 1 – Contextualisation spatiale et chronologique du site d'Arslantepe. 1a) Répartition des sites cités dans le texte. 1b) Le tell d'Arslantepe, s'élevant au-dessus de la plaine de Malatya, non loin de l'Euphrate, avec les datations des périodes chronologiques qui y sont représentées et l'emplacement des trois secteurs fouillés (d'après un cliché des archives du MAIAO).

tive phenomena to look at early domestic practices at the site (Balossi Restelli, 2012 and 2019).

None of the directors worked alone: an excavation is always in need of collaborators and professionals, scholars that over the years came from many different nations and contributed greatly to the rich mosaic that this excavation is today. As times and collaborations naturally change, in recent years, Arslantepe has also gained two Turkish vice directors (Y. S. Erdal and V. Indere).

The above discussion highlights how the success of the Arslantepe's excavation—confirmed by its inclusion on the Unesco World Heritage List in 2021—lies not only in the site's history, but also in good research practices that allowed each generation to build on what had been previously done, each generation adding their personal take on collective work, reducing information loss to a minimum in the transition.

1. THE HARD ANIMAL TISSUE ARTEFACTS FROM ARSLANTEPE: 40 YEARS OF STUDY

S. Bökönyi (Archaeology Institute of the Hungarian Academy of Sciences) started serious faunal analysis at Arslantepe under the *aegis* of then director, A. Palmieri. His focus was largely on which species were present and their biological markers. He was never particularly interested in more artisanal aspects of animal exploitation at the site within phases and over time, beyond picking out obviously worked objects made from hard osseous materials. In the mid-1980s, however, the number of HAM objects recovered and recognized during excavations over the previous excavation seasons had slowly grown creating a need for their analysis. For this reason, he suggested that A. Choyke, then a newly minted PhD in Hungarian Bronze Age bone tool studies in Hungary, started work on the Arslantepe materials. Available pieces came from the stores of the Malatya Museum, research materials kept at the excavation camp as well as the objects now being retrieved more regularly from the faunal assemblage. By the late 1990s, over 600 worked bone specimens had been studied (Choyke, 2000), coming in varying numbers from the Neo-Hittite, Middle Bronze Age, Early Bronze Age phases as well as from the Late Chalcolithic. Over recent years, the extent of Late Chalcolithic areas of excavation greatly expanded. In addition, C. Sabbini also began the difficult work of making collections from different eras of excavation comparable, digitizing the collections, first as a master student and currently as a PhD candidate in HAM studies. However, A. Choyke was no longer able to get to the excavation site to study new materials. Furthermore, her research time at Arslantepe took place before the digitized maps of artifact distributions and structures at Arslantepe became readily available. It was time to look for a successor with whom she could share, not only her results on HAM from the Arslantepe excavations, but also her general experience in working with this class of

archaeological materials and more closely, her experience working on assemblages from other sites located in the broader region.

These other archaeological excavations recovered materials ranging in date from the Medieval to Early Bronze Age from the Sapienza University excavations lead by M. Frangipane and F. Balossi Restelli at the tell site of Zeytinli Bahçe. A. Choyke also worked on HAM from Late Chalcolithic contexts at rescue excavations carried out by C. Marro (UMR 5133 Archéorient, Lyon) at the tell site of Horum Höyük in southern Türkiye along the Euphrates. Other research work at Godezor (Choyke, 2019), a Late Chalcolithic and Early Bronze Age pastoralist site in southern Armenia excavated by C. Chataigner (UMR 5133 Archéorient, Lyon) and the Late Chalcolithic tell site of Ovçular Tepesi in Nakhchivan (Azerbaijan) excavated by C. Marro both provided material from pastoral, non-urbanized contexts in more easterly territories in the Caucasus—one of the important spheres of influence for worked HAM materials at certain periods at Arslantepe. This expanded work over a wide area provided new perspectives on the use of bone, antler and tooth as raw materials during the Late Chalcolithic phases at Arslantepe.

