MIND IN METAL:

CONTEXTUALIZING LATE BRONZE AGE METAL ARTIFACTS

FROM TARSUS-GÖZLÜKULE, TURKEY

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BOĞAZİÇİ UNIVERSITY

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Mind in Metal:

Contextualizing Late Bronze Age Metal Artifacts

From Tarsus-Gözlükule, Turkey

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DECLARATION OF ORIGINALITY

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ABSTRACT

Mind in Metal:

Contextualizing Late Bronze Age Metal Artifacts

From Tarsus-Gözlükule, Turkey

This thesis aims to re-present the metal artifacts from the Late Bronze Age levels of Tarsus-Gözlükule through a contextual approach. These artifacts were assiduously excavated, examined and published by Hetty Goldman and her team from early to mid-twentieth century. The results of this excavation project galvanized Anatolian archaeology yet also followed the methodological conventions of the time where context was peripheral to the study of artifacts. The re-investigation of metal artifacts resumed within the new phase of archaeological research during the early twenty-first century, however, these focused more so on material composition through chemical analysis. Thus, the present study intends to re-situate the Late Bronze Age metal artifacts within a contextual perspective through an extensive study of unpublished field notebooks, documents and final reports while also incorporating previous archeaeometric studies. Together with new evidence on metalworking and metal processing on site, the resulting picture demonstrates the overarching continuity in the use and production of metals notwithstanding changes in the layout of the revealed settlement plan throughout the examined periods.

ÖZET

Madende Akıl:

Tarsus-Gözlükule, Türkiye'den Geç Tunç Çağı

Maden Eserlerine dair Bağlamsal bir Çalışma

Bu tez, Tarsus-Gözlükule'ye ait Geç Tunç Çağı tabakalarından ele geçmiş maden eserleri bağlamsal bir yaklaşımla yeniden tasvir etmeyi hedefler. Bu eserler Hetty Goldman ve kazı ekibi tarafından yirminci yüzyılın başından ortasına kadar özenle ortaya çıkarılmış, incelenmiş ve yayımlanmıştır. Kazı projesinin sonuçları Anadolu arkeolojisini canlandırmakla birlikte buluntu çalışmalarında bağlamın daha az önemli olduğu zamanın kabul gören metodolojilerini izlemiştir. Yirmi birinci yüzyıl sırasında Tarsus-Gözlükule kazılarının yeni dönemi dahilinde maden eserlerin yeniden araştırılması söz konusu olmuş fakat bu çalışmalar daha çok kimyasal analiz yoluyla buluntuların element bileşimlerine odaklanmıştır. Bu nedenle, bu çalışma, yayımlanmamış kazı günlükleri, belgeler ve sonuç raporları üzerine kapsamlı bir araştırma ile, aynı zamanda önceki arkeometrik çalışmalarını içine dahil ederek, Geç Tunç Çağı maden eserlerini bağlamsal bir bakış açısı içinde yeniden konumlandırmayı amaçlar. Maden işçiliği ve maden işlenmesine dair yeni bulgularla birlikte, ortaya çıkan tablo incelenen dönemler boyunca yerleşim düzeni ve yapılaşmadaki değişikliklere rağmen madenlerin kullanımı ve üretimindeki kapsamlı sürekliliği göstermektedir.

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CHAPTER 1

INTRODUCTION

This thesis re-presents the metal artifacts from the Late Bronze Age levels of the settlement mound of Tarsus-Gözlükule in a contextual approach. As all excavated material, these artifacts were extracted out of their contexts and were carefully and attentively re-arranged for presentation. The methodology of this first rearrangement both inspired and complied with the earliest ways of publishing excavated material, where context was of secondary importance. Therefore, the present study aims to implement the missing data back into picture through studying the unpublished field notebooks within a new, contextual perspective while also incorporating previous archaeometric studies into the re-investigation of the metal artifacts.

I have chosen the opening title of the thesis, *Mind in Metal*, in reference to J. D. Prown's article "Mind in Matter: An Introduction to Material Culture Theory and Method". In his article, Prown states that "..artifacts are primary data for the study of material culture, and, therefore, they can be used actively as evidence rather than passively as illustrations".[1] Although, I do not agree with Prown's entire conceptualization regarding material culture in the article,[2] it is a good starting point to focus on artifacts and conceive them as active agents that must be perceived within a context.

In this thesis, I offer a contextual reading of the metal artifacts in order pave the way for their future study to potentially conceptualize and foreground these

[1] Prown, "Mind in Matter: An Introduction to Material Culture Theory and Method," 1.
[2] Prown's approach dictates a theoretical separation between the aesthetic and utilitarian aspects of artifacts where the former is more culturally significant. Therefore, artifacts such as implements, tools and utensils, which he addresses as 'devices', are problematic in his material cultural analysis. See Prown, "Mind in Matter: An Introduction to Material Culture Theory and Method," 15.

intriguing finds. Thus, the potentiality is not actualized within the scope of this thesis, but the aim is to enable. Through this contextual investigation, a theoretical framework, such as those that I select to explore in the following chapter or others, may be employed to formulate new narratives.

I have divided the present thesis into seven main chapters, of which the first is this introduction and the last presents my concluding thoughts. In the first two sections of the second chapter, I discuss the principal theoretical and methodological frameworks employed to explore objects, and more specifically metal objects, in the history of archaeology and archaeometallurgy which stimulate the need to contextualize finds. Then, in the third section, I present a brief overview of the ways in which metal finds were published in Turkey in order to illustrate how and why a contextual approach was missing in this historical setting, then I introduce and discuss the archaeological and scientific research conducted on the Late Bronze metal artifacts of Tarsus-Gözlükule to specifically explain the need for a contextual study.

The third chapter presents an overview of archaeological work at Tarsus-Gözlükule and lays the ground for my investigation. In the first section, I introduce the mound and its excavation history. This is followed by a synopsis of Late Bronze Age levels as defined by Hetty Goldman, the director of excavation, along with revisions later suggested by Dorothy Slane in the second section. Then, in the third and fourth sections, I introduce the Late Bronze Age metal artifacts with a brief account of their initial publication and explain my criteria for selection of material in relation to a minor revision in the chronological sequence of the stratigraphy. Finally, in the last and fifth section, I introduce the main sources and contributions of my study with regard to new plans of the two main excavation areas at the site, Section

A and Section B, coupled with the revised chronological distribution of the metal assemblages.

The fourth, fifth and sixth chapters each consist of a detailed contextual analysis of a total of 113 metal artifacts recovered from four successive levels, Middle Bronze II and Late Bronze I, Late Bronze IIa and Late Bronze IIb, respectively. The fourth and fifth chapters commence with a review of the fine-tuned chronological distribution of the artifacts, the latter of which accounts for the finds presented in sixth chapter. Then, in each of the three chapters, I present, in contrast to Goldman's typological classification with limited data on stratigraphic context, all metal artifacts in their spatial organization. For each level, the artifacts are first sorted according to their trenches and then further sorted according to the type of their find location; that is, either structure such as a room or a building, feature such as a trash pit or fill deposit. Second, for each artifact, I present a detailed account of find location and associated finds, a description based on my visual analysis, available comparanda, and my interpretation of its function and meaning in context. At the end of each chapter, I provide an overview and discussion of the presented metal along with, if available, material evidence for metalworking or metal production for the Late Bronze IIa and Late Bronze IIb levels. In chapter six, in a separate section dedicated to metal production, I propose and submit the new evidence for metalworking and processing during the Late Bronze IIb period.

In the seventh and final chapter, I reiterate the conclusions that I have reached in these three main chapters where I re-introduce context to the study of metal artifacts and present a short narrative about the vicissitudes of metal working at Gözlükule during the period in question. The overall resulting picture demonstrates that in contrast to more dramatic changes in architectural developments the metal

assemblages reflect uniformity and continuity throughout the Middle Bronze II to Late Bronze IIb periods.

Lastly, following these chapters, in the appendix, I present an exhaustive catalogue of all the metal artifacts excavated from the Middle Bronze II and Late Bronze levels at Tarsus-Gözlükule. Hopefully, this catalogue and my re-appraisal may provide the basis for future research where metals are visualized as active constituents with regard to their actual, intrinsic and unique properties.

CHAPTER 2

INVESTIGATING METALS IN THEORY AND PRACTICE

2.1 Understanding metal objects

Initially the concern of specialists who studied metal finds was to identify and classify these as it was done for all excavated objects. Since emerging as a field of research, archaeology was concerned with a cluster of things; things that, when first encountered, are, and to an extent often remain, parts of an unfamiliar whole. Typologies based on function or seldom style were sought after in order to establish comparative links between objects from different sites. Researchers who were interested in metals focused on technical examinations with questions in mind, that are still relevant, such as the origin of metallurgy, reconstruction of past production techniques and the impact of metallurgy on (the development of) societies. Metal finds were first theorized in processes of production and distribution within a diffusionist and social evolutionary framework by Gordon V. Childe, the pioneering figure of the culture-historical approach.[3] Even though the successive 'New Archaeology' processualists rejected a diffusionist interpretation in archaeological theory, important studies regarding metals continued to entail a similar point of view.[4]

In the last forty years or so, theoretical approaches rooted in anthropology, philosophy, hermeneutics and material culture studies have heavily influenced how objects came to be regarded in the field of archaeology under the multi-stranded post-processual movement. A similar paradigm shift, in Kuhnian terms, began in the

[3] Childe, *The Bronze Age*, 12; Childe, *Archaeological Ages as Technological Stages*, 9-10; Henry Morgan, *Ancient Society*, 42.
[4] Storey and Jones, "Diffusionism in Archaeological Theory: The Good, the Bad, and the Ugly," 7; Tylecote, *A History of Metallurgy*, xi.

sub-field of archaeometallurgy towards the end of twentieth century, proclaiming the reconcilement of metallurgy and social theory.[5] In this section, I am going to briefly present the theoretical perspectives that provoke an interest in the technology, materiality, and agency of metals. These theoretical approaches are in no way separated in a strict manner within academic fields. In fact, most concepts are often voiced and used in tandem with one another.

A social reading of the technological processes of production first developed within the French school of thought with origins in the works of Marcel Mauss, André Leroi-Gourhan and later Pierre Lemonnier.[6] According to this perspective, objects were regarded as products of socially constructed technological processes. In other words, an object reflected the cultural values of their creator and consumers through the technological choices they have made in the trajectory of the object's *chaine opératoire.* In this framework, not only production but also consumption, that is the exchange, use, reuse and discard of metals, represent stages in the life-cycle of an object.[7] In Kopytoff's terms, society constructs objects as they construct people.[8] Conceiving metal objects in these ways has been favored in various recent studies, for instance, on African, Nubian or Bronze Age European metallurgy and metal working.[9]

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[5] Goodway, "Archaeometallurgy: Evidence of a Paradigm Shift?," 705-12; Cleere, "Archaeometallurgy Comes of Age,"; cf. Thornton, "Archaeometallurgy in the 21st Century," 175; Thornton, "Archaeometallurgy: Evidence of a Paradigm Shift?," 25-33.
[6] Mauss, "Le Techniques du Corps," 5-23; Leroi-Gourhan, *L'Homme et la Matière*; Leroi-Gourhan, *La Geste et la Parole*; Lemonnier, *Technological Choices: Transformation in Material Culture since the Neolithic;* Lemonnier, *Elements for an Anthropology of Technology.*
[7] Appadurai, "Introduction: Commodities and the Politics of Value," 3-63.
[8] Kopytoff, "The Cultural Biography of Things: Commoditization as Process," 90.
[9] Chirikure, *Metals in Past Societies: A Global Perspective on Indigenous African Metallurgy*; Drici, "The Chaîne Opératoire of Bronze Working in Ancient Sudan: An Attempt at Reconstituting the Manufacture of Kushite Weapons," 9-28; Kuijpers, "A Sensory Update to the *Chaine Operatoire* in Order to Study Skill: Perceptive Categories for Copper-Composition in Archaeometallurgy," 863-91.

Most of these works, however, tend to focus more on the processes rather than the objects themselves. On the other hand, the socio-culturally driven choices in producing and/or using a metal object cannot solely be understood in terms of utilitarian purposes nor processes but equally by virtue of their visual and semantic properties. In the field or archaeometallurgy, a founding figure to pay attention to metals as material was Cyril S. Smith.[10] As a metallurgist, he foregrounded the sensory properties of metal such as color, luster and tonality, and how these properties influenced the way objects were produced/fashioned. His ideas paved the way for future researchers to widen their perspective towards an interplay of technology and aesthetics to be glimpsed through the metal objects themselves. Heather Lechtman, who was a student of Smith, developed Smith's ideas further into the structuralist concept of "technological style" similar to that of Lemonnier's technological choice, in which technologies of material culture reflect the attitudes of the artisans and communities as they are part of a larger cultural system.[11] Following Smith and Lechtman, more scholars are now interested in studying metal finds in terms of their materiality.[12] For instance, in her seminal study on the development of metallurgy in West Mexico, Dorothy Hosler has focused on the social value of metals in relation to their specific qualities such as color, luminosity and sound.[13] Recently, Susan Sherratt has also emphasized the importance of studying color as opposed to the dominant utilitarian attitude towards metals.[14] Therefore, studies devoted to the investigation of the aesthetic properties of metals such as the recent

[10] Smith, "Art, Technology and Science: Notes on their Historical Interaction," 493-549; Smith, "Metallurgy as a Human Experience," 603-23.
[11] Lechtman, "Style in Technology: Some Early Thoughts," 10.
[12] Jones, "Archaeometry and Materiality: Materials-based Analysis in Theory and Practice," 327-388
[13] Hosler, *The Sounds and Colors of Power: The Sacred Metallurgical Technology of Ancient West Mexico.*
[14] Sherratt, "Why was (and is) Silver Sexy? Silver during the 4th-3rd Millennia in the Near East and Mesopotamia," 99.

article by Radivojević et al. that focuses on the relation between alloying and color change through experimental analysis become increasingly valuable.[15]

The concept of "material agency" is another useful notion in understanding metal finds.[16] In the field of archaeology, more recently some scholars deemed the return to a material-based theory necessary in response to the prevalent post-processual theoretical stance[17], wherein artifacts are conceived as abstract signs or symbols that convey meaning, derived conceptually from literary studies and semiotics. In critique of this, "material agency" recognizes that interactions between a metal object and a person, whether during the stage of production, exchange or use, shape both ends. This concept enables the artifacts to be integral parts of the narrative rather than passive conveyors. Human behavior shapes metal and in turn, metal objects, from their state of ore to finished product, shape human behavior.

The main theoretical concepts that are currently relevant to the study of metals in which the objects are at the forefront in both the theoretical and physical sense shall serve to indicate new avenues of research. The grasp of context is a necessity for a broader perspective to have new insights on the complexity of the making and consumption of metal artifacts. Therefore, the contextual outlook in this thesis, I hope, is merely the first step, albeit in the right direction, towards a holistic approach concerning various aspects of the metal objects, here shortly summarized.

As mentioned, studying metals in the context of materiality or material agency require a detailed understanding of the metal itself. The development of scientific methods plays a crucial role in this matter. It is their integration into these

[15] Radivojević et al., "Experimental Design of the Cu-As-Sn Ternary Colour Diagram," 106-119.
[16] Latour, *We Have Never Been Modern,* 15; See also Latour, *Reassembling the Social: An Introduction to Actor-Network-Theory.*
[17] See, for instance, Hodder, *The Meaning of Things: Material Culture and Symbolic Expression*; Hodder, *Theory and Practice in Archaeology*.

theoretical frameworks that increases our understanding to a greater degree. Therefore, in the following section, I present an overview of recent scientific methodologies concerning metals and emphasize the importance of their integration into archaeological body of work.

2.2 New scientific methodologies

On par with the theoretical developments, advances in scientific technology and methodology have been as influential in the field of archaeology, if not more so. Scientific analysis of metals have enhanced our quest to respond to three basic questions: "what is it made of?", "how was it made?" and "where is it from?".[18] The answers to these questions depend on the variant ways in which the compositions of objects are analyzed, compared and evaluated.

Compositional analysis of artifacts, as developed in Europe and forming the basis of current analytical studies in the archaeological context, has been carried out from the end of the eighteenth century.[19] The methods have largely been modified since their time of origin, particularly in the aftermath of World War II period and onwards.[20] In the last fifty years or so, various (spectroscopic and other) analytical methods have been used to determine the type and quantity of alloying elements in metals ("what is it made of?"). The current most common method of analysis for metal objects is inductively coupled plasma mass spectrometry (ICP-MS) which has gradually replaced previous popular methods of analysis including atomic absorption spectrometry (AAS), inductively coupled plasma optical emission spectrometry

[18] Inspired by Pearce, "Archaeology and archaeometallurgy: some Unresolved Areas in the Interpretation of Analytical Data," 46.
[19] Pollard, "From Bells to Cannon – The Beginnings of Archaeological Chemistry in the Eighteenth Century," 335-41.
[20] Pollard et al., *Analytical Chemistry in Archaeology*, 8.

(ICP-OES) and neutron activation analysis (NAA).[21] Compared to others, ICP-MS is a fast quantitative method with high sample output and has high-sensitivity. It is capable of multi-element analysis with good precision and isotope ratio measurement. In addition, X-ray fluorescence (XRF) spectrometry is another favored method, especially used for artifacts in museums, that is non-destructive, though the analysis is limited to surface layers and hence, produces qualitative or semi-quantitative data.

On the other hand, visual examination of objects through metallographic microscopy is immensely valuable as it give insights on manufacturing, shaping and decorating techniques including thermal and physical surface treatments ("how was it made?").[22] Apart from the artifacts themselves, the analysis of related metallurgical remains such as slag (metallurgical waste), crucibles, and furnaces are further research tools for understanding production technologies.[23] Experimental archaeology (or archaeometallurgy) also contributes to reflecting the various choices and techniques used in metal production processes.[24]

Trace element distribution and lead isotope analysis provide the scientific framework for provenance studies ("where is it from?"). These analyses are conducted by means of mass spectrometry methods including ICP-MS or thermal ionization mass spectrometry (TIMS). Lead isotope analysis was initially used in the provenancing of lead-containing glass, silver and lead[25], however, it quickly gained interest and popularity by researchers and archaeologists following its application in provenancing copper due to its commonality in the archaeological record.[26]

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[21] Pollard et al., *Analytical Chemistry in Archaeology*, 195-6 (Figure 9.1).
[22] Scott, "Metallography and Microstructure of Metallic Artifacts," 67-90.
[23] Hauptmann, "The Investigation of Archaeometallurgical Slag," 91-106.
[24] Heeb and Ottaway, "Experimental Archaeometallurgy," 161-192.
[25] Brill and Wampler, "Isotope Studies of Ancient Lead," 63-77.
[26] Gale and Stos-Gale, "Bronze Age Copper Sources in the Mediterranean: A New Approach," 11-19.

The answers to the three basic questions presented above, however, are only meaningful as part of research questions that are developed within a theoretical framework the archaeologist entwines. That is to say the interpretation of these methods is as crucial as the methods themselves. For instance, lead isotope studies have been in the center of archaeological debate and discussion concerning the circulation of metals in the Bronze Age Mediterranean. The major scientific discovery in the 1980s was that the isotope ratios of traces of lead in copper objects could be matched with specific ore deposits which then enabled archaeologists to provenance copper-based assemblages.[27] One major issue that generated skepticism, however, was that copper was usually recycled through re-melting and mixing: actions that alter its isotopic composition. This, I believe, is the most major issue among others including the publication of the research and defining differences in specific ore-fields.[28] Most recently, in response to the above mentioned concerns regarding the interpretation of lead isotope analysis, the directors of the FLAME (Flow of Ancient Metals across Eurasia) research project at the University of Oxford have decided not to use lead isotope data for provenancing but to observe change in the composition of copper object assemblages over time and space.[29] This change in interpretation demonstrates that the variant ways of interpreting scientific methods directly determine the conclusions that are drawn concerning the past experiences and actions of humans. As DeAtley and Bishop have stated; "No archaeometric technique has built-in interpretive value for archaeological investigations; the links

[27] Gale and Stos-Gale, "Bronze Age Copper Sources in the Mediterranean: A New Approach," 11-19.
[28] For further information see Pollard, "'What a Long Strange Trip It's Been': Lead Isotopes in Archaeology," 181-189.
[29] Pollard et al., *Beyond Provenance: New Approaches to Interpreting the Chemistry of Archaeological Copper Alloys*, 150.

between physical properties of objects and human behavior producing the variations in physical artifacts must always be evaluated".[30]

The integration of scientific methods into archaeological theory and practice is a major issue that must be developed together by the aid of archaeologists and archaeometallurgists for the integrity of future research. In this thesis, I have intended, even if preliminarily, to integrate the results of previous chemical analyses of copper-based objects into my contextual analysis. In the following section, I will briefly elucidate my point through an overview of metal studies in Turkey.

2.3 A brief history of metal studies in Turkey

'Metal studies', here, refers to works that include or focus on studying metal objects that are unearthed in excavations, whether recorded with or without context, as well as to those that are acquired by museums. In the early years of Anatolian archaeology, works exclusively dedicated to metal objects were rare. Metal finds were first systematically published within sizable volumes containing a plethora of objects from the newly excavated Bronze Age sites in Turkey including the following major sites presented in chronological order: Alacahöyük[31] in 1936, Boğazköy-Hattusha[32] and Alişar Höyük[33] in 1937, Troy[34] and Kültepe-Kanesh[35] in

[30] DeAtley and Bishop, "Toward an Integrated Interface for Archaeology and Archaeometry," 371.
[31] Arık, *Alaca Höyük Hafriyatı. 1935'deki Çalışmalara ve Keşiflere ait İlk Rapor.* See also Koşay, *Türk Tarih Kurumu Tarafından Yapılan Alaca Höyük Hafriyatı. 1936'daki Çalışmalara ve Keşiflere Ait İlk Rapor;* Koşay, *Türk Tarihi Kurumu Tarafından Yapılan Alaca Höyük Kazısı. 1937-1939'daki Çalışmalara ve Keşiflere ait İlk Raporlar.*
[32] Bittel, *Boğazköy. Die Kleinfunde der Grabungen 1906-1912. I. Funde Hethitischer Zeit,* 4-5, 20-21, 27.
[33] Von der Osten, *The Alishar Hüyük. Seasons of 1930-32. Part II,* 253-273.
[34] Blegen, Caskey and Rawson, *Troy. The Sixth Settlement. Vol III.* See also Schliemann, *Ilios. The City and Country of the Trojans.*
[35] Özgüç, *Türk Tarih Kurumu Tarafından Yapılan Kültepe Kazısı Raporu 1948*. See also Özgüç, *Türk Tarih Kurumu Tarafından Yapılan Kültepe Kazısı Raporu 1949.*

1950, Tell Atchana[36] in 1955 and Tarsus-Gözlükule[37] in 1956.[38] These publications were written in the traditional format of reports and their main purpose regarding metalliferous finds was to identify and classify these objects according to stratigraphy and typology based on function and less often style. In general, metal finds were examined for chronological comparison or discussion and were not studied in relation to their find context within the site. The spatial analysis of excavated objects was typically chronological, seldom contextual, that is metal finds were usually assigned to a stratigraphic level rather than an excavated structure, feature or fill even though catalogue entries presented more often than not some information on the find context. In other words, the objects were usually stripped off of their contexts when catalogued to be presented to the scientific community according to the prevalent method of interpretation at the time in a way reflecting the physical loss of context due to excavation in writing. This strategy is in contrast with the current trends of publication where stratification and context of objects are recorded and presented in great detail with almost self-conscious unease to undo some of the damage excavation inflicts on contexts by definition. The trend may be observed in second generation excavations, for instance, at Boğazköy-Hattusha where so-called small finds are published in a separate volume, due to their high quantity, with available contextual information for each excavated artifact.[39] A further, more recent example is the latest excavation report from Chatal Höyük in the

[36] Woolley, *Alalakh. An Account of the Excavations at Tell Atchana in the Hatay, 1937-49,* 275-287;
[37] Goldman, *Excavations at Gözlü Kule, Tarsus: Vol. II. From the Neolithic through the Bronze Age,* 281-303.
[38] Publications of minor metal finds include Koşay, "Ahlatlıbel Hafriyatı," 75-78; Von der Osten, *Discoveries in Anatolia 1930-31,* 51, 86-87; Lamb, "I.-Excavations at Kusura near Afyon Karahisar"; Lamb, "VII.-Excavations at Kusura near Afyon Karahisar: II," 39-43.
[39] Boehmer, *Die Kleinfunde von Boğazköy.*

Amuq by Marina Pucci (2019) where all material finds including metals are presented within functional categories in site context.[40]

As the number of unearthed metal objects increased, these finds from individual sites in Turkey began to be gathered under extensive classificatory publications. The first study to collect metal objects for an investigation of the Anatolian metal industries was by Slovak archaeologist Stefan Przeworski (1939).[41] The German publication was devoted to a typological examination of bronze objects with a chronological focus on the Late Bronze Age and the transition to Iron Age to trace their origin, development and distribution in Anatolia. Two decades later, French archaeologist Jean Deshayes published his comprehensive study of over 3000 copper-based finds from a wide geographical area from the Indus valley to Danube river, including Turkey, and of a wide chronological scope between the 4th and 2nd millennia BCE, in French. [42] Deshayes focused on a particular category of objects, that is bronze tools, in order to study and classify production through metal implements within a typological framework, as well.

Towards the latter half of the twentieth century, the typological method of analysis was accompanied by analytical studies with the advent of scientific investigations. The first comprehensive analytical study regarding metals in Turkey was published in 1969 by Ufuk Esin in Turkish.[43] Previously, only metal artifacts from a particular site or region were sporadically analyzed such as Kurt Bittel's publication of the Soloi/Pompeiopolis hoard the metal finds of Braidwoods' Amuq

[40] Pucci, *Excavations in the Plain of Antioch III. Stratigraphy, Pottery, and Small Finds from Chatal Höyük in the Amuq Plain.*
[41] Przeworski, *Die Metallindustrie Anatolien in der Zeit von 1500-700 vor Chr. Rohstoffe, Technik, Produktion.*
[42] Deshayes, *Les Outils de Bronze, de L'Indus au Danube (IVe au IIe Millenaire).*
[43] Esin, *Kuantitatif Spektral Analiz Yardımıyla Anadolu'da Başlangıcından Asur Kolonileri Çağına Kadar Bakır ve Tunç Madençiliği.*

Valley excavations.[44] Esin, on the other hand, collected representative samples from numerous sites including Tarsus-Gözlükule and conducted analysis using optical emission spectroscopy (OES) to determine their material composition with aims of dating and provenancing metal objects. Her publication still remains one of the most extensive analytical studies on metal finds in Turkey.

Esin thus became a pioneering figure in the development of the academic field of archaeometry in the country during the second half of the twentieth century. Archaeometric studies flourished under the multi-disciplinary Keban Dam Rescue Project from 1968 to 1974 on the Euphrates where Esin and many (of her) eager students and scholars of archaeology and archaeometry took part in.[45] The project was initiated by Halet Çambel and Kemal Kurdaş, and was a joint collaboration between Istanbul University and Middle East Technical University (METU).[46] Subsequently, in 1980, the Unit of Archaeometry was established in association with METU under the Scientific and Technological Research Council of Turkey (TÜBİTAK) with the support of Bahadır Alkım, Halet Çambel and Ufuk Esin.[47] Researchers from various institutions including Istanbul University, Boğaziçi University, Hacettepe University, Istanbul Technical University, Çukurova University, and Fırat University participated in the Unit and the results of their research were published in annual bulletins.[48]

At the same time, in the 1980s, Boğaziçi University became another intellectual meeting point for interdisciplinary research in archaeometallurgy and

[44] Bittel, "Der Depotfund von Soloi/Pompeiopolis," 183-205; Braidwood, Burke and Nachtried, "Ancient Syrian Coppers and Bronzes," 87-96; Braidwood and Braidwood, *Excavations in the Plain of Antioch I. The Earlier Assemblages Phases A-J.*
[45] Özdoğan, "Keban Projesi'nden Arkeometri Ünitesi'ne Türk Arkeolojisinde Çağdaşlaşma Süreci," 43-49.
[46] Middle East Technical University Keban Project Publications in 1968, 1969, 1970, 1971, 1972, 1973, 1974-5.
[47] Yalçın, "Neden Arkeometri?," 40.
[48] TÜBİTAK Arkeometri Ünitesi Bilimsel Toplantı Bildirileri I-VI (1981-1986).

archaeometry with the inauguration of a longtime collaboration between the Departments of History and Chemistry. This was initiated by K. Aslıhan Yener, who was an assistant professor at the History Department at the time,[49] and Hadi Özbal, who is now an Emeritus professor at the Chemistry Department[50]. In the early 1980s, Yener, Özbal and their colleagues began an intensive long-term research project in collaboration with the TÜBİTAK Archaeometry Unit and the Ankara Mining Research Institute (MTA).[51] The project included an intensive survey, later concentrated to the Bolkardağ mining district in Central Taurus Mountains, with the objective to locate sources of ancient metals in Turkey, particularly silver and lead, that were utilized in long-distance trade networks with the Near East as lucidly exemplified in the thousands of cuneiform tablets recovered at Kültepe-Kanesh near Kayseri.[52] In addition, ore sources from Bolkardağ, Aladağ and the Niğde Massif in the central Taurus region and a group of metal artifacts were characterized by analyses of trace element distribution and lead isotope ratios of ores and slag specimens from the surveys as well as artifact samples from a number of archaeological sites.[53]

An unexpected discovery during analyses was that the polymetallic ore samples from Sulucadere, Bolkardağ contained significant levels of tin minerals,

[49] Yener is currently an Emeritus professor at the Department of Archaeology and Art History of Koç University. She directed the excavations of Tell Kurdu, Alalakh and the Amuq Valley Regional projects.
[50] Özbal's archaeometric analyses on metals and other material from numerous archaeological sites including İkiztepe, Değirmentepe, Tarsus-Gözlükule, Tell Atchana and Barcın Höyük are much valuable scientific contributions to the fields of archaeology and archaeometallurgy. He is also the founder of Boğaziçi University Archaeometry Research Center where analyses for scientific research projects are being facilitated since 1991.
[51] Yener and Özbal, "Bolkardağ Mining District Survey of Silver and Lead in Ancient Anatolia," 309.
[52] Yener, "The Archaeometry of Silver in Anatolia: The Bolkardağ Mining District," 469-70. Yener et al., "Bolkardağ: Archaeo-metallurgy Surveys in the Taurus Mountains, Turkey," 477-494.
[53] Özbal and Yener, "Gümüş Kaynakları Tanımlama Projesi: 1983 Yılı Bolkardağ Arkeometri İncelemeleri," 133-144; Yener, Sayre, Joel, Özbal, Barnes and Brill, "Stable Lead Isotope Studies of Central Taurus Ore Sources and Related Artifacts from Eastern Mediterranean Chalcolithic and Bronze Age Sites," 541-577.

particularly stannite.[54] This discovery initiated another strand of survey research for local tin deposits in Anatolia, which were hitherto unpredicted as scholars assumed that tin was imported from Central Asia, Europe or elsewhere.[55] The surveys resulted in the major discoveries of the Early Bronze Age Kestel mining complex and its interrelated processing site of Göltepe near Niğde where tin was intensively procured, and then processed and smelted.[56] The excavations of these sites and the more recently identified Hisarcık tin and arsenic ore deposit near Kayseri have provided and continue to provide crucial insights into the local multi-tiered organization of metal production as conceptualized by Yener in her "highland production model" and on the technologies of ore dressing and smelting in Anatolia.[57]

One of the most important academic gatherings for archaeometallurgical research in the twenty-first century is undoubtedly the ongoing symposium series of "Anatolian Metal" initiated and organized by Ünsal Yalçın under the auspices of the Deutsches Bergbau-Museum Bochum.[58] The proceedings of the symposiums, which are in general dedicated to Anatolian mining and metallurgical traditions, are regularly published in *Der Anschnitt* and edited by Yalçın. Aside from the "Anatolian Metal" conferences, Yalçın's significant contributions to the field in

[54] Yener and Özbal, "Tin in the Turkish Taurus mountains: the Bolkardağ Mining District," 223; Yener, "The Archaeometry of Silver in Anatolia: The Bolkardağ Mining District," 472.
[55] Muhly, "Sources of Tin and the Beginnings of Bronze Age Metallurgy," 275-291.
[56] Yener et al., "Kestel: An Early Bronze Age Source of Tin Ore in the Taurus Mountains, Turkey," 201-3; Göltepe; Yener and Vandiver, "Tin Processing at Göltepe, an Early Bronze Age Site in Anatolia," 207-238.
[57] Yener, *The Domestication of Metals: The Rise of Complex Metal Industries in Anatolia (c. 4500-2000 B.C.);* Yener et al., "New Tin Mines and Production Sites near Kültepe in Turkey: A Third-Millennium BC Highland Production Model," 596-612; Lehner, Yener and Burton, "Lead Isotope Analysis and Chemical Characterization of Metallic Residues of an Early Bronze Age Crucible from Göltepe: Using ICP-MS," 165-174; Yalçın and Özbal, ""Ein Neues Zinnvorkommen in Kayseri-Hisarcık, Zentralanatolien: Ein Vorbericht," 117-122. See further applications of the model in Lehner and Schachner, "The Organization of Metal Production at Hattusa: A First Assessment," 403-435; Lehner, "Metal Technology, Organization, and the Evolution of Long-Distance Trade at Kültepe," 135-155.
[58] Yalçın, *Anatolian Metal I-VIII.*

terms of his own research include analytical studies on metal finds from a large number of sites including Can Hasan, Aşıklı Höyük, Tülintepe, Mersin-Yumuktepe and especially Alacahöyük, in particular regarding the spectacular metal finds from the Early Bronze Age royal tombs.[59] The recently finalized excavations of his research project at Derekutuğun mining galleries near Çorum, conducted from 2009 to 2017 in two phases and preliminarily published, sheds light on ancient copper mining techniques in Anatolia during its formative period and may indicate possible sources of copper for excavated metal artifacts from urbanized settlements in Central Anatolia such as Early Bronze Age Alacahöyük.[60]

As a result of these academic developments, we now have a more refined and improved understanding of the technological, socio-cultural, economic and political aspects of metallurgical traditions in Anatolia from its pristine origin to a high state of complexity.[61] Metal studies in archaeology have proliferated resulting among other things in a growing interest in Anatolian metallurgy in terms of its technological and organizational development. Recently, more dissertations are now being devoted to reconsidering metals and metallurgy through social interaction, craft specialization, trade and technology.[62] While context is a required and expected aspect of studying metals of current excavations, the typological and/or analytical character remains dominant within the methodologies of studies focusing on finds of

[59] Yalçın is currently a professor at the Institute of Archaeological Studies at Ruhr-Universitat Bochum.
[60] Yalçın et al., "Prahistorischer Kupferbergbau in Derekutuğun," 147-184. Yalçın and Yalçın, "Derekutuğun Tarihöncesi Madenci Çıraları," 120.
[61] See Lehner and Yener, "Organization and Specialization of Early Mining and Metal Technologies in Anatolia," 529-557; Yalçın, "Anadolu Madencilik Tarihine Toplu Bir Bakış," 3-13; Yalçın, "Ancient Metallurgy in Anatolia," 15-40.
[62] See for instance Reeves, "Aegean and Anatolian Bronze Age Metal Vessels: a Social Perspective"; Blackwell, "Middle and Late Bronze Age Metal Tools from the Aegean, Eastern Mediterranean, and Anatolia: Implications for Cultural/Regional Interaction and Craftsmanship"; Lehner, "Cooperation, the Craft Economy, and Metal Technology during the Bronze and Iron Ages in Central Anatolia"; Kuruçayırlı, "Copper Metallurgy in Cilicia and the Amuq in the Second Millennium BC: Insights into Aspects of Bronze Age Technology and Trade"; Ercanlı, "The Examination of Metal Working Technology in Kültepe".

excavations, as their publications often provide limited information on the exact find locations or circumstances of excavated objects. My intention in this thesis is to promote a contextual study of published material from an early excavation at the mound of Tarsus-Gözlükule based on previous typological and analytical works that were carried out and which I will outline in the next section. This, I believe, will serve, on the one hand, specialists to consider contextual circumstances of metal finds from an early excavation when interpreting analytical results of archaeometric studies on metal objects, and, perhaps more importantly, put forward fine-tuned, site-specific research questions regarding these captivating and complex artifacts.

2.4 Restudying the Tarsus-Gözlükule metal finds

My intention to re-introduce context into the study of the Late Bronze Age metal objects from Tarsus-Gözlükule was born out of this necessity: as I have stated in Section 2.2, a thorough contextual analysis is a prerequisite in interpreting any group of objects within a proper theoretical framework. As I have summarized in Section 2.3, however, many twentieth century final publications of excavations before the 1990's were void of contextual analyses due to a myriad of reasons. Pioneering works often focused on chronology and identification, others eschewed context because of shortcomings in the methods of excavation, recording or documentation.

The excavation project at the mound of Tarsus-Gözlükule in southern Turkey was an important and pioneering excavation for its region and time. It was initiated by Hetty Goldman through her interest in prehistoric cultural contacts between the regions of Anatolia, Syria and the Aegean, and was largely carried out in the 1930s and continued briefly in the 1940s, under the auspices of Bryn Mawr College. The results of excavation regarding the Late Bronze Age metal artifacts, which I

elaborate on in the next chapter, were published in 1956 and complied with the abovementioned mainstream approach in presenting artifacts.

Half a century later, the re-investigation of the metal artifacts from the Goldman excavations became a priority in the 2001-2003 field seasons of the Tarsus-Gözlükule Interdisciplinary Research Project.[63] First, the metal artifacts, found together with Mersin-Yumuktepe material in the depots of Adana Museum, were sorted, photographed and inventoried and became part of the Goldman Study Collection. A selection of the metal finds was then subjected to chemical analysis as part a series of archaeometallurgical studies that consist of two master's theses, one PhD dissertation and a number of articles. Hadi Özbal and Emre Kuruçayırlı obtained a total of 282 micro samples from metal artifacts ranging from Bronze Age through the Hellenistic and Roman periods in their archaeometallurgical study. The results of sample analysis were first partially published in *Arkeometri Sonuçları Toplantısı* in 2003 and 2004,[64] and then further published in 2005.[65]

In the meantime, as part of his master's thesis, Kuruçayırlı (2003) published the elemental composition of 61 copper-based samples obtained from Bronze Age metal artifacts by AAS to investigate the alloying traditions used in metal production as well as possible ore sources.[66] Based on the results of the study, Kuruçayırlı concluded that throughout the Early and Middle Bronze Ages the prevalent copper alloy used in production was arsenical copper, and the use of bronze, which was infrequent in the mentioned periods, became widespread during the Late Bronze

[63] Özyar, Danışman and Özbal, "Field Seasons 2001-2003 of the Tarsus-Gözlükule Interdisciplinary Research Project," 40.
[64] Kuruçayırlı and Özbal, "Tarsus, Gözlükule'den Yeni Metal Analiz Sonuçları ve Değerlendirmeleri," 49-59; Kuruçayırlı, Özbal and Mısırlı, "Tarsus İlk Tunç Çağı II Mühürleri," 17-26.
[65] Kuruçayırlı and Özbal, "New Metal Analysis From Tarsus-Gözlükule," 177-195; Özbal, Kuruçayırlı and Mısırlı, "Two EBA Metal Seals from Tarsus-Gözlükule," 197-206.
[66] Kuruçayırlı, "Investigation of Metal Artifacts of Tarsus/Gözlükule from the Second and Third Millennia B.C.," 43-5.

Age, relatively later than at many comparable Bronze Age sites in Central Anatolia as well as Cyprus and the Levant.

Additionally, in her master's thesis, Gonca Dardeniz (2005) studied 82 copper-based published and unpublished arrowheads from Late Bronze to Hellenistic and Roman periods from the mound.[67] Dardeniz typologically categorized the finds and conducted chemical analysis on samples taken from the arrowheads by means of AAS.[68] The study revealed that copper was mostly preferred in unalloyed form for the production of arrowheads during the Late Bronze and Iron Ages. Along with pure copper, arsenical copper and bronze was also used, although less highly. Furthermore, as opposed to the continuation in alloying traditions, according to Dardeniz's study, the typology drastically changed from the Late Bronze to Iron Age where the straight and butted pin arrowheads were replaced by socketed specimens. The socketed arrowheads from Iron Age and Hellenistic and Roman Periods were shown to contain high levels of lead which Dardeniz interpreted was cast into the cavity in order to increase the mass of the weapon presumably for greater momentum.

More recently, as part of his PhD dissertation, Kuruçayırlı (2015) conducted chemical and lead isotope analysis, for the first time, on 34 copper-based samples obtained from the Middle and Late Bronze Age metal artifacts of Tarsus-Gözlükule by means of ICP-MS.[69] As a result of this study, Kuruçayırlı further proposed that the period when bronze became the predominant copper alloy in Cilicia, which he previously asserted as Late Bronze, was Late Bronze II in particular. This assertion

[67] Dardeniz, "Chemical Analysis and Characterization of First Millennium B.C. Arrowheads from Tarsus".
[68] Dardeniz, "Chemical Analysis and Characterization of First Millennium B.C. Arrowheads from Tarsus," 53-55.
[69] Kuruçayırlı, "Copper Metallurgy in Cilicia and the Amuq in the Second Millennium BC: Insights into Aspects of Bronze Age Technology and Trade," 137 (Figure 4.3), Appendix I-II.

was possible because the Late Bronze metal assemblage was studied separately as differentiated into its two phases.

As briefly summarized, the re-study of the metal artifacts from Tarsus-Gözlükule initially focused on compositional analysis in order to understand and to reveal similarities and changes in patterns of alloy use based on chronology, and more recently on provenancing via lead isotope analysis to illuminate possible ore sources and exchange networks. On the other hand, there has not yet been a study devoted to refining our knowledge of the context of the metal artifacts. Hence, although the results and interpretation of analyses obtained in these studies are immensely valuable, the discussions generated from the results remain preliminary for two reasons. First, despite the lack of a thorough contextual approach, in her final publication, Goldman presented sufficient contextual/chronological information to situate some of the metal artifacts within specified phases of Late Bronze I and Late Bronze II. On the other hand, these are not pursued further in the mentioned analytical studies and therefore, the results of analyses are only discussed in terms of wider/generic chronological levels of the Middle Bronze and Late Bronze Age; the latter level discussed only in Kuruçayırlı's PhD dissertation within its two distinct phases of I and II, and not further. Kuruçayırlı also expressed a similar concern for the inability to chronologically distinguish the metal assemblages, although not for Gözlükule but for the Amuq, where the beginning of the use of tin-bronze could not be explicitly situated in the chronology due to the fact that the Late Bronze Age material was not differentiated into the phases of I and II.[70] Second, since the metal finds are not discussed in terms of their location in site, useful information available in excavation reports remains untapped; information regarding the structure or

[70] Kuruçayırlı, "Copper Metallurgy in Cilicia and the Amuq in the Second Millennium BC: Insights into Aspects of Bronze Age Technology and Trade," 9.

feature that the artifact belongs to or references to its state of preservation potentially indicating discarded, scrap metal or a well-preserved, functioning object still in use, or an object broken and buried to preserve the intentional break. For these reasons, with this thesis, my intention is to add further layers of meaning to the study of metal finds by re-introducing available information on find context to enable new levels of analysis and a more complete picture.

The re-contextualization of metal artifacts in this thesis is primarily based on the detailed examination of the final publication, and unpublished field notebooks and documents. Through studying these sources, I attain three objectives: I fine-tuned the chronological sequence of metal objects, I assign the metal objects to a specific locus as much as data permitted, and finally, I produce a new, accessible catalogue for the metal artifacts with updated data. Within my study, I also incorporate the abovementioned compositional and lead isotope analyses concerning the Late Bronze Age metal artifacts in order to amalgamate the results of analysis within a single framework where the focus is on understanding these produced, used, re-used and discarded metal things within a settlement process. In order to do so, in the next chapter, I introduce the mound of Tarsus-Gözlükule in terms of its excavation history and settlement layout, followed by a detailed explanation of the methodology of research and criteria for selection of artifacts for this thesis and the main contributions of my research.

CHAPTER 3

REVISITING LATE BRONZE AGE METAL ARTIFACTS OF GÖZLÜKULE FROM THE GOLDMAN EXCAVATIONS

3.1 History of excavations at the mound of Gözlükule at Tarsus

Once located on the banks of the Berdan (classical Kydnos) river, the mound of Gözlükule lies on the southern limits of the modern city of Tarsus. It rises impressively, some 20 meters high, from the western part of the flat coastal plain of Cilicia, one of the most fertile regions in modern Turkey. The mound was continuously inhabited from Neolithic to the present time with minor lacunae.[71] Its strategic location at the entrance of the Cilician Gates (Gülek Pass), an important pass connecting the plain with Central Anatolia, gave further prominence to the site for almost nine millennia.

The mound is made up of two elevations, a higher eastern and lower western summit, and an intervening saddle. The orientation of the mound is East-West with a northwestern inclination in the western section.[72] Visibly, it measures around 350 meters in East-West direction and around 150 in North-South direction. It rises circa 20 meters high from the plain at its highest eastern point. Below the current level of plain and buried under alluvial deposits, the mound accumulation continues down to circa 10 meters. The total accumulation goes up to 32 meters.[73]

In the course of a long lifespan, the mound of Gözlükule was acquainted with two teams of archaeologists, and few travelers in pursuit of antiquities. During the

[71] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 3.
[72] Özyar, Danışman and Özbal, "Field Seasons 2001-2003 of the Tarsus-Gözlükule Interdiscliplinary Research Project," 9.
[73] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, plan 26.

nineteenth century, the mound attracted two travelers from Europe who were interested in the classical history of Tarsus.[74] Some eighty years later, the first systematic excavations took place under the direction of the pioneering archaeologist Hetty Goldman[75] and under the auspices of Bryn Mawr College. Goldman was interested in the prehistoric cultural contacts between the regions of Anatolia, Syria and the Aegean. She was drawn to Cilicia following the discovery of both imported and locally made Mycenaean pottery during the survey of the Swedish archaeologist Einar Gjerstad[76] and the proposal to identify the term "Ahhiyawa" in Hittite texts as Mycenaean Greeks (Achaeans) by the Swiss linguist Emil Forrer. After her initial survey expedition to Cilicia where she and her team visited 41 sites and undertook soundings at four of them, including Gözlükule in the spring of 1934, she decided on the mound of Gözlükule.[77]

The excavation project continued from 1935 to 1939 and briefly in the years of 1947 and 1948 with an interruption due to World War II. There were two main areas of excavation widened from multiple trenches opened in the first years of excavation. The area dug on the steep slope of the eastern peak was named Section A. In this sector, from 1934 to 1938, Robert W. Ehrich supervised and recorded the excavation. The area dug to the west of Section A, in the saddle of the mound, was named Section B. There, from 1934 to 1938 with the exception of the year 1936, Ann M. Hoskin (later Ehrich) was in charge of daily supervision and recording of the excavation. Hoskin also supervised the excavation at Section A during the fall of

[74] Goldman, "Preliminary Expedition to Cilicia, 1934, and Excavations at Gözlü Kule, Tarsus, 1935," 528.
[75] See Mellink and Quinn, "Hetty Goldman," 298-350 for an account of Hetty Goldman's life and career in archaeology.
[76] Gjerstad, "Cilician Studies," 171, 195.
[77] Goldman, "Preliminary Expedition to Cilicia, 1934, and Excavations at Gözlü Kule, Tarsus, 1935," 526.

1938. In 1936, Dorothy H. Cox, Margaret S. Woods and John F. Daniel supervised at different times.

The results of excavation were initially published by Goldman in a series of preliminary reports in the *American Journal of Archaeology*.[78] These were followed by three monumental double volumes of final reports printed by Princeton University Press in 1950, 1956 and 1963.[79] A fourth volume on the Medieval period was planned but not published.[80] This entire operation at Tarsus-Gözlükule during the first half of the twentieth century is, to this day, one of the most important archaeological projects for the development of Anatolian archaeology and chronology.[81]

Goldman began her foreword in the first volume of the final publications with the following words: "The excavation of Gözlükule has been ended; it would be misleading indeed to say that it had been completed for the major part of the Tell remains unexplored".[82] Following this statement, in the early twenty-first century, archaeological research resumed at Gözlükule after a 50-year break with a new interdisciplinary project.

The current research project is carried out under the direction of Aslı Özyar who was encouraged by Machteld J. Mellink, member of the Goldman excavation team and eminent scholar of Anatolian archaeology, and under the auspices of Boğaziçi University in cooperation with Bryn Mawr College for nearly 20 years. The first phase of the project was devoted to two main objectives: first, an investigation

[78] See Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. I: The Hellenistic and Roman Periods*, v-vi for a complete list of publications prior to the final reports.
[79] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. I: The Hellenistic and Roman Periods;* Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age;* Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. III: The Iron Age.*
[80] Özyar et al., "Recent Fieldwork at Tarsus-Gözlükule: The Medieval Levels," 198.
[81] Karg, "Tarsus and Anatolian Chronology in Retrospect," 284.
[82] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. I: The Hellenistic and Roman Periods,* v.

of the mound and its vicinity through surveys; second, the revisiting and rehousing of the large collection of ceramics and small finds of the Goldman excavation, then stored in the Adana Museum. Currently, except for some inventoried artifacts, this study collection, now referred to as the Goldman Study Collection, is housed in the archives of the Tarsus-Gözlükule Excavations Research Center, adjacent to the mound of Gözlükule. The fruitful restudy of the Goldman Study Collection (hereafter abbreviated as GSC) have produced various MA and PhD theses, including the present study, and is still a work in progress.[83]

The preliminary research was published by Özyar as an edited book in 2005.[84] The first excavation season took place in 2007 on the eastern summit of the mound, northeast of Section A, and since then the Boğaziçi University Tarsus-Gözlükule Excavation Project continues to be carried out. This location was chosen to excavate the remaining debris of the monumental Late Bronze IIa building partially uncovered by the Goldman team. Annual preliminary reports of excavation and research are published in the series of *Kazı Sonuçları Toplantısı*. Recent fieldwork concerning the Medieval and Late Bronze Age levels has been published in the second and third volumes of *The Archaeology of Anatolia*.[85]

[83] Ünlü, "Locally Produced Painted Pottery of Tarsus-Gözlükule: The Late Bronze to Iron Age Transition"; Kuruçayırlı, "Investigation of Metal Artifacts of Tarsus/Gözlükule from the Second and Third Millennia B.C."; Dardeniz, "Chemical Analysis and Characterization of First Millennium B.C. Arrowheads from Tarsus"; Yalçın, "A Re-Evaluation of the Late Bronze to Early Iron Age Transitional Period: Stratigraphic Sequence and Plain Ware of Tarsus-Gözlükule"; Güldüren, "The Middle Bronze Age Settlement at Tarsus-Gözlükule: A Re-Evaluation of Stratigraphy and Analysis of Use of Space".
[84] Özyar, *Field Seasons 2001-2003 of the Tarsus-Gözlükule Interdisciplinary Research Project*.
[85] Özyar et al., "Recent Fieldwork at Tarsus-Gözlükule: The Medieval Levels," 197-226; Özyar, Ünlü and Pilavcı, "Recent Fieldwork at Tarsus-Gözlükule: The Late Bronze Age Levels," 55-71.

3.2 A synopsis of Goldman's Late Bronze Age levels

Goldman defined the Late Bronze levels of habitation based on the following changes in the settlement layout and the ceramic repertoire: She characterized the Late Bronze by the appearance of a new Anatolian ceramic type which she labeled "Plain Monochrome" here referred to as the Cilician Late Bronze Age Plain Ware (hereafter abbreviated as Cilician LBA Plain Ware).[86] The Late Bronze Age was subdivided into two main levels, Late Bronze I and II. This subdivision was based on two major points: First, the variations in the ceramic repertoire with a major increase in the use of the Cilician LBA Plain Ware and overall change in the ceramic shapes.[87] Second, the changes in the scale and organization of the settlement with the construction of a large monumental building at the summit, and two large buildings around a wide street in the mound's saddle associated with Hittite political control in Cilicia. Late Bronze I and all preceding levels were solely attested in the excavated areas in Section A given that excavations in Section B did not go further below the levels defined as Late Bronze II. The Late Bronze II levels were excavated in both Section A and B albeit at different elevations[88] and consisted of two levels which Goldman referred to as Late Bronze IIa and IIb, separated by a major destruction phase. The Late Bronze IIb material culture was defined with a scaled-down and less organized settlement layout and the minor introduction of two types of painted ceramics: Aegean-style IIIC and Transitional Period Local Painted Pottery.[89]

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[86] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 62; 183-184.
[87] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 203.
[88] The reason for this difference is that Section B is located in the saddle of the mound which was settled much later than in Section A, possibly through the course of Early Bronze Age when occupation expanded into a lower town.
[89] Ünlü, "Locally Produced and Painted Late Bronze to Iron Age Transitional Period Pottery of Tarsus-Gözlükule," 145-168.

According to Goldman's recording system, the position of any feature or find was calculated in reference to an elevation point on the summit of Section A.[90] Goldman identified four phases within the Late Bronze I strata and referred to these by indicating the approximate lowest and highest measured elevations: "6.50 m.-5.50 m. level", the "5.00 meter phase" and two "Intermediate" levels between 5.00 m. and 4.00 m.[91] The lowest two phases, that is the former two mentioned, yielded more substantial architecture and material finds according to which Goldman defined the entire Late Bronze I period. The structures associated with the Late Bronze I level, particularly the higher phases, were significantly damaged due to foundation trenches dug for the construction of the subsequent Late Bronze IIa monumental building.

The Late Bronze levels were later revisited by Dorothy Slane as part of her PhD thesis. In her thesis, Slane re-evaluated the Middle and Late Bronze stratigraphy based on architectural remains and ceramic repertoire. The architectural remains were re-studied in connection with the ceramic remains based on available information from Goldman's publication together with the unpublished field notebooks. Through this examination, Slane re-organized and re-catalogued the ceramic repertoire of the Middle Bronze and Late Bronze stratigraphy. She re-analyzed the stratified ceramic repertoire, although partially, since an entire storeroom of pottery unknown to Slane at the time was discovered later.[92] As result

[90] The elevation of this 0 point was not published and the point is not preserved anymore.
[91] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 44-47.
[92] Karacic, "The Archaeology of Hittite Imperialism and Ceramic Production in Late Bronze Age IIA Tarsus-Gözlükule, Turkey," 22.

of her work, she fine-tuned the Middle and Late Bronze levels into an architectural sequence consisting of ten levels in Section A and three levels in Section B.[93]

The "6.50 m.-5.50 m. level", the lowest building phase of Late Bronze I, was characterized by a large two-story building consisting of multiple rooms constructed in a N-S orientation. Goldman referred to this building as the "Late Bronze Age I House" and described its ground plan as "small rooms arranged around three sides of a court" reminiscent of an Anatolian type plan known from Alacahöyük and Kültepe-Kanesh.[94] The complete dimensions of the building are not known since it was partially uncovered, however, the section Goldman team excavated measured circa 200 m^2.[95] While the eastern and western extent of the building were exposed, its northernmost section lay underneath unexcavated fill, whereas the foundations of subsequent structures, referred to as the terrace rooms N and M, disrupted what lay south of the building. Goldman contemplated that the "Late Bronze Age I House" was either an official residence or an administrative building based on the attached storage rooms and a deposit of bronze artifacts discovered in Room D of the building which she interpreted as a foundation offering in reference to parallels in Syria.[96] Later, Slane, who had studied the field notebooks, determined that the building had two architectural phases. Following an apparent conflagration localized to the northeastern portion of the structure in Rooms D, E, H, J, K and the Court, the area was leveled, and the building was reconstructed in a similar fashion.[97]

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[93] Slane, "Middle and Late Bronze Age Architecture and Pottery in Gozlu Kule, Tarsus: A New Analysis," 11.
[94] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 44; Plan 21.
[95] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 44.
[96] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 46.
[97] Slane, "Middle and Late Bronze Age Architecture and Pottery in Gozlu Kule, Tarsus: A New Analysis," 51.

Eventually the "Late Bronze Age I House" was abandoned and a new structure was partially erected over its remains, which is one of the buildings associated with the second phase of Late Bronze I, the "5.00 m. phase". It is composed of two adjoining rooms built against a terrace wall in a NE-SW orientation and laid over rooms A, C, and G of the former "Late Bronze Age I House".[98] A total of 32 ceramic pots were excavated from its western room which was named the "Pottery Storage Room".[99] The eastern room yielded a well-preserved horse-shoe type hearth, first attested at the mound during the Early Bronze III period.[100] To note, Slane observed a change in the ceramic repertoire from the first to the second level of Late Bronze I.[101]

The "5.00 m phase" architecture was further defined with a series of terrace rooms built into the southern slope of the mound named under the "Later Terrace".[102] It consisted of a series of rooms (Room N, M, O and the Court) to the south of the "Pottery Storage Room".[103] Goldman interpreted these rooms as domestic spaces rather than storage facilities due to their size and well-built walls.[104] Room O contained what Goldman referred to as "a characteristic Hittite rectangular tub" laid on a debris of burnt brick and timber.[105] These ceramic containers or so-called

[98] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age,* 46.
[99] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age,* 46.
[100] Güldüren, "The Middle Bronze Age Settlement at Tarsus-Gözlükule: A Re-Evaluation of Stratigraphy and Analysis of Use of Space," 82.
[101] Slane, "Middle and Late Bronze Age Architecture and Pottery in Gozlu Kule, Tarsus: A New Analysis," 362.
[102] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age,* 46-48. Slane later re-assigned the "The Earlier Terrace Rooms to the South" to an earlier level (Slane A.I) based on her analysis of the architectural remains.
[103] These four rooms are referred to as the "Terrace House Unit" by Slane.
[104] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age,* 47.
[105] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age,* 48, 197, 204 (Figure 310/1054); Slane, "Middle and Late Bronze Age Architecture and Pottery in Gozlu Kule, Tarsus: A New Analysis," 348, 358.

bathtubs are best known in Anatolia from the site of Kültepe-Kanesh and have been interpreted as grape-crushing vats.[106]

For the upper two "Intermediate" levels of Late Bronze I, only few material finds and no architectural plans were published due to their fragmentary state. In Chapter four of this thesis, I provide a detailed account of the excavated architectural remains in relation to metal finds as recorded in the 1936 and 1937 field notebooks of Robert Ehrich. It appears that the now fragmented structures were erected over the large Middle Bronze II building in a similar orientation, however, the Late Bronze I remains belong to multiple structures separated by open areas with trash pits and not a single large building. Furthermore, the orientation of the wall fragments shifts from the first to the second "Intermediate" level.

The Late Bronze IIa level, which was excavated at both Section A and B, is characterized by the remains of a large monumental building, of stone foundation and mudbrick/timber superstructure in Section A.[107] The excavated southwestern section of the building measured circa 1000 m^2 in area. Based on the excavated portion, the building consisted of two rows of rooms arranged around the west and south sides of a large court. For its construction, the mound summit was extensively leveled. Steve Karacic, who has studied the Late Bronze IIa ceramic and architectural remains as part of his PhD thesis, later suggested that the building had two architectural phases.[108] While the significance of every individual room is still not clear, Rooms T10, T11 and T12 were certainly of importance for these contained remnants of metal production including slag, crucible and decomposed metal

[106] Gorny, "Viticulture and Ancient Anatolia," 169.
[107] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 49.
[108] Karacic, "The Archaeology of Hittite Imperialism and Ceramic Production in Late Bronze Age IIA Tarsus-Gözlükule, Turkey," 121.

fragments as recorded in the field notebooks.[109] Two drainage systems existed within the building for efficient water management: one to the north of the excavated portion, extending from the large court to the western corridor rooms, and the other in the southwest corner, extending from Room T1 to Room T14 in an angle.[110]

Goldman identified the building as a temple in comparison to those excavated at Boğazköy-Hattusha and referred to it as the "Hittite" Temple.[111] Although, this was later challenged[112] and the role of the building is still open to question, in all likelihood her identification was correct. Nonetheless, the size and location of the building indicates that it was the most important edifice of Tarsus-Gözlükule at its time associated likely with both religious, economic and political realms.[113]

To the south of the monumental building a stone paved street widened into a plaza toward the east. To the south of the street, a circuit wall containing cyclopean stones surrounded the southern and eastern edges of the summit.[114] Goldman could not determine whether the circuit wall was defensive or merely supportive for the terracing since its superstructure was not preserved. Based on Ehrich's suggestion from the field diaries, Karacic proposed that it was likely constructed as a retaining wall to retain the large quantities of the leveling fill.[115]

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[109] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 50. Hoskin Ehrich, "1938 Excavation Report from Tarsus-Gözlükule, 2-3 M Levels," 240. See pages 128-131 in Section 5.4 of this thesis for further discussion.
[110] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 49-50.
[111] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 49-50.
[112] Naumann, *Architektur Kleinasiens: von ihren Anfangen bis zum Ende der Hethitischen Zeit*, 404-405.
[113] See Section 5.4 of this thesis for further discussion on the building's role and significance in relation to its inventory of metal objects.
[114] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 49.
[115] Karacic, "The Archaeology of Hittite Imperialism and Ceramic Production in Late Bronze Age IIA Tarsus-Gözlükule, Turkey," 129.

The Late Bronze IIa level was defined by two large buildings with thick walls lining a 3 meter wide street in a N-S direction in Section B, at the saddle of the mound.[116] These buildings, named the "East House" and the "West House", measured a minimum of 125 m^2 and 550 m^2, respectively.[117] To the west, the "West House" was adjoined by another building, named the "South House", however, only a small portion of it was uncovered during the excavations. Goldman interpreted the "East House" as the residence of an official based on its size and official title-bearing bullae in a sealed pit sunken into the building.[118]

In general, the Late Bronze IIa level may be characterized with extensive building activities unprecedented in size and construction technique both in Section A and B. All of the buildings constructed during the Late Bronze IIa period were destroyed in heavy conflagration which definitively marked the end of this and the beginning of the next level of Late Bronze IIb. Following this abrupt disruption, the mound was resettled as observed in both Section A and B.

After the conflagration that terminated the Late Bronze IIa occupation, the area was leveled and reconstructed in a smaller scale, while the settlement plan was retained. The street running in a N-S direction was kept at Section B, however, the width was reduced by one half.[119] Three smaller structures separated by alleys extending in an E-W direction replaced the Late Bronze IIa buildings west of the street.[120] East of the street were contemporary structures, though in a fragmentary state. This settlement plan was later altered with the construction of stone wall

[116] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 51.
[117] Özyar, "Contributions of Tarsus-Gözlükule to Hittite Studies," 283.
[118] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 56.
[119] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 58.
[120] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 58.

foundations of a larger room cutting off the main street.[121] Based on the initial settlement layout and similar ceramic repertoire in Section B, Slane argued that the area was first resettled by displaced inhabitants of Late Bronze IIa who maintained earlier architectural and pottery traditions.[122] In line with Slane's observation, Serdar Yalçın, who has later studied the Transitional Late Bronze to Iron Age stratigraphic sequence from Section B, suggests that the Late Bronze IIb level may be divided into three phases: Early, Middle and Late.[123]

The Late Bronze IIb architecture and settlement organization have been seldom discussed in relation to the buildings in Section A. Goldman published the excavated remains of Section A in plan (inset) yet did not elaborate further on these due to their fragmentary state. According to Goldman's plan, a series of small-scaled structures in non-uniform orientation were built on top of the southeastern section of the LB IIa monumental building.[124] In addition to these, unpublished intrusion pits recorded in the field notebooks indicate that Late Bronze IIb occupation may have stretched further towards the western section of the monumental building.[125] Moreover, one sizeable wall fragment in Goldman's plan is identified as an earlier wall running under the south wall of T15 and the south drain of LB IIa monumental building, however, according to the field notebooks, it must be a later construction as Ehrich's section plan illustrates how this wall fragment, named as "Terrace Wall Return", cuts the wall foundation of south wall of Room T15.[126] The wall, 1.15 meter

[121] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age,* 59. See also Figure 75 of this thesis.
[122] Slane, "Middle and Late Bronze Age Architecture and Pottery in Gozlu Kule, Tarsus: A New Analysis," 83-84.
[123] Yalçın, "A Re-Evaluation of the Late Bronze to Early Iron Age Transitional Period: Stratigraphic Sequence and Plain Ware of Tarsus-Gözlükule," 67.
[124] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age,* 50; Slane, "Middle and Late Bronze Age Architecture and Pottery in Gozlu Kule, Tarsus: A New Analysis," 83.
[125] See Figure 59 and Section 6.1of this thesis in general for further information on these pits.
[126] Ehrich, "1937 Excavation Report from Tarsus-Gözlükule," 13-15.

wide and around 10 meters long, was constructed on a pebble filled foundation trench at a depth of ca. 3.80 m. The width of the wall is larger than the rest of the Late Bronze IIb wall remains which may suggest that, if dated to Late Bronze IIb, it may have been part of a more significant structure. Moreover, it may also signify that the "new settlers" were able to construct large-scale buildings. Towards the northeast of Section A, the new TGK excavations have also revealed the further extent of the Late Bronze IIb occupation in two phases consisting of building remains and trash pits.[127]

3.3 Introducing the metal artifacts based on Goldman's publication

Over a thousand metal artifacts were uncovered during the Goldman excavations in the course of six campaigns.[128] These artifacts range from the Early Bronze Age I through the Middle and Late Bronze Age, Iron Age, Hellenistic-Roman and Medieval periods. The artifacts are mainly copper-based[129] with some iron, lead, and few gold and/or composite artifacts. Among the excavated artifacts, those Goldman published and dated to the Late Bronze Age constitute approximately 13.5% of Gözlükule metal assemblage with 135 artifacts.

Goldman meticulously published a selection of excavated metal artifacts in the *Excavations at Gözlü Kule, Tarsus* volumes. Some of these that were considered particularly significant and were from secured contexts were first immediately

[127] Özyar, Ünlü and Pilavcı, "Recent Fieldwork at Tarsus-Gözlükule: The Late Bronze Age Levels," 54 (Figure 5-1).
[128] This statement is based on the number of metal artifacts from the GSC that Virginia Verardi and myself inventoried during the TGK 2018 study season in addition to those in display at the Tarsus Museum.
[129] I refrain from using the term 'bronze' for unanalyzed artifacts even though they are referred to as such in Goldman's publication and the field diaries. Instead I prefer the generalized, neutral term 'copper-based' for these artifacts since their alloying elements are unknown. For a history of archaeometric analysis of the Tarsus-Gözlükule metal artifacts see Section 2.4 in this thesis.

published in the preliminary reports.[130] In the final publication, all artifacts are discussed in separate chapters based on their material and/or form following an account of the building levels and the chronology of the mound. Each chapter includes a catalogue of selected artifacts which are more significant and are better preserved examples of their class. The order of classification is as follows: "Neolithic and Chalcolithic Pottery", "Bronze Age Pottery", "Non-Hieroglyphic Seals and Seal Impressions", "Hittite Hieroglyphic Seals and Seal Impressions", "Flint, Chert, and Obsidian", "Stone", "Bronze", "Gold and Lead", "Molds", "Bone", "Clay", "Faience, Shell, and Wood", and "A Crystal Statuette". The artifacts are mainly classified based on material. To note, some artifacts of different material yet of similar use are discussed under the same chapter such as chapters "Flint, Chert, and Obsidian" or "Faience, Shell and Wood". Furthermore, some artifacts of same material yet of different form are classified under separate chapters such as "Non-hieroglyphic" and "Hittite Hieroglyphic" seals and seal impressions. This flexibility in classification allows an ability to highlight important types of artifacts that are visually or functionally distinct.

Goldman presented the metal artifacts in two chapters, titled "Bronze" and "Gold and Lead", based on their metal types. Gold and lead artifacts were combined in single chapter for the number of artifacts were few.[131] The chapters begin with a brief synopsis of the artifacts and are followed by the catalogue. In the synopsis, the artifacts are discussed in a typological order. Twenty-six types are listed under the "Bronze" chapter and nine types are listed under the "Gold and Lead" chapter. The former includes the following types in given order: knives, leather knives, sickles,

[130] Goldman, "Excavations at Gözlü Kule, Tarsus, 1936," 270-71, 284-86.
[131] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 300.

scrapers, axes, double axes, awls, chisels, tweezers, arrowheads, spearheads, swords and daggers, nails and tacks, hooks, needles, pins, roll-headed pins, toggle pins, fibulae, rings and earrings, bracelets, spoons, vessels, tubes, weight or counter, and miscellaneous. The latter includes the following types given order: for gold; pin, earrings, bead, and for lead; open links, rings and coils, rod, lid, miniature vase, and miscellaneous. The order of types from weapons and tools to ornaments and utensils implies larger classes. The defined types are complex in that there is reference to both functional and formal features of the artifacts. For instance, knives are grouped as knives and leather knives based on functionality while pins are grouped as pins, roll-headed pins and toggle pins based on both function and form.

3.4 Selection of metal artifacts based on the revised chronology

While there are clear indicators marking the start of the Late Bronze IIa and Late Bronze IIb levels, there seems to be no explicit change in material culture from Middle Bronze to the Late Bronze I levels. In fact, this was originally acknowledged by Goldman herself.[132] Recently, Marie-Henriette Gates revised the dating of the Late Bronze Age stratigraphy of Kinet Höyük based on the Levantine chronology.[133] In light of this, the BU-TGK team has also revised the periodization of the early second millennium at Gözlükule (Table 1).[134] The revised TGK chronological table takes into consideration Slane's reanalysis, but refrains from using her new level designations.

[132] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 183.
[133] Gates, "Kinet Höyük (Hatay, Turkey) and MB Levantine Chronology," 77-101; Gates, "Dating the Hittite Levels at Kinet Höyük: A Revised Chronology," 293-310.
[134] Novák et al., "A Comparative Stratigraphy of Cilicia: Results of the First Three Cilician Chronology Workshops," 162.

Table 1. Synchronization of the MB and LB Levels Combining Goldman (1956), Slane (1987), and the Recent TGK Revision (2017)

Traditional Chronology of Goldman	Goldman (1956) Levels	Slane (1987) Levels	Slane (1987) Structures[135]	TGK (2017) Levels
MB	7.50 m. Level	A.I	The 7.50 Unit, The Room 40 Unit	MB I
	7.00-6.50 m. Level	A.II	The 7.00-6.50 Unit, The Cellar Unit	
	c. 6.00 m. Level	A.III	The Pithos Room, The Lower Drift Slope	
LB I	6.50-5.50 m. Level	A.IV	The Room L Unit, The Room 12 Unit, 7.55 Pavement	MB II
		A.V	The 5.00-5.75 Unit, The Sand Kerpiç Covered Unit, The Upper Drift Slope	
	5.00 m. Level	A.VI	The Pottery Storage Room, The Terrace House Unit, The Sand Kerpiç Covered Unit	
	Intermediate Levels	A.VII-VIII	-	LB I
LB IIa	LB IIa	A.IX, B.IX.1, B.IX.2	The Monumental Building & East, West, South Houses	LB IIa
LB IIb	LB IIb	A.X, B.X	Houses 1-5 & Units L and R	LB IIb

According to the new TGK chronology, the "6.50 m.-5.50 m. level" and "5.00 m. phase" which Goldman identified as Late Bronze I are now re-dated to Middle Bronze II. Hence, the metal artifacts excavated from these two phases are also dated to the Middle Bronze II. Despite this terminological change in chronology, I have decided to include the Middle Bronze II metal artifacts in my discussion for the following reason: The construction of the large building (Goldman's "Late Bronze Age I House") of the "6.50 m.-5.50 m. level" demonstrates that there was change in the settlement layout from Middle Bronze I to Middle Bronze II. This major change separates the Middle Bronze II level out, as Goldman thought so with

[135] The structures given in this column are referred to with Slane's terminology.

her Late Bronze I identification and, therefore, merits attention. Although this level is now referred to as Middle Bronze II with respect to the Levantine chronology, I believe it must still be perceived within the Late Bronze domain of Tarsus-Gözlükule since it is distinct from the former Middle Bronze I level in terms of settlement layout and architecture and since the subsequent, now compressed, Late Bronze I level do not exhibit such character due to its fragmentary state.

3.5 Re-introducing context

The most important contribution of this thesis is to re-contextualize the metal finds in terms of stratigraphy and depositional loci. In accord with this, I present the metal artifacts in two-tiers: first ordered by chronology, then find context. The order of classification for metal objects is, hence, in contrast with Goldman's presentation.[136] In Chapters 4, 5 and 6, the artifacts are classified under their corresponding stratigraphic levels of Middle Bronze II and Late Bronze I, Late Bronze IIa and Late Bronze IIb, respectively. Within each chapter, I prefer to present the artifacts in this way to emphasize their context and provide a narrative account of metal use and production in Tarsus-Gözlükule.

I have re-studied a total of 137 metal artifacts as part of my thesis research. Of these, I present photographs for 9 artifacts here for the first time and re-present 97 metal artifacts with new photographs in color. When correlating Goldman's final publication and the field notebooks, I refer to all artifacts presented in my main analytical chapters with their inventory numbers assigned by the Goldman excavation team, identified by the abbreviation GE.

[136] In the catalogue, on the other hand, the artifacts are ordered in a similar fashion to Goldman's classification, first under chronological levels and then under general types of tools, weapons, ornaments, scrap, and cultic.

In this thesis, I maintain the TGK chronology to refer to stratigraphic levels which uses Goldman's traditional chronology of Late Bronze I, IIa and IIb for Late Bronze levels and employs Levantine chronology of Middle Bronze I and II for Middle Bronze levels with the minor terminological alteration elucidated above in Section 3.4. The fine-tuning of the chronological distribution of the Middle Bronze II and Late Bronze metal artifacts, which is another important contribution and is elucidated in the beginning of each following chapter, is situated in this TGK chronology.

The re-contextualization and fine-tuned chronological distribution of the metal artifacts in this thesis is fundamentally based on the detailed examination of the surviving textual sources from the Goldman excavations. To reconfigure the metal artifacts within the site stratigraphy, I have used the preliminary articles and the final publication of Hetty Goldman, the field diaries of Robert W. Ehrich, Ann M. Hoskin Ehrich and Dorothy H. Cox, and the PhD thesis of Dorothy A. Slane. Other than these, I also refer to the following studies which include chemical analyses of selected groups of metal artifacts: Emre Kuruçayırlı and Hadi Özbal's chemical analysis on selected metal artifacts,[137] Kuruçayırlı's MA and PhD theses,[138] and Gonca Dardeniz's MA thesis[139] regarding the material composition of the artifacts.

Another important contribution of the thesis is an updated catalogue of the Middle Bronze II and Late Bronze metal artifacts. The artifacts are catalogued with

[137] Kuruçayırlı and Özbal, "Tarsus, Gözlükule'den Yeni Metal Analiz Sonuçları ve Değerlendirmeleri," 49-59; Kuruçayırlı and Özbal, "New Metal Analysis from Tarsus-Gözlükule," 177-195.
[138] Kuruçayırlı, "Investigation of Metal Artifacts of Tarsus-Gözlükule from the Second and Third Millennia B.C"; Kuruçayırlı, "Copper Metallurgy in Cilicia and the Amuq in the Second Millennium BC: Insights into Aspects of Bronze Age Technology and Trade".
[139] Dardeniz, "Chemical Analysis and Characterization of First Millennium B.C. Arrowheads from Tarsus".

the following information: type, class, material, date, find location, associated finds, dimension, formal and functional description, reference to Goldman's publication, GE inventory number and image. If available, the chemical analysis results of material composition are also included. This new catalogue is presented in the Appendix of the thesis.