The focus of A. Choyke's work has always been raw material choice within typological categories based on morphology, measurements, manufacturing and use macro wear, detectable at 20× (using a magnifying loop), curation patterns, chronological position, and finally, where possible, horizontal context (Choyke, 2000, p. 171). Along these lines, attention was also paid to patterns in manufacturing quality (Choyke, 1997 and 2001) since, as a rule, the quality and amount of effort put into bone tool manufacture during the European and Anatolian Late Chalcolithic and Early Bronze Age generally declines, often depending on the type of site and area within the site. This trend towards generally less effort being put into HAM tool manufacture seems to weaken in the Caucasus, something that may have influenced the quality of manufacturing at Arslantepe in periods when the influence from the Caucasus is greater. In any case, most of the research by A. Choyke at Arslantepe concentrated on diachronic changes in raw material choice and morphological type connected to the aforementioned constraints. Perhaps the only exception was the publication of a special cache find from the Arslantepe settlement from the end of the Early Bronze Age (Period VID). A great deal more use of red deer antler was attested at this period, often made into crudely formed points. This find however is special because it comprises a group of unusual objects, some roughly made points, probably manufactured from wild bezoar goat (*Capra aegreus* Erxleben, 1777) horncore as well as a number of very elaborated, antler-based projectile points, none of which seem to have been usable and which have been interpreted as connected to hunting magic (Choyke, 2012).

These general variables were built into the database. C. Sabbini came to Budapest to learn how to recognize and analyse them on actual prehistoric, modified HAM. A. Choyke's mentorship involved extensive practical

tutoring for two months, explanation of how database data were collected and interpreted on Hungarian Bronze Age examples and passing down the raw data previously acquired at Arslantepe, as well as frequent, on-going consultations and discussions through video-calls.

One important outcome of this intensive collaboration was the development of a new, more modern Microsoft Office Access database whose form and content both parties could agree on. Thus, intellectual continuity in the recording and analysis of the Arslantepe HAM was ensured. Starting from A. Choyke's model, the new version was updated radically: now with a modular structure, it holds different interoperable sections exploring various aspects of HAM. Chronological and spatial coordinates for each find, relative zooarchaeological data, manufacturing wears, use-wears, taphonomical aspects, graphic documentation and storage records, are included. Even though some sections are by necessity still rudimentary, this prototype is flexible enough to incorporate substantial updates while providing a strong foundation to the logical structure of the database. While the zooarchaeology section is deeply indebted to J. Schibler's systematization, built for his own database to investigate the Swiss Neolithic (Schibler, 1980 and 1981), the manufacturing section has undergone radical improvements. Shifting the focus from the *chaîne opératoire* to individual kinds of identified *stigmata*, it was possible to increase the resolution of its description through standardized bound fields recording each object's position, techniques used in its manufacture, orientation, tools involved in the production process and to note their sequential order, wherever possible. While this level of resolution might not always be necessary, it is proving to be useful for investigating phenomena in different, coexisting manufacturing traditions, standardization, and possibly, the presence of craft specialization.

C. Sabbini also trained with French scholars (N. Provenzano at CNRS in Montpellier) to learn more about manufacturing wear and the basis of experimental archaeology as they can be applied to the bone and antler industries. This training will improve the information that may be gleaned from all the bone and antler tools found in Late Chalcolithic 3–4 levels (VII level). Improved mapping and datapoint information designed through a GIS system connected to the database, also makes it easier to map clustering of types as well as associations between different types of objects. It is now possible to explore artefact distributions within different interval radii in both open and enclosed spaces over the excavation area.

2. PRELIMINARY RESULTS FROM THE NEW ARSLANTEPE PERIOD VII DATABASE

When A. Choyke began her work in the early 1980's, computers were not as integrated into archaeological research, later on databases were introduced but comparing different datasets was not easy. Nowadays, with

the regular use of digitalized databases at Arslantepe, it has become technically much easier to connect spatial data with categorized elements within the bone tools assemblage, producing new and much stronger evidence about individual types, especially in the on-going study of Period VII, the most extensively investigated period at Arslantepe.

Dating to Late Chalcolithic 3–4 (3900–3400 BCE), it was a moment when acceleration towards increasing complexity among social actors and economic organization can be observed. First, some of the domestic structures are much richer in terms of their architecture and material culture. Public spaces with symbolic and political functions developed into locations for monumental architecture built by elites. Economic transactions took place here in a ritualized fashion, with massive food redistribution practices documented through carefully stored clay sealing imprints (*cretulae*).

The assemblage from Period VII comprises 479 HAM finds, the greatest part of which (N. 333) come from the western sector of the excavation area, associated with evidence of new social complexity arising in both public and private architecture. The other two sectors, on the other hand, attest only domestic structures (fig. 1b).