Moreover, I present new diagrammatic plans of the architectural remains from Section A and B produced specifically to display the locations of the metal artifacts. In the final publication, there are separate plans for the Late Bronze I and Late Bronze II levels excavated in Section A.[140] These are detailed plans that provide a closer look into the layout and architecture of individual levels, however, there are no plans containing all Late Bronze levels.[141] Similarly, the plans of Late Bronze IIa and IIb remains from Section B were published separately and in different scales. On the other hand, superimposed plans are necessary in order to understand and illustrate the spatial relationship between structures from different levels since often the find location of artifacts are given in reference to structures from either preceding or following levels. As a result of this necessity, a plan containing all Late Bronze levels as well as the newly defined Middle Bronze II level from Section A (Figure 1) and a plan containing both Late Bronze IIa and IIb levels from Section B were created (Figure 2). These two composite plans form the basis for all the subsequent plans I will present to locate the metal artifacts from Section A and B.

[140] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, plans 21 and 22.
[141] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, plan 22.

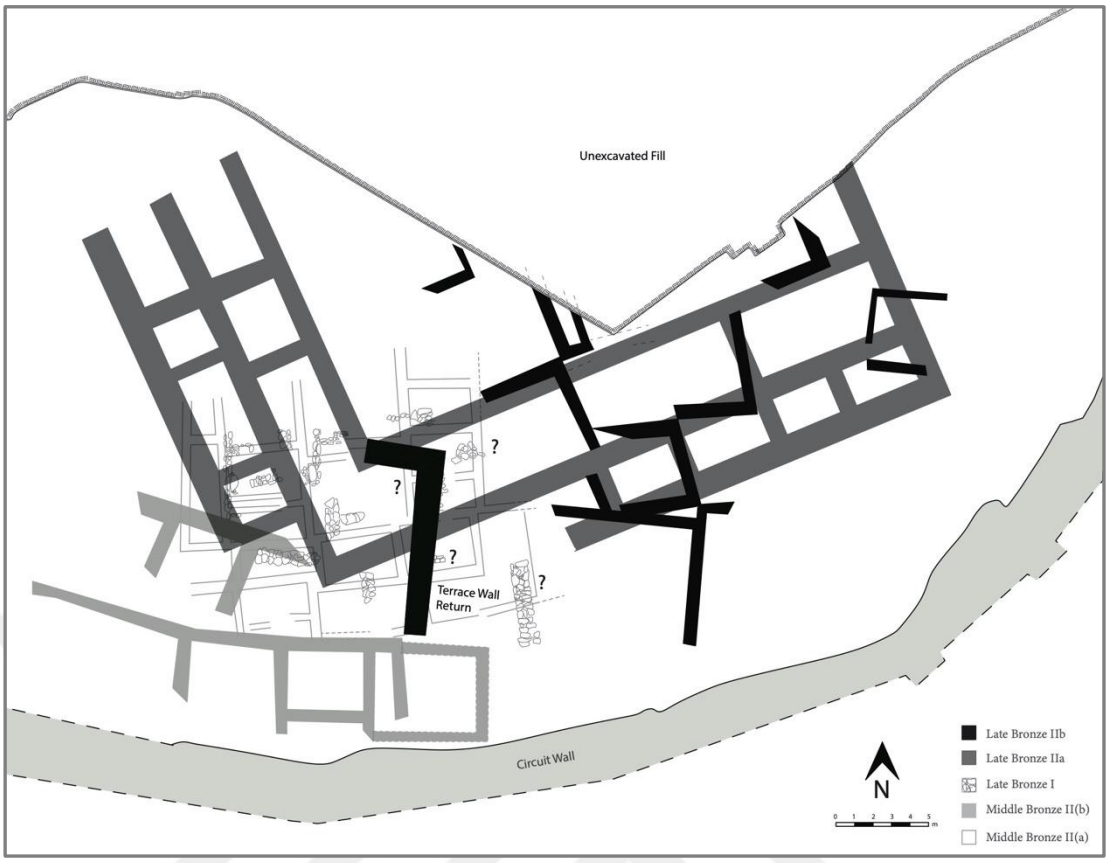


Figure 1. The architectural remains of the Middle Bronze II, Late Bronze I and Late Bronze IIa-b levels at Section A superimposed (After Goldman 1956, Ehrich 1936, 1937; drawn by Luka Koumari)



Figure 2. The structural remains of the Late Bronze IIa and Late Bronze IIb levels at Section B superimposed (After Goldman 1956; drawn by Luka Koumari)

Before moving onto the metal artifacts, I want to clarify the changes I have made in their chronological distribution pertinent to the recent terminological revision in chronology, Slane's fine-tuning of the building levels and finally my own analysis of the documentation of metal artifacts in the field diaries. The numeric implications of this chronological fine-tuning which will be explained in the beginning of each respective chapter are first summarized below (Figure 3).

As seen from the charts that demonstrate the new chronological distribution of the artifacts, I could not designate 23 Late Bronze II metal finds into the Late Bronze IIa and Late Bronze IIb levels. I exclude these from my presentation of the metal artifacts as data concerning them is insufficient for a contextual analysis, however, they are included in the catalogue to present the available information.

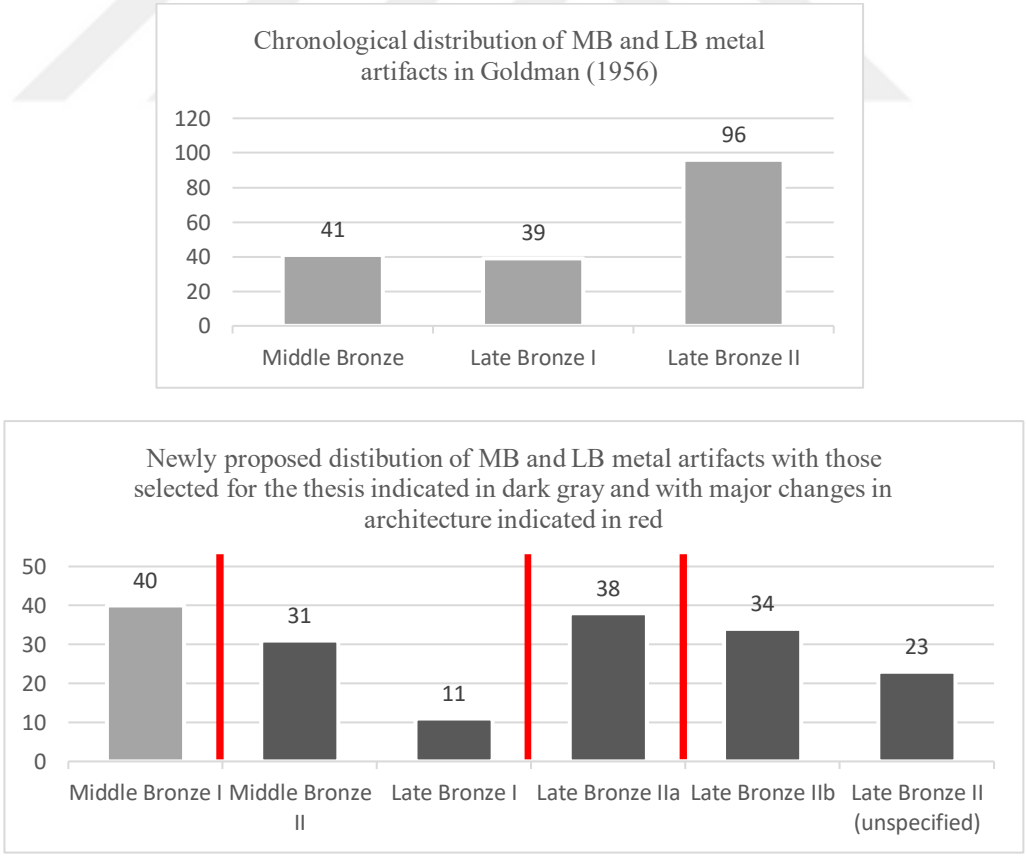


Figure 3. Comparative distribution of the Middle Bronze and Late Bronze artifacts based on Goldman's final publication (top) and the newly proposed distribution based on Tarsus field diaries (1936-8), Goldman (1956), Slane (1987) and the recently revised TGK chronology (2017) (bottom)

CHAPTER 4

A CONTEXTUAL ANALYSIS OF THE METAL ARTIFACTS FROM THE NEW MIDDLE BRONZE II AND LATE BRONZE I LEVELS

In this chapter, I re-present the metal artifacts from the successive levels of Middle Bronze II and Late Bronze I. The artifacts from the two levels are combined in a single chapter in view of the small quantity of the Late Bronze I metal assemblage. The aim here is to depict the metal artifacts within their context in a narrative manner. In order to do so, in the first section, I clarify the adjustments that I have made in the chronological distribution of the metal artifacts subsequent to Goldman's final publication. Then, in the following two sections, I present the Middle Bronze II and Late Bronze I metal artifacts with the new contextual data that I have mainly obtained from the unpublished field diaries in the order of their find location. Finally, in the last section, I summarize the additions and modifications that I have made regarding the metal artifacts compared to Goldman's account and offer a new contextual interpretation in the light of these contributions.

4.1 Fine-tuning the chronological distribution of Goldman's 'Late Bronze I' metals

Goldman published a selection of 36 metal finds from what she labeled the Late Bronze I levels in catalogue entries.[142] In the final publication, 34 entries present copper-based artifacts and two further entries in fact present five lead objects, resulting in a total of 39 metal artifacts (Figure 3). Based on my examination of the field diaries, Slane's fine-tuning and the revised chronology, I have made certain modifications on the dating of these 39 metal artifacts.

[142] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 288-303.

I have subdivided the metal artifacts into the newly assigned Middle Bronze II and the shortened Late Bronze I levels in the following way: I securely assign 27 of the 39 metal artifacts to the new Middle Bronze II level. Of the diminished group of 12 metal artifacts, nine do still remain in the shortened Late Bronze I level, however, I argue that the remaining three are, in fact, from the earlier Middle Bronze I level.

These three artifacts are all copper-based and consist of one fish hook (GE Inv. No: 36.1080), one awl (GE Inv. No: 38.20) and one flat-headed nail (GE Inv. No: 36.862). The fish hook was found on the stones of the north wall of the "Pithos Room" at a depth of 6.30 m.[143] The awl was excavated from a pavement north of the "Pithos Room" at a similar depth of 6.20 m.[144] Since the "Pithos Room" is a structure belonging to the Middle Bronze I level (Slane A.III), these artifacts must also belong to that level or even earlier. The flat-headed nail was found in what was interpreted by Ehrich as the superstructure of the eastern wall of the "Pithos Room" at a depth of 5.30 m.[145] Even though this elevation level is too high to be associated with the "Pithos Room", it is also too low to be associated with the succeeding structure built on top; the "Pottery Storage Room". The architectural sequence here is fragmentary and does not permit further analysis. Therefore, I will not comment further on these three artifacts.

Other than the mentioned 27 metal artifacts, I assign four more to the Middle Bronze II level. These are four copper-based pins that Goldman published as Middle Bronze,[146] however, the locations of the artifacts given in the field diaries indicate otherwise. One double spiral-headed pin (GE Inv. No: 36.883) was excavated from

[143] Ehrich, "1936 Excavation Report for Tarsus-Gözlükule," 423.
[144] Ehrich, "1936 Excavation Report for Tarsus-Gözlükule," 401.
[145] Ehrich, "1936 Excavation Report for Tarsus-Gözlükule," 263.
[146] Goldman's Middle Bronze corresponds to Middle Bronze I period in the revised TGK chronology.

Room D of the Middle Bronze II building formerly published as Late Bronze I.[147] Two pins, one double spiral-headed but broken (GE Inv. No: 37.478), and the other roll-headed (GE Inv. No: 38.477), were apparently found in "the burnt level above 5.00-5.70 Unit; 4.83-5.07".[148] The label "4.83-5.07" refers to a structure excavated within the given levels of depth, of which only the northwest corner is uncovered. It is contemporary with the "Pottery Storage Room" and stratigraphically overlays Room 3 of the Middle Bronze II building. Although there is no record of the remainder roll-headed pin (GE Inv. No: 37.763) in the field diaries, Goldman published this artifact with a find depth at circa 5.50 m. This elevation level and similarities in type provides enough evidence to assume that this pin is of the same level as the other three. Since all of the given contexts are associated with the Middle Bronze II level, the mentioned artifacts in fact must belong to this level. Therefore, in total, 31 metal artifacts now belong to the Middle Bronze II level.

Nine out of 39 metal artifacts do still remain in the shortened Late Bronze I level and, therefore, will be discussed in the third section of this chapter. In addition to these nine, I assign two more artifacts to Late Bronze I which Goldman previously assigned to Late Bronze II as they were, in fact, recovered from Late Bronze I pits. These are an arrowhead (GE Inv. No: 37.181) and a toggle pin (GE Inv. No: 36.935). Hence, a total of 11 metal artifacts now belong to the Late Bronze I level.

4.2 Metal artifacts of the Middle Bronze II level

The 31 metal artifacts unearthed from the Middle Bronze II level consist of six tools (three chisels, one needle, one tweezer and one awl), 13 weapons (five daggers, seven flat axes and one double axe), five pins, five coiled pieces of scrap metal, one

[147] Ehrich, "1936 Excavation Report for Tarsus-Gözlükule," 349.
[148] Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 81.

drinking tube and one ring. All artifacts, except for the five coiled pieces that are of lead, are copper-based.[149] A high quantity of these metal artifacts, 26 out of 31, were recovered from the Middle Bronze II building which was erected in the first phase of the Middle Bronze II level (Slane A.IV) and then reconstructed in the second phase (Slane A.V). Four were excavated from two partially uncovered structures, the "Terrace House Unit" and the "4.83-5.07" Unit, while the location of the remaining one artifact is unclear. These two structures, of which the former yielded one and the latter yielded three metal artifacts, were erected during the last phase of the Middle Bronze II level subsequent to the destruction of the MB II building. The stratigraphic contexts of these 31 metal finds are as follows:

According to Goldman's final publication, the Middle Bronze II building yielded 22 metal finds; 20 from Room D, one from Room E, and one from Room C (Figure 4). These are all excavated from levels associated with the second architectural phase of the building (Slane A.V). As mentioned, the building was entirely reconstructed after the area was leveled following an apparent conflagration localized to the northeastern portion of the structure in Rooms D, E, H, J, K and the court.[150] Upon examining the field diaries, I propose that four more artifacts were excavated from Rooms A, B and III of the building. Therefore, the number of metal artifacts excavated from the Middle Bronze II building adds up to 26 in total.

[149] 9 out of 26 copper-based artifacts were analyzed in previous studies of either Kuruçayırlı, Kuruçayırlı and Özbal, or Dardeniz. Based on these, the alloying elements of these artifacts will be referenced in due course.
[150] Slane, "Middle and Late Bronze Age architecture and pottery in Gozlu Kule, Tarsus: A new analysis," 51.

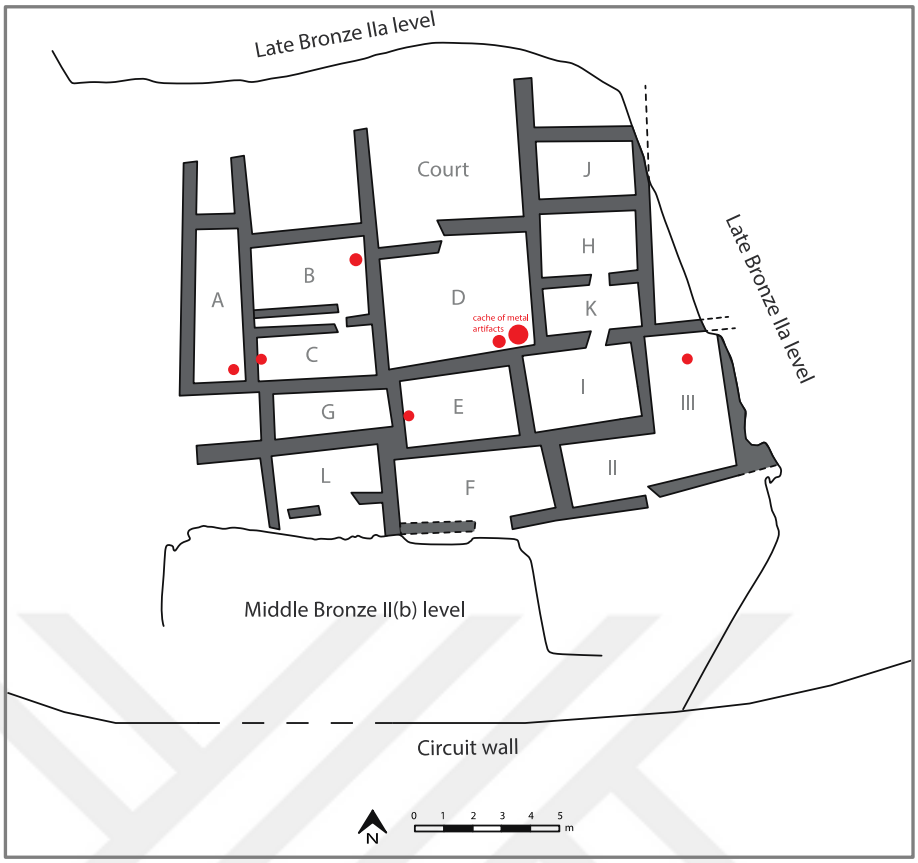
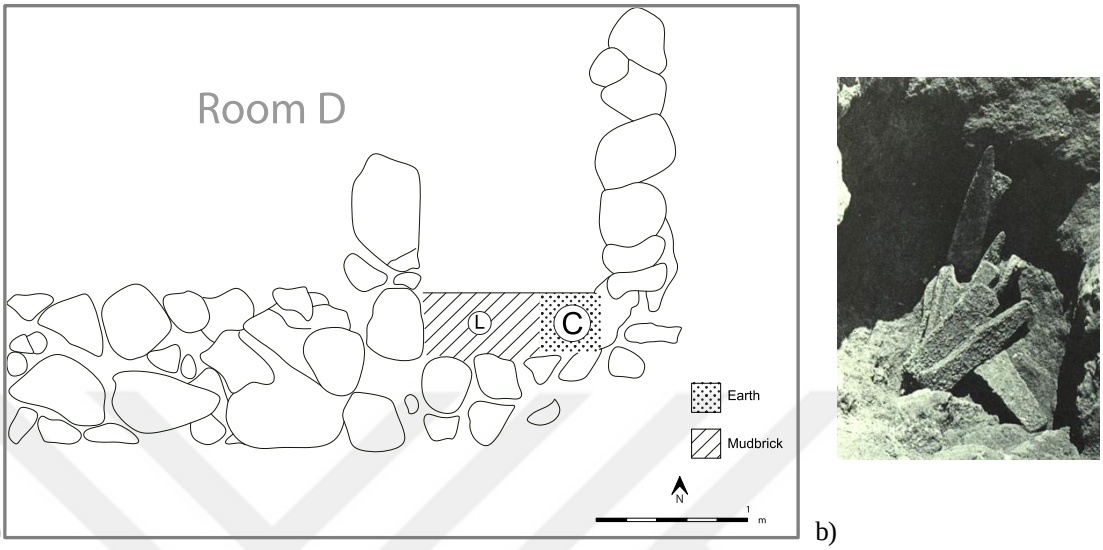


Figure 4. The Middle Bronze Age II building (Goldman's "Late Bronze Age I House") with the find locations of the recovered metal artifacts indicated in red (After Goldman 1956 plan 21; drawn by Luka Koumari)

A cache of 15 copper-based objects was found in a niche in the southeastern corner of the south wall of Room D (Figure 5).[151] Ehrich recorded that the stone foundation of the south wall stepped down and back to form a 40-45 cm wide and one-meter long niche. The stones that were lying lower than the rest of the course were overlaid with a 20 cm thick layer of mudbrick up to 30 cm from the east wall of the room. The pocket left in the southeastern corner was filled with earth. In this earth pocket, the deposited objects were found. The cache must have been found above 5.77 m. which is the top elevation provided for the stones beneath the niche.[152] In the final publication, Goldman remarks that the artifacts were found at a depth of

[151] Ehrich, "1936 Excavation Report for Tarsus-Gözlükule," 352-54.
[152] Ehrich, "1936 Excavation Report for Tarsus-Gözlükule," 352-54.

circa 5.50 meters.[153] Furthermore, approximately 30 cm west of the cache of copper-based artifacts, on top of the mudbrick fill, four lead coils were discovered.



a) b)

Figure 5. a) Plan view sketch of the southeastern corner of Room D with the cache of copper-based objects (C) and the lead coils (L) (After Ehrich 1936, 415) b) Cache of copper-based artifacts photographed in situ at the time of discovery (Goldman 1956, fig. 152)

The number of artifacts from the cache is impressive, and consists of eight axes, four daggers, two chisels and a perforated drinking tube found in two pieces. Ehrich also recorded that three pottery fragments were found with the cache.[154]

Among the axes, seven are flat axes of which two are the lugged type, and one is a shaft-hole double axe. The five regular flat axes (Flachbeil) (GE Inv. No: 36.659-3; Goldman fig. 424/22-6), of which only three were illustrated in the publication, are similar yet not identical in shape and size (Figure 6a). They all taper to a flat butt and have flaring convex cutting edges except for one (GE Inv. No: 36.661; Goldman fig. 424/25) that has a flat and damaged cutting edge indicating signs of use. Their length ranges from 11 to 13 cm. Of the five regular flat axes, one

[153] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 289-90, 292-93.
[154] Ehrich, "1936 Excavation Report for Tarsus-Gözlükule," 354.

is included in the GSC (GE Inv. No: 36.659)[155] and three are in the Tarsus Museum (Figure 6b). According to Kuruçayırlı and Özbal's chemical analysis, the axe from the GSC is made of bronze with 4.6% tin.[156] It is likely that the remaining four axes were also cast in bronze, however, conclusive remarks await further compositional analysis.

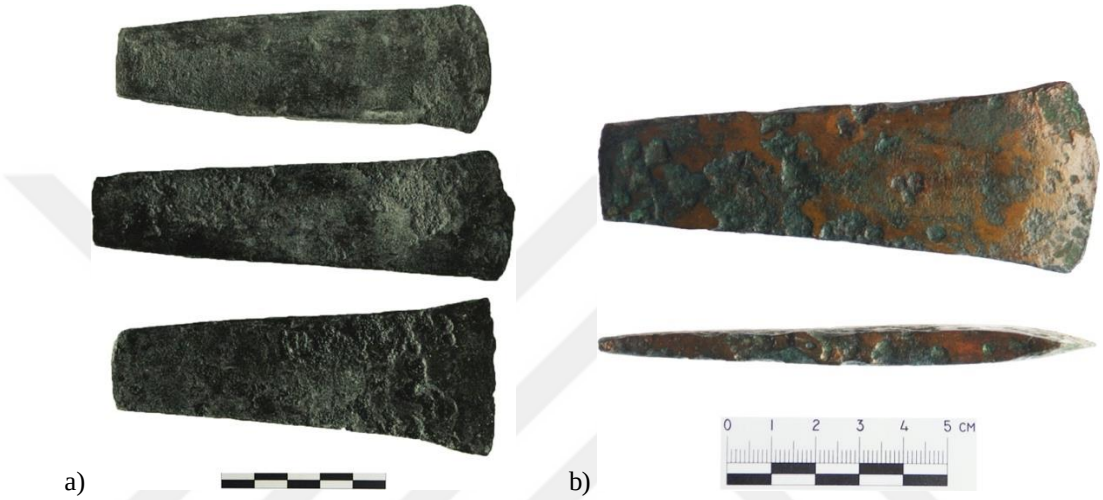


Figure 6. Four out of five flat axes from the cache of metal objects; a) The three (bronze?) flat axes (GE Inv. Nos: 36.661-3) (After Goldman 1956, fig. 424) b) The bronze flat axe in front and side view (GE Inv. No: 36.659)

Two flat axes of the lugged type (Ärmchenbeile) both have minorly pronounced lugs (Figure 7). The shorter lugged axe (GE Inv. No: 36.658; Goldman fig. 424/21) is 11 cm long with a biconcave, slightly flaring blade, a convex cutting edge and a flat end. The longer lugged axe (GE Inv. No: 36.657; Goldman fig. 424/20) is 16 cm in length and has a similar biconcave blade with a convex cutting edge and a rounded end. The blade of the latter axe is longer than the butt. Both artifacts are currently in the collection of the Tarsus Museum. Regarding the form of

[155] This flat axe is not photographed in the final publication, however, its inventory number indicates that it is one of the five flat axes that Goldman published since all of them have consecutive numbers.
[156] Kuruçayırlı and Özbal, "Tarsus, Gözlükule'den Yeni Metal Analiz Sonuçları ve Değerlendirmeleri," 54 (Tablo 2, 01/199).

the lugged axes, Deshayes proposed that it was not replicated from earlier lithic examples but specifically designed for metals.[157] Axes in this form are well-known in Anatolia from the Middle Bronze period.[158] A specimen with more pronounced lugs was also excavated from the Middle Bronze I level here at Tarsus-Gözlükule.[159]



Figure 7. The two copper-based lugged axes from the cache of metal objects (After Goldman 1956, fig. 424)

The double axe (GE Inv. No: 36.656b; Goldman fig. 425/27), which is also currently part of the Tarsus Museum collection, has a curved 21 cm long blade with rounded cutting edges, and an elliptical shaft-hole with a sleeve around its top (Figure 8). Based on Anatolian comparanda, Gernez has classified this particular form as a local Anatolian type.[160] Copper-based double axes of such form are known from the sites of Kültepe-Kanesh and Emirdağ in Anatolia[161] and Megiddo in the Levant. The double axe from Kültepe-Kanesh was found in a cist-grave under the floor of a room containing many tablets dated to the Karum II period.[162] In addition,

[157] Deshayes, *Les outils de bronze de l'Indus au Danube (IVe au IIe millénaire)*, 114.
[158] Wesse, *Die Armchenbeile der Alten Welt*, 9-72; Gernez, *L'armement en métal au Proche et Moyen-Orient: des origines à 1750 av. J.-C.*, 111-3.
[159] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 289 (Figure 424/19).
[160] Gernez, *L'armement en métal au Proche et Moyen-Orient: des origines à 1750 av. J.-C.*, 239-240.
[161] Erkanal, *Die Axte und Beile des 2. Jahrstausends in Zentralanatolien*, 21, (Plate 6, 66-68).
[162] Özgüç, "Excavations at Kültepe 1954 Finds on Level Ib," 70.

one mold for such double axes was also recovered from a Karum II context.[163] The double axe from Megiddo is similarly dated to Middle Bronze I[164] and was apparently found in a cultic context, in front of a small shrine.[165] Moreover, a parallel iron double axe is recovered from the Iron Age settlement of Pet Mogili in the Shumen district of Bulgaria.[166]



Figure 8. The shaft-hole double axe from the cache of metal objects in front and side view (After Goldman 1956, fig. 425/27)

The four daggers all have tapered blades with two cutting edges (Figure 9). On the other hand, they vary in several aspects. First, in terms of size, the lengths are 18.5 cm, 18.1 cm, 17.8 cm, and 6.3 cm. The former (GE Inv. No:36.665; Goldman fig. 428/104) has a long, slender blade with round shoulders and a short tang on which are three rivet holes in triangular formation; one on tang and two on shoulders. The tip of the blade is apparently broken or perhaps clipped. The next dagger (GE Inv. No: 36.664; Goldman fig. 428/106) is quite similar in form, however, the tang appears to be broken while the tip is sharp and intact. It is the only dagger that

[163] Gernez, *L'armement en métal au Proche et Moyen-Orient: des origines à 1750 av. J.-C.*, 240; Müller-Karpe, *Altanatolisches Metallhandwerk*, Plate 48/3.
[164] Yasur-Landau, "Notes on Anatolian or North Syrian Axes in the Southern Levant," 480. Cf. to Adams, "Egypt and the Levant in the Early/Middle Bronze Age Transition," 493-515 for an alternative earlier dating.
[165] Yasur-Landau, "From Byblos to Vapheio: Fenestrated Axes Between the Aegean and the Levant," 147 (Figure 9).
[166] Stoyanov, "Sinope as a Trading and Cultural Agent in Thrace during the Classical and Early Hellenistic Periods," 407.

appears rhombic in section. The other dagger (GE Inv. No: 36.667; Goldman fig. 428/108) has a triangular butt with six preserved rivets in triangular form. The blade sharply tapers to rounded point. Traces of an ivory handle is also recorded. Around the rivets the edges of where the haft was placed is also visible. Finally, the last dagger (GE Inv. No: 36.666; Goldman fig. 428/107), the smallest out of four, has a trapezoidal butt with three preserved rivets in triangular form. The tip of the blade is clipped.



Figure 9. The four daggers from the cache of metal objects (GE inventory numbers from left to right: 36.666, 36.667, 36.665 and 36.664) (After Goldman 1956, fig. 428)

Of the two chisels, the smaller one (GE Inv. No: 36.668; Goldman fig. 426/63) is socketed, rectangular in section and has a rough cutting edge tapered to rounded point (Figure 10a). According to Kuruçayırlı's chemical analysis, the socketed chisel is made of bronze with 4.2% tin.[167] The split in the socket of the chisel, which is broken at one edge, indicates that it was produced via hammering the

[167] Kuruçayırlı, "Copper Metallurgy in Cilicia and the Amuq in the Second Millennium BC: Insights into Aspects of Bronze Age Technology and Trade," 181, 305 (TGK 36.668). The results of analysis indicate that the chisel also contained 4.5% zinc, however, Kuruçayırlı concluded that this was due to a contamination during the sampling process.

flattened butt into its cone-like shape and that it was adjusted to the size of the inserted handle. According to Goldman's account, the other chisel (GE Inv. No: 36.671; Goldman fig. 426/64), which has not survived to be included in the GSC, is similarly rectangular in section and has a tapered cutting edge (Figure 10b). The characteristic cutting edge of the chisel, which is often beveled, is not observed in these two specimens and renders them different when compared to the remaining chisels from Tarsus-Gözlükule. The rounded, blunted ends and the broken socket perhaps suggest that these tools were overused.



Figure 10. The two chisels (top: 36.668, bottom: 36.671) from the cache of metal objects (After Goldman 1956, fig. 426/64)

The perforated tube were recovered in two separate pieces, one bent (GE Inv. No: 36.669; Goldman fig. 433/274b) and the other tangled in two loops registered with two separate inventory numbers (GE Inv. No: 36.676, 38.4; Goldman fig. 433/274a) (Figure 11). The bent piece has six perforations in three lines at its open end. It must have been used as a drinking straw, and must have been closed at one end, likely with a filter tip. These perforations act as a sieve to keep residue from going up the straw when drinking liquids. Whether the pieces once formed a single

tube is not clear, however, this was likely as the diameter of both tubes measure 7 mms. If so, the tube would have been around a meter in length. The chemical analyses of the three pieces further suggest that they compose a single drinking tube as their trace element distributions are compatible.[168] According to Kuruçayırlı, the tube is made of arsenical bronze with 2.2-2.9% tin and 1% arsenic.



Figure 11. The three pieces of drinking tube from the cache of metal objects (GE inventory numbers from top to bottom: 36.669, 36.676 and 38.4)

The act of drinking liquids, beer or wine, with long straws is well-represented in the Mesopotamian visual world. It is associated with banquet scenes in which two or more people drink together facing one another in the context of a ritual feast.[169] At the time of Goldman's publication, drinking tubes were not attested in the archaeological record except for one remarkable find of an earlier period at Tell

[168] Kuruçayırlı, "Investigation of Metal Artifacts of Tarsus-Gözlükule from the Second and Third Millennia B.C.," 44 (Table 5.1, 36.669, 36.676, 38.4).
[169] This imagery is particularly attested on seals from the Early Dynastic period and onwards. See Selz, *Die Bankettszene: Entwicklung eines "Überzeitlichen" Bildmotivs in Mesopotamien : von der Frühdynastischen bis zur Akkad-Zeit*.

Asmar (ancient Eshnunna) in Iraq.[170] A 70 cm long copper drinking tube was found in a late 3rd millennium BCE metal hoard placed in a large ceramic pot within the walls at the southeastern corner of Room 35 in the "Northern Palace".[171] Currently, other finds of copper alloy drinking tubes are known in Anatolia from the sites of Kuşaklı[172] (ancient Sarissa), Giricano (ancient Dunnu-ša-Uzibi) [173] and Kültepe-Kanesh[174]. In Kuşaklı, one perforated bent tube fragment was excavated from Building A, a structure which yielded numerous clay tablets concerning rituals, cult inventories and oracles.[175]

Drinking tubes are also known from Egyptian art and material culture; a well-preserved example is the drinking siphon excavated at Tell el-Amarna from a New Kingdom context. It is an L-shaped lead tube with a decorated supporting bar and a perforated bulb tip.[176] This type is also illustrated on a funerary stele which depicts a Canaanite mercenary in banquet scene from the same site.[177] One such similar lead tube fragment is known from the Uluburun shipwreck.[178]

Perforated filter tips or strainers of such drinking tubes are excavated from Late Bronze contexts in Tell Munbaqa[179] (ancient Ekalte), Tell Bazi[180] (ancient

[170] Frankfort, *Iraq Excavations of the Oriental Institute 1932/1933*, 37-39, fig. 32, 35.
[171] The excavators dated the building to the Akkadian period, however, an earlier Early Dynastic phase is also suggested.
[172] Müller-Karpe, "Bier und Bierproduktion in Anatolien zur Bronzezeit," 185.
[173] Bartl, "Giricano and Ziyaret Tepe: Two Middle Bronze Age Sites in the Upper Tigris Region," 183.
[174] Kulakoğlu and Kangal, *Anatolia's Prologue: Kültepe Kanesh Karum, Assyrians in Istanbul,* 292 (300).
[175] Müller-Karpe, "Kuşaklı-Sarissa: A Hittite Town in the "Upper Land"," 146-147; Wilhelm, *Keilschrifttexte aus Gebäude A. Kuşaklı-Sarissa 1*.
[176] Peet and Woolley, *The City of Akhenaten. Excavations of 1921 and 1922 at el-'Amarneh', Pt. I,* 24, fig. 5
[177] Spiegelberg and Erman, "Grabstein eines Syrischen Söldners aus Tell Amarna," 126-9.
[178] Weisgerber, "Biertrinken an Bord? Ein Seltener Fund aus Blei!," 157.
[179] Czichon/Werner, *Ausgrabungen in Tall Munbaqa–Ekalte I: Die Bronzezeitlichen Kleinfunde*, 92-94, pl. 89-90.
[180] Einwag and Otto, "The Inventory of the Temple at Tell Bazi," 169.

Basiru) and Chagar Bazar[181] in Syria. Most similar to the Tell Asmar and Kuşaklı type, the drinking tube of the Room D cache demonstrates one kind of these specific drinking utensils. A contemporary parallel to these Bronze Age utensils would be the "bambillo"; a metal straw with a bulb-like perforated filter tip used in drinking yerba mate which is a traditional herbal tea of pre-Columbian South American origin.

Approximately 30 cm west of the cache, on top of the mudbrick fill, four lead coils (Goldman fig. 435/6a-c) were discovered.[182] Three of the coils were found stuck together. The coils are made of 1.3 cm wide and 6 mm thick strips with rectangular sections and flat, cut ends (Figure 12). The one found separately, which is the third from left in Figure 12, is slightly smaller in diameter. The diameters of the coils range from 4.7 to 6.5 cm. It is clear that these were not intended as jewelry as they are too heavy and too large to be worn. Other lead coils and links are found in Late Bronze and earlier contexts in Tarsus[183] and other sites such as Alişar and Kusura,[184] however, such large sized coils are uncommon. In general, coiled lead strips have been interpreted as raw material or scrap metal for reuse: Goldman suggested that the four coils represent a form of raw material used for soldering likely derived from her observation of contemporary lead solders. In this case, the coils presented here were more likely scrap lead, as they were found together with scrap copper.

[181] Mallowan, *The Excavations at Chagar Bazar and an Archaeological Survey of the Habur Region. Second Campaign, 1936*, 99-100 (Plate XIV C).
[182] Ehrich, "1936 Excavation Report for Tarsus-Gözlükule," 352-4.
[183] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 302-3.
[184] Von der Osten, *The Alishar Hüyük. Seasons of 1930-32. Part II*, 264 (Figure 297, d 1558, c 416); Lamb, "I.-Excavations at Kusura near Afyon Karahisar," 41.



Figure 12. The four lead coils found near the cache of metal objects in front and side view

The final artifact retrieved from Room D, other than the cache of metal objects, is the double spiral-headed pin (GE Inv. No: 36.883; Goldman fig. 431/209). According to Ehrich, it was found under a floor below the depth of 5.50 m. and, therefore, is likely dated to the second architectural phase of the building.[185] The artifact has not survived to be included in the GSC, however, according to Goldman's photograph, the head of the pin curls to spirals on either sides of the stem with two tight turns in a circular shape and the tip is bent (Figure 13). Pins with decorated heads were personal items used to fasten and adorn garments. During the third millennium BCE, the double-spiral-headed motif was employed for decorating pins and pendants in a wide geographical area including the Aegean, Anatolia, Iran, the Near East and the Indus.[186]



Figure 13. The double spiral headed pin from Room D (After Goldman 1956)

[185] Ehrich, "1936 Excavation Report for Tarsus-Gözlükule," 349.
[186] Reade, "The Royal Tombs of Ur," 129; Tosi and Lamberg-Karlovsky, "Pathways Across Eurasia," 352.

The rest of the two artifacts which Goldman assigned to the Middle Bronze II building consist of a bronze chisel from Room C and a copper-based dagger from Room E. The chisel (GE Inv. No: 36.934; Goldman fig. 426/65) was apparently found in the southwestern corner of Room C in hard earth above floor pavement at a depth of 5.41 m, the last floor level detected in the room after.[187] It has a long, narrow body with a square cross section measuring 10 in length and 35 mm in width (Figure 14). Its blade is slightly flared with a rounded cutting edge. According to Kuruçayırlı and Özbal's chemical analyses, it is made of arsenical bronze with 3.1% tin and 1.5% arsenic.[188] Compared to the two chisels from the cache, the slender form of the chisel in Room C suggests that it was intended to be used for more refined, finishing work. Unstratified comparanda from Boğazköy-Hattusha are dated to the Hittite period.[189]



Figure 14. The bronze chisel from Room C in front and side view

The dagger (GE Inv. No: 36.937) in Room E was found against the west wall of the room at a depth of 5.69 m.[190] The earliest floor level recorded for this room is at 5.77 m., belonging to the first architectural phase after the reconstruction of the

[187] Ehrich, "1936 Excavation Report for Tarsus-Gözlükule," 287.
[188] Kuruçayırlı and Özbal, "Tarsus, Gözlükule'den Yeni Metal Analiz Sonuçları ve Değerlendirmeleri," 54 (Tablo 2, 01/200).
[189] Boehmer, *Die Kleinfunde von Boğazköy*, 77 (Plate XIV, 247, 250, 251).
[190] Ehrich, "1936 Excavation Report for Tarsus-Gözlükule," 347, 350.

building. The dagger has a tapered blade with two cutting edges (Figure 15). The tip is missing, apparently clipped which indicates that it was likely kept as scrap metal. Three rivets are preserved on the triangular butt in triangular formation; two complete and one half-preserved. Edge line of where the haft is fitted is visible below the rivets.



Figure 15. The copper-based dagger with a clipped tip from Room E in front and side view

In addition to these 22 artifacts, I propose that the following four metal artifacts, which are a coiled wire, a needle, an awl and a ring, were also excavated from the Middle Bronze II building.

The lead coiled wire (GE Inv. No: 37.258) must have been recovered from Room III of the Middle Bronze II building as Ehrich recorded that it was found in "gray earth under 4.83-5.07 Unit" and, according to Goldman, at a depth of 5.75 m.[191] The "4.83-5.07 Unit" is a room located to the east of its contemporary "Pottery Storage Room" of which only the northwest corner was uncovered. The room has two excavated floors at 5.20 and 5.25 m.[192] As I superimposed Slane's plan, which

[191] Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 103; Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 302.
[192] Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 75.

includes the “4.83-5.07 Unit”, with Goldman’s “Late Bronze I” plan, I noticed that the N-S wall of the “4.83-5.07 Unit” is located directly above the northern end of Room 3 of the Middle Bronze II building, while the E-W wall is located on an area where excavations did not go further than Middle Bronze IIb.[193] Room 3 has three floor levels from the first architectural phase of the building with the highest at 6.07 m.,[194] and the depth of the artifact’s discovery, at 5.75 m., supports that it was excavated from the fill of this room. The coiled wire, which was likely kept as scrap metal, is 3 mm in diameter and is 10 cm long (Figure 16).



Figure 16. The lead coiled wire from Room III

The needle (GE Inv. No: 36.861) must have been recovered from the northeastern corner of Room B of the Middle Bronze II building on the following grounds: Ehrich recorded that the artifact was found on the “western edge of the 4.58 wall, above the 5.44 pavement”.[195] The “4.58 wall” mentioned here refers to a Late Bronze I (“Intermediate Level”) wall in N-S direction.[196] As I superimposed Goldman’s plan of the MB II building with Ehrich’s sketch drawing, it was clear that the wall was located above the cross wall between Room B and D and extends into

[193] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, plan 21; Slane, “Middle and Late Bronze Age architecture and pottery in Gozlu Kule, Tarsus: A new analysis,” Plan R.
[194] Ehrich, “1937 Excavation Report for Tarsus-Gözlükule,” 180.
[195] Ehrich, “1936 Excavation Report for Tarsus-Gözlükule,” 263.
[196] Ehrich, “1936 Excavation Report for Tarsus-Gözlükule,” 258.

the Court.[197] Moreover, in Goldman's plan, the floor level in the northeastern corner of Room B is illustrated at a depth of 5.44 m. All of these evidence supports that the artifact was found on the northeastern corner of Room B. The body of the needle is slightly bent from the middle and the head is broken, therefore, the eye is not fully preserved (Figure 17). Furthermore, according Kuruçayırlı's chemical analysis, it is made of arsenical copper with 1% arsenic.[198]



Figure 17. The copper needle from Room B

The awl (GE Inv. No: 36.908) must have been unearthed from the southwestern corner of Room A of the MB II building for the following reason: Ehrich noted that the awl was found on the "4.42 pavement". In the next page of the field notebook following the artifact's record, he noted a pavement at a depth of 5.42 m which was in the southeastern corner of Room A of the MB II building, overlaid by a mass of fallen, burnt bricks, according to a recap later in the notebook.[199] Apparently Ehrich initially recorded this pavement as 4.42 by mistake and later crossed the number four with five, which is why I suspect that Ehrich meant the pavement of Room A found at a depth of 5.42 m instead of 4.42 m. when he

[197] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, plan 21; Ehrich, "1936 Excavation Report for Tarsus-Gözlükule," 258.
[198] Kuruçayırlı, "Copper Metallurgy in Cilicia and the Amuq in the Second Millennium BC: Insights into Aspects of Bronze Age Technology and Trade," 181, 305 (TGK 36.861). The results of analysis indicate that the chisel also contained 4% zinc, however, Kuruçayırlı concluded that this was due to a contamination during the sampling process.
[199] Ehrich, "1936 Excavation Report for Tarsus-Gözlükule," 271-72, 333-34.

recorded the find location. As a result, the awl, must have been recovered from Room A of the Middle Bronze II building.

Moreover, Goldman published the artifact with the inventory number 38.908 which must be a mistake since Ehrich recorded it as 36.908 and since there is no physical or textual record of a metal artifact with that inventory number. The awl, then regarded as a pin, was found broken in three even-length fragments according to the drawing in Ehrich's notebook (Figure 18). In the publication, Goldman has not included a photograph and mentions that its butt was missing which, in Ehrich's drawing, is present. According to the publication, the preserved length of the awl is 2.7 cm. If we consider Ehrich's drawing in which the awl appears complete, the approximate length must have been around 4 cm. The artifact seems not to have survived to be included in the GSC. Awls of similar length and form are known from *Unterstadt* of Boğazköy-Hattusha, though unstratified.[200]

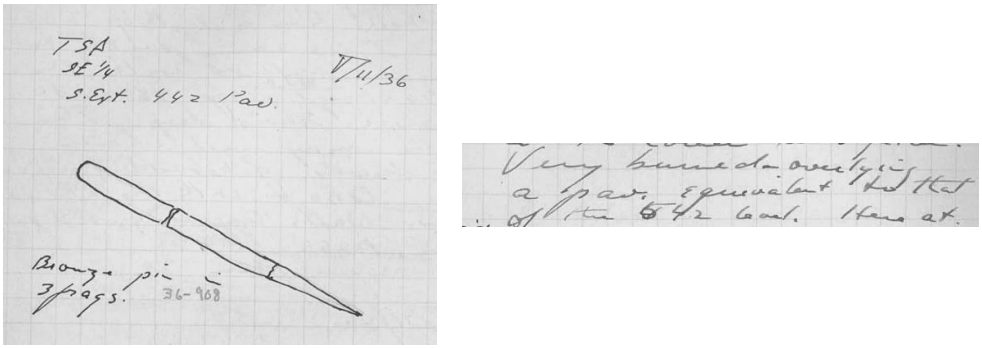


Figure 18. Diary record of the Middle Bronze II copper-based awl (then, addressed as a pin) and the 5.42 pavement of Room A of the Middle Bronze II building (Ehrich 1936, p. 271-2)

The last artifact associated with the Middle Bronze II building is the finger ring (GE Inv. No: 36.860; Goldman fig. 432/260) which I propose was found at Room B. It is an open ring that widens to a curved flat bezel with what appears to be

[200] Boehmer, *Die Kleinfunde von Boğazköy,* 118 (Plate XXXIII, 1000, 1004, 1005).

faint traces of decoration on surface, apparently damaged or erased off. A gold ring with a similar form dated to Late Bronze IIa is from Megiddo and has an incised inscription in Old Canaanite.[201] The outer diameter of the ring is 2.1 cm and the inner diameter is 1.7 cm indicating it was crafted for a slim finger (Figure 19). I could not find a record of the artifact in the field notebooks, however, Goldman published its find location as "5.44 m. pavement".[202] As mentioned, the only floor recorded at this level is at the northeastern corner of Room B. Therefore, it is highly probable that the ring was recovered from Room B of the Middle Bronze II building.



Figure 19. The copper-based finger ring from Room B in front and side views

Of the remaining five artifacts, four were found in association with two structures, the "4.83-5.07" Unit and the "Terrace House Unit", which were occupied in the third and final phase of the Middle Bronze II level. The three artifacts uncovered from the "4.83-5.07" Unit are three pins; one double spiral headed and two roll-headed (Figure 20).[203] According to Ehrich, this Unit is contemporary with the "Pottery Storage Room", a structure dated to the later phase of the Middle

[201] Guy, *Megiddo Tombs*, 174-6 (Plate 128).
[202] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 297.
[203] Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 81.

Bronze II level. Its northwest corner, which is the only uncovered portion of the building, stratigraphically overlays Room 3 of the Middle Bronze II building. According to Goldman, the pins were unearthed at a depth of circa 5.50 m.[204] Although only two pins are recorded in the field diaries, because the third pin presented here was also published by Goldman with a find depth at circa 5.50 m. and that it is very similar in type to the other roll-headed pin, I assume that this pin is of the same level as the other three.



Figure 20. The three pins, one double-spiral-headed and two roll-headed, from the "4.83-5.07" Unit in front and side view (GE inventory numbers from left to right: 37.763, 37.478 (bottom) and 37.477)

The double-spiral-headed pin (GE Inv. No: 37.478; Goldman fig. 431/208) has a head that curls to flat spirals on either side of the stem in a circular shape, and a straight stem tapered to pointed tip. It is comparable to the other double-spiral-headed specimen from the Middle Bronze II level except that its curl is looser. According to Kuruçayırlı's chemical analysis, it is made of arsenical copper with 1% arsenic.[205] The head was formed by splitting the head of the stem and twisting the two ends into spirals.

[204] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 295.
[205] Kuruçayırlı, "Copper Metallurgy in Cilicia and the Amuq in the Second Millennium BC: Insights into Aspects of Bronze Age Technology and Trade," 304 (TGK 37.478).

The two roll-headed pins are similar in form yet vary in size. The shorter pin is bent slightly towards the tip (GE Inv. No: 37.763; Goldman fig. 431/192), while the longer pin has a straight stem (GE Inv. No: 38.477; Goldman fig. 431/191). According to Kuruçayırlı's chemical analysis, the former pin is made of arsenical copper with 2.3% arsenic and contains 1.3% iron.[206] The head was formed by hammering the upper end flat which was then rolled. It is possible that the hole formed by the rolled head of the pin functioned similarly to the eye of the toggle pin; to both fasten the garment and attach objects of desire.[207] Earlier specimens of copper roll-headed pins are encountered at the nearby site of Mersin-Yumuktepe in Cilicia from the "barrack-rooms" in Level XVI dated to the ca. 5000 BCE, idiosyncratic for this period.[208] Later comparanda in Anatolia include examples from Boğazköy-Hattusha and further east, such as Tille Höyük on the Euphrates.[209] Roll-headed pins with straight or bent stems are recovered from the preceding Early Bronze II and III, Middle Bronze I, and the succeeding Late Bronze I, IIa and IIb levels here at Gözlükule.[210]

The artifact recovered from the "Terrace House Unit" is a conical-headed pin (GE Inv. No: 36.925; Goldman fig. 431/233) (Figure 21). It was apparently found in the court of structure since Ehrich noted that it was found "under pavement above the limestone layer in the Court, east of T.II.A" along with another metal shaft fragment,

[206] Kuruçayırlı, "Copper Metallurgy in Cilicia and the Amuq in the Second Millennium BC: Insights into Aspects of Bronze Age Technology and Trade," 304 (TGK 37.763).
[207] Özyar, Ünlü and Pilavcı, "Recent Fieldwork at Tarsus-Gözlükule: The Late Bronze Age Levels," 60.
[208] Garstang, *Prehistoric Mersin: Yumuk Tepe in Southern Turkey*, 139; Yalçın, *Frühchalkolitische Metallfunde von Mersin-Yumuktepe: Beginn der Extraktiven Metallurgie?*, 114 (Table 3).
[209] Boehmer, *Die Kleinfunde von Boğazköy*, 80-81 (Plate XXII, 518-22); Summers, *Tille Höyük 4*, 52 (Figure 60, 5).
[210] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 295; See pages 83-84 of this thesis for the Late Bronze I specimen, and pages 122-23, 125 and 166 for the two Late Bronze IIa and one Late Bronze IIb specimens, respectively.

a stone bowl fragment and a terracotta bull's head originally attached to a vessel.[211] There were three floor levels above the mentioned limestone layer on which the pin was found. According to Goldman, the limestone foundation was constructed as a base for flagging.[212] The highest of the floors was excavated at a depth of 5.94 m., though it is not clear under which floor level the pin was found.

The pin was identified by Goldman as a toggle pin; however, it appears that it does not contain an eyelet. Therefore, I address the artifact solely as a pin. It has a conical head with a broken tip; overall very corroded. According to Kuruçayırlı's chemical analysis, it is made of arsenical copper with 1.6% arsenic and contains 2.7% iron.[213]

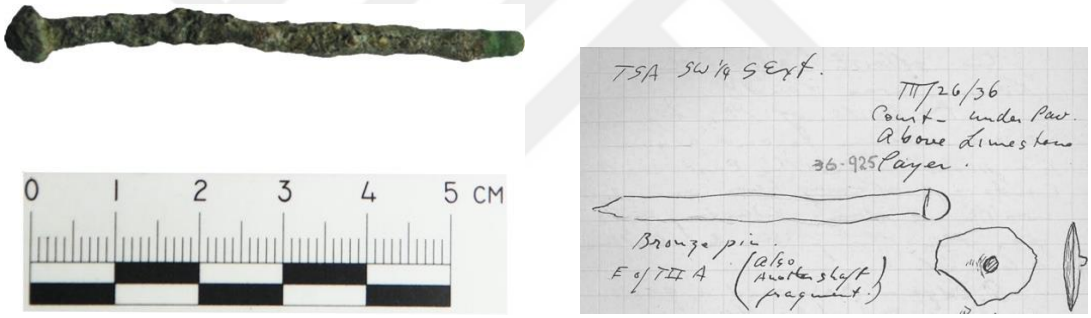


Figure 21. The arsenical copper pin from the "Terrace House Unit" with the drawing and location of the artifact as recorded in the field diaries (After Ehrich 1936, 80)

The stratigraphic information regarding the last artifact from the Middle Bronze II level is fragmentary. The tweezer (GE Inv. No: 36.888) was reportedly found on the "eastern edge of kerpiç wall .. dividing line between SE1/4 and SW1/4" at ca. 5.00 m.[214] Unfortunately, Ehrich does not elaborate further on the location of

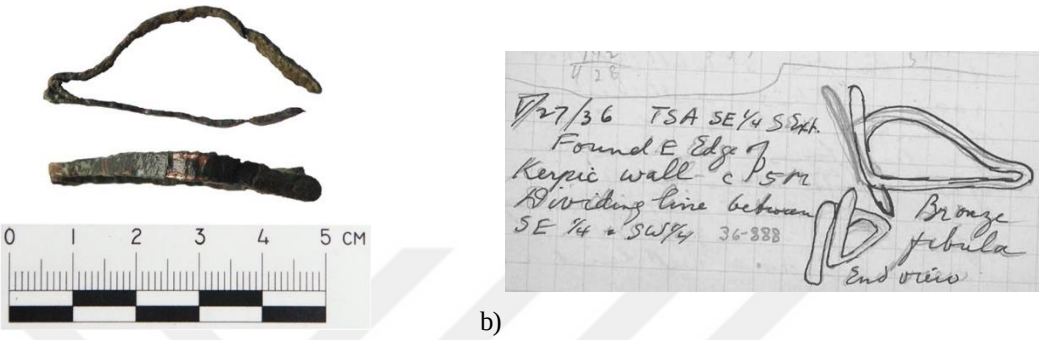
[211] Ehrich, "1936 Excavation Report for Tarsus-Gözlükule," 80.
[212] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 48.
[213] Kuruçayırlı, "Copper Metallurgy in Cilicia and the Amuq in the Second Millennium BC: Insights into Aspects of Bronze Age Technology and Trade," 181, 304 (TGK 36.925). The results of analysis indicate that the chisel also contained 2.3% zinc, however, Kuruçayırlı concluded that this was due to a contamination during the sampling process.
[214] Ehrich, "1936 Excavation Report for Tarsus-Gözlükule," 307.

the "kerpiç wall" in the field notebooks and the whereabouts of the mentioned dividing line is unclear. It was found with its tips twisted inwards which led Ehrich to address it as a fibula.

The tweezer is 5 cm long and round-tipped with one tip broken on one side (Figure 22). The jaws are composed of two separate pieces of metal, one curvy and the other straight, joined together. It is possible that the tweezer was broken and repaired. Another tweezer was uncovered from the Late Bronze I level here at the mound.[215] Metal tweezers were employed as personal items in a wide geographical region during the Early to Late Bronze Ages as exemplified in assemblages from the sites of Boğazköy-Hattusha in Anatolia, Tell Atchana in the Amuq, Tell Bazi and Ras Shamra in Syria, Megiddo in the Levant as well as in Cyprus, Crete and Egypt.[216] In contrast, metal tongs, which are quite larger in size, are objects that are similar in form yet have different functions, generally interpreted as utilized in metalworking and smelting activities. Our specimen here appears to have been an item of personal use likely for cosmetic purposes and was perhaps even worn by the owner. In some cases, tweezers are found together with razors and other cosmetic implements attached with a loop forming personal kits. In fact, a razor knife and a tweezer were found together here at Tarsus-Gözlükule from the Late Bronze IIb level.[217]

[215] See pages 82-3 (Figure 30) of this thesis.
[216] Boehmer, *Die Kleinfunde von Boğazköy*, 118 (Plate XXXIV, 1006-1013); Woolley, *Alalakh. An Account of the Excavations at Tell Atchana in the Hatay, 1937-1949*, 281; Einwag and Otto, "Tell Bazi 2000 und 2001 – Die Untersuchungen auf der Zitadelle und in der Nordstadt," 117 (Figure 8d); Schaeffer, *Ugaritica II*, 57 (Figure 21); Guy, *Megiddo Tombs*, pl. 126/2; Brown and Catling, *Ancient Cyprus*, 24 (Plate IX-d); Ferrence and Giumlia-Mair, "Minoan Status Symbols: Tweezers, "Weaving Hooks," and Cosmetic Scrapers," 247-252; Petrie, *Tools and Weapons*, 51 (Plate LXII Y1-3; Plate LXIV 34-37).
[217] See pages 156-57 (Figure 72) of this thesis.

According to Kuruçayırlı's chemical analysis, it is made of brass with 3.7% zinc.[218] If in fact made of brass, the tweezer would be one of the few brass finds from the Middle Bronze period in this region and, hence, a noteworthy find in terms of demonstrating different copper alloying traditions.



a) b)

Figure 22. The brass tweezer from an unknown Middle Bronze II context " in front and side view (a) with the drawing and location of the artifact, then addressed as a fibula, as recorded in the field diaries (b) (After Ehrich 1936, 307)

4.3 Metal artifacts of the Late Bronze I level

The Late Bronze I level, according to the revised chronology,[219] has two building phases referred to as Intermediate Levels I and II in the field diaries.[220] The 11 metal artifacts excavated from these phases are six tools (three needles, one awl, one chisel, one tweezer), two pins (one roll-headed, one toggle pin), one semi-circular knobbed arc, one open ring and one arrowhead. All of the artifacts are copper-based.[221] The stratigraphic contexts from which these metal finds were excavated are as follows (Figure 23):

Four of these artifacts, which are two of the three needles, the chisel and the open ring were found in association with fragmentary wall structures in the western

[218] Kuruçayırlı, "Investigation of Metal Artifacts of Tarsus-Gözlükule from the Second and Third Millennia B.C.," 44 (Table 5.1, Sample 36.888).
[219] See Section 3.4 of this thesis.
[220] Ehrich, "1936 Excavation Report for Tarsus-Gözlükule," 196, 216.
[221] 6 out of 11 copper-based artifacts were analyzed by either Kuruçayırlı or Dardeniz as part of their thesis studies. The alloying contents of these artifacts will be referenced in due course.

part of Section A within an area of approximately 100 m^2. Three of these, the open ring and the two needles, were found in relation to two walls, one running N-S and the other E-W, that form a corner. These are named together as "4.43 wall" in the field diaries.[222] The E-W wall extension contains a threshold for a door and seems to have been rebuilt as indicated by a separate upper stone course with an intact door socket.[223] Within the corner of the walls, a floor was found at a depth of 4.78 m which indicates that the two walls formed the northwestern corner of a room or structure.[224] On the other hand, the area between the N-S walls of "4.43" and "4.46" seems like an open area as there is a trash pit and as no floor levels were detected.

Of the remaining seven, four were retrieved from three pits (Intrusion 36/22, Intrusion 37/3 and Intrusion 36/34). For the other three Late Bronze I metal finds, the contextual information is unclear, however, two might have been found in associated with two wall fragments recorded without clear locations in the field notebooks, illustrated in plan as indicated with question marks (Figure 23).

[222] Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 24, 42.
[223] Ehrich, "1936 Excavation Report for Tarsus-Gözlükule," 260.
[224] Ehrich, "1936 Excavation Report for Tarsus-Gözlükule," 258.

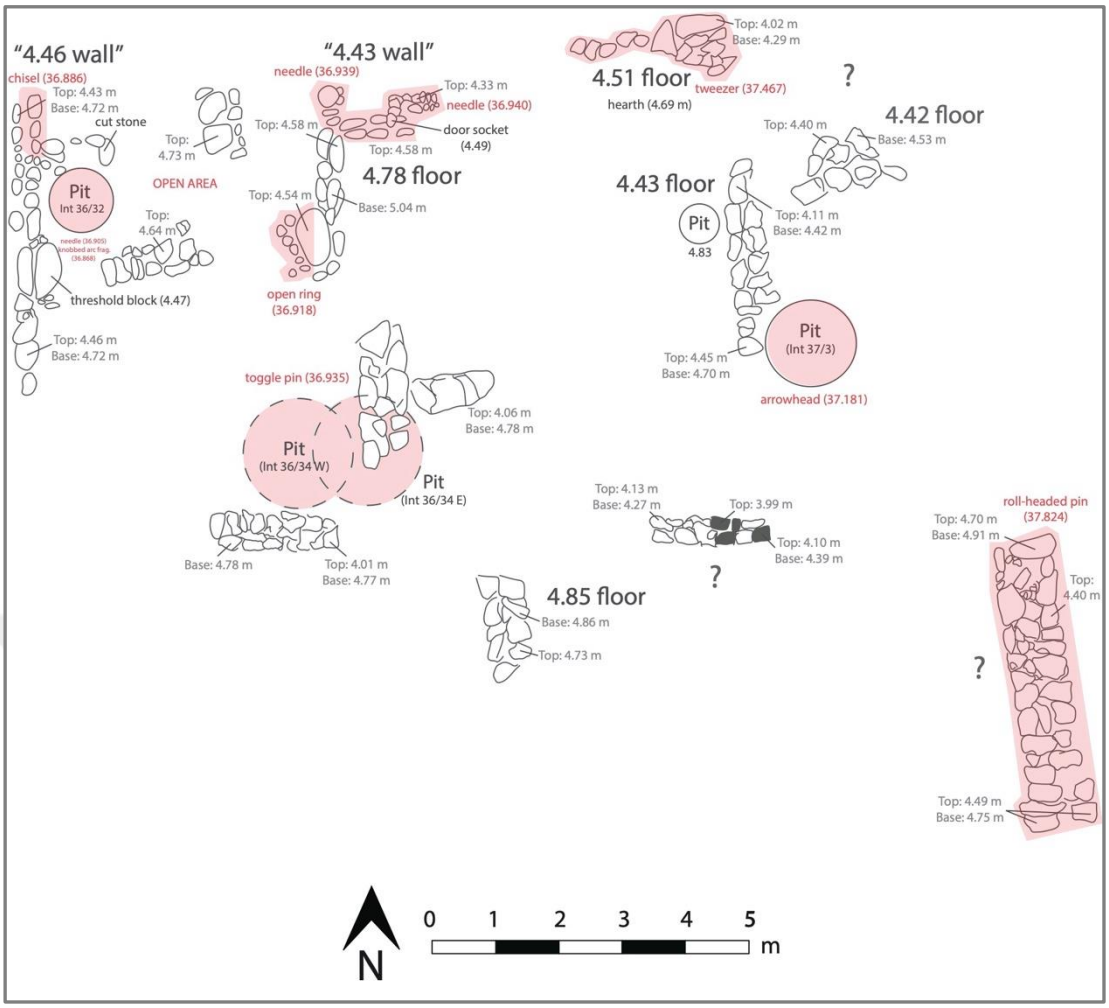


Figure 23. Composite sketch plan of Late Bronze I remains with approximate find locations of 10 out of 11 metal artifacts highlighted in red (After sketch plans from Ehrich 1936, p. 190, 257, 258, 261, 321, 322 and Ehrich 1937, p. 27, 41, 65; drawn by Luka Koumari)

The first of the four artifacts associated with walls, the open ring (GE Inv. No: 36.918; Goldman fig. 432/257) was found on the west side of the "4.43 wall" N-S wall towards its south end; apparently during cleaning below top stones, as Ehrich noted.[225] The open ring is circular in section and tapers slightly towards overlapping, cut ends (Figure 24). The ring is slightly thinner in two sections; in its middle and towards one end, likely due to corrosion. It is possible that it was once a modest ornament such as a hair ring or a child's bracelet, or, on the other hand, a loop/chain attached to a series of ornaments, tools or utensils to be carried or suspended

[225] Ehrich, "1936 Excavation Report for Tarsus-Gözlükule," 263.

together.[226] Boehmer proposed that such rings could be widened to remain in use as the owner grew.[227] Comparanda from here at Gözlükule are dated to the Middle Bronze I and Late Bronze II periods.[228] Similar rings with overlapping open ends were unearthed from Boğazköy-Hattusha and Alişar Höyük in Central Anatolia.[229]



Figure 24. The Late Bronze I copper-based open ring from the "4.43 wall" in front and side view

Two of the three Late Bronze I needles (GE Inv. No: 36.939-40; Goldman fig. 429/145, 148) were found in association with the E-W extension of the "4.43 wall". One (36.939) was found in the lower part of E-W wall fragment[230] and the other (36.940) was found under the upper part, which seemed rebuilt, at a depth of ca. 4.50 m (Figure 23).[231] These are similar in form and both have flattened, small eyes and are bent (Figure 25). The eyelet of the needle was formed by folding the flattened end back and then soldering it. Comparanda for such long, small-eyed needles from the mound itself are dated to the Middle Bronze, Late Bronze IIa and

[226] See Boehmer, *Die Kleinfunde von Boğazköy,* 118 (Plate XXXIV, 1007, 1008, 1011) for various copper rings attached to the necks of tweezers.
[227] Boehmer, *Die Kleinfunde von Boğazköy,* 119.
[228] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 297 (Figure 432/256, 258).
[229] Von der Osten, *The Alishar Hüyük. Seasons of 1930-32. Part II*, 268 (Figure 294-5/c1489, d1997, e1081); Boehmer, *Die Kleinfunde von Boğazköy,* 120, (Plate XXXV, 1036).
[230] Ehrich, "1936 Excavation Report for Tarsus-Gözlükule," 199.
[231] Ehrich, "1936 Excavation Report for Tarsus-Gözlükule," 271.

Late Bronze IIb.[232] Here at Gözlükule copper-based needles are known to be used from the Early Bronze I period onwards, however, only in the Middle Bronze such longer, sturdier needles appear.[233] It is conceivable that metal needles imitated earlier examples made of bone or perhaps wood; four bone needles are dated to the Early Bronze II period at Gözlükule.[234] As simple yet basic tools of sewing, needles are commonly found in Late Bronze levels throughout Anatolia and the wider Eastern Mediterranean.[235]

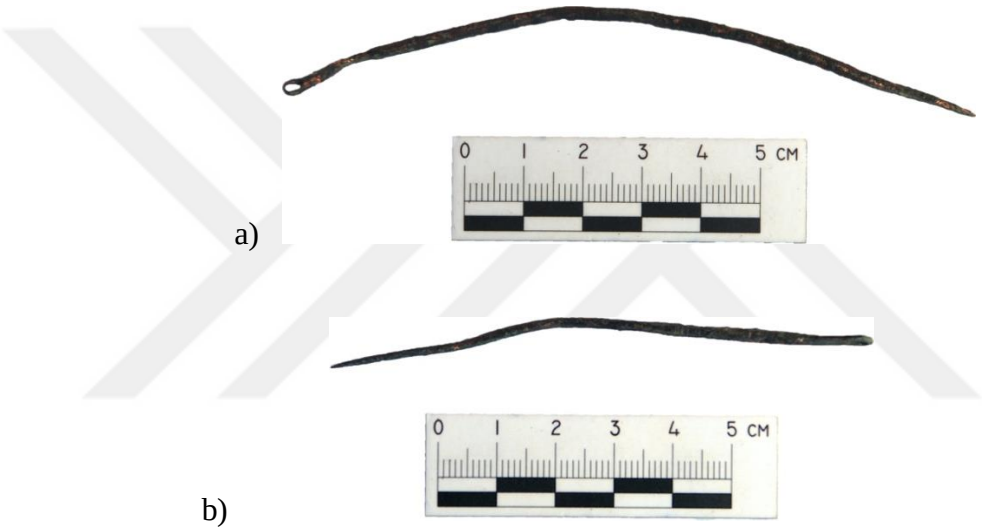


Figure 25. The Late Bronze I copper-based needles (a. 36.940, b. 36.939) from the "4.43 wall"

The chisel (GE Inv. No: 36.886; Goldman fig. 426/66) was found under the "4.46 wall", running N-S and west of the "4.43 wall", at a depth of circa 4.80 m (Figure 23).[236] Ehrich noted that it was found at the north end of the wall near an

[232] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 294 (Figure 429/137, 139; Fig. 430/149-152). See pages 120-121 for the Late Bronze IIa, pages 139-140 for the Late Bronze IIb and catalogue #107-108 in the appendix of this thesis for the unspecified Late Bronze II needles.
[233] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 294 (Figure 429/131-5).
[234] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 315 (Figure 438/68-71).
[235] Von der Osten, *The Alishar Hüyük. Seasons of 1930-32. Part II*, 253, 260 (Figure 285) ; Boehmer, *Die Kleinfunde von Boğazköy,* 80-1 (Taf. XVIII-XX, XXII).
[236] Ehrich, "1936 Excavation Report for Tarsus-Gözlükule," 275.

intrusion pit. The 4.2 cm-long chisel has a rectangular section with a flaring cutting edge that tapers to a rounded end which was inserted into the, now disintegrated, handle (Figure 26). The stocky and flaring blade suggests that the chisel was used for wasting out large areas in working wood, stone or metal as opposed to narrow chisels. Comparanda for this type are found here at Gözlükule from the Late Bronze II levels.[237] The chisel is a specimen of Boehmer's Type Ib with comparanda from Büyükkale IV and III at Boğazköy-Hattusha.[238] Deshayes categorized this artifact as an axe (Type B5a) due to the form of its straight blade.[239] In contrast to Deshayes, I agree with Goldman that this is indeed a chisel because of its small size. According to Kuruçayırlı's chemical analysis, it is made of arsenical copper with 1.2% arsenic.[240]



Figure 26. The Late Bronze I arsenical copper chisel from the "4.46 wall"

As mentioned, four metal artifacts, that is the needle, the semi-circular knobbed arc, the arrowhead and the toggle pin, were recovered from three Late Bronze I intrusion pits (Intrusion 36/32, Intrusion 36/34, Intrusion 37/3).

[237] These are two chisels that are shorter in length recovered from Late Bronze II levels (Goldman, 291, fig. 426/72, 73): See pages 144-46 and 152-53 of this thesis for the two Late Bronze IIb specimens and catalogue #106 in the appendix for the Late Bronze II specimen.
[238] Boehmer, *Die Kleinfunde von Boğazköy,* 76 (Plate XIII-XIV, 209, 219, 226, 229, 231).
[239] Deshayes, *Les Outils de Bronze, de L'Indus au Danube (IVe au IIe Millénaire)*, 16, 59.
[240] Kuruçayırlı, "Copper Metallurgy in Cilicia and the Amuq in the Second Millennium BC: Insights into Aspects of Bronze Age Technology and Trade," 305 (TGK 36.886).

Two of these were excavated from a trash pit in the area east of the "4.46 wall" towards its north end (Intrusion 36/32) (Figure 23).[241] The pit is sunk into the wall foundations of Room B of the Middle Bronze II building at its northwestern corner. As its top elevation is recorded at 4.50 m and its contents are published as Late Bronze I, I conclude that this trash pit is dated to Late Bronze I. Moreover, Ehrich recorded a third unpublished object,[242] a copper-based blade, from this intrusion, however, there is no mention of such an object in the final publication and no evidence of it in the GSC.

The two published artifacts recovered from the pit are one needle, last of the three needles of Late Bronze I, and the semi-circular knobbed arc (Figure 27). The needle (GE Inv. No: 36.905; Goldman fig. 429/147) has a thick body and a large tear-shaped eyelet. It is 5.3 cm in preserved length and the tip is missing. According to Kuruçayırlı's chemical analysis, it is made of unalloyed copper.[243] The eyelet of the needle was formed by folding the flattened end back and then soldering it to fasten; the same technique applied to the other two needles from Late Bronze I. The size of the eye and the thickness of the body suggests it is a tool once likely used for sewing thick threads, comparable to contemporary yarn or tapestry needles. A needle of similar type is known from *Unterstadt* of Boğazköy-Hattusha and is dated to the Middle Bronze.[244]

[241] Ehrich, "1936 Excavation Report for Tarsus-Gözlükule," 287, 325.
[242] Ehrich, "1936 Excavation Report for Tarsus-Gözlükule," 325.
[243] Kuruçayırlı, "Copper Metallurgy in Cilicia and the Amuq in the Second Millennium BC: Insights into Aspects of Bronze Age Technology and Trade," 305 (TGK 36.905).
[244] Boehmer, *Die Kleinfunde von Boğazköy,* 87, (Plate XVIII, 337).

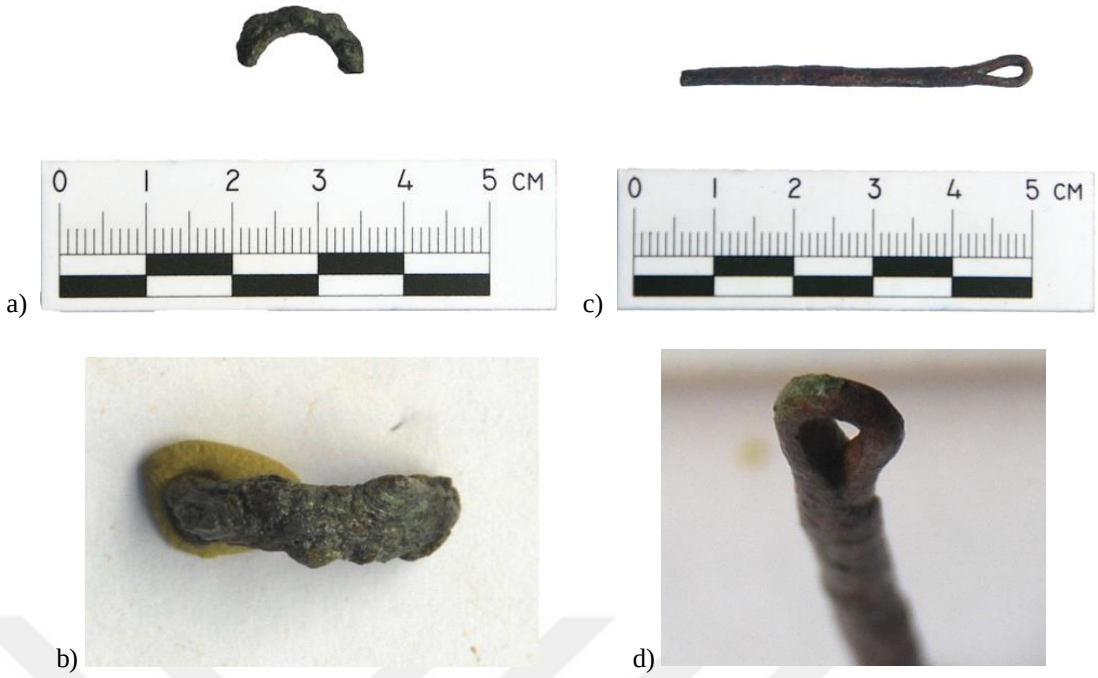


Figure 27. The two metal artifacts from the 36/32 trash pit: the copper-based semi-circular knobbed arc in front and top view (a-b) and the copper needle with a close up of its eyelet (c-d)

The second artifact from the pit is a small semi-circular arc decorated with knobs (GE Inv. No: 36.868; Goldman fig. 432/255). Goldman has published this artifact as an earring but noted that it may also have been part of a fibula.[245] To note, there is an artifact of similar form which Goldman identified as a fibula here from the Middle Iron level at the mound.[246] In terms of shape, it is comparable to the semi-circular fibulae types in Stronach's categorization.[247]

The chronological development and distribution of fibulae in general is problematic and I will not discuss it here in detail. Functioned as a safety pin to fasten garments, fibula was not a common item of clothing in Anatolia until towards the end of the 2nd millennium BCE.[248] The earliest form, which is not arced but consisted of a horizontal bow, is considered to have developed from eyelet-pins in

[245] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 297.
[246] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. III: The Iron Age*, 376 (Figure 176/72).
[247] Stronach, "The Development of the Fibula in the Near East," 185-9, 203.
[248] Stronach, "The Development of the Fibula in the Near East," 181.

Europe which later spread to the Aegean, Anatolia and Cyprus.[249] Goldman has published five fibulae dated to Late Bronze II here at Gözlükule, though their dating is later challenged.[250] Therefore, there is a high possibility that the semi-circular knobbed arc fragment, if classified as a fibula, is an intrusive find originated from the later levels.