The analysis of the assemblage does pose some challenges connected to absence of screening practices and the non-formalised old documentation system preceding 1976. Consequently, elements of *débitage* as *debris* and waste pieces are rarely identified, often lost among the impressive quantity of faunal material, unless recognized by the current specialists. As noted previously, the zooarchaeologists working at Arslantepe are now much more sensitive to marks of manufacture or use wear on bone fragments since there have been specialists in HAM working at the site.

The HAM assemblage from VII is primarily characterized by pointed tools of different kinds, immediately followed by a variety of pin-like objects with ornamental, plastically carved bases (fig. 2). Spindle-whorls made from large ruminant femur caputs follow suit as the third most quantitatively consistent object class (fig. 3), after which numbers in individual types drop dramatically. There are few ornaments made either from bone or tooth. Seals, antler sleeves and handles made from antler tine and bone occur in equally low numbers, as do a few other types of tools or ornaments. The relatively low number of morphotypes in this period at the site suggests some sort of technical norm dictated which kinds of objects could or should be manufactured from HAM within this Late Chalcolithic community. If one considers how most of the artefacts that cannot be attributed to a type are tip fragments [n. 68] belonging to either generic points or decorated pin-like objects, it becomes apparent that points of all types, including decorative pins, make up more than two thirds of the assemblage over the whole Period (fig. 4).

Altogether, 16 point morphotypes were distinguished based on raw material (species and skeletal element were also considered), exploitation strategies and morphometric parameters. As a result, the morphotypes types are,



Fig. 2 – Different types of decorative pin-like objects from A1483, A1475, A1469, all domestic structures located in the western excavation sector in Period VII (Late Chalcolithic 3–4; photo R. Ceccacci, MAIAO Archive).

Fig. 2 – Différents types d'objets décoratifs en forme d'épingle provenant de A1483, A1475, A1469, toutes des structures domestiques situées dans le secteur de fouille sud-est de la période VII (Chalcolithique tardif 3-4 ; cliché R. Ceccacci, archives MAIAO).



Fig. 3 – Variability in the spindle whorls manufactured from the caput femur of cattle from a variety of contexts in Period VII (photo R. Ceccacci, MAIAO Archive).

Fig. 3 – Variabilité des fuseaux fabriqués à partir de fémurs de bovins provenant de divers contextes de la Période VII (cliché R. Ceccacci, archives MAIAO).