The third artifact associated with another intrusion, that is an arrowhead (GE Inv. No: 37.181; Goldman fig. 427/86), was recovered from a large, shallow pit (Intrusion 37/3) located near a LB I wall fragment running N-S.[251] The pit was cut into the southeast corner of the wall fragment and, therefore, must have been dug later, after the structure, of which the wall was part of, was abandoned. It is likely that the wall fragment is dated to the earlier "Intermediate Level I" and the pit is dated to the later "Intermediate Level II", even though Ehrich did not explicitly state this. According to Ehrich's record, the pit's Late Bronze I dating is confirmed by both its pottery reading and that it was cut by the foundations of the Late Bronze IIa monumental building.[252] Perhaps due to a misreading of the notebooks, Goldman published this artifact under Late Bronze II, however, based on the points summarized above, it must be re-dated to the Late Bronze I period.

The arrowhead is lance-shaped with a wide, weak midrib and a short tang, rectangular in section, that tapers to butt (Figure 28). The edges of the blade, particularly in the mid to lower section, are notched and damaged, while the damaged tip of the blade curves slightly upwards. The blade is heavier and larger compared to the later Late Bronze II arrowheads excavated here at Gözlükule.

[249] Alexander and Hopkin, "The Origins and Early Development of European Fibulae," 401.
[250] Vassileva, "Early Bronze Fibulae and Belts from the Gordion Citadel Mound," 116; Pedde, *Vorderasiatische Fibeln: von der Levante bis Iran,* 175.
[251] Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 51.
[252] Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 46.

According to Dardeniz's chemical analysis, it is made of unalloyed copper.[253] Further, on both sides, there are shallow circles gouged on the midrib and the edge of the blade in groups of two and three circles.

Engraving marks and symbols such as crosses, crescents, lines and circles, or cuneiform signs on metal weapons, tools and ingots was a wide spread phenomena during the second millennium BCE exhibited from Central Anatolia to the Syro/Palestinian region.[254] The arrowhead here may have been marked with an ideogram belonging to a symbolic system of production or measurement such as the one suggested by Andreas Müller-Karpe for metal ingots.[255] As noted by Yener, metal objects marked with multiple circular hollows exist from Korucutepe, Tilmen Höyük and Kültepe-Kanesh.[256] For a better understanding, a comprehensive typological study of marked artifacts is needed to observe regional, functional and temporal similarities and distinctions in the long term.



Figure 28. The Late Bronze I copper arrowhead (previously published as Late Bronze II) from Intrusion 37/3 in front, back and side view

[253] Dardeniz, "Chemical Analysis and Characterization of First Millennium B.C. Arrowheads from Tarsus," 53 (Table 6.1, Sample 11).
[254] Tubb, "A Bronze Arrowhead with Engraved Mark from Gezer in the British Museum Collection," 5; Yener, "Symbolic Messaging and Incised Signs on Bronze: A Cache of Middle-Late Bronze I Weapons from Alalakh," 171.
[255] Müller-Karpe, "Hititler'de Metal Külçeler," 491-2.
[256] See Yener, "Symbolic Messaging and Incised Signs on Bronze: A Cache of Middle-Late Bronze I Weapons from Alalakh," 178-179 (Table 1/4, 5, 11, 12) for further references.

Finally, one toggle pin (GE Inv. No: 36.935; Goldman fig. 432/236), one of the two Late Bronze I pins, was recovered from a large pit, later revealed to be two intersecting pits (Intrusion 36/34E and 36/34W) cut into the upper two Middle Bronze II levels (the southwestern corner of Room D of the MB II building and the eastern continuation of the north wall of the room east of the "Pottery Storage Room").[257] Since the two pits were detected later, it is not clear from which pit the artifact came from. Ehrich recorded that both measured 1.70 m in diameter. Apparently, Intrusion 36/34E was an ash pit which produced what Ehrich referred to as "Plate Ware" pottery, now known as Cilician LBA Plain Ware. Furthermore, he noted that Intrusion 36/34W was possibly a grain pit which produced unspecified "Bronze Age" pottery.[258]

Goldman dated the toggle pin to Late Bronze II, however, I propose that it must be dated to the Late Bronze I levels for the following reason: Ehrich recorded that the two pits were picked up with the removal of "PP9".[259] "PP9" is part of a series of "pebble pavements" (abbreviated as "PP" by Ehrich) later understood to be associated with the pebble foundation trenches dug for the construction of the Late Bronze IIa monumental building. These are recorded in the notebooks with corresponding depths of location.[260] Since these pits cut the two upper MB II levels and were apparently cut by the Late Bronze II foundation trenches, they must belong to the 'in between' Late Bronze I levels which is also supported by their top elevation assigned in relation to "PP9" at a depth of 4.78 m.[261]

[257] Ehrich, "1936 Excavation Report for Tarsus-Gözlükule," 265, 329.
[258] Ehrich, "1936 Excavation Report for Tarsus-Gözlükule," 372.
[259] Ehrich, "1936 Excavation Report for Tarsus-Gözlükule," 368.
[260] Ehrich, "1936 Excavation Report for Tarsus-Gözlükule," 195.
[261] Ehrich, "1936 Excavation Report for Tarsus-Gözlükule," 195, 221.

The toggle pin recovered from the pit has a conical head and the eyelet is located on the upper part of the slightly curved stem (Figure 29). The stem thickens for the eyelet and below the head, and it is broken on end. The preserved length of the pin is 9.5 cm, however, in Goldman's photograph it is complete and measures 14.4 cm long. According to Kuruçayırlı and Özbal's chemical analysis, it is made of arsenical brass with 6.4% zinc and 1.8% arsenic.[262]

Pins with decorated heads were items of jewelry used to fasten garments. Iconographic evidence for pins exist in Mesopotamian art from the Early Dynastic period; shell inlays from the Mari mosaic panel depict women wearing toggle pins with beads, rings (inlayed with precious stones, now missing[263]), amulets or seals suspended on tied strings.[264] Such suspended objects of decorative and functional purpose are also archaeologically attested, for instance, from Tell Ashara (ancient Terqa) on the banks of the Euphrates, where two pins were found in association with a shell ring and a black bead still in place at the shoulder of a woman in a burial context dated to mid-3rd millennium BCE.[265] While toggle pins are encountered from Early Bronze II to Late Bronze II periods, specimens from the Early Bronze II and III levels here at Gözlükule bear striking resemblance to this Late Bronze I specimen.[266]

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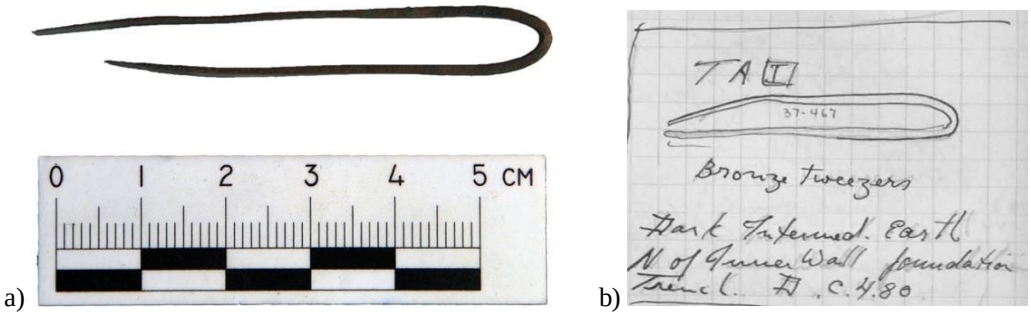
[262] Kuruçayırlı and Özbal, "Tarsus, Gözlükule'den Yeni Metal Analiz Sonuçları ve Değerlendirmeleri," 54 (Tablo 2, 01/218); See also Kuruçayırlı, "Copper Metallurgy in Cilicia and the Amuq in the Second Millennium BC: Insights into Aspects of Bronze Age Technology and Trade," 307 (TGK 36.935).
[263] Aruz, *Art of the First Cities: The Third Millennium B.C. from the Mediterranean to the Indus,* 161 (Figure 104a).
[264] Parrot, *Les Fouilles de Mari: Douzieme campagne (Automne 1961),* 164, fig. 11 (Plate XI: 3, 4; pl. XII: 3).
[265] Kelly-Buccellati and Williams, *Terqa Preliminary Reports, No. 3: Object Typology of the Second Season: The Third and Second Millennia,* 3-4 (pins: Fig. 3, TPR 3 7-8; bead: Fig. 5, TPR 3 17; ring: Figure 17, TPR 3 22).
[266] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 296 (Figure 431/221, 222-5, 227, 231).



Figure 29. The Late Bronze I arsenical copper toggle pin from Intrusion 36/34

For the remaining three Late Bronze I metal artifacts, the contextual information is less clear. One tweezer (GE Inv. No: 37.467; Goldman fig. 426/75) must have been found in the vicinity of the northernmost E-W Late Bronze I wall fragment as Ehrich records that it was found "north of the inner wall foundation trench" which corresponds to the area where the mentioned wall fragment was excavated.[267] It was found at a depth of 4.80 m in "dark intermediate earth" characteristic of the Late Bronze I fill. It is 6.2 cm long with flattened and flat-tipped jaws; one shorter than the other, probably broken post-excavation as Ehrich's drawing in the notebook displays both ends in equal length (Figure 30). The jaws seem to be flattened by hammering as their width thickens from the neck to the tips. Compared to the tweezer from Middle Bronze II, there are some differences in terms of their form and how they were produced. The Late Bronze I specimen is produced from a single bent piece of metal and it has straight jaws as opposed to the Middle Bronze II specimen which is made of two separate pieces soldered together and has curved jaws. According to Kuruçayırlı's chemical analysis, it is made of copper-nickel alloy with 1.3% nickel and contains 1.1% iron.[268]

[267] Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 83.
[268] Kuruçayırlı, "Investigation of Metal Artifacts of Tarsus-Gözlükule from the Second and Third Millennia B.C.," 45 (Table 5.1, Sample 37.467), 52.



a) b)

Figure 30. (a) The Late Bronze I copper-nickel alloy tweezer (b) and its record in the field diaries (Ehrich 1937, 83)

The last of the two pins (GE Inv. No: 37.824; Goldman fig. 431/197) from the Late Bronze I levels must have been found in the area of the southeasternmost Late Bronze I wall fragment as Ehrich notes it was found "south of the south drain" in "dark mixed Intermediate level earth" at a depth of circa 4.00 m.[269] The south drain Ehrich refers to is the south extension of the drain of the Late Bronze IIa monumental building and the only Late Bronze I structural element south of this drain is a N-S running wall fragment (Figure 23). It was found together with an undecorated clay whorl.[270] The pin is roll-headed with a bent stem, 8.5 cm in length (Figure 31). Comparanda for roll-headed pins from the mound are encountered from the Early Bronze II to the Late Bronze IIb level.[271]

[269] Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 53.
[270] Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 53.
[271] See pages 65-8 of this thesis for the two Middle Bronze II specimens and for a detailed account on their history and comparanda from other sites. See also pages 122-3, 125 and 166 for the two Late Bronze IIa and one Late Bronze IIb specimens, respectively.



Figure 31. The Late Bronze I copper-based roll-headed pin

The only awl of the Late Bronze I level (GE Inv. No: 38.691; Goldman fig. 425/42), the last in this group of 11 that I present, was found at a depth of circa 4.00 m. I could not locate it in the field diaries, but it is included in the final publication.[272] The depth of the find, 4.00 m, is at the uppermost stratigraphic limit for the Intermediate levels of Late Bronze I, therefore, there is slight possibility that this object is from the Late Bronze IIa level.

The awl is 7.5 cm long and slender, with both ends pointed and slightly triangular in section (Figure 32). According to Kuruçayırlı's chemical analysis, it is made of bronze with 6.7% tin.[273] It is similar to the double-ended awls from the Early Bronze II and Late Bronze II levels here at the mound.[274] The ends of the awl are different in form, for example, there is a tapered section towards the less sharp end and an indentation on the sharply pointed end, although corrosion prevents certainty of their originality. These differentiations indicate that the tool might have been used for a specific task or even multiple tasks. It is known that pointed implements, such as this one, were used to penetrate and puncture or drill holes in

[272] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 290.
[273] Kuruçayırlı, "Copper Metallurgy in Cilicia and the Amuq in the Second Millennium BC: Insights into Aspects of Bronze Age Technology and Trade," 305 (TGK 38.691).
[274] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 289-90 (Figure 425 /31-2, 45, 48, 49).

different materials such as leather, textile or wood. For instance, contemporary specimens of saddlers' awl, which have similar narrow tapered sections, might point out to one such specific function. Late Bronze comparanda are uncovered from various sites including Boğazköy-Hattusha in Central Anatolia and Tell Atchana in the Amuq.[275]



Figure 32. The Late Bronze I bronze awl

4.4 Conclusions

I have now presented all 42 metal artifacts that I have designated to the Middle Bronze II and Late Bronze I levels. My analysis revealed that 31 of these were retrieved from the Middle Bronze II level and 11 were retrieved from the heavily disturbed Late Bronze I level. Previously, while the specific levels of some were alluded to through the given find depths, Goldman had assigned most of the artifacts to the broad stratum which she referred to as "Late Bronze I". Furthermore, Goldman had published 22 "Late Bronze I" metal artifacts recovered from the Middle Bronze II building and one from the Intermediate Level, now referred to as Late Bronze I according to the revised chronology. My analysis uncovered that, in fact, 26 metal artifacts were excavated from the large Middle Bronze II building, three were from the "4.83-5.07" Unit and one was from the "Terrace House Unit". Therefore, while

[275] Boehmer, *Die Kleinfunde von Boğazköy*, 115-117 (Plate XXXII-III); Woolley, *Alalakh. An Account of the Excavations at Tell Atchana in the Hatay, 1937-1949*, 279, 283.

the metal artifacts excavated from the Middle Bronze II building increased from 22 to 26, I have designated the rest into specific loci. This designation revealed that a large number of Middle Bronze II metal artifacts were excavated from the first phase of the level. Further, the metal artifacts assigned to the heavily disturbed Late Bronze I level, which I have also designated into specific loci, increased to 11 in number.

The amassing number of artifacts from the first phase of the Middle Bronze level, in comparison with the latter two phases, is associated with the discovery of the large Middle Bronze II building which defines the entire level. The high number of tools, implements and ornaments from the large building indicates that there were local metal workshops active during this period, even if there is no conclusive evidence to suggest that the Middle Bronze II building itself was associated with metalworking or production.

Most of the metal objects from the building were found in a depositional context which accounts for their preservation: 19 metal artifacts deposited in two bundles within a single niche in the southeastern wall corner of the central Room D of the Middle Bronze II building. These metal objects are functional; copper-based tools, weapons and a drinking utensil. On the other hand, as I have discussed, the double axe and the drinking tube are artifacts also often found in association with cultic contexts. Goldman interpreted this find as a foundation deposit due to its location while comparing it to examples known from Syria.[276] In order to interpret this deposit, an understanding of different types of depositions according to the current body of knowledge is necessary.

The practice of depositing objects in the foundations of built or rebuilt royal and sacred architecture as votive offerings has a long history in the Near East, first

[276] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 45, 281.

standardized during the Early Dynastic period when it is manifested in textual and material form.[277] In Anatolia, foundation rituals concerning urban and sacred architecture are known from Hittite texts[278] and actual foundation deposits from numerous sites including Oylum Höyük, Tell Atchana, Tilmen Höyük, Maşat Höyük and Toprakhisar Höyük[279] as well unprovenanced foundation figurines from private collections and museums[280] dated to the second millennium BCE. Although it was more common to deposit often inscribed objects functionally referring to the act of building such as votive nails, pegs or bricks, foundations deposits in the form of raw or scrap material and tools in sacred contexts is not unheard of. Two such examples are the deposits found in the Oval Temple at Khafajah in the Diyala region and the Ishtar Temple at Mari in Syria.[281] In these instances, raw materials of gold, copper or precious stones of lapis lazuli or crystal appear to have been purposefully selected for their embodied symbolic value as Irene Winter enunciated.[282] A unique instance of unusual sacred metal deposition is the foundation deposit known as "the Tod Treasure" dedicated to the god Montu by Amenemhat II in his temple at Tod in Upper Egypt.[283] The deposit consists of four inscribed copper-alloy boxes filled with numerous finds including silver and gold in the form of vessels, chains, rings, ingots and fragments. Furthermore, Egyptian foundation deposits often contained samples

[277] Ellis, *Foundations Deposits in Ancient Mesopotamia,* 11.
[278] Ünal, "A Hittite Foundation Ritual on the Occasion of Building a New Fortified Border Town," 213-223; Süel and Soysal, "The Hattian-Hittite Foundation Rituals from Ortaköy (I)," 1-22.
[279] Engin, "Oylum Höyük Kazılarında Ele Geçen bir Grup Orta Tunç Çağı Yapı Adak Eşyası," 19-49; Dardeniz, "Cultic Symbolism at the City Gates: Two Metal Foundation Pegs from Tell Atchana, Alalakh (Turkey)," 33-50**;** Duru, *Tilmen Höyük Kazılar II, pl. 111/1*; Özgüç, "A Votive Foundation-nail in the Temple of Maşathöyük," 227-234; Akar and Kara, The Formation of Collective, Political and Cultural Memory in the Middle Bronze Age: Foundation and Termination Rituals at Toprakhisar Höyük," 1-27.
[280] Akdoğan, "Yapı-Adak Çivisi Biçiminde Tanrı-Tanrıça Çifti," 27-36; Özcan and Akgün, "İki Hitit Yapı-Adak Çivisi," 47-54; Özcan and Akgün, "Konya Arkeoloji Müzesi'nde Bulunan Yapı-Adak Çivileri," 91-110.
[281] Ellis, *Foundations Deposits in Ancient Mesopotamia,* 89-90, 94-95; Delougaz, *The Temple Oval at Khafajah*, 85-8; Parrot, *Le Temple d'Ishtar: Mission Archaeologique de Mari*, 18.
[282] Winter, "Chapter Twenty-Seven. The Aesthetic Value of Lapis Lazuli in Mesopotamia," 301.
[283] Pierrat-Bonnefois, "The Tôd Treasure," 65-67.

of material from the building in which they were deposited, and model or real tools used in construction.[284]

While these Near Eastern and Egyptian finds demonstrate votive depositions intended for the divine and to remain buried forever, those identified as hoards were intended to be later retrieved. These were objects deposited within walls or under floors with the intention to be reused and may represent transferrable wealth, tool kits, scrap metal or a combination of all. For instance, the late 3rd millennium BCE metal hoard from Tell Asmar (ancient Eshnunna) in Iraq was found in a large ceramic pot deposited within the wall at the southeastern corner of Room 35 in the "Northern Palace".[285] This hoard consisted of 60 copper bowls, two bottles, four lamps, four strainers, four daggers and a drinking tube; reflecting items from a ritual inventory. Frankfort suggests that because they were found deposited in a jar within a palace, these items were clearly removed from a temple either because they were stolen or hidden away in the face of armed conflict.[286] He characterized the hoard as a haphazard and hasty deposition which may not have accurately portrayed the rationale behind this act. On the other hand, these examples demonstrate the ambiguous nature of deposits: while scrap metal does not necessarily imply a hoard, cultic association does not strictly deem a deposition sacred.

The intentions behind depositing objects are complex and multi-faceted. Since their content is, at times, indistinguishable, the lines between foundation deposits and hoards are blurred especially in the absence of an inscription denoting the dedicator or the dedicated divine persona. Now that this issue is addressed, I

[284] Müller, Foundation Deposits and Strategies of Place-Making at Tell el-Dab'a, 182 (Figure 1).
[285] Frankfort, *Iraq Excavations of the Oriental Institute 1932/1933*, 37-38 (Figure 32, 35). The excavators dated the building to the Akkadian period, however, an earlier Early Dynastic phase is also suggested.
[286] Frankfort, *Iraq Excavations of the Oriental Institute 1932/1933*, 39.

would like to propose that, similar to the Tell Asmar hoard, the deposit of metals in Room D of the Middle Bronze II building may best be interpreted as a hoard deposited, likely by the residents of the building, with the intention to be later retrieved. Despite the ceremonial aspects of certain artifacts, the damaged weapons with clipped ends, broken and overused tools, and their occurrence in a non-sacred context, as divided into their copper and lead constituents, imply to me that this was a hoard. The hoard may have belonged to a founder, which is the most traditional interpretation of ancient hoards, as the copper-based and lead artifacts are deposited separately, perhaps to group and distinguish the two metals for reuse and re-melting. On the other hand, the various types of utensils, weapons and tools also implies an intention in selection beyond their metallic value. In any case, the hoard of metal objects deposited in the Middle Bronze II building displays an accumulation of power and wealth likely associated with the people who were able to commission the construction of a large building hitherto unseen at the mound of Tarsus-Gözlükule.

The state of preservation in the following level of Late Bronze I poses an obstacle in interpreting the production and use of metal artifacts in Tarsus-Gözlükule within the larger chronological framework. The fragmentary architectural state also hinders a contextual understanding of the metal artifacts vis-à-vis the use of urban space. The fragmentary remains dated to the first phase of the Late Bronze I level, Intermediate Level I, were erected over the large Middle Bronze II building in a similar orientation. On the other hand, the Late Bronze I remains appear to represent multiple structures separated by open areas with trash pits rather than a large single building. In the second phase, Intermediate Level II, a similar use of urban space persists, albeit the orientation of wall fragments slightly shifts.

The 11 Late Bronze I copper-based artifacts presented here, which consist of six tools, two clothing fasteners, one weapon, one open ring and one semi-circular knobbed arc, must illustrate only a small portion of the metal tools and ornaments employed during this period. Despite impeding circumstances, I have determined that among the eleven metal artifacts four were retrieved from three trash pits while one of the pins was uncovered within structural remains.

Tools such as the needles, the awl and the chisel are material evidence implying locally developed crafts, although the presence of a workshop cannot be identified from the excavated structural remains. While the chisel and the awl may have been owned by a craftsperson possibly specialized in carpentry or leatherworking, the rest of the excavated artifacts such as the pins, the ring and the tweezer are personal implements and ornaments found and used at a household level. These artifacts were likely produced locally as forms do continue and are recognized from preceding and following periods, which indicates presence of small-scaled, active metal workshops enduring the changes in use of urban space.

CHAPTER 5

A CONTEXTUAL ANALYSIS OF THE METAL ARTIFACTS FROM THE MAIN LATE BRONZE IIA LEVEL

In this chapter, I re-present the metal artifacts from the Late Bronze IIa level. The aim here is, once again, to depict the metal artifacts within their context in a narrative manner. In order to do so, in the first section, I clarify and summarize the adjustments that I have made in the chronological distribution of the Late Bronze II metal artifacts subsequent to Goldman's final publication. This summary covers and concerns both the Late Bronze IIa and IIb metal assemblages. Then, I present the metal artifacts from the Late Bronze IIa level in two sections, one dedicated to those from Section A and the other to those from Section B, in the order of their find location. Finally, in the last section, I summarize the additions and modifications that I have made regarding the metal artifacts of the Late Bronze IIa level compared to Goldman's account and offer a new contextual interpretation concerning the use and production of metals in the light of these contributions.

5.1 Fine-tuning the chronological distribution of Goldman's "Late Bronze II" metals

Goldman published a selection of 96 metal artifacts dated to Late Bronze II.[287] As part of my research for this thesis, I have assigned these artifacts to the following main levels, which are Late Bronze IIa and Late Bronze IIb, based on my examination of the unpublished field diaries and documents from the excavation and Goldman's final publication. As previously mentioned in Section 4.1, I have re-dated two artifacts which Goldman ascribed to Late Bronze II, that is one arrowhead and

[287] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 288-303.

one toggle pin, to Late Bronze I. Therefore, out of the diminished group of 94, I now date 38 artifacts to the earlier Late Bronze IIa and 33 artifacts to the later Late Bronze IIb level. The remaining 23 artifacts, already mentioned previously under Section 3.5, will not be discussed as the data to provide a contextual study is not available. Furthermore, I re-date one arrowhead, which Goldman previously dated to the Assyrian period, to the Late Bronze IIb level. In the following two chapters, I present therefore 72 metal artifacts recovered from the Late Bronze IIa and Late Bronze IIb levels.

As mentioned, a total of 38 metal artifacts were unearthed from the Late Bronze IIa level. These are composed of 9 tools (two awls, two chisels, two knives, one needle, one sickle, one scraper), seven weapons (two spearheads, four arrowheads, one dagger tang), seven fasteners (one nail, one fibula, five pins), 12 studs, one ring, one vessel and one open ring of scrap metal. Of these, 27 are from Section A, on the eastern summit, and 11 are from Section B, in the saddle of the mound. In the following pages, I will first present the metal finds from Section A followed by those from Section B, in an order based on their find location.

5.2 Metal artifacts of the Late Bronze IIa level from Section A

The 27 metal artifacts from Section A consist of five tools (two awls, one chisel, one scraper, one leather knife), four weapons (two arrowheads, one spearhead tip, a dagger tang), four fasteners (three pins and one nail), 12 studs, one open ring and one vessel. All of these, except for the open ring, that is made of lead, are copped-based objects.[288] The stratigraphic contexts from which these metal finds were excavated are as follows (Figure 33):

[288] 9 out of 26 copper-based artifacts were analyzed by either Kuruçayırlı or Dardeniz as part of their thesis studies. The alloying contents of these artifacts will be referenced in due course.

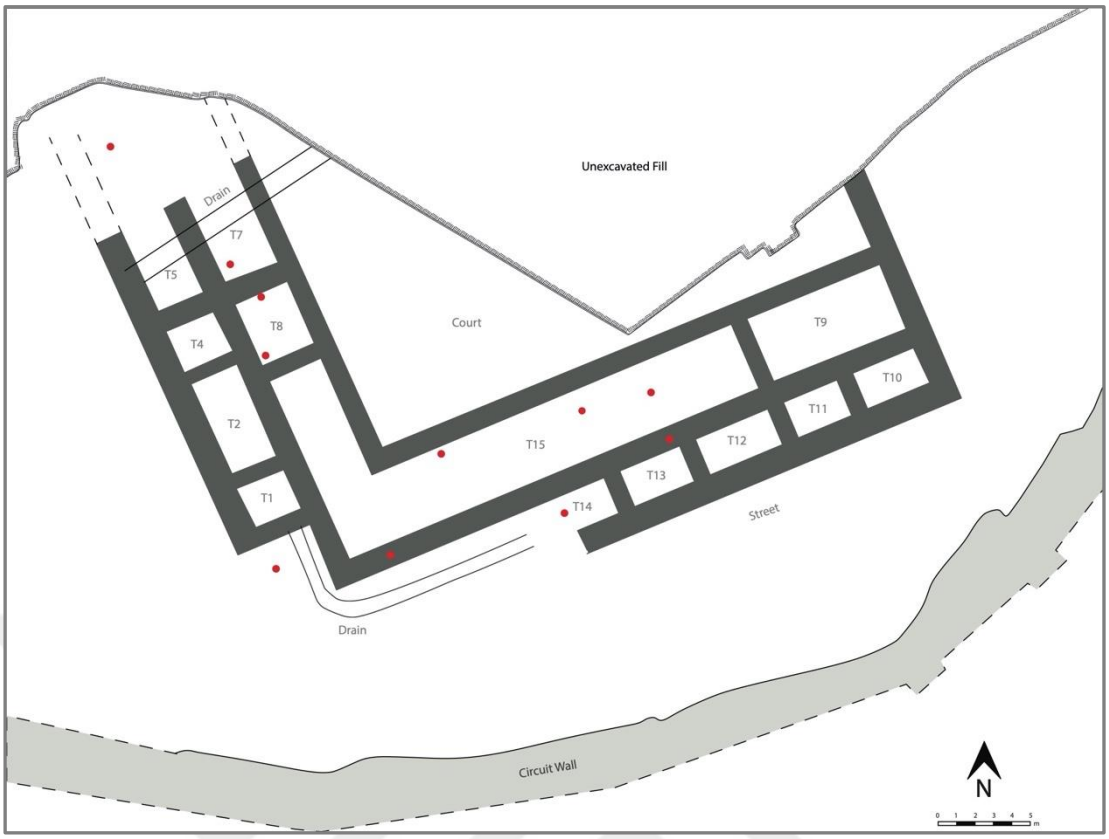


Figure 33. Diagrammatic plan of the Late Bronze IIa architectural remains in Section A with approximate find locations of 25 out of 27 metal artifacts indicated in red (After Goldman 1956 plan 22; drawn by Luka Koumari)

A large number of the artifacts in Section A, 25 out of 27, were found in association with the Late Bronze IIa monumental building. Of the remaining two, one, that is one of the arrowheads, was recovered from the encircling street and the other, the lead open ring, was apparently found south of the building.

All artifacts from the monumental building, except for the tang of a dagger which was found within the foundation trench for the southern wall of Room T15, are associated with floor levels of excavated rooms. The rooms which yielded metal finds consist of T7, T8, T14, T15, an unidentified northern room and possibly T5.

The rooms to the west of the large court yielded five metal artifacts. One of the awls was found in the unnamed northern room adjacent to T5, the spearhead tip was found in Room T7 and two artifacts, that is the other arrowhead and the leather

knife, were found in Room T8. The remaining artifact, that is the chisel, was likely found either in Room T5 or T7.

The awl (GE Inv. No: 38.1628; Goldman fig. 425/44) must have been unearthed from north of Room T5, perhaps a separate room on its own, as Hoskin Ehrich recorded that it was found below a Medieval building (named *House 1* in the field notebook) later built into the northernmost section of the LB IIa building, at a depth of 3.88 m.[289] She further noted that the find location was below the stones comprising the cross-wall between Room 2 and Room 3 of the Medieval building. Perhaps due to the damage caused by the construction of the later Medieval building, this section of the monumental building is not published in Goldman's plan. Based on its find depth, I date this artifact to the Late Bronze IIa level. The awl is square in section with a flat end and tapers to a sharp point (Figure 34). According to Kuruçayırlı's chemical analysis, it is made of pure copper.[290]



Figure 34. The Late Bronze IIa copper awl, square in section, from the room north of T5

The chisel (GE Inv. No: 38.1626) was likely found in Room T5 or T7 as the floor level noted between 3.40 and 3.50 m. on which the artifact was found must belong to these rooms.[291] Hoskin Ehrich recorded that this floor level was excavated

[289] Hoskin Ehrich, "1938 Excavation Report for Tarsus-Gözlükule, 2-3 M Levels," 60.
[290] Kuruçayırlı, "Copper Metallurgy in Cilicia and the Amuq in the Second Millennium BC: Insights into Aspects of Bronze Age Technology and Trade," 307 (TGK 38.1628).
[291] Hoskin Ehrich, "1938 Excavation Report for Tarsus-Gözlükule, 2-3 M Levels," 101.

to the north and east of a Late Hellenistic structure (*House 3* in the field notebooks), which was cut into Room T5 and T4, and yielded the so-called "Plate Ware", now referred to as the Cilician LBA Plain Ware.[292] Moreover, she noted that that in its easternmost limit, the floor ran against a line of burnt earth and down to a stone wall foundation which, according to her, is likely the east wall of Room T7.[293] Among the finds associated with the same floor was also a frit *wedjat* eye.[294] Recently, in his study of Egyptian artifacts from Al Mina and Tarsus,[295] Günter Hölbl proposed that this *wedjat* eye is probably dated no later than 10th century BCE, therefore, it was most likely an intrusive find.[296] A similar faience *wedjat* eye amulet bead was also recovered from the Late Bronze IIb level settlement remains northeast of Section A during the new TGK excavations.[297]

Regarding the form, the chisel is double-ended with a flaring fishtail-like beveled blade on one end and presumably a similar blade on the other broken end (Figure 35). The shaft is rectangular in section with convex sides in its middle part bound by two bulges. The form of the shaft must indicate the way it fits in hand and perhaps directs the user on how it was meant to be handled. Its small size, which is around 7 cm, suggests it was used for refined, detail work. According to Kuruçayırlı's chemical analysis, the chisel is made of bronze with 4.5% tin.[298]

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[292] Hoskin Ehrich, "1938 Excavation Report for Tarsus-Gözlükule, 2-3 M Levels," 69-72.
[293] This would suggest that there was, at one point, one continuous floor level from T5 to T7. Hoskin Ehrich also noted that the foundation was visible from the walls of Intrusion 38/4 which is a pit cut into Room T7 towards its east.
[294] Hoskin Ehrich, "1938 Excavation Report for Tarsus-Gözlükule, 2-3 M Levels," 101; Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 339-40 (Figure 453/24).
[295] Hölbl, *Aegyptiaca aus Al Mina und Tarsos im Verbande des Nordsyrische-Südanatolischen Raumes,* 108 (Cat. No. 123).
[296] This is supported by the fact that a pit containing Iron Age painted pottery (Intrusion 38/35) was excavated in this section of the trench.
[297] Özyar, Ünlü and Pilavcı, "Recent Fieldwork at Tarsus-Gözlükule: The Late Bronze Age Levels," 58.
[298] Kuruçayırlı, "Copper Metallurgy in Cilicia and the Amuq in the Second Millennium BC: Insights into Aspects of Bronze Age Technology and Trade," 307 (TGK 38.1626).

Goldman contemplated that it was either a chisel or a scraper. Although, parallels for scrapers are scarce in this period and it is also unlike other chisels excavated here at Gözlükule. The only somewhat similar artifact from the mound is a sturdier double-ended chisel from the Late Bronze IIb level which will be presented in the following sixth chapter.[299] More akin to this LB IIb example, a similar double-ended chisel from Tell Atchana in the Amuq is recovered from an unstratified context.[300]



Figure 35. The Late Bronze IIa bronze double-ended chisel with one end broken from either Room T5 or T7

The spearhead tip (GE Inv. No: 38.1618; Goldman fig. 427/96) was likely recovered from Room T7 due to the following reason: Hoskin Ehrich noted that it was found south of the large Medieval building and below the area of Intrusion 38.35. This is a large pit located in the southwestern corner of Room T7, therefore, the spear must have been found there.[301] Further, the artifact must be dated to Late Bronze IIa since Late Bronze IIb remains were not recorded in this area and in the final publication, Goldman states that it was recovered from the "Hittite Temple". The tip of the slightly curved spearhead has a blunt point and seem to be

[299] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 290 (Figure 426/67). See pages 163-65 of this thesis.
[300] Woolley, *Alalakh. An Account of the Excavations at Tell Atchana in the Hatay, 1937-1949,* 281 (39/290; pl. LXXIII, Ch. 4).
[301] Hoskin Ehrich, "1938 Excavation Report for Tarsus-Gözlükule, 2-3 M Levels," 152, 169-70.

intentionally cut which indicates that the object was likely kept this way to be reused as scrap metal (Figure 36). Similarly, one cut fragment of a socketed spearhead, also likely re-used as scrap metal, was recently recovered during the TGK excavations in an unstratified context and was dated to Late Bronze II based on typology.[302] According to Kuruçayırlı's chemical analysis, the spearhead tip is made of arsenical copper with 2.1% arsenic.[303]



Figure 36. The Late Bronze IIa arsenical copper spearhead tip, intentionally cut most likely to be reused as scrap metal, from Room T7

The arrowhead (GE Inv. No: 36.695; Goldman fig. 427/79) was found approximately at the southwestern corner of Room T8 in an area which Ehrich named as the "North Cut" and according to Goldman, at a depth of 3.30 m.[304] The earliest floor level recorded for T8 is at 4.40 m, and above this at 2.80 m was a beaten clay floor post-dating the monumental building.[305] From available evidence, I suggest that the artifact was found within the collapsed destruction fill of the Late Bronze IIa building before the area was reoccupied.

[302] Özyar, Ünlü and Pilavcı, "Recent Fieldwork at Tarsus-Gözlükule: The Late Bronze Age Levels," 60-1.
[303] Kuruçayırlı, "Copper Metallurgy in Cilicia and the Amuq in the Second Millennium BC: Insights into Aspects of Bronze Age Technology and Trade," 306 (TGK 38.1618).
[304] Ehrich, "1936 Excavation Report for Tarsus-Gözlükule," 56, 65; Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 291.
[305] Ehrich, "1936 Excavation Report for Tarsus-Gözlükule," 52, 57, 116.

It has a narrow and high midrib which has a knobbed texture, barbed and angular shoulders and a tang rectangular in section (Figure 37). The point is perhaps cut at an angle and the barbs also seem to have been clipped. It is very damaged and is currently preserved in three pieces with a large fragment broken off on the left side. The cut ends indicate that the object may have been reused as scrap metal. Comparably, the recent TGK excavations uncovered a cut lower part fragment of a lance-shaped arrowhead.[306] The barbed arrowhead is a more fatal weapon compared to the elliptical/lance-shaped type in the sense that the barbs prevent it to be easily extracted from the target. Comparanda from Boğazköy-Hattusha date to *Büyükkale IIIb* besides one dated to *Büyükkale IVb*.[307] According Kuruçayırlı and Dardeniz's chemical analyses, the artifact is made of brass and contains low amounts of tin.[308]



Figure 37. The Late Bronze IIa copper-based barbed arrowhead with cut point and clipped barbs from Room T8

Finally, the leather knife was recovered near the north wall of Room T8.[309] Goldman records that it was found at a depth of 2.50 m which is higher than the

[306] Özyar, Ünlü and Pilavcı, "Recent Fieldwork at Tarsus-Gözlükule: The Late Bronze Age Levels," 61.
[307] Boehmer, *Die Kleinfunde von Boğazköy*, 105-6 (Plate XXVII, 832-37, pl. XXVIII, 838-45).
[308] Kuruçayırlı, "Copper Metallurgy in Cilicia and the Amuq in the Second Millennium BC: Insights into Aspects of Bronze Age Technology and Trade," 181, 306 (TGK 36.695). The results of analysis indicate that the chisel contained 3.3% zinc. While Kuruçayırlı concluded that this was due to a contamination during the sampling process, since Dardeniz's analysis also indicate zinc, the artifact must have contained some zinc. See Dardeniz, "Chemical Analysis and Characterization of First Millennium B.C. Arrowheads from Tarsus," 53 (Table 6.1, Sample 12).
[309] Hoskin Ehrich, "1938 Excavation Report for Tarsus-Gözlükule, 2-3 M Levels," 149-52.

average depth of the Late Bronze IIa level remains.[310] On the other hand, in Goldman's plan, the top elevation given for the northwestern corner wall of Room T8 is at 2.54 m which explains the high find elevation. Hoskin Ehrich did not include an inventory number, however, a leather knife from among the GSC is likely this artifact, as it is the only one without an inventory number.[311] The width of the leather knife in GSC is shorter than what Goldman and Ehrich recorded, however, the knife was found with fragments which might indicate that some parts were corroded and broken off.

According to Goldman and Ehrich, the knife is 14 cm long and has a fan-shaped blade and a sharply pointed, slender tang (Figure 38). The form is quite unique and was interpreted by the Goldman team as a leather knife. Leather knives, also named head or round knives, are used in contemporary leatherworking for multiple tasks such as trimming and skiving leather.[312] Strikingly similar tools are depicted in use by leatherworkers in the New Kingdom period wall paintings from the Tomb of Rekhmire at Thebes, Egypt.[313] Another knife in similar form is excavated from the Late Bronze IIb level at Section B.[314] Further, a similar knife with a notch in the middle of the blade's cutting edge, is recovered from the Early Bronze levels here at Gözlükule.[315] While notched comparanda are known from the sites of Akko, Tell Abu Hawam, Megiddo in Palestine, and Ras-Shamra-Ugarit in

[310] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 288 (13).
[311] The artifact in the TGK Depot is shorter in length than the one recorded in the 1938 field notebook, however, it may have partly disintegrated due to corrosion as Hoskin Ehrich recorded that the knife was not found in good condition.
[312] Leather knife directly translates as "saddler's knife" (*saraç bıçağı*) in Turkish which indicates that this tool was primarily used in saddlery in the region until recently.
[313] Scheel, *Egyptian Metalworking and Tools*, 54 (Figure 59, b); Davies, *The Tomb of Rekh-mi-Re at Thebes*, pl. 53.
[314] See pages 168-70 (Figure 83) of this thesis.
[315] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 288 (Figure 423/12).

Syria, one that is more akin to the knife presented here is recovered from Bet Shan.[316]

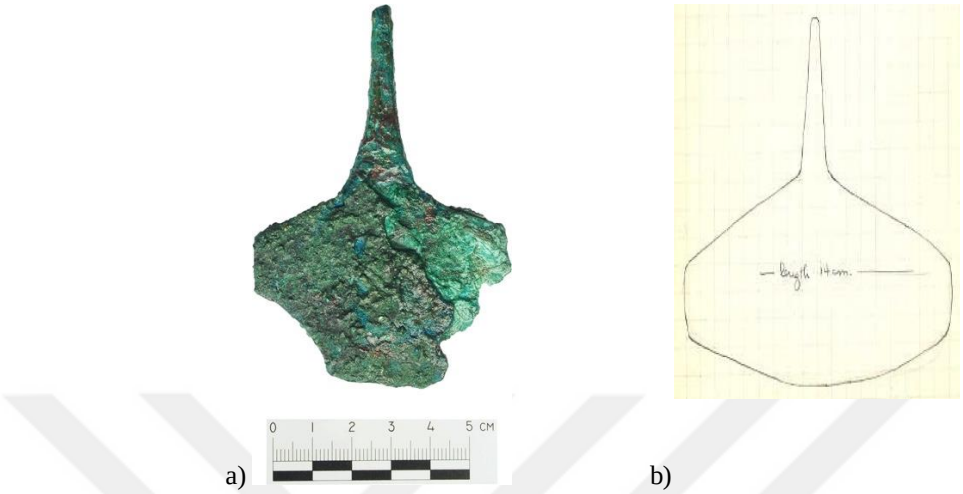


Figure 38. The non-inventoried Late Bronze IIa copper-based "leather knife" found in Room T8 (a) from the GSC and its drawing in the 1938 field notebooks indicating its complete form (b) (After Hoskin Ehrich 1938, 149)

The rooms to the south of the court yielded 20 metal artifacts. Of these, 16 metal finds, which are the nail, the three pins and the twelve studs, were found in the E-W extension of the longitudinal L-shaped hall of Room T15.[317] The scraper was found on the door entry between Room T13 and T15, the vessel was found in Room T14 and the last of the two awls was found in an unidentified room in the southern section.

The nail (GE Inv. No: 36.730; Goldman fig. 429/114) was found in the northwest section of the E-W extension of Room T15.[318] In his record, Ehrich noted that it was found together with a pierced "thin, flat disk of bronze" on the area where

[316] James and McGovern, *The Late Bronze Egyptian Garrison at Beth Shan: A Study of Levels VII and VIII*, 206.
[317] In his own study of the Tarsus-Gözlükule field notebooks, Karacic later revealed that Room T15 was, in fact, originally partitioned by a cross-wall running N-S, later removed. See Karacic, "The Archaeology of Hittite Imperialism and Ceramic Production in Late Bronze Age IIA Tarsus-Gözlükule, Turkey," 121-122; Ehrich, "1936 Excavation Report from Tarsus-Gözlükule," 189-191.
[318] Ehrich, "1936 Excavation Report for Tarsus-Gözlükule," 48-9.

the pavement was disturbed by a Late Bronze IIb wall fragment, named as "Terrace Wall Return" in the field notebooks, which provides an approximate location for the find.

The nail has a square cross-section with rounded edges and a rounded tip to which Goldman comments that it is broken (Figure 39). The head, larger in diameter than the body, is perfectly conical. Nails with blunt ends are used in contemporary carpentry to prevent splits in the wood, though, the rounded tip and edges suggests to me that it was not intended to be driven but inserted in a pre-drilled (pilot) hole. The thin, flat disk found together may represent the washer/rove to fix the nail in place through clenching the protruding end, perhaps at the now corroded, broken section. It is imaginable that it was utilized to fasten pieces of material in a wooden furniture, door or carriage and that the decorative conical end was meant to be seen and perceived as an ornament. One similar, slightly shorter, example is from Boğazköy-Hattusha and dates to Büyükkale III.[319] The conical-head is also used in pins of the Hittite period testified by various examples from Boğazköy-Hattusha, however, the thickness of its body indicates that our specimen is a nail rather than a pin.[320] According to Kuruçayırlı's chemical analysis, it is made of bronze with 4.4% tin.[321]



Figure 39. The LB IIa bronze nail with a perfectly conical head from Room T15 in front and side view

[319] Boehmer, *Die Kleinfunde von Boğazköy,* 101 (Plate XXV, 788).
[320] Boehmer, *Die Kleinfunde von Boğazköy,* 81, 82, 84 (Plate XXI, 452, 455 469-470, 473; pl. XXIII, 525-6, 531; XXIV, 563).
[321] Kuruçayırlı, "Copper Metallurgy in Cilicia and the Amuq in the Second Millennium BC: Insights into Aspects of Bronze Age Technology and Trade," 306 (TGK 36.730).

The three pins were also found in the E-W extension of Room T15 (Figure 40a). According to Ehrich's field notebook accounts, two pins were found at the base of a Late Bronze IIb structure, which was detected at a depth of 3.00 m, built into Room T15.[322] According to his drawing, the north wall of this structure was built directly on top of the north wall of Room T15.[323] As they were found at a depth of 3.25 m., they must have been recovered from the Late Bronze IIa fill laying on top of the (3.53 m.) floor level of Room T15. Even though Ehrich noted two pins in the field notebook, the fact that Goldman published three pins with consecutive inventory numbers (36.926-8) and with matching find-depths (3.25 m.) inclines me to think that Ehrich did not mention a third pin because it was not found complete as the other two were. This also must be the reason why Goldman did not provide a photograph for the third broken pin which may have been discarded due to state of preservation or lost since it did not survive to be included in the GSC. Therefore, I assume that these three pins were all excavated from the same area.

Two of these three (GE Inv. No: 36.926-7; Goldman fig. 431/235-6) are toggle pins; one, according to Goldman, with a broken point, which did not survive and for which there is no visual record, and the other (Figure 40b top) with a conical head and a straight stem that thickens in section for an eyelet on its upper part, though corroded and possibly broken at the end. According to Kuruçayırlı's chemical analysis, the preserved toggle pin is made of brass with 3.8% zinc.[324] These personal ornaments were used as clothing pins where the eyelet would function to secure the garment with a thread attached and also to suspend decorative or functional items

[322] Ehrich, "1936 Excavation Report for Tarsus-Gözlükule," 75.
[323] Ehrich, "1936 Excavation Report for Tarsus-Gözlükule," 86.
[324] Kuruçayırlı, "Investigation of Metal Artifacts of Tarsus-Gözlükule from the Second and Third Millennia B.C.," 45 (Table 5.1, Sample 36.926), 52.

through a string such as beads, seals or rings.[325] Toggle pins were ubiquitous in the Near East during the third millennium BCE and they are first encountered here at Gözlükule during the Early Bronze II period.[326] Other than these, toggle pins with conical heads are also known from Tell Atchana in the Amuq dated to both Late Bronze IIa and IIb (*Levels I and II*),[327] and one from Boğazköy-Hattusha, though unstratified.[328]

The third is a pin with a compressed spheroid head that is flattened at top, a straight stem and a broken point (GE Inv. No: 36.928; Goldman fig. 430/176) (Figure 40b below). The stem is thinner in its middle as this section was likely not swollen due to corrosion. One pin with a similar head, identified as hemispherical by Goldman, is from the Early Bronze II levels here at Gözlükule.[329] Comparanda for spheroid-headed pins from Boğazköy-Hattusha date to *Büyükkale IVb-d.*[330] According to Kuruçayırlı's chemical analysis, the pin was mostly made of copper and contains 1.6% tin.[331]

[325] See page 81 of this thesis for further iconographic evidence and comparanda.
[326] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age,* 296 (Figure 431); Henschel-Simon, "The Toggle Pins in Palestine Archaeological Museum," 169-209.
[327] Woolley, *Alalakh. An Account of the Excavations at Tell Atchana in the Hatay, 1937-1949,* 284 (Plate LXXIII, P6).
[328] Boehmer, *Die Kleinfunde von Boğazköy*, 85 (Plate XXIV, 580).
[329] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age,* 294 (Figure 430/161).
[330] Boehmer, *Die Kleinfunde von Boğazköy*, 80-1 (Plate XVII, 281; pl. XVIII, 343; pl. XIX, 388-9, 402).
[331] Kuruçayırlı, "Copper Metallurgy in Cilicia and the Amuq in the Second Millennium BC: Insights into Aspects of Bronze Age Technology and Trade," 306 (TGK 36.928).

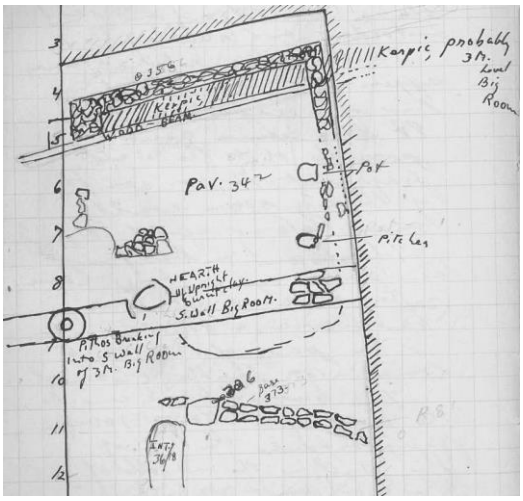
a)  b) 

Figure 40. a) Sketch drawing of the discontinuous remains of the Late Bronze IIb structure at a depth of 3.25 m. (Ehrich 1936, 86) b) top: Brass toggle pin (GE Inv. No: 36.926); below: Copper pin (GE Inv. No: 36.928)

The twelve small studs (GE Inv. No: 38.1593; Goldman fig. 429/117) were recovered on floor level below a rectangular hearth located in the eastern part of Room T15 and, according to Goldman, at a depth of circa 3.30 m.[332] This hearth is not illustrated neither in the field notebooks nor in Goldman's plans. Ehrich noted that east of it was found a complete pithos embedded in the floor.[333] Along with the studs, an unpublished bead of carnelian was recovered (GE Inv. No: 38.1556).[334]

Only one of the studs survived to be included in the GSC which is a hemispherical sheet, now broken, with prongs protruding from opposite sides for attachment (Figure 41a). I agree with Goldman on their function that they were attached to leather or garments. To attach the stud, the material must have been pierced twice with an awl. After the stud was inserted the prongs were clasped from behind for securement. The prongs were found clasped, indicating that the studs were indeed attached to a piece of clothing, more likely of leather, now disintegrated.

[332] Hoskin Ehrich, "1938 Excavation Report for Tarsus-Gözlükule, 2-3 M Levels," 217; Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 293.
[333] Hoskin Ehrich, "1938 Excavation Report for Tarsus-Gözlükule, 2-3 M Levels," 218.
[334] Hoskin Ehrich, "1938 Excavation Report for Tarsus-Gözlükule, 2-3 M Levels," 217.

Copper prong studs are still frequently used in leatherworking, for instance, to ornament bridles, saddles and equine tack in general (Figure 41b). Comparanda for these accessories are 120 copper-alloy studs acquired by the British Museum in the 1920s (Museum Number: 1921, 1101.27). These were found together with other scrap metal such as mountings of a drinking horn and belt mountings with silver studs and were unearthed in Gotland, Sweden.[335]

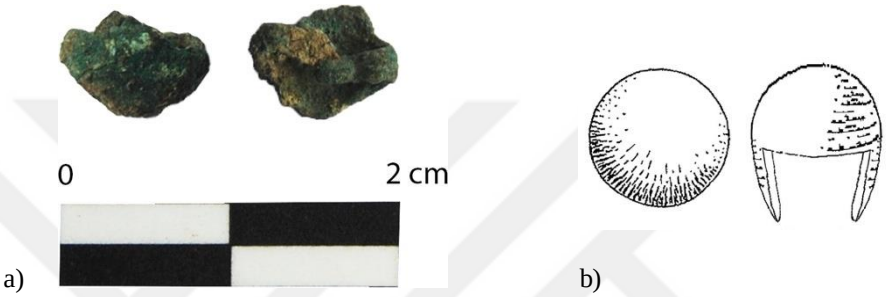
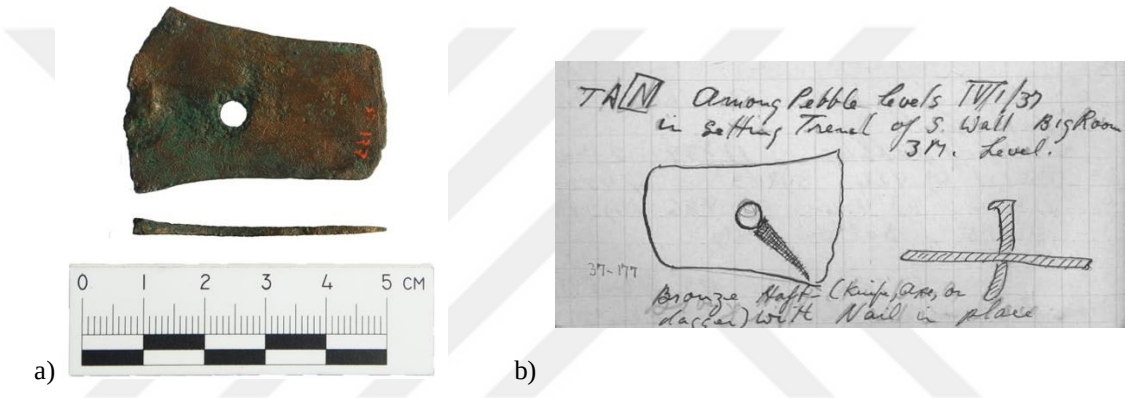


Figure 41. a) The Late Bronze IIa copper-based two prong stud viewed in front and back b) Sketch drawing of the stud imagined in complete form viewed from the top and side

The tang of a dagger (GE Inv. No: 37.177; Goldman fig. 428/109) was found in the pebble foundation trench of the south wall of Room T15.[336] It must have been deposited there as the foundations were being laid for the construction of the massive structure. The depth of the find must have been between 4.20 and 5.90 m. as these are the top and base levels of the foundation trench dug for the south wall of Room T15.[337] The tang is short with a flat end and seem to be intentionally cut from the blade (Figure 42a). According to Ehrich, the tang was found with a rivet in place and his drawing illustrates that the rivet was around 2.5-3 centimeter-long (Figure 42b).[338] A second rivet hole is visible from the broken or perhaps cut convex edge.

[335] Kidd and Thunmark-Nylén, "James Curle of Melrose and His Collection of Gotlandic Antiquities," 167-9.
[336] Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 51.
[337] Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 35-6.
[338] Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 51.

Because it is reminiscent of the tang of an Early Bronze Age dagger from Gözlükule and Goldman has categorized it under daggers and thrusting swords, I refer to the object as the tang of a dagger.[339] It does not seem to have been scrap metal as it was found within the wall foundation trench. Instead it may indicate a deliberate and purposeful act rather than an accidental deposition, perhaps serving as what remains of a votive deposit known from Hittite rituals in which each corner of sacred buildings were filled with items of precious metals, stones and sacrificial food.[340]



a) b)

Figure 42. a) The Late Bronze IIa copper-based tang of a dagger from the south wall foundation of Room T15 b) Ehrich's drawings of the tang from the field diaries (Ehrich 1936, 51)

The object which Goldman identified as a scraper (GE Inv. No: 38.1621; Goldman fig. 423/17) was found in a supposed doorway in the wall between Rooms T13 and T15.[341] The doorway is not illustrated in Goldman's plan, therefore, its location is based on a field notebook sketch.[342] Because this area is heavily disturbed by the later Late Bronze IIb remains, the features of these rooms are not well-preserved. The artifact has a blunt, ovate blade and a broad tang that tapers to a flat butt (Figure 43). Goldman presented an artifact that has a similar yet wider, ovate

[339] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 292 (Figure 428/100).
[340] Beckman, "Temple Buildings among the Hittites," 78-79. 85-87.
[341] Hoskin Ehrich, "1938 Excavation Report for Tarsus-Gözlükule, 2-3 M Levels," 192, 199-200.
[342] Hoskin Ehrich, "1938 Excavation Report for Tarsus-Gözlükule, 2-3 M Levels," 213.

blade from Ur as comparanda for the scraper.[343] Further, in his seminal study of bronze tools, Deshayes categorized the artifact as Type A1a under "*tranchets à taillant transversal*" along with a specimen from Mari dated to the second quarter of the third millennium B.C.E.[344]

In Greek, Etruscan and later Roman societies, a scraper (*strigil*) was used for body cleansing: to scrape oil, dirt and sweat from the skin.[345] In fact, inscriptions on four *strigilis* from Anatolia, Romania, Italy and Hungary manifest that these implements were crafted by Tarsian artisans, perhaps in a workshop at Tarsus, during the 2nd century CE. The blade of the Greek type of this implement is elongated and curved with both edges sharpened, and the tang forms a loop. The earliest visual attestation of the strigil is in the second half of the 6th century BC, and the earliest literary reference to its use is around a century later.[346] The origin of this bath implement is not entirely known, and it might have been adopted into the Greek culture as the word (*στλεγγις)* is non-Greek in origin.[347] Raubitschek argues that the form had a nonmetallic origin and derived from reeds which were used by Spartans.[348] Scraping the body is not directly attested in Mesopotamian or Hittite texts,[349] on the other hand, implements with sharpened edges such as the iron ones from Boğazköy-Hattusha dated to the Iron Age[350] may have functioned in a way similar to the Greek strigil. Although identified as a scraper by Goldman, our

[343] Woolley, *Ur Excavations Vol. II The Royal Cemetery*, 310 (Plate 230/U. 12740).
[344] Deshayes, *Les Outils de Bronze, de L'Indus au Danube (IVe au IIe Millénaire)*, 364; Parrot, *Le Temple d'Ishtar: Mission Archaeologique de Mari,* 184 (Plate LXIV, Figure 98, M 1398).
[345] Şahin and Doğan, "Patara'da İki Strigilis: Anadolu'nun Strigilis Üretimindeki Yeri," 776.
[346] Boardman, "Sickles and Strigils," 136.
[347] Dorigny, "Strigilis," 1532-4.
[348] Raubitschek, *Isthmia: Volume VII. The Metal Objects, 1952-1989,* 122.
[349] Although, anointing the body was a crucial part of purification and funerary rituals. Hoffner, "Oil in Hittite Texts," 111-2; Vigo, "The Use of (Perfumed) Oil in Hittite Rituals with Particular Emphasis on Funerary Practices".
[350] See Boehmer, *Die Kleinfunde von Boğazköy,* 146, 158 (Plate XLVI, 1305; pl. LV, 1654-6) for Iron Age curved knives from *Büyükkale I and II.*

specimen from Tarsus-Gözlükule does not seem to be related to the later developed Greek strigil in terms of its form and, hence, its function, perhaps connected to cooking or cosmetics equipment, remains unclear to me.



Figure 43. The Late Bronze IIa copper-based "scraper" from the doorway between Rooms T13 and T15 in front and side view

The awl (GE Inv. No: 38.1713; Goldman fig. 425/47) must have been recovered from the east section of the LB IIa monumental building as Hoskin Ehrich records that it was found in the trench named "East Extension" from the "Upper 3M Level" which refers to the Late Bronze IIa level.[351] Its precise location is not recorded in the field notebooks.

The awl is square in section with a broken point and is set in the handle which is made of antler (Figure 44). The antler handle is round in section and slightly tapers to flat butt which indicates that the awl was held on rear end. It is remarkable that the handle was preserved, which is usually not the case for most Bronze Age tools in this region. According to Kuruçayırlı's chemical analysis, it is made of

[351] Hoskin Ehrich, "1938 Excavation Report for Tarsus-Gözlükule, 2-3 M Levels," 169.

bronze with 5.7% tin.[352] It was most likely used for punching leather for leatherworking or marking wood for drilling holes. Another rare specimen from the Early Bronze levels here at Gözlükule has a similar cylindrical bone handle that, in contrast, tapers towards the awl blade indicating it was held different and therefore may have had a different function.



Figure 44. The Late Bronze IIa bronze awl set in antler handle from the east section of the LB IIa monumental building

The last of the metal artifacts from the Late Bronze IIa monumental building, the vessel (Goldman fig. 433/270), must have been unearthed at Room T14 as Ehrich recorded that it was found on a pavement east of the building's southern drain at a depth of 3.80 m.[353] Goldman has published the depth of find as 3.40 m., however, this must be due to a misreading of the notebooks as Ehrich records that the vessel was found at a depth of 3.80 m. and west of a wall fragment, location unclear, laying at 3.40 m. The pavement was unearthed at 4.01 m, presumably either belonging to the street encircling the building or Room T14 to its west. Since excavations did not go farther east that season, Ehrich could not comment on the pavement further,

[352] Kuruçayırlı, "Investigation of Metal Artifacts of Tarsus-Gözlükule from the Second and Third Millennia B.C.," 45 (Sample 38.1713).
[353] Ehrich, "1936 Excavation Report for Tarsus-Gözlükule," 119.

however, the depth of the pavement and the floor level of Room T14 (3.96 m) are well-matched. Therefore, I would argue that it was recovered from Room T14.

The vessel itself is a hemispherical bowl with a plain rim and a rounded base which, unfortunately, seems not to have survived (Figure 45). Ehrich noted that it was found complete, in three fragments. The size of the bowl is suitable to be held in either one hand or both hands, and it was most likely used for special food or beverage consumption/offering and was part of the building inventory. It does not appear as an item of display due to its simplistic form and its rounded base. The shape must have derived from earlier clay prototypes as it retains the simplicity of its ceramic parallels and does not possess any characteristics exclusive to metals.

Metal vessels are encountered in a variety of forms in Anatolia from the Early Bronze Age onwards.[354] Earlier examples of the metal hemispherical bowl include three, one of silver and two of bronze, from EBA II-III burial contexts in Alacahöyük and Horoztepe, and seven of silver from the Old Assyrian Colony Period, possibly part of a palace hoard, in Acemhöyük.[355] Comparanda dating to Late Bronze II are from Kınık Höyük, Maşat Höyük and Uluburun, as well as one unprovenanced example inscribed in Anatolian Hieroglyphics.[356]

[354] See Reeves, *Aegean and Anatolian Bronze Age Metal Vessels: A Social Perspective* for a comprehensive study of Anatolian metal vessels which I have benefited for comparanda.
[355] Koşay, *Ausgrabungen von Alaca Höyük. Ein Vorbericht über die im Auftrage der Türkischen Geschichtskomission im Sommer 1936 durchgeführten Forschungen und Entdeckungen*; Özgüç and Akok, *Horoztepe: Eski Tunç Devri Mezarlığı ve İskan Yeri – An Early Bronze Age Settlement and Cemetery*, 44 (Plate VI.4 Figure 17, Figure 11); Bittel, *Altkleinasiatische Pferdetrensen*, 302.
[356] Emre and Çınaroğlu, "A Group of Metal Hittite Vessels from Kınık-Kastamonu," 682 (no: 19, fig. 17, pl. 132.3); Özgüç, *Maşat Höyük II: Boğazköy'ün kuzeydoğusunda bir Hitit merkezi – A Hittite Center Northeast of Boğazköy* (Figure 83); Pulak, The Uluburun Shipwreck, 243 (Figure 11); Hawkins, "A Hieroglyphic Luwian Inscription on a Silver Bowl in the Museum of Anatolian Civilizations, Ankara". 7-24.



Figure 45. The Late Bronze IIa copper-based vessel from Room T14 (After Goldman 1956)

As mentioned, the remaining two metal artifacts of the Late Bronze IIa level, the arrowhead and the open link, were found outside of the monumental building. The copper arrowhead (GE Inv. No: 35.1718; Goldman. fig. 427/78) was found on the west side of the paved street encircling the monumental building at a depth of circa 3.30 m.[357] Ehrich recorded traces of burning in this area, likely related to the destruction of the building, which puts the weapon discovered here in context as a byproduct of warfare.

The arrowhead may be classified as a variant of the lanceolate type (Figure 46); it is composed of a flat, lance-shaped blade without a midrib, or a very weak one, a contracting stem and a tang with a rectangular section that tapers to a rounded end. The edges are damaged and the shaft it was attached to has by nature disintegrated. According to Dardeniz's chemical analysis, it is made of unalloyed copper.[358] Arrowheads are major components of the bow and arrow, perhaps the most in demand weapon of the Late Bronze II used in hunting, warfare and rituals. They are ubiquitous in Late Bronze Anatolia both in material form and in

[357] Ehrich, "1935 Excavation Report for Tarsus-Gözlükule," 210.
[358] Dardeniz, "Chemical Analysis and Characterization of First Millennium B.C. Arrowheads from Tarsus," 55 (Table 6.1, Sample 77).

iconography.[359] Comparanda from Boğazköy-Hattusha are dated to Büyükkale III and IV(c or b).[360]



Figure 46. The Late Bronze IIa copper arrowhead from west of the paved street encircling the Late Bronze IIa monumental building in front and profile view

The final metal artifact from the Late Bronze IIa level at Section A, is the lead open ring (GE Inv. No: 37.10). Goldman published this artifact as Late Bronze II yet no visual record of it exist in her publication nor any record in the field diaries. From its inventory number, I suspect that it was possibly found from the earth dump either left from 1936 or the first day of excavation in 1937 as a bullae with the following inventory number (37.11) was described as such.[361] Further, Goldman published the depth of the find as circa 4.00 m and its location as the fill south of the LB IIa monumental building, therefore, I date this artifact to the Late Bronze IIa level. It did not survive to be included in the GSC, however, Goldman recorded that

[359] Woolley, *Alalakh. An Account of the Excavations at Tell Atchana in the Hatay, 1937-1949,* 282 (Plate LXXI, Ar. 7); Collon, "Pfeil und Bogen. B. In der Ikonographie.," 466.
[360] Boehmer, *Die Kleinfunde von Boğazköy,* 75, 105, 106 (Plate XII, 203; pl. XXVI, 814; pl. XXVII, 825, 826, 827).
[361] Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 7.

it was irregular with overlapping ends and measured a maximum of 1.7 cm which suggests to me that it may have been kept as scrap metal for use by a metal smith.

Now that I have presented all Late Bronze IIa artifacts from Section A, I will move onto those excavated from Section B located in the saddle of the mound.

5.3 Metal artifacts of the Late Bronze IIa level from Section B

The 11 metal artifacts unearthed from Section B are comprised of four tools (one needle, one sickle, one knife and one chisel), three weapons (two arrowheads and one spearhead), three fasteners for garments (two pins and one fibula) and one ring. All of these are copper-based objects.[362] The stratigraphic contexts from which these metal finds were excavated are as follows (Figure 47):

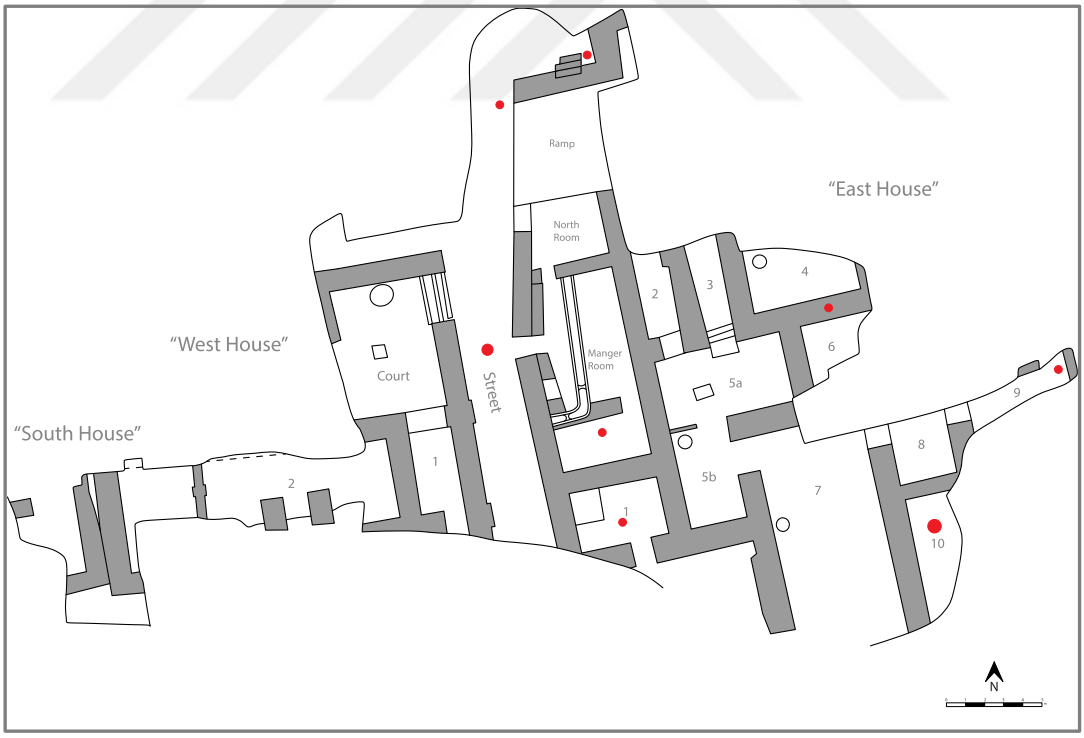


Figure 47. Diagrammatic plan of the Late Bronze IIa architectural remains in Section B with approximate find locations of 10 out of 11 metal artifacts indicated in red (After Goldman 1956, plan 23; drawn by Luka Koumari)

[362] 5 out of 11 copper-based artifacts were analyzed by either Kuruçayırlı and Özbal, Kuruçayırlı, or Dardeniz. The alloying contents of these artifacts will be referenced in due course.

The majority of the metal artifacts, 8 out of 11, were recovered from the building named "East House".[363] The remaining three, which are the chisel, one of the two pins and the ring were recovered from the 3 meter-wide street in between "East House" and "West House".

The metal artifacts from the "East House" consist of the sickle, the spearhead, the two arrowheads, the knife, the needle, the fibula, and the last of the two pins from Section B. Six out of 8 artifacts were excavated from specific rooms. Of these, two were found in excellent condition: the sickle from the Manger Room and the spearhead from Room 9. Room 10 yielded two artifacts, which are the knife and one of the arrowheads. The other arrowhead was likely excavated from Room 1, and the needle was found near the northern door entry of Room 6. The roll-headed pin was excavated from the "East House", however, its precise location was recorded neither in the final publication nor the field notebooks. The eighth and final metal artifact from the "East House", that is the fibula, was recovered from the northern entrance of the building.

The sickle (GE Inv. No: 36.760; Goldman fig. 423/15) was recovered from the "Manger Room" of the building within a storage place for fodder.[364] According to Cox, it was found with straws still adhered to the blade.[365] It is currently in the collection of the Tarsus Museum. According to the photograph in Goldman's final publication, it has a curved blade with a rhombic cross-section that tapers to a sharp point (Figure 48). The short tang projects from the curved blade in a 120º angle and is curved at end. The only other sickle excavated from Gözlükule is dated to the

[363] In the field notebooks, this building is referred to as the "Big House", however, here I maintain Goldman's designation of "East House".
[364] Cox, "1936 Excavation Report for Tarsus-Gözlükule," 270; Goldman, "Excavations at Gözlü Kule, Tarsus, 1936," 284-6 (Figure 44); Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 53, 281-2.
[365] Cox, "1936 Excavation Report for Tarsus-Gözlükule," 270.

Early Bronze II period and, according to Goldman, there were additional curved points that may have been fragments of sickle blades unearthed from Early Bronze I and Late Bronze II levels.[366]

As primary tools of agriculture, sickles are not only found in various domestic contexts including agricultural village households or urbanized family or institutional households but also in hoard and burial contexts as well. Our Gözlükule specimen here must be associated with an urban household, likely of an important official family, that could afford to own the sickle in valuable, metal form. The best parallel to the form of the blade is found in the *Level I* stratum of Tell Atchana, though it has a straight and riveted tang.[367] For comparison, sickles with curved tangs are known from various sites including Boğazköy-Hattusha (*Büyükkale IVc-d*) and Alişar in Central Anatolia, as well as Mersin-Yumuktepe in Cilicia and Tell Atchana (*Level VII*) in the Amuq.[368]



Figure 48. The Late Bronze IIa copper-based sickle from the Manger Room (After Goldman 1956)

[366] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 281-2.
[367] Woolley, *Alalakh. An Account of the Excavations at Tell Atchana in the Hatay, 1937-1949*, 285 (Plate XXIV, AT/258).
[368] Boehmer, *Die Kleinfunde Von Boğazköy,* 126, (Plate XXXVII, 1128, 1132); Von der Osten, *The Alishar Hüyük. Seasons of 1930-32. Part II*, 253 (Figure 189, e 2123); Woolley, *Alalakh. An Account of the Excavations at Tell Atchana in the Hatay, 1937-1949*, 285 (Plate XXIV, AT/39/228); Garstang, *Prehistoric Mersin*, 250 (Figure 158/12).

The spearhead (GE Inv. No: 38.1645; Goldman fig. 427/97) was found in the eastern end of Room 9, within the burnt fill above a step-like mudbrick feature.[369] Unfortunately, the room was partially excavated and was heavily disturbed by later intrusions (i.e. "War Trench" and "Sennacherib's wall").[370] It extends 5.50 meters east to west with only part of its east and west walls uncovered.

The spearhead was found in perfect condition and is currently located in the Tarsus Museum. According to its photograph and description in Goldman's publication, it is lance-shaped with a high, narrow and angular midrib (Figure 49). The haft is socketed and seems to have a ferrule at the end to be securely fitted into the, now disintegrated, shaft. Goldman also noted that it had two holes for attachment, though these are not detectible in the photograph. The socket must have been produced by hammering the flattened end into its conical shape.

According to Gernez, socketed spearheads began to be manufactured during the first half of the second millennium BCE in Mesopotamia and the Levant, and replaced their tanged predecessors.[371] This technological innovation is due to a few reasons: the socket allows flexibility in hafting the weapon and also provides a more secured attachment compared to the tanged spearhead which splits its shank. In Anatolia, the socketed type first appears in Late Bronze contexts, except for Kültepe-Kanesh, where first examples are found in graves dated to *karum* levels *III* and *IV*, as their contacts with the Near East were prominently strong.[372] In the Amuq valley, another region with close ties to its south and east, socketed types also emerge

[369] Hoskin Ehrich, "1938 Excavation Report for Tarsus-Gözlükule," 342, 342a; Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 55.
[370] Hoskin Ehrich, "1938 Excavation Report for Tarsus-Gözlükule," 342, 342a.
[371] Gernez, *L'armement en métal au Proche et Moyen-Orient: des origines à 1750 av. J.-C.*, 369; See "Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 292 (Figure 427/94 and 428/93)" for the Early and Middle Bronze tanged specimens.
[372] Yıldırım, "Weapons of Kültepe," 120 (cat. no. 278-83, p. 284-5); Von der Osten, *The Alishar Hüyük. Seasons of 1930-32. Part II*, 264 (Figure 291, e2323).

earlier: in *Levels VII* and *IV* at Tell Atchana.[373] Similar to Anatolia, in Cyprus, these artifacts appear during the Late Cypriot II period and remain in use during the 12th century BCE.[374]



Figure 49. The Late Bronze IIa copper-based spearhead from Room 9 (After Goldman 1956)

The two artifacts, that is the knife and one of the two arrowheads, must have been excavated from Room 10. According to Cox, the knife (GE Inv. No: 37.661; Goldman fig. 423/8) was recovered from the room under the modern "War Trench".[375] This is likely Room 10, which is the southeasternmost room of the building, as she also noted that "War Trench" was dug east of the southeast room of "East House". Among other recorded finds are two bronze pins, one red steatite biconvex seal with Anatolian Hieroglyphic inscription,[376] one red serpentine stamp seal[377] and bits of bronze including some adhered to a sherd.[378]

This 7.5 cm-long artifact, which Goldman identified as a possible razor, has a short and narrow blade which stems from a straight, long tang in a 120º angle (Figure

[373] Woolley, *Alalakh. An Account of the Excavations at Tell Atchana in the Hatay, 1937-1949*, 278 (Plate LXXI, Sp. 3).
[374] Karageorghis, *Ancient Art from Cyprus*, 55. In contrast, Karageorghis assumed the socketed spearhead had an Aegean origin.
[375] Cox, "1936 Excavation Report for Tarsus-Gözlükule," 233a.
[376] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 248 (Figure 401, 405/11).
[377] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 239 (Figure 394/32).
[378] Cox, "1936 Excavation Report for Tarsus-Gözlükule," 233a.