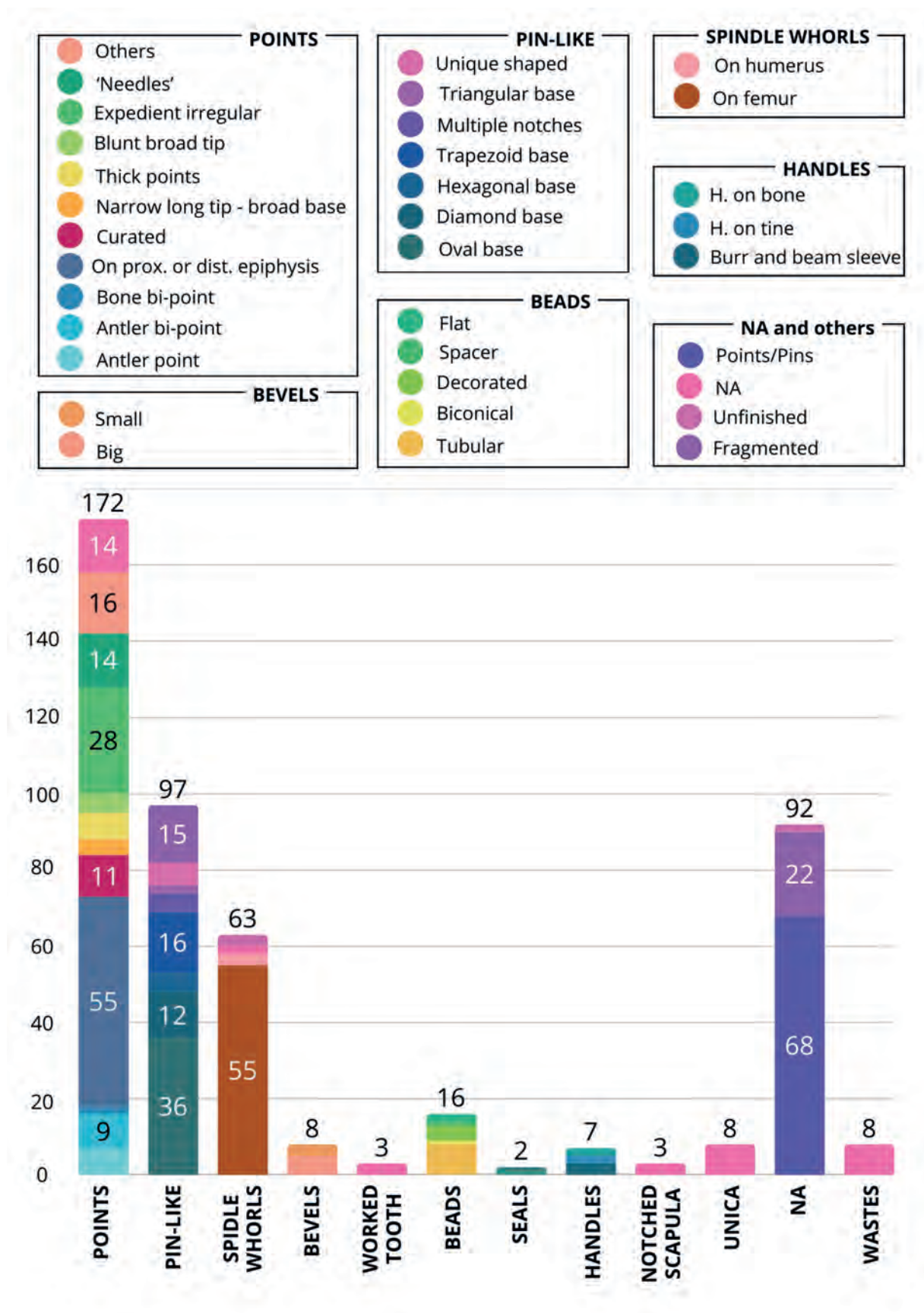


Fig. 4 – Type clusters representing the composition of the assemblage being studied from period VII contexts. Each bar stands for a class of tool differentiated by colours based on type. Some less frequent types have been grouped together to improve readability.

Fig. 4 – Groupes de types représentant la composition de l'assemblage étudié à partir de contextes de la Période VII. Chaque barre correspond à une classe d'outils différenciée par des couleurs selon le type. Certains types moins fréquents ont été regroupés afin de favoriser la lisibilité.

in most cases, quite consistently constituted, trending towards one end or the other of the manufacturing continuum spectrum (Choyke, 1997). Both carefully planned sets of points and more expedient productions are present, exhibiting broader tips or slender elongated shafts.

Even though quantities of worked HAM might differ greatly among sectors, the ratio between the macro-classes of tools discussed here shows consistency among their representation in the three areas. The percentages and relative importance of the object classes are quite homogeneous, the only notable difference coming from the presence/absence values of some of the rarest, but no less significant object classes. We know, for example, that heavy duty antler hammer/sleeves, made from the medallion and beam of red deer antler, are almost exclusively retrieved in the western sector, whereas bone and antler seals with figurative motifs seem to be confined to the D5 sector, excavated on the northwestern slope of the mound. At the same time, it is worthwhile mentioning a particular find that appears limited to the northeastern sector: there are three occurrences of large ungulate (probably cattle [*Bos dom.* sp.]) scapulae which display a sequence of parallel short, rounded edged incisions on the posterior border of the bone. The area of the incisions exhibits a high polish. Another incised cattle scapula was found at Arslantepe in the VID levels at the very end of the Early Bronze Age sequence. Such incised line scapulae occur regularly at other sites in the region. Looking at the manufacturing continuum classes, a similar pattern is evidenced: there seems to be a consistent ratio between well-made and barely worked objects among the three sectors, with a dominance of class I (well made) artefacts, partly due to the high numbers of decorative points and spindle-whorls. Nor do these ratios seem to shift among architectural subphases of Period VII, representing a rather impressive continuity in types and classes distributions. To some small extent, however, this ratio may be influenced by the lack of screening and the tendency of field workers to notice better made, more polished objects during excavation.