50).[379] As the cutting edge is located on the outer convex edge, I agree with Goldman's identification that it was a razor, likely used in precision work. Though its blade is very short, the length of the tang must have allowed it to be gripped securely and moreover, contemporary straight razors, which are folded into their handles or scales, are held in a similar angle when used. A larger iron knife with a similar straight, long tang, and a curved, though broken, blade from Boğazköy-Hattusha is dated to *Büyükkale II*.[380] Boehmer also interpreted this artifact as a razor, comparing it to the ones known from the Hittite period.[381] On the other hand, I would like to remark that both knives, our Gözlükule specimen and likely the Boğazköy-Hattusha parallel, are different in form than the rest of the razors and might have had a different function or technique of use as they have longer tangs and distinctly angled blades.



Figure 50. The Late Bronze IIa copper-based knife, likely a razor, from Room 10

One of the two arrowheads (GE Inv. No: 36.930; Goldman fig. 427/83) must have also been found in Room 10 as Cox noted that it was found in the room under the floor of the "War Trench".[382] It is barbed, one of which was found corroded and

[379] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 288 (8).
[380] Boehmer, *Die Kleinfunde von Boğazköy,* 146 (Plate XLVI, 1031B).
[381] Boehmer, *Die Kleinfunde von Boğazköy,* 146.
[382] Cox, "1936 Excavation Report for Tarsus-Gözlükule," 238b.

broken, with a long tang, round in section (Figure 51). The blade is flat or slightly rhombic with low and wide midrib in section. Comparanda from *Unterstadt* of Boğazköy-Hattusha is dated to *Büyükkale III* as well as an unstratified one.[383]

Two previous chemical analyses of the artifact which applied different techniques, resulted in slightly varying data. According to these, the arrowhead is either made of bronze with 2% tin[384] or of copper with arsenic, tin and zinc.[385] If the latter analysis was in fact accurate, the low amounts of various different metals indicates that the arrowhead was likely produced of scrap metal.



Figure 51. The Late Bronze IIa (bronze or arsenical copper) long tanged, barbed arrowhead from Room 10 in front and side view

The last of the two arrowheads (GE Inv. No: 36.1120; Goldman fig. 427/88), then addressed as an implement, may have been found in Room 1 since Cox recorded that it was found in fill earth over the southwest corner of the building.[386]

[383] Boehmer, *Die Kleinfunde von Boğazköy,* 106 (Plate XXVIII, 845, 848-9; pl. XXIX, 873).
[384] Kuruçayırlı, "Investigation of Metal Artifacts of Tarsus-Gözlükule from the Second and Third Millennia B.C.," 45 (Table 5.1, Sample 36.390); Kuruçayırlı and Özbal, "Tarsus, Gözlükule'den Yeni Metal Analiz Sonuçları ve Değerlendirmeleri," 54 (Tablo 2, 01/205).
[385] Dardeniz, "Chemical Analysis and Characterization of First Millennium B.C. Arrowheads from Tarsus," 53 (Table 6.1 Sample 4).
[386] Cox, "1936 Excavation Report for Tarsus-Gözlükule," 212.

Among the finds from this area is a white paste bead.[387] The arrowhead is lance-shaped and rhombic with very low, angular midrib in section (Figure 52). It has a straight stem and a bent tang, rectangular in section. It has a similar form to the Late Bronze IIb arrowhead with the GE inventory number 38.1614.[388] According to the chemical analyses by both Kuruçayırlı and Özbal and Kuruçayırlı, it is made of arsenical copper with 1.9% arsenic and contains 1% iron.[389] Comparanda for this type from Boğazköy-Hattusha are dated to *Büyükkale IVb* and *III* as well as three unstratified ones from *Unterstadt* and *Büyükkale*.[390]

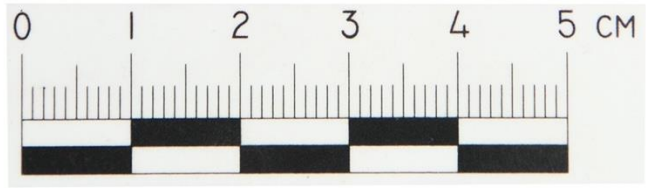


Figure 52. The Late Bronze IIa arsenical copper arrowhead from SW corner of the "East House"

The needle (GE Inv. No: 36.1087; Goldman fig. 430/151) may have been recovered from Room 6 since, according to Cox, it was found in the "East Room" of the building.[391] Of this "East Room", Cox recorded that the northern wall was

[387] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 339 (Figure 453/8.)
[388] See pages 148-49 of this thesis.
[389] Kuruçayırlı and Özbal, "Tarsus, Gözlükule'den Yeni Metal Analiz Sonuçları ve Değerlendirmeleri," 54 (Tablo 2, 01/211); Kuruçayırlı, "Investigation of Metal Artifacts of Tarsus-Gözlükule from the Second and Third Millennia B.C.," 45 (Table 5.1, Sample 36.1120).
[390] Boehmer, *Die Kleinfunde von Boğazköy,* 106-7 (Plate XXVI, 816; pl. XXVII 829; pl. XXX 876-8).
[391] Cox, "1936 Excavation Report for Tarsus-Gözlükule," 241.

recovered and only its south edge was found, while its floor was unearthed against the east face of the trench wall.[392]Apparently, the needle was found near a doorway located in the north wall of the room.

The artifact did not survive to be included in the GSC; however, Goldman published a photograph of it in her final publication. According to the visual, the needle is 10.3 cm long and has a small teardrop-shaped eyelet, most likely formed by folding the flattened end (Figure 53). It is the only needle recovered from the Late Bronze IIa level and is similar to its precursors. As the basic tool for sewing, needles are encountered in all building levels here at the mound of Gözlükule.[393]



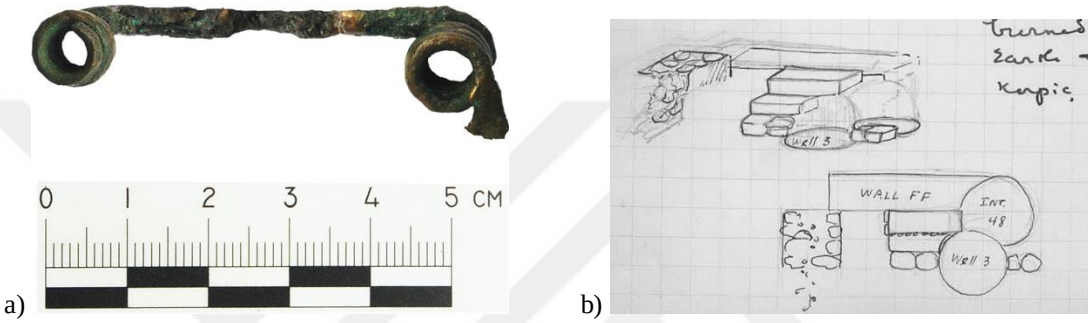
Figure 53. The Late Bronze IIa copper-based needle from Room 6 (After Goldman 1956)

The fibula (GE Inv. No: 37.833; Goldman fig. 432/245) must have been recovered from the northern entrance of the "East House" as Hoskin Ehrich recorded that it was found in debris, extending from the stepped entry of the building to the massive pier to its east, that ended at a hard, beaten floor level at a depth of 18.85 m.[394]

The fibula has a horizontal bow parallel to the pin, which is now missing, with coiled spring at both ends (Figure 54). The end of one coil flare to broken end which might have been the catch plate on which the pin was connected to. It

[392] Cox, "1936 Excavation Report for Tarsus-Gözlükule," 246.
[393] See the Late Bronze I needles on pages 73-4 of this thesis for further information.
[394] Hoskin Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 229, 231.

classifies into Blinkenberg's Type I and one of the earliest forms of Stronach's East Mediterranean type, also known as the "violin bow".[395] As mentioned, this type is considered to have developed from eyelet-pins in Europe which later spread to the Aegean, Cyprus, Anatolia and further east.[396] The only parallel in the east is from the cemetery at Hama, Syria and is dated between 12th and 11th century BCE (*Period I*).[397]



a) b)

Figure 54. a) The Late Bronze IIa copper-based fibula from the "East House" northern entrance b) Sketches of the northern entrance of the "East House" from the 1937 field notebook in three dimensional and plan view (Hoskin Ehrich 1937, 225)

The roll-headed pin (GE Inv. No: 36.907; Goldman fig. 431/199) must have been unearthed from the "East House" as Goldman published it as such.[398] Although, since the object is not recorded in the field notebooks, I will not comment further on its find location. It is similar to the two earlier Middle Bronze II roll-headed pins as well as the Late Bronze I one, however, the Late Bronze IIa specimen here has a straight stem (Figure 55).[399] It is one of the two roll-headed pins excavated from the Late Bronze IIa level here at Gözlükule: the other specimen is recovered from the

[395] Blinkenberg, *Fibules Grecques et Orientales*, 41 ff.; Stronach, "The Development of the Fibula in the Near East," 182-183.
[396] Alexander and Hopkin, "The Origins and Early Development of European Fibulae," 401.
[397] Riis, *Hama II-3*, 131-132 (Figure 166 B).
[398] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 295 (Figure 431/199).
[399] See pages 66-7 for the Middle Bronze II and pages 83-4 of this thesis for the Late Bronze I specimens and for further information on the function of the roll-headed pin and its comparanda.

subsequent Late Bronze IIb level in a pit context.[400] Further, Goldman also recorded six fragmentary pieces related to this type.[401] The recent TGK excavations also uncovered a roll-headed pin from Late Bronze II fill context, described as a yellow clayey matrix.[402]



Figure 55. The Late Bronze IIa roll-headed pin from the "East House" in front and side view

Three artifacts, that is the ring, the chisel and the first of the two pins from Section B, were recovered from the street between the two Late Bronze IIa buildings running in a N-S direction. According to Hoskin Ehrich, the copper-based ring (GE Inv. No: 38.15; Goldman fig. 432/261) was found in a fill earth above a floor sloping down northward at a depth of 18.00 m.[403] Apparently, the floor was located below the Early Iron Age Apsidal building, and was covered with burned material and ash.[404] This floor must correspond to the northern section of the LB IIa street as

[400] See page 166 of this thesis for the Late Bronze IIb roll-headed pin.
[401] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 295.
[402] Özyar, Ünlü and Pilavcı, "Recent Fieldwork at Tarsus-Gözlükule: The Late Bronze Age Levels," 60 (Figure 5-8b).
[403] Hoskin Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 198.
[404] Hoskin Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 198.

Goldman described it as a floor level sloping northward from a depth of 17.24 m. to 19.03 m., which fits Hoskin Ehrich's account.[405]

The ring is open with flat, splayed ends that once held a lump of iron as bezel, now disintegrated (Figure 56a). The drawing in the field notebook illustrates that the lump was found broken (Figure 56b). The ring is rectangular in section with rounded edges. Similar sized copper or bronze rings with open ends are known from Boğazköy-Hattusha, which are interpreted as earrings and are dated to *Büyükkale IVb* and *III*, and Alişar in Central Anatolia.[406] According to Kuruçayırlı's chemical analysis, the ring is made of copper with 4% iron.[407] The high level of iron, the highest recorded in Kuruçayırlı's entire dataset, must have been due to the disintegrated iron lump since the sample was taken from the end where it was once set. This could also explain the reason why the sample taken from the artifact appeared as an outlier to the main group in Kuruçayırlı's lead isotope analysis.



Figure 56. a) The Late Bronze IIa copper ring from the 3-meter street between the "East House" and the "West House" viewed in front and side b) The drawing of the artifact in the 1937 field notebook illustrating the, now disintegrated, lump of iron (Hoskin Ehrich 1937, 198)

[405] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 51.
[406] Von der Osten, *The Alishar Hüyük. Seasons of 1930-32. Part II*, 264 (Figure 294/d2779, d2142, Fig. 298/d2519); Boehmer, *Die Kleinfunde von Boğazköy*, 120 (Plate XXXV/1028, 1034, 1037-1038).
[407] Kuruçayırlı, "Copper Metallurgy in Cilicia and the Amuq in the Second Millennium BC: Insights into Aspects of Bronze Age Technology and Trade," 181, 306 (TGK 38.15). The results of analysis indicate that the ring also contained 8.8% zinc, however, Kuruçayırlı concluded that this was due to a contamination during the sampling process.

Finally, the chisel (GE Inv. No: 37.814; Goldman fig. 426/70) and the roll-headed pin (GE Inv. No: 37.836; Goldman fig. 431/200) must have been unearthed from the same street as Hoskin Ehrich recorded that they were found above the same floor level sloping down towards north to a depth of 18.10 m.[408] According to Goldman, they were found at a depth of 17.75 m.[409]

The chisel has a wide, flaring blade with a flat, double beveled cutting edge (Figure 57a). The shaft, which is rectangular in section and tapers to flat end, must have been fitted into the handle, now missing. The roll-headed pin has a straight stem that tapers to point and a head that is remarkably wider than the stem (Figure 57b).[410] Comparably, the only roll-headed pin with a head wider than its stem from Boğazköy-Hattusha is dated to *Büyükkale III*.[411] According to Kuruçayırlı's chemical analysis, both the chisel and the roll-headed pin are made of bronze, with 5.6%[412] and 4.4%[413] tin, respectively.



Figure 57. The Late Bronze IIa bronze chisel with a wide, flaring blade and the bronze roll-headed pin from the 3-meter street between the "East House" and the "West House" in front and side view

[408] Hoskin Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 199.
[409] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 291 (Figure 426/70), 295 (Figure 431/200).
[410] See the previously presented roll-headed pin for further information on the function of the roll-headed pin and its comparanda.
[411] Boğazköy, *Die Kleinfunde von Boğazköy*, 81, 94 (Plate XXII/520).
[412] Kuruçayırlı, "Copper Metallurgy in Cilicia and the Amuq in the Second Millennium BC: Insights into Aspects of Bronze Age Technology and Trade," 307 (TGK 37.814).
[413] Kuruçayırlı, "Investigation of Metal Artifacts of Tarsus-Gözlükule from the Second and Third Millennia B.C.," 45 (Table 5.1, Sample 37.836).

5.4 Conclusions

I have now presented all 38 metal artifacts that I have designated to the Late Bronze IIa level; 27 from Section A and 11 from Section B. These artifacts consist of nine tools, seven weapons, seven fasteners, twelve studs, one ring, one vessel and one scrap metal. Needless to say, they constitute merely a fragment of the metal objects used during a period when the urban landscape of Gözlükule drastically changed with the construction of (at least) three, partially excavated, large-scale buildings: one monumental at the summit and two sizeable in the lower saddle area of the mound. A large proportion of the metal artifacts were recovered inside of these sizeable buildings with well-built stone foundations and mudbrick-timber superstructure, however, the function of many of their rooms has not been understood since so little of their features were preserved in the aftermath of destruction likely followed by multiple lootings. In this section, my intention is to summarize the results of my study of the metal artifacts from the Late Bronze IIa level and propose a new interpretation for their function, use and discard as well as for the perplexing and impressive structures associated with these important finds.

My analysis revealed that the large Late Bronze IIa monumental building at the summit of the mound yielded 25 metal objects consisting of a combination of tools, weapons, garment fasteners, ornaments, and a cultic vessel. Previously, Goldman had published seven metal artifacts recovered from this building of which two, that is a knife and a pin, in fact, belong to the Late Bronze IIb level.[414] Therefore, as presented in this chapter, the actual number of metal artifacts excavated from the LB IIa monumental building is five times more than the published material.

[414] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 288, 295 (Figures 423/5, 430/178). See pages 137-38 and 153-154 in chapter six of this thesis for these two artifacts that I have now designated to the Late Bronze IIb level.

One-fifth of the metal artifacts found within the monumental building consists of tools. Three of the five tools, the awl, the chisel and the leather knife, were recovered from the rooms located on the western side of the court (Room T5, T7 and T8). These small tools must have been left inside the rooms at the time of the building's destruction, and then concealed within the debris. It is plausible that some of these western rooms perhaps formed a small workshop area for institutionalized crafts including leatherworking, stonemasonry or carpentry within the building. Comparably, the largest functional category of small finds, at around 30% of the entire assemblage, excavated from the Upper City Temple District (*Tempelvierteln der Oberstadt*) in Boğazköy-Hattusha is comprised of tools.[415] For instance, in particular, while tools in general are copiously found in Temples 7 and 9, equipment for textile and leather processing are found in Boğazköy 9 and 10 in large quantities.[416]

Three-fifths of the metal artifacts recovered from the monumental building are clothing and/or equipment ornaments: the three pins and the 12 ornamental studs, all of which were found in the longitudinal, L-shaped hall of Room T15, a space that is reminiscent of the inner pillared halls of the Boğazköy temples.[417] These, and perhaps the now disintegrated clothing or equipment they were once attached to, must have been left unintentionally and remained unnoticed in the destruction debris. Likewise, jewelry and ornaments are commonly found among the inventories of the Upper City temples at Boğazköy-Hattusha.[418]

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[415] Herbordt, "Die Tempelinventare aus der Oberstadt von Boğazköy-Hattusha: Hethitische Tempelanlagen als Kultstätten und Wirtschaftseinheiten," 178 (Figure 4).
[416] Herbordt, "Die Tempelinventare aus der Oberstadt von Boğazköy-Hattusha: Hethitische Tempelanlagen als Kultstätten und Wirtschaftseinheiten," 184 (Figure 10). To note, in this study, only temple complexes with more than 50 excavated objects were considered.
[417] Müller-Karpe, "Einige Archaologische Sowie Archaoastronomische Aspekte Hethitischer Sakralbauten," 337 (Figure 3).
[418] Herbordt, "Die Tempelinventare aus der Oberstadt von Boğazköy-Hattusha: Hethitische Tempelanlagen als Kultstätten und Wirtschaftseinheiten," 184 (Figure 10).

Finally, let me refer to the abundance of slags and clay crucible fragments excavated from the monumental building. In the field notebooks, Hoskin Ehrich recorded that the southern rooms of the building yielded "bits of shapeless bronze" and "traces of heavily burned clay vessels, et cetera, resembling crucibles".[419] Deriving from her remarks, Goldman concluded that the Rooms T10-T12 were for bronze work.[420] The slag and crucibles that Hoskin Ehrich found and recorded undoubtedly indicate that these three rooms were used as spaces for secondary smelting, refining and casting metal. Therefore, since these complex operations require pre-planned facilities, part of the monumental building must have been designed to house metal workshops. The southern drain, which extended from Room T1, that is interpreted as a bathroom, and went under the street level and towards Room T14, may have supplied water management for working and casting metal, though its eastern limit is unknown as Hoskin Ehrich and Ehrich did not excavate neither the drain nor the workshop rooms to their full extent.

According to Hoskin Ehrich's notes, the best preserved crucible was excavated from the third room from the east, that is Room T12, and had "a complete profile and adhering bits of bronze inside".[421] This clay object must correspond to the only published crucible from the final publication which, according to Goldman, was in the shape of an open bowl with a flat base and flaring sides.[422] Unfortunately, the crucible has not survived and, therefore, cannot be subjected to further analysis.

[419] Hoskin Ehrich, "1938 Excavation Report for Tarsus-Gözlükule, 2-3 M Levels," 240.
[420] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 50.
[421] Hoskin Ehrich, "1938 Excavation Report for Tarsus-Gözlükule, 2-3 M Levels," 240.
[422] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 306 (Figure 436/11).

Furthermore, Hoskin Ehrich noted that a fragmentary clay "jeweler's mold" was excavated south of the workshop rooms at a depth of 4 meters (Figure 58).[423] Based on this find, Goldman stated that Room T11 of the workshop rooms may have been "dedicated to fine craftsmanship in gold and other precious metals".[424] From this statement, I discern that Goldman was inclined to distinguish workrooms dedicated to precious metals as opposed to base metals, although, it is not clear to me why she chose Room T11 in particular.

The clay "jeweler's mold" reveals the various types of objects, whether of base or precious metals, once produced here, and therefore is worth reconsidering here again: It has two casting surfaces on opposite sides with negatives of three objects on each side, two of which are partially preserved due to the broken end. In other words, the mold would be used to produce six objects as many times as was needed. The dowel-hole, which also acts as the central perforation for one of the ornaments, and the pour channels indicate that this was a bivalve mold. Another dowel-hole may have been located on the missing end since doweled molds have multiple in general. The missing half which could have been either molded back or flat, must have had corresponding dowel-hole and pour channels. On one side, are the negatives of a perforated flat disk, a round conical object with a perforated depression in the center and one object in the shape of three stylized entities on a podium surmounted by a winged sun disk. The perforated flat disk is 0.4 cm wide and 1.3 cm in diameter. The plain form may have served a variety of purposes. The conical object, which is partially preserved, is 1.5 cm in diameter and is decorated with a five pointed star surrounded by a hatched line and knobs in between the

[423] Hoskin Ehrich, "1938 Excavation Report for Tarsus-Gözlükule, 2-3 M Levels," 233.
[424] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 50.

points. It is similar to the negatives of two objects from the two unprovenanced Early Bronze molds examined by Jeanny V. Canby (1965), one found by a tourist and the other from the Louvre Museum (AO 5685).[425] Canby suggested that it was pegged to another object to serve either as an amulet or a decoration and that it recalled Early Bronze Anatolian whorls in terms of decoration.[426] If conical on the missing half, it may have also been a conical-shaped bead. The third object appears to depict a very stylized version of an iconographic scene likely adopted into the Hittite art and imagery during the Empire period: a central divine figure flanked by two lesser supporting figures beneath a winged sun disk such as in the ivory Megiddo plaque.[427] The loop over the winged sun disk may have been used for suspension. The object is 2.2 cm in height and 2 cm in width, and must have been worn as an amulet pendant for protection.

On the other side of the mold, are the negatives of a closed ring, a rounded object decorated with a hatched line on the outer border and an object in the shape of a stylized figurine. The ring, which is 0.3 cm thick and is 2.4 cm in diameter, was likely worn as jewelry. The negative of the rounded decorated object is only partially preserved and may have been for a small pendant or amulet. The third object was likely a small amulet pendant of the same deity depicted on the opposite side. The figure is heavily stylized in a static, standing pose and has pronounced nose and ears, wearing a long robe decorated with hatches. To compare, the negative visually corresponds to the exquisite rock crystal figurine found in a disturbed fill context

[425] Canby, "Early Bronze 'Trinket' Moulds," 48, 56 (Plate IX/b, e).
[426] Canby, "Early Bronze 'Trinket' Moulds," 48.
[427] Alexander, "Šaušga and the Hittite Ivory from Megiddo," 164 (Figure 2).

from Section B which has similar facial features with the pronounced nose and ears and a similar body posture with arms held together, bent at the elbow.[428]



Figure 58. The clay "jeweler's mold" found south of the workshop rooms T10-12 of the LB IIa monumental building

The architecture of the LB IIa monumental building at Tarsus-Gözlükule has been paralleled with sacred temple buildings in the Hittite heartland. The inventory of metal and metallurgical objects from the building do support this comparison. Since temples played a central role in the Hittite economy as demonstrated in the capital, the presence of metal and other institutional workshops within the building, if identified as a temple, would be expected. The abundance of tools and ornaments from the wing rooms is comparable to the distribution of objects in the Boğazköy temples. The absence of any documents or cultic objects, excluding the cultic copper-based vessel, if any left, may also be related to the fact that no *cella* or *anti-*

[428] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 342-344 (Figure 456/a-d); Hoskin Ehrich, "1935 Excavation Report for Tarsus-Gözlükule," 104-105.

cella were uncovered during the excavations. On the other hand, a similar object distribution may be expected from palatial structures that occupy a similar role in the political and economic spheres. In any case, through a metallurgical perspective, there is clear evidence of local metal production at a high-rank institutional level based in the monumental building.

The architecture at Section B reflects households of importance, most likely residences of administrative officials. The "East House" at the lower saddle of the mound yielded eight metal artifacts which are comprised of tools, weapons and garment fasteners. These metal artifacts must have belonged to these households of officials probably as their personal possessions. The copper-based sickle and spearhead, found in good condition, demonstrate the wealth of the households owning tools and weaponry in valuable metal form. The metal artifacts must have been unintentionally left in the building only later to be concealed within the destruction debris.

Of the weapons from both Section A and B, two of the arrowheads may have been surviving traces of violent combat during the destruction of the Late Bronze IIa buildings since, according to my research for this thesis, they were found in damaged condition on the paved street at the summit and inside Room 10 of the "East House" as a single-find.[429] Some, on the other hand, must have been kept as scrap metal and some were personally stored. Two of the three weapons from the monumental building found in Rooms T7 and T8 were clipped and, hence, kept as scrap, possibly to be re-used in the workshops within the building. The spearhead from the "East House" must have been found as stored since it was in great condition.

[429] A similar approach was employed in examining the arrowheads in Ugarit-Ras Shamra. See Yon, "The End of the Kingdom of Ugarit," 117.

Finally, although their presence is not supported with archaeological evidence, I would also expect the existence of some private, small-scaled metal workshops associated with official households who must have also operated on individual lines of production and exchange. While Section B residential architecture in as much as it was dug does not reflect such workshops, they likely existed in Tarsus-Gözlükule, perhaps also within the unexcavated lower town area. All in all, the metal artifacts of the Late Bronze IIa level illustrate that craftsmanship and production flourished during this period as they were institutionally supervised under a Hittite administration and were likely further supported by private households established also in the central and elevated part of the town not far from the monumental building.

CHAPTER 6

A CONTEXTUAL ANALYSIS OF THE METAL ARTIFACTS FROM THE LATE BRONZE IIB LEVEL

In this chapter, I re-present the metal artifacts from the Late Bronze IIb level. As in the previous two chapters, the aim here is to depict the metal artifacts within their context in a narrative manner. For this purpose, I present the metal artifacts from the Late Bronze IIb level in two sections, one dedicated to those from Section A and the other to those from Section B. The presentation of the metal artifacts is organized according to their find location: first, those retrieved from pits followed by those recovered from fill contexts. Afterwards, in the third section, I present new material evidence for metal production from trash pits and fill debris of the Late Bronze IIb level. Finally, in the fourth and last section, I summarize the additions and modifications that I have made regarding the metal artifacts from the Late Bronze IIb level compared to Goldman's account and offer a new contextual interpretation concerning the use and production of metals in the light of these contributions.

The 34 metal artifacts recovered from the Late Bronze IIb level are comprised of 16 tools (three awls, two needles, four chisels and five knives), nine weapons (eight arrowheads and one spearhead fragment), three garment fasteners (two pins and one fibula), two pieces of jewelry (two rings and one bead), one hook, one ornament, one foot of a vessel, one votive figurine and one model wheel. Of these artifacts, 20 are uncovered from Section A and 14 are from Section B. Evidence from walls and pits from both areas suggest that there were multiple building phases of Late Bronze IIb occupation, though I will not attempt to classify

all metal artifacts into these phases since only a small number of the artifacts are recorded with this information in the field diaries.[430]

6.1 Metal artifacts of the Late Bronze IIb level from Section A

The 20 metal artifacts excavated from Section A consist of nine tools (two needles, three chisels, three knives and one awl), seven weapons (six arrowheads and one spearhead fragment), two pieces of jewelry (one ring and one bead) one pin and one foot of a vessel. All of these, except for the bead, which is made of gold, are copper-based.[431] The stratigraphic contexts from which these metal finds were excavated are as follows (Figure 59):

Nine out of 20 artifacts were recovered from seven pits dispersed around the Late Bronze IIb architectural remains (Intrusion 35, Intrusion 36/4, Intrusion 37/4, Intrusion 36/10, Intrusion 38/22 and "The Great Pit" which consists of two intercepting pits). All of these seven pits, except for two intercepting ones that is located to the east and yielded three metal artifacts,[432] are located west of the published Late Bronze IIb architectural remains. Three of these pits (Intrusion 37/4 and "The Great Pit") have also yielded significant evidence for metal processing including slag and crucible fragments. I will present these features, together with three more pits, and further evidence from fill debris in detail in the third section of this chapter.

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[430] Yalçın, "A Re-Evaluation of the Late Bronze to Early Iron Age Transitional Period: Stratigraphic Sequence and Plain Ware of Tarsus-Gözlükule," 209 (Figure 4); Özyar, Ünlü and Pilavcı, "Recent Fieldwork at Tarsus-Gözlükule: The Late Bronze Age Levels," 55.

[431] 12 out of 19 copper-based artifacts were analyzed by either Kuruçayırlı or Dardeniz. The alloying contents of these artifacts will be referenced in due course.

[432] These two intercepting pits, referred to as "The Great Pit" in the field notebook, which are further discussed in pages 144-46, are not drawn on plan since their precise dimensions are not known. On the other hand, the approximate location of the artifacts are marked on the southeastern corner of the LB IIb monumental building's inner court.

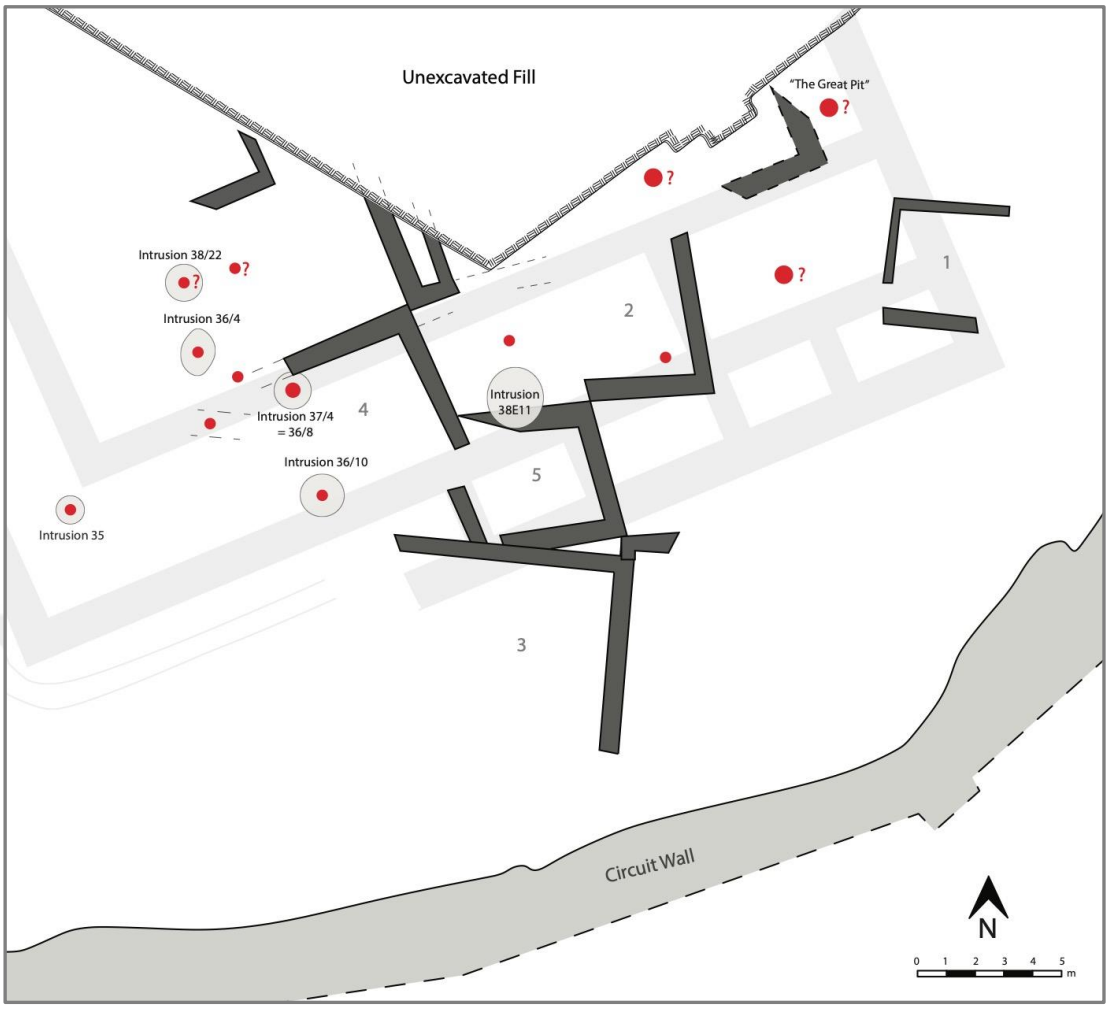


Figure 59. Diagrammatic plan of the Late Bronze IIb remains superimposed on the LB IIa monumental building with approximate find locations of 18 out of 20 metal artifacts indicated in red (After Goldman 1956 plan 22; drawn by Luka Koumari)

Eleven out of 20 artifacts were recovered from fill contexts associated with the Late Bronze IIb level. Of these, one was likely within a partially excavated structure named Unit 2, two were found east and west of Unit 2, possibly in outdoor contexts, and three were recovered below wall fragments west of Unit 4. The remaining three were recorded in the field notebooks to be excavated above the Late Bronze IIa destruction debris.

The nine metal artifacts found as discarded inside pits consist of one of the three knives, one of the two rings, the two needles, three of the six arrowheads, the foot of vessel and one of the three chisels from Section A.

Of these metal artifacts, the knife (GE Inv. No: 35.1699; Goldman fig. 423/5) was recovered from an ash pit (Intrusion 35) located west of the excavated Late Bronze IIb remains as Ehrich noted that the pit cut the western section of Room T15 of the LB IIa monumental building.[433] Ehrich did not provide a drawing or an inventory number of the artifact, though, this is the only knife recorded to be excavated in the season of 1935, and according to Goldman's catalog system, the first two digits of an artifact's inventory number signifies the year it was found.[434] In the final publication, only a single Late Bronze knife has an inventory number that begins with 35 (GE Inv. No: 35.1699; Goldman fig. 433/5) and in the GSC, there are no other unpublished artifacts that fit in this category. Therefore, the artifact with the 35.1699 inventory number must be the knife recorded in Ehrich's 1935 field notebook.

The artifact has a curved blade with a convex cutting edge and slightly concave back that tapers straight towards the now broken tip (Figure 60). The tang, also broken, has a circular section. The size and form suggest it was used as a tool, perhaps a razor, rather than an offensive weapon. According to Dardeniz who classified the artifact as an arrowhead, it is made of unalloyed copper.[435] Similar knives with concave backs are known in Boğazköy-Hattusha from *Unterstadt I*.[436]

[433] Ehrich, "1935 Excavation Report for Tarsus-Gözlükule," 211.
[434] The only exception to this rule that I have come across are a few metal artifacts recorded in the 1937 field notebooks that must have been inventoried a year later since their inventory numbers begin with 38.
[435] Dardeniz, "Chemical Analysis and Characterization of First Millennium B.C. Arrowheads from Tarsus," 53 (Table 6.1, Sample 2).
[436] Boehmer, *Die Kleinfunde von Boğazköy,* 78 (Plate XVI, 271, 272, 272a).



Figure 60. The copper knife from a Late Bronze IIb ash pit (Intrusion 35) located west of the published Late Bronze IIb settlement remains

The ring (GE Inv. No: 36.751) was excavated from an ash pit (Intrusion 36/4) also located west of the published Late Bronze IIb structures.[437] The pit is circa 1.5 m long with a top depth of 2.67 m., and was cut into the Late Bronze IIa monumental building's court.[438] Since it is cut into the Late Bronze IIa layer and the pottery from the pit is recorded as Cilician LBA Plain Ware, the pit must be dated to Late Bronze IIb.[439] Among the finds were two bullae with Anatolian Hieroglyphic inscription,[440] two unpublished copper-based pin fragments, a bone ring fragment, a perforated stone object and few metal oddments.[441]

The artifact is a closed ring made of a flat strip of metal (Figure 61). The width of the band is not equal on all sides as the band has irregular edges. Grooves on one side of the coarse outer face seem to imply some residue of decoration, though now corroded. While Goldman published this artifact as a hair ring, it may have also been a finger ring as its outer diameter of 2.3 cm, although a bit large, is suitable to be worn on the finger according to average ring sizing. One similar

[437] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, plan 22.
[438] Ehrich, "1936 Excavation Report for Tarsus-Gözlükule," 27.
[439] Ehrich, "1936 Excavation Report for Tarsus-Gözlükule," 29.
[440] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 247 (Figure 401/3, 4 and Figure 405/3, 4).
[441] Ehrich, "1936 Excavation Report for Tarsus-Gözlükule," 26-9.

example, also identified as a finger ring, from Boğazköy-Hattusha is dated later, to *Büyükkale I*.[442]



Figure 61. The copper-based finger ring from a Late Bronze IIb ash pit (Intrusion 36/4) located west of the published Late Bronze IIb settlement remains viewed in front and side

The needles (GE Inv No: 37.471, 37.476; Goldman fig. 430/150, 149) were excavated from a deep trash pit (Intrusion 37/4[443]) cut into the north inner wall of Room T15 of the LB IIa monumental building.[444] Because it cuts the monumental building and Ehrich noted that it "probably continued from the 2M level" which is the Late Bronze IIb occupation level, I suggest that the pit belongs to the Late Bronze IIb layer.[445] Since it is detected within Unit 4, it must have post-dated this Late Bronze IIb structure and, hence, of the later phase of the Late Bronze IIb occupation. It has a diameter of 1.35 meters and, if dug from the 2M level, must have been circa 3 meters deep.[446]

[442] Boehmer, *Die Kleinfunde von Boğazköy,* 121 (Plate XXXV, 1057).
[443] Ehrich noted that Intrusion 37/4 most likely corresponded to Intrusion 36/8 previously detected during the earlier 1936 excavation season. Therefore, the location of the pit in the plan on Figure 59 of this thesis is based on the location of this pit since Intrusion 37/4 was not clearly illustrated in any of the sketch plans from the field notebooks.
[444] Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 58, 79.
[445] Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 58, 60.
[446] Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 60.