Though very sporadic use of avifauna and fish bones was noticed, the raw material choice for artefacts seems to have relied heavily on the available domestic fauna, especially on cattle (*Bos taurus*) and caprine (*Caprinae*). Among the wild species, sporadic bezeor goat (*Capra aegarus aegarus*) may possibly have been found although identification based purely on size is problematic. There are also a few examples of objects made from brown hare (*Lepus* sp.). *Cervus* sp. metapodia were also found and even antler, mostly shed, was collected and brought to the settlement. However, finds made from antler are overall very rare in Period VII—only 24 specimens altogether. Antler was used most often for the manufacture of double points. The other evidence of antler use in manufacturing connects with the tine *débitage* cut from the beam, heavy duty hammer/sleeves, made from red deer antler medallion and beam as well as an isolated seal made from the extremely modified medallion of a small red deer antler (Choyke, 2013, p. 6; here fig. 5).

Many times, the link between raw materials and technological procedures appears to have been very pragmatic, as evidenced by several types of points derived from long bones, usually ruminant metapodia. Among many of these points, the choice of splitting or double splitting a long bone seems to be correlated to the size of the species from which the element was retrieved, with bigger species requiring double splitting to reach the desired size and shape results, while a single split was usually deemed sufficient to produce blanks for points made from medium sized animals such as caprines.

Since the present work is part of a much wider, chronologically ordered comprehension of Arslantepe's HAM industries as outlined by A. Choyke (Choyke, 2000; Choyke and Daróczy-Szabó, 2010; Choyke, 2012), it has been possible to highlight some characteristics that are specific to Period VII, in contrast with other phases. The first special aspect is related to the decorated pin-like objects (fig. 2) whose bases were shaped using a particular set of simple but easily identifiable actions. They are the only other class of artefacts in this period which are decorative alongside the seals and the beads. This set of base forms for pins all have in common a distinctive “notch”, either scraped or sawn, to distinguish the pointed-tip shaft from the carved basis. This is enough to set them apart from the shape of pin-like object from the succeeding Period VIA (Late Chalcolithic 5, 3400–3100 BCE) when they are formed into a “T” shaped bases or from the smaller, Early Bronze Age examples that seem to rely more on incised simple motifs rather than notches for decoration.

Characteristic of Period VII is also the marked presence of bone spindle whorls realized almost exclusively from the proximal caput femur of large ruminants, probably domestic cattle. This type is attested to in the same period at the pastoralist site of Godezor in southern Armenia (Choyke, 2019, p. 6) and probably in the worked bone assemblages from other sites from the same period as well. These spinning tools are not exclusive to Period VII layers at Arslantepe (Laurito, 2013), but even though examples in both clay and stone are also present, bone spindle whorls are more common from a quantitative point of view compared to following periods at the site (Laurito, 2012). Nonetheless, when these raw material ratios are compared, it must be remembered that it is impossible to estimate how many of these spindle whorls may also have been produced from wood as is typically the case today. Wood obviously does not preserve on dry-sites such as Arslantepe. It is relevant that decorated points and spindle whorls are also two tool classes that exhibit a stricter control in their somewhat simple manufacturing sequence, with a recognizable main scheme that allows for specific sets of internal variations.

Administrative material in the form of seals made from HAM is rare, with only two such finds from bone and antler respectively coming from secure Period VII levels. Other seals produced from stone also came from the same area as did a few seals in elephant ivory, bone and stone that have come to light recently and may



Fig. 5 – Seal carved from a highly modified red deer antler medallion from sector D5. A number of seals made from other hard animal materials have been found in both Period VII and the preceding Period VIII layers in this area (photo R. Ceccacci, MAIAO Archive).

Fig. 5 – Sceau taillé dans un médaillon en bois de cerf rouge très modifié du secteur D5. Plusieurs sceaux réalisés à partir d'autres matières dures d'origine animale ont été retrouvés dans cette zone, aussi bien dans les couches de la Période VII que dans celles de la Période VIII précédente (cliché R. Ceccacci, archives MAIAO).

derive from the previous, VIII Period. However, the two HAM seals are still remarkable for their complex animal motifs. The first seal was manufactured from the thick cortical bone from the long bone diaphysis of a large species and has a triangular cross-section. Similarly shaped bone seals were found in a huge Late Chalcolithic pit at the tell site of Horum Höyük located to the south along the Euphrates. The seal depicts two herds of *Capra*, likely bezoar goat and domestic goat (*Capra hircus*). The other seal, as noted above (fig. 5), has a plano-convex profile and was made from a highly modified and polished red deer antler medallion. Its stamping surface shows a lion with its cub depicted opposite to some kind of ungulate. Both seals have naturalistic themes and styles but also exhibit the same *horror vacui* that caused the craftsperson to juxtapose figures in different angles and orientations.

3. PASSING THE BATON: THE KEY TO INTEGRATING PREVIOUS AND FUTURE DATA

Passing the baton between scholars, especially those from different generations, can often prove problematic without a conscious effort on both sides. On the one hand, it is impossible not to incur some loss of expertise and practical experience that the previous specialist developed over time. On the other hand, the introduction of a new person can bring new tools, methodologies and theoretical perspectives at a historical moment when cutting edge technologies appear to be revolutionizing everything. Nonetheless, these technical advances can be a double-edged sword. If it is true that novelty can shed new light on former evidence, there is a risk of ignor-

ing previous good practices while pursuing each promising “revolution”. New efforts and research directions should instead operate like grapevines growing by grafting pre-existing trees onto each other. This perspective requires an open discussion between both parties to plan a shared strategy focused on putting the archaeological material first.

In the case of Arslantepe, the transition was planned through teaching, tutoring, and even sharing unpublished data on the side of the mentor (A. Choyke). In response, C. Sabbini worked through renovating pre-existing working methodological tools such as the database to increase its scope and efficiency while adopting the theoretical perspective and the indexes previously developed and applied to the Arslantepe HAM materials. Thus, substantial compatibility between old and new data was ensured.

The focus on raw material was maintained, though data resolution could initially suffer because of the experience gap and diverse formative experiences between the scholars. Manufacturing analysis instead embraced more of a French school approach, zooming in on details, adhering to their accurate definitions (Averbouh and Provenzano, 1998–1999) and adapting the concept of a *transformation scheme* (Averbouh, 2000; Goutas and Christensen, 2018). This approach has made it possible to identify different manufacturing traditions potentially coexisting over the areas of Period VII that have been excavated to date, while maintaining scholarly awareness of the human beings operating in this past society, beyond their tools. If such an interpretative level is still challenging to grasp at this preliminary stage, the potential expressed by careful consideration of the spatial data and the increased diachronic resolution offered by considering inner architectural subphases is still undeniable.

As a result, it will be possible to approach the evaluation of continuity and discontinuity in all the previously mentioned aspects, both vertically and across horizontal space. Understanding the variations in raw material exploitation, manufacturing and style in different areas, or even households, in a period when a class of élites begin to arise in this local society, circumscribing the attributes of their new power in opposition to shared aspects of community life, is pivotal for this archaeological inquiry.

CONCLUSIONS

Arslantepe can be considered a good example of academic knowledge being carefully transmitted from one generation of scholars to another within the framework of an excavation with several decades of history. Planning the passing of the baton is by no means a secondary issue as it has consequences for the quality of the research: unplanned transitions with poor communication make for discontinuity in research directions leaving questions half-addressed or—much worse—potentially resulting in the loss of previously gathered data or a lack of compatibility between previous collected information as opposed to ongoing research.

Tutoring and transitional years are fundamental to avoid incurring these setbacks while still embracing useful additions in methodology. These additions can enhance the collective efforts lying behind such an archaeological excavation and all the subsequent specialist studies that follow from it.

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REFERENCES

- AVERBOUH A. (2000) – *Technologie de la matière osseuse travaillée et implications paléolithiques*, PhD Dissertation, université Paris I Panthéon-Sorbonne, Paris.
- AVERBOUH A., PROVENZANO N. (1998–1999) – Propositions pour une terminologie du travail préhistoriques des matières osseuses, *Préhistoire Anthropologie méditerranéennes*, 7–8, pp. 5–25.
- BALOSSI RESTELLI F. (2012) – The beginning of the Late Chalcolithic occupation at Arslantepe, Malatya, in C. Marro (ed.), *After the Ubaid. Interpreting change from the Caucasus to Mesopotamia at the dawn of urban civilization (4500–3500 BC)*, Istanbul, Institut français d'études anatoliennes-Georges-Dumézil, Paris, De Boccard (Varia Anatolica, 27), pp. 235–259.
- BALOSSI RESTELLI F. (2019) – *Arslantepe Period VII. The development of a ceremonial/political centre in the first half of the fourth millennium BCE (Late Chalcolithic 3–4)*, vol. 1, Rome, Arbor Sapientiae Editore (Arslantepe: Scavi e Ricerche a Malatya II).
- CHOYKE A. M. (1997) – The bone manufacturing continuum, *Anthropozoologica*, 25–26, p. 65–72.
- CHOYKE A. M. (2000) – Bronze Age antler and bone manufacturing at Arslantepe (Anatolia), in M. Mashkour, A. M. Choyke, and H. Buitenhuis (eds.), *Archaeozoology of the Near East IVA*, Groningen, ARC (ARC Publicatie, 62), pp. 170–183.
- CHOYKE A. M. (2001) – A quantitative approach to the concept of quality in prehistoric bone manufacturing, in H. Buitenhuis and W. Prummel (eds.), *Animals and Man in the Past*, Groningen, ARC (Arc-Publicatie 41), pp. 59–66.
- CHOYKE A. M. (2012) – Hunting the Bezoar Goat: Sympathetic magic in Early Bronze Age Arslantepe, in D. Raemaekers, K. Esser, R. Lauwerier, and J. Zeiler (eds.), *A bouquet of archaeozoological studies. Essays in honour of Wietske Prummel*, Groningen, Barthuis, University of Groningen Library (Groningen Archaeological Studies, 21), pp. 11–20.
- CHOYKE A. M. (2013) – Hidden agendas: Ancient raw material choice for worked osseous objects in Central Europe and beyond, in A. M. Choyke and S. O'Connor (eds.), *From these bare bones. Raw materials and the study of worked osseous materials*, Oxford, Oxbow Books, Oxford, pp. 1–13.
- CHOYKE A. M. (2019) – From the mountains to the plains and back again: Late Chalcolithic worked osseous material from Godedzor, Armenia, in Henan Provincial Institute of Cultural Heritage and Archaeology (ed.), *Zooarchaeology*, Beijing, Cultural Relics Press, pp. 1–13.
- CHOYKE A. M., DARÓCZI-SZABÓ M. (2010) – The complete and usable tool: Some life histories of prehistoric bone tools in Hungary, in A. Legrand-Pineau, I. Sidéra, N. Buc, E. David, and V. Scheinsohn (eds.), *Ancient and modern bone artefacts from America to Russia*, Oxford, BAR Publishing (BAR International Series, 2136), pp. 235–248.
- FRANGIPANE M. (2011) – Arslantepe-Malatya: A Prehistoric and Early Historic center in Eastern Anatolia, in G. McMahon and S. Steadman (eds.), *The Oxford handbook of Ancient Anatolia (10000–323 BCE)*, Oxford, Oxford University Press, pp. 968–992.
- FRANGIPANE M., BALOSSI RESTELLI F., DI NOCERA G. M. (2021) – Arslantepe: The Sapienza University Archaeological Project in Eastern Anatolia 60 years on, *Asia Minor*, 1, pp. 15–36.
- GOUTAS N., CHRISTENSEN M. (2018) – Extraction, partitioning, reduction or fracturing? What exactly are we talking about? Discussion of the production of elongated blanks, in N. Goutas and M. Christensen (eds.), « *À coup d'éclats!* ». *La fracturation des matières osseuses en Préhistoire*, Paris, Société Préhistorique Française (Actes de la Séance de la Société Préhistorique Française, 13), pp. 23–42.
- LAURITO R. (2012) – Changes in textile production at Arslantepe during the 4th and 3rd millennium BCE, *Origini: Preistoria e Protostoria delle Civiltà Antiche*, 34, pp. 317–328.
- LAURITO R. (2013) – Textile production: Notes on spinning and weaving tools, in F. Manuelli (ed.), *Arslantepe Late Bronze Age: Hittite influence and local traditions in an Eastern Anatolian community*, Roma, Università di Roma La Sapienza, (Arslantepe, Scavi e Ricerche a Malatya, IX), pp. 224–233.
- SCHIBLER J. (1980) – *Osteologische Untersuchungen der cortailodzeitlichen Knochenartefakte*, Bern, Staatlicher Lehrmittelverlag (Die neolithischen Ufersiedlungen von Twann, Band 8).
- SCHIBLER J. (1981) – *Typologische Untersuchungen der cortailodzeitlichen Knochenartefakte*, Bern, Staatlicher Lehrmittelverlag (Die neolithischen Ufersiedlungen von Twann, Band 17).