Intrusion 37/4 is also one of the pits that has yielded evidence from metal processing, to be discussed in the third section of this chapter. To note, this pit is deeper than average for the Late Bronze II level.

The two needles are similar in form and size; both are long, slender and have small tear-shaped eyelets formed by folding the flattened end back on the head (Figure 62). The tip of one needle is slightly bent. They are similar to two Late Bronze I needles presented in the second section of the chapter four.[447] According to Kuruçayırlı's chemical analysis, one of the needles (GE Inv. No: 37.471) is made of unalloyed copper.[448]

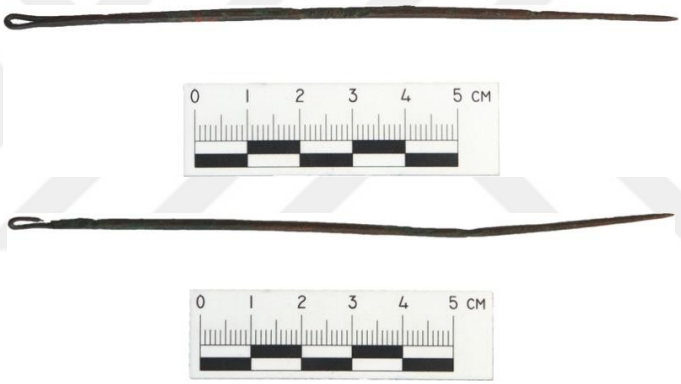
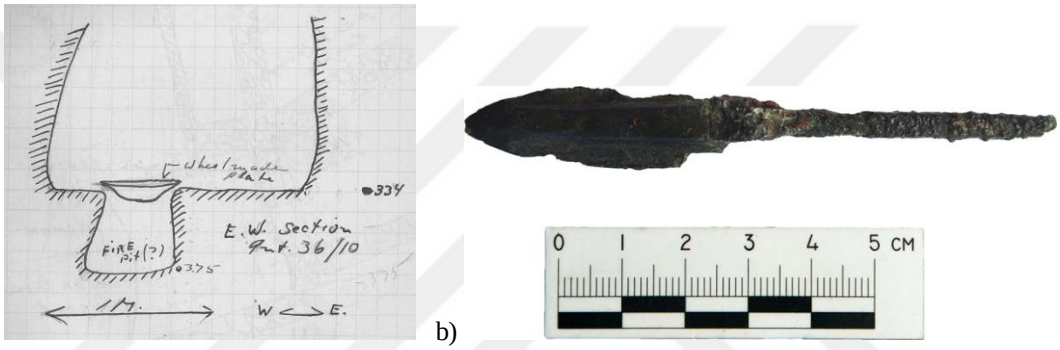


Figure 62. The copper needles from a Late Bronze IIb pit (Intrusion 37/4) (top: 36.471 bottom: 36.476)

The arrowhead (GE Inv. No: 36.732; Goldman fig. 427/85) was found from the pit (Intrusion 36/10) southwest of Unit 2, sunk into the south wall of Room T15 of the LB IIa monumental building, along with another unpublished arrowhead (GE Inv. No: 36.736).[449] To note, inside this circa one meter deep pit, another smaller pit full of ash was found covered on top by a complete plate of the so-called "Plate

[447] See pages 73-4 of this thesis for the two Late Bronze I needles and further information.
[448] Kuruçayırlı, "Investigation of Metal Artifacts of Tarsus-Gözlükule from the Second and Third Millennia B.C.," 44 (Table 5.1, Sample 37.471).
[449] Ehrich, "1936 Excavation Report for Tarsus-Gözlükule," 60-61.

Ware", now referred to as Cilician LBA Plain Ware**,** at a depth of 3.34 m. (Figure 63a).[450] Ehrich interpreted the feature as a fire pit. The arrowhead from the pit is flat with wide, sharp-cornered midrib in section and has a long tang, rectangular in section (Figure 63b). Because the lower edges of the blade are damaged and corroded, whether it was barbed or not cannot be determined. According to previous chemical analyses by Kuruçayırlı and Özbal, the arrowhead is made of bronze with 4.3% tin.[451]



a) b)

Figure 63. a) Sketch drawing of the fire (?) pit (Intrusion 36/10) from the field notebooks (Ehrich 1936, 64) b) The bronze arrowhead with long tang from the Late Bronze IIb pit (Intrusion 36/10)

The zoomorphic foot of a vessel (GE Inv. No: 38.1623; Goldman fig. 433/272) was excavated from a pit (Intrusion 38/22) located northwest of Unit 2 as it was cut into the northwest section of the court of the LB IIa monumental building.[452] The pit was not drawn in sketch plans from the field notebooks, however, Hoskin Ehrich recorded that it was located southeast of another pit (Intrusion 38/20) which he illustrated in plan (Figure 64a).[453] The pit is recorded at a depth of 3.12 meters yet whether the elevation reflected its opening or base level is not clear, although the

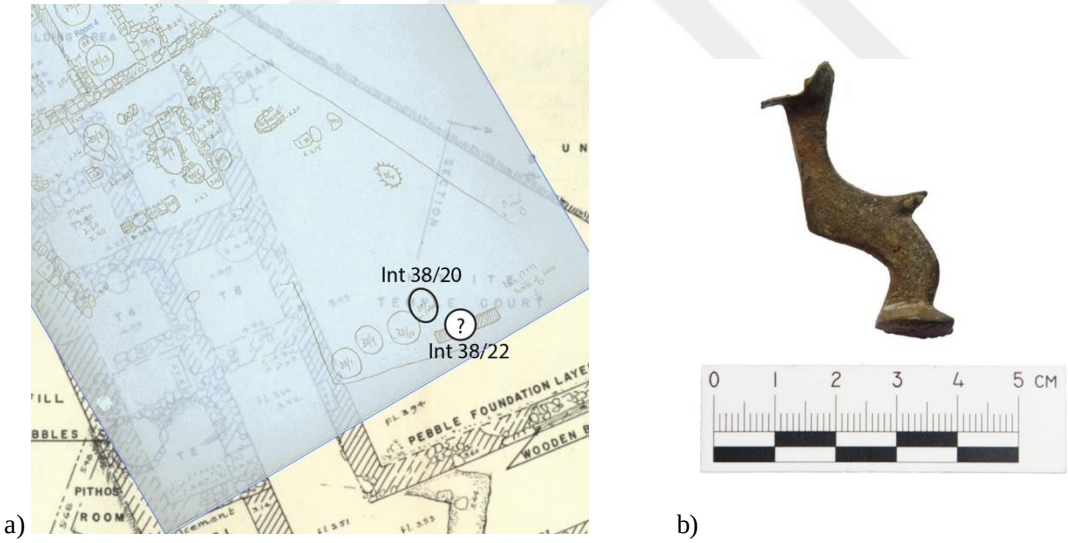
[450] Ehrich, "1936 Excavation Report for Tarsus-Gözlükule," 64.
[451] Kuruçayırlı, "Investigation of Metal Artifacts of Tarsus-Gözlükule from the Second and Third Millennia B.C.," 45 (Table 5.1, Sample 36.732); Kuruçayırlı and Özbal, "Tarsus, Gözlükule'den Yeni Metal Analiz Sonuçları ve Değerlendirmeleri," 54 (Tablo 2, 01/213).
[452] Hoskin Ehrich, "1938 Excavation Report for Tarsus-Gözlükule, 2-3 M Levels," 115-116.
[453] I have found the sketch plan where the mentioned pit is present in an unpublished document containing typewritten copies of parts of the field notebooks.

former is more likely.[454] Further, among the finds, Ehrich noted an unpublished copper-based chisel-like tool.[455]

The vessel foot is in the shape of an animal's leg (Figure 64b). The angular curvature of the hollow upper end suggests it may have also been attached to a stand rather than the body of the vessel itself. The circular base represents the foot of the animal which is turned outwards from the vessel and has a knobbed texture in the front and bottom. There is an angular protrusion on the back of the leg, anatomically reminiscent of the fetlock, and a spur in the front curved upward. While the incorporation of zoomorphic elements into vessels have a long history going back to its ceramic precedents, the earliest metal comparanda for zoomorphic vessels stands are the Early Dynastic specimens from the Near East.[456] Various copper supports adorned with male figurines in the nude from Khafaje in the Diyala region also have stylized foots comparable to our Gözlükule specimen.[457] In addition, a metal tripod stand with zoomorphic legs is excavated from Tell Atchana in the Amuq, most likely dated to *Levels IV* or *V,* foreshadowing later examples of Urartian cauldron tripod stands from Altın Tepe and the Neo-Assyrian vessel stands from the North-West Palace in Nimrud.[458] That the Gözlükule specimen was found detached from the main piece in a pit indicates that the foot may have been all that had remained of a broken vessel stand at the time it was discarded.

[454] Hoskin Ehrich, "1938 Excavation Report for Tarsus-Gözlükule, 2-3 M Levels," 126.
[455] Hoskin Ehrich, "1938 Excavation Report for Tarsus-Gözlükule, 2-3 M Levels," 115-116.
[456] Muscarella, *Bronze and Iron: Ancient Near Eastern Artifacts in the Metropolitan Museum of Art*, 333.
[457] Frankfort, *Sculpture of the Third Millennium B.C. from Tell Asmar and Khafājah,* 41 (Plate 98-103); Frankfort, *More Sculpture from the Diyala Region,* 8 (Plate 95).
[458] Woolley, *Alalakh. An Account of the Excavations at Tell Atchana in the Hatay, 1937-1949,* 277 (Plate LXXIV, AT/37/8); Barnett and Gökçe, "The Find of Urartian Bronzes at Altın Tepe, Near Erzincan," 121-123 (Plate XIIII-XIV); Barnett, "Layard's Nimrud Bronzes and Their Inscriptions," 1-2 (Plate I/3-4).

The material composition of the artifact is intriguingly unusual. According to Kuruçayırlı's chemical analysis, it is made of a unique copper-alloy with 8.6% tin, 10.2% lead and 11.1% zinc.[459] Kuruçayırlı noted that the only parallel to this composition that he encountered was a bracelet from Mersin-Yumuktepe (1.8% tin, 5% lead and 5% zinc) which has been previously analyzed by Esin.[460] In addition to this, there are two late third millennium BCE blades from the site of Altyndepe in Turkmenistan that contain 6% tin, 6-16% zinc and 8-12% lead.[461] This peculiar alloy composition indicates a deliberate decision, perhaps to create a particular visual appearance akin to gold, particularly with the incorporation of zinc. Since the artifact's function is to support vessels, the lead must have been included to increase the overall weight and, hence, to strengthen and stabilize the feet.



a) b)

Figure 64. a) The sketch plan from an unpublished document (colored in blue) superimposed on Goldman's Late Bronze IIa plan illustrating the proposed location of Intrusion 38/22, southeast of Intrusion 38/20, in the court of the Late Bronze IIb monumental building (After Goldman 1956, Plan 22) b) The copper alloy foot of a vessel from the Late Bronze IIb pit (Intrusion 38/22)

[459] Kuruçayırlı, "Investigation of Metal Artifacts of Tarsus-Gözlükule from the Second and Third Millennia B.C.," 45, 52 (Table 5.1, Sample 38.1623). This alloy is also referred to as leaded gunmetal. See Thornton, "Of Brass and Bronze in Prehistoric Southwest Asia," 123 (Figure 1).
[460] Esin, *Kuantitatif Spektral Analiz Yardımıyla Anadolu'da Başlangıcından Asur Kolonileri Çağına Kadar Bakır ve Tunç Madençiliği*, Sample 17917.
[461] Thornton, "Of Brass and Bronze in Prehistoric Southwest Asia," 126, 128 (Table 1).

Three artifacts, the chisel (GE Inv. No: 38.1226) and two arrowheads (GE Inv. Nos: 38.1627, 38.1619; Goldman fig. 427/81, 91), were recovered from two intercepting, large trash pits most likely located north of Unit 1 and 2 since Hoskin Ehrich recorded that these were cut into the southeastern section of the LB IIa Court (Figure 65a).[462] Initially regarded as a single large pit, they were later understood to be multiple pits cutting each other (unidentified in the notebooks) and therefore referred to as "The Great Pit".[463] The pits yielded copious amounts of the so-called Plate Ware, that is Cilician LBA Plain Ware.[464] Furthermore, among the recorded finds from the pits are "bits of bronze slag" which, once again, evidences metal processing or production. Although the sketch drawing illustrates as if the "Great Pit" belongs to an earlier stratum, Hoskin Ehrich noted that this was caused by the surrounding fill earth accumulating into the hollow area created for these features.[465] Furthermore, smaller pits from the later phase of the Late Bronze IIb occupation were also sunk into the "Great Pit" which suggests that the artifacts recovered from the "Great Pit" may have been be associated with the earlier phase of the Late Bronze IIb level.[466]

The chisel has a short, double beveled, flaring blade with a rounded cutting edge and a flat butt rectangular in section (Figure 65b). It is similar to the only Late Bronze I specimen excavated here at Gözlükule.[467] As mentioned before under chapter four, the stocky and flaring blade suggests that the chisel was used for wasting out large areas in working wood, stone or metal as opposed to narrow

[462] Hoskin Ehrich, "1938 Excavation Report for Tarsus-Gözlükule, 2-3 M Levels," 159-60. I have not included the pits in my Late Bronze IIb plan as their precise size is not provided in the field notebooks.
[463] Hoskin Ehrich, "1938 Excavation Report for Tarsus-Gözlükule, 2-3 M Levels," 148-50, 162.
[464] Hoskin Ehrich, "1938 Excavation Report for Tarsus-Gözlükule, 2-3 M Levels," 150.
[465] Hoskin Ehrich, "1938 Excavation Report for Tarsus-Gözlükule, 2-3 M Levels," 162.
[466] Hoskin Ehrich, "1938 Excavation Report for Tarsus-Gözlükule, 2-3 M Levels," 164.
[467] See pages 74-5 in the second section of chapter four for the Late Bronze I specimen.

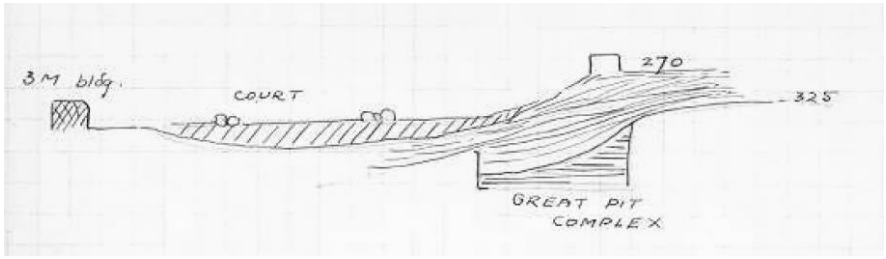
chisels. It is a specimen of Boehmer's Type Ib with comparanda from *Büyükkale IV* and *III* at Boğazköy-Hattusha.[468] According to Kuruçayırlı's chemical analysis, it is made of bronze with 6.2% tin.[469]

The two arrowheads are formally different except that both are tanged. One of the arrowheads (GE Inv. No: 38.1619) is lance-shaped and rhombic in section with rounded shoulders, a contracting stem and a tang rectangular in section (Fig. 64c). In terms of blade form, it is similar to the Late Bronze II arrowhead with the inventory number 38.21.[470] According to Kuruçayırlı's chemical analysis, it is made of unalloyed copper.[471]

The other arrowhead (GE Inv. No: 38.1627) is barbed and rhombic with low, wide midrib in section with a long, straight stem and a short tang tapered to point (Fig. 64d). It has no exact parallels at Gözlükule, however, there is an unstratified specimen from Boğazköy-Hattusha with longer barbs and tang.[472] According to Kuruçayırlı and Dardeniz's analyses, it is made of bronze with 3.8-6.5% tin.[473]

[468] Boehmer, *Die Kleinfunde von Boğazköy,* 76 (Plate XIII-XIV, 209, 219, 226, 229, 231).
[469] Kuruçayırlı, "Copper Metallurgy in Cilicia and the Amuq in the Second Millennium BC: Insights into Aspects of Bronze Age Technology and Trade," 307 (TGK 38.1226).
[470] See catalogue #117 in the appendix of this thesis.
[471] Kuruçayırlı, "Copper Metallurgy in Cilicia and the Amuq in the Second Millennium BC: Insights into Aspects of Bronze Age Technology and Trade," 307 (TGK 38.1619).
[472] Boehmer, *Die Kleinfunde von Boğazköy,* 107 (Plate XXIX, 867).
[473] The results of analysis for this particular artifact slightly varies in the two studies. While Kuruçayırlı's sample analysis indicated that the arrowhead contained 3.8% tin, Dardeniz's sample analysis suggests it contained 6.5% tin: Kuruçayırlı, "Copper Metallurgy in Cilicia and the Amuq in the Second Millennium BC: Insights into Aspects of Bronze Age Technology and Trade," 307 (TGK 38.1627); Dardeniz, "Chemical Analysis and Characterization of First Millennium B.C. Arrowheads from Tarsus," 55 (Table 6.1, Sample 81).

a)



b) c) d)



Figure 65. a) Cross-section drawing of the Late Bronze IIb "Great Pit Complex" from which the chisel and the two arrowheads were found, from the field notebooks (Hoskin Ehrich 1938, 161) b) Bronze chisel in front and side view c) Copper arrowhead viewed in front, back and side (GE Inv. No: 38.1619) d) Bronze arrowhead in front and back view (GE Inv. No: 38.1627)

The eleven artifacts unearthed from Late Bronze IIb fill contexts consist of the final three arrowheads, the awl, the spearhead fragment, the final two chisels, the pin, the bead and the final two of the three knives from Section A.

The first of the three arrowheads that I will now present (GE Inv. No: 38.1601; Goldman fig. 427/90) might have been found within the Late Bronze IIb Unit 2, as Ehrich noted it was found on a floor south of the "War Dugout" at a depth of ca. 2.30 m.[474] Among the finds from the area, Ehrich recorded a small, irregular sheet of gold leaf and a worked stone with an off-center perforation.[475] The arrowhead is rhombic in section with a narrow midrib (Figure 66). The triangular blade has angular shoulders and a contracting stem with no barbs. The tang, rhomboidal in section, is broken on end and the tip of the blade curves slightly

[474] Hoskin Ehrich, "1938 Excavation Report for Tarsus-Gözlükule, 2-3 M Levels," 95-96; Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, inset of plan 22.
[475] Hoskin Ehrich, "1938 Excavation Report for Tarsus-Gözlükule, 2-3 M Levels," 95-96.

upward. According to Dardeniz's chemical analysis, it is made of unalloyed copper.[476]

Interestingly, one side of the narrow midrib is incised with a cross-shaped symbol.[477] The intercepting lines of the cross are shorter on one side. The arrowhead was incised post-production, after it was cast. An arrowhead with an identical cross symbol, unfortunately not an excavated but a purchased find, from Gezer has been published by Jonathan N. Tubb who discusses inscribed arrowheads from Syro/Palestine and Anatolia.[478] Comparably, a copper ingot from Cherkovo, Burgas in southeastern Bulgaria has a similar incised mark.[479] The cross-shaped symbol on the ingot has been interpreted as a sign within the earlier Aegean and Cypriot writing systems. Our symbol here is indeed comparable with the signs from the so-called Cypro-Minoan syllabary, a script that has survived in Cyprus following the end of Late Bronze Age. On the other hand, considering the vast distribution of these inscribed objects, attributing a single value to the cross symbol may be ineffectual especially until further substantiation by textual sources and archaeological evidence.

[476] Dardeniz, "Chemical Analysis and Characterization of First Millennium B.C. Arrowheads from Tarsus," 53 (Table 6.1, Sample 8).
[477] See pages 78-9 (Figure 28) of this thesis where I have discussed metal artifacts incised with symbols in relation to the incised arrowhead from the Late Bronze I level.
[478] Tubb, "A Bronze Arrowhead with Engraved Mark from Gezer in the British Museum Collection," 1-6 (Figure 1).
[479] Karayotov, "Cretan Copper Ingot from the Village Tcherkovo, Burgas Region," 13-17; Doncheva, "The Northern 'Journey' of Late Bronze Age Copper Ingots," 692-93.



Figure 66. The copper arrowhead possibly from the Late Bronze IIb Unit 2 viewed from front, back and side with a close-up of the incised cross-shaped symbol

The second of the three arrowheads (GE Inv. No: 38.1614; Goldman fig. 427/89) must have been found in between two Late Bronze IIb structures, Unit 2 and 4, as Ehrich noted that it was excavated from north of Intrusion 38E11 at a depth of circa 2.30 m. (Figure 59).[480]

The arrowhead is lance-shaped, rhombic with low, narrow and angular midrib in section (Figure 67). It has rounded shoulders, a straight stem and a tang, square in section. It is heavily damaged and corroded particularly towards the tip. According to Dardeniz's chemical analysis, it is made of unalloyed copper.[481] The pronounced, angular midrib is similar to the Late Bronze IIb arrowhead from Unit 2, presented above, though this one does not expand towards the tang. The form of the blade is similar to the Late Bronze IIa arrowhead with the inventory number 36.1120[482] while the midrib is similar to the previous arrowhead presented. As mentioned for the latter

[480] Hoskin Ehrich, "1938 Excavation Report for Tarsus-Gözlükule, 2-3 M Levels," 157-158.
[481] Dardeniz, "Chemical Analysis and Characterization of First Millennium B.C. Arrowheads from Tarsus," 53 (Table 6.1, Sample 5).
[482] See pages 119-20 (Figure 52) of this thesis.

arrowhead, comparanda from Boğazköy-Hattusha are dated to *Büyükkale IVb* and *III* as well as three unstratified ones from *Unterstadt* and *Büyükkale*.[483]



Figure 67. The copper arrowhead (left) found at a depth of 2.30 m., and west of the Late Bronze IIb Unit 2 together with the two similar Late Bronze II arrowheads (top right: 38.1601, bottom right: 36.1120) in front and back view

The artifact that Goldman identified as an awl (GE Inv. No: 38.1590; Goldman fig. 425/46) and the socket part of a spearhead (GE Inv. No: 38.1591; Goldman fig. 427/98) must have been found east of Unit 2, in the fill on top of Room T9 of the LB IIa monumental building, as Hoskin Ehrich recorded that they were found east of the "War Dugout" at a depth of 2.90 m. [484] To note, the two detected floor levels for T9 are at 3.05 and 3.56 meters,[485] however, the depth of find suggests that a Late Bronze IIb dating is more likely.

The former artifact is rectangular in section and tapers minutely to a rounded end on one side and a flat end on the other, perhaps broken(Figure 68a). It is 7.7 cm long, and 0.3 cm to 0.6 cm thick from one end to the other. Goldman published this artifact as an awl, on the other hand, I have not come across an awl that is

[483] Boehmer, *Die Kleinfunde von Boğazköy,* 106-7 (Plate XXVI, 816; pl. XXVII 829; pl. XXX 876-878).
[484] Hoskin Ehrich, "1938 Excavation Report for Tarsus-Gözlükule, 2-3 M Levels," 189-190.
[485] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze,* Plan 22.

rectangular in section and has such a thick blade and blunt end. Instead of an awl, the object may have also been another type of tool, currently unidentified. According to Kuruçayırlı's chemical analysis, it is made of bronze.[486]

The socket fragment of a spearhead is hollow and the slit on the wider open end is indicative of the way it was produced (Figure 68b). The closed narrow end is broken. It was likely once the shaft of a spear, as Goldman suggested. Comparanda for socketed spearheads from Boğazköy-Hattusha are dated to *Büyükkale III* and *IIb*.[487] That it was found detached from the blade signals that it likely became scrap metal for re-use or exchange.



a) b)

Figure 68. The bronze tool identified by Goldman as an awl, in front and side view, and the copper-based fragment of a spearhead found at a depth of 2.90 m., and east of the Late Bronze IIb Unit 2

The following three artifacts, that is the last two of the three chisels from Section A and the pin, were found below wall fragments built into the inner court and Room T15 of the Late Bronze IIa monumental building.

One of the two chisels (GE Inv. No: 36.741; Goldman fig. 426/69) was found at a depth of circa 2.00 m under a short wall fragment, likely dated to a later period, running NW-SE and cut into Room T15 of the Late Bronze IIa monumental

[486] Kuruçayırlı, "Copper Metallurgy in Cilicia and the Amuq in the Second Millennium BC: Insights into Aspects of Bronze Age Technology and Trade," 307 (TGK 38.1590).
[487] Boehmer, *Die Kleinfunde von Boğazköy,* 163 (Plate XII-III, 205-207).

building.[488] I date this artifact to Late Bronze IIb due to its find depth as the floor levels recorded for Room T15 are much lower at 3.27 and 3.48 m.[489] The chisel is socketed (*Tüllenmeißel*) with a slightly flaring blade (Figure 69). The split in the socket indicates how it was produced; via hammering its flattened end into the cone-like shape. According to Goldman, the split was intentional to adjust to the size of the inserted handle.[490] Its size and type of hafting suggests it is intended for heavy work as large socketed chisels in general are more suitable for heavy work as opposed to smaller tanged chisels. The artifact has not survived to be included in the GSC. From the photograph in Goldman's publication, the form of the blade is not discernible, however, it is likely to be double-beveled, similar to the following three examples: A very similar chisel from the *Unterstadt* of Boğazköy-Hattusha is dated to *Büyükkale III.*[491] Further, two specimens, smaller in size, are from Büyükkale and date to the earlier layer of *Büyükkale IVb*.[492]. Comparanda also exists from the sites of Alişar in Central Anatolia, Tell Atchana in the Amuq and Megiddo in the Levant.[493]



Figure 69. The Late Bronze IIb copper-based socketed chisel recovered found at a depth of circa 2.00 m., below a wall fragment (After Goldman 1956)

[488] Ehrich, "1936 Excavation Report for Tarsus-Gözlükule," 12-13.
[489] Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 35-36.
[490] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age,* 290.
[491] Boehmer, *Die Kleinfunde von Boğazköy,* 76 (Plate XIV, 245).
[492] Boehmer, *Die Kleinfunde von Boğazköy,* 76 (Plate XIII, 224-225).
[493] Von der Osten, *The Alishar Hüyük II. Seasons of 1930-32. Part II,* 441 (Figure 445/d1812); Guy, *Megiddo Tombs*, pl. 94/4. To note, the chisel from Megiddo is published as a "spear butt"; Woolley, *Alalakh. An Account of the Excavations at Tell Atchana in the Hatay, 1937-1949,* 283 (Plate LXXIII, Ch.5).

The other chisel, last of three from Section A, (GE Inv. No: 38.1624; Goldman fig. 426/73) was found below a stone wall overlying a floor level excavated at a depth of 2.70 m.[494] Ehrich further noted that below the wall was another wall fragment, built in a different angle, tumbled over the Late Bronze IIb pit (Intrusion 38/22) from which the foot of vessel was recovered.[495] According to the location of this pit, the chisel must have been recovered within or around Late Bronze IIb buildings built into the southwestern corner of the Late Bronze IIa monumental building's inner court.

In the final publication, the artifact is published with the inventory number 38.1624, however, Hoskin Ehrich's account in her field notebook reveals that this inventory number belonged to another unpublished tool recorded below (Figure 70). For the sake of continuity, I will refer to the artifact as it is published by Goldman. On the other hand, I would like to correct that it was not excavated from a pit, as Goldman stated, but below the wall fragment mentioned above. Moreover, due to this misunderstanding, the artifact previously analyzed by Kuruçayırlı as the chisel is in fact the unpublished tool which was revealed to be made of bronze.[496] The chisel has not survived to be included in the GSC, however, according to the photograph in the final publication and the drawing in the field notebook, it was around 5 cm in length with a slightly flaring, probably beveled blade, rectangular in section, and a shaft, square in section, with a blunted end inserted into the handle. It may have been utilized for finer, detail work on material such as wood, metal or stone. It is

[494] Hoskin Ehrich, "1938 Excavation Report for Tarsus-Gözlükule, 2-3 M Levels," 115-116.
[495] Hoskin Ehrich, "1938 Excavation Report for Tarsus-Gözlükule, 2-3 M Levels," 115-116.
[496] Kuruçayırlı, "Copper Metallurgy in Cilicia and the Amuq in the Second Millennium BC: Insights into Aspects of Bronze Age Technology and Trade," 307 (TGK 38.1624).

comparable to the Late Bronze I specimen (GE Inv. No: 36.886) presented in chapter four in that both have flaring blades and are similar in length.[497]

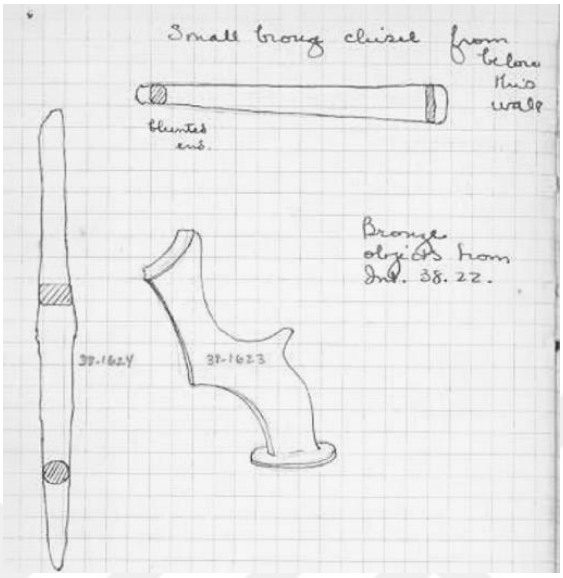
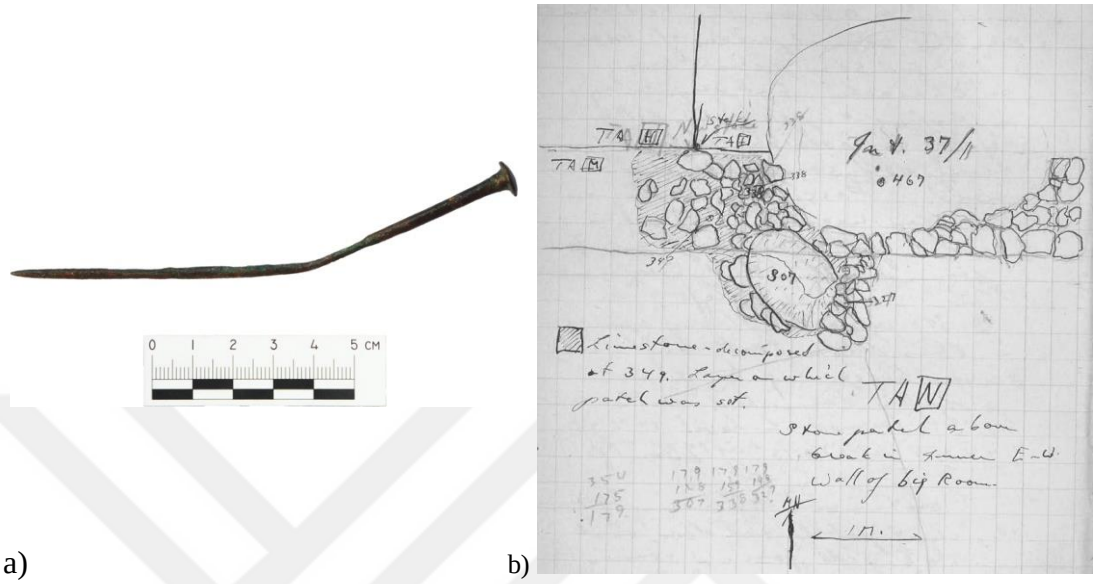


Figure 70. Field notebook record and drawing of the copper-based chisel found below a wall fragment, above the record of the two artifacts, the foot of a vessel and the unpublished tool, recovered from the Late Bronze IIb Intrusion 38/22 (After Hoskin Ehrich 1938, 115)

The pin (GE Inv. No: 37.822; Goldman fig. 430/178), was found under a patch of stones lying on a bed of decomposed limestone on top of the inner northern wall foundation of Room T15 of the Late Bronze IIa monumental building (Figure 71b).[498] The patch of stones and the decomposed limestone layer seem to run from NW to SE and must be part of a later unpublished structure post-dating the Late Bronze IIa destruction since they disrupted the monumental building's wall foundation.[499] The pin has a rounded, thin head, a long, bent stem and a pointed end (Figure 71a). The stem tapers from the head up to the bend and in a small section the

[497] See pages 74-5 (Figure 26**)** of this thesis.
[498] Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 25-6, 53.
[499] Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 25-6, 53.

diameter is narrower perhaps due to corrosion. Two close parallels from Boğazköy-Hattusha, one bent and the other straight, are dated to *Büyükkale IVc*.[500]



a) b)

Figure 71. a) The copper-based pin b) Sketch drawing of the patch of stones and the decayed limestone built on top of the northern wall foundation of T15 under which the pin was found (After Ehrich 1937, 25-26)

The final four metal artifacts found in Late Bronze IIb fill above the Late Bronze IIa destruction debris are comprised of the final arrowhead of the six presented, the bead and the last two of the three knives recovered from Section A.

The arrowhead (GE Inv. No: 38.1611; Goldman fig. 427/80) and the small gold bead (GE Inv. No: 38.1128; Goldman fig. 434/9) must have been found north of the LB IIb structures, in the eastern section of the LB IIa monumental building's court above the destruction debris.[501] According to Goldman, they were found at a depth of circa 2.00 m., for that I date these to the Late Bronze IIb level.[502] Hoskin Ehrich noted that they were found in the area north of "East Cut I" where irregular

[500] Boehmer, *Die Kleinfunde von Boğazköy,* 80 (Plate XVIII, 350-1).
[501] Hoskin Ehrich, "1938 Excavation Report for Tarsus-Gözlükule, 2-3 M Levels," 77-8.
[502] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age,* 291, 301.

patches of soft, greenish-gray powdery earth, charcoal and ash were observed. This greenish-gray earth must correspond to the Late Bronze IIb fill in the courtyard and is later mentioned in the field notebook as so.[503] Among the finds from the area, Hoskin Ehrich also noted several spindle whorls and an unpublished disk of thin bronze, around 7 cm in diameter according to her drawing, which is reported to have disintegrated during cleaning.

The arrowhead is rhombic with low, wide midrib in section and barbed (Figure 72a). The barbs are now broken; one almost completely and the other partially. The tang is short and rectangular in section. According to Dardeniz's chemical analysis, it is made of bronze with 2.5% tin.[504] The gold bead is spherical with a wide perforation (Figure 72b).[505] This single piece of jewelry, perhaps once part of an ornate necklace or bracelet, may have also became scrap metal for reuse.[506]



a) b)

Figure 72. The bronze barbed arrowhead (a) and the gold spherical bead in front and side view (b) recovered from the Late Bronze IIb fill above the destruction debris from the court of the Late Bronze IIa monumental building

[503] Hoskin Ehrich, "1938 Excavation Report for Tarsus-Gözlükule, 2-3 M Levels," 104.
[504] Dardeniz, "Chemical Analysis and Characterization of First Millennium B.C. Arrowheads from Tarsus," 53 (Table 6.1, Sample 10).
[505] See Beck, *Classification and Nomenclature of Beads and Pendants* for an outdated yet comprehensive work on the classification of beads.
[506] Gold beads were among the scrap metal found on board at the Uluburun shipwreck: Pulak, "The Uluburun Shipwreck and Late Bronze Age Trade," 257-8.

One of the two knives (GE Inv. No: 38.1600; Goldman fig. 423/11) was also recovered from the Late Bronze IIb fill on top of the destruction layer in the court of Late Bronze IIa monumental building.[507] Because its location within the inner court is not specified, I did not pinpoint the location of the artifact in my Late Bronze IIb plan. According to Hoskin Ehrich's record, it was found together with a tweezer which, apparently, was not kept perhaps due to its poor state of preservation.[508]

The knife has a blade with a triangular cutting edge, now notched and corroded, with an apex closer to the tang and a flat back (Figure 73a). The tang is short and has a knobbed end formed by rolling it inward. The size and shape suggests it was used as a tool, most likely a razor. That it was found with the tweezer may imply these implements were once part of a personal cosmetic kit. An unstratified parallel to the unpublished tweezer, with more rounded protuberances, is from *Büyükkale* at Boğazköy-Hattusha.[509] A strikingly similar specimen for the knife is an unstratified obsidian scraper from here at Gözlükule.[510] In Hoskin Ehrich's drawing from the 1938 field notebook, the knife ended with a rounded protrusion on the side of the flat back, which seem to have been disintegrated before it was photographed, similar to its obsidian comparanda where the protrusion was on the side of the cutting edge (Figure 73b).

[507] Hoskin Ehrich, "1938 Excavation Report for Tarsus-Gözlükule, 2-3 M Levels," 181-82.
[508] Hoskin Ehrich, "1938 Excavation Report for Tarsus-Gözlükule, 2-3 M Levels," 181-82.
[509] Boehmer, *Die Kleinfunde von Boğazköy*, 118 (Plate XXXIV, 1012).
[510] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 261 (Figure 412/80).



Figure 73. a) The copper-based knife with a rolled tang from the Late Bronze IIb fill above the destruction debris of the Late Bronze IIa monumental building b) Drawing of the knife and the discarded tweezer from the 1938 field notebook (After Hoskin Ehrich 1938, 182)

Finally, the last knife (GE Inv. No: 38.1622; Goldman fig. 423/6) was found on the Late Bronze IIa destruction debris lying at a depth of 2.80 m which, according to Hoskin Ehrich, was probably used as a floor level or perhaps a walking surface during the Late Bronze IIb period.[511] As for the knife presented above, I did not pinpoint the artifact in my Late Bronze IIb plan since its approximate location is unclear.[512] Among the finds from the floor was also a stone tabular palette.[513]

The knife has a thin blade with a convex cutting edge and a slightly concave back that tapers to pointed tip (Figure 74). The tang is almost as thin as the blade and tapers to pointed butt. The back might have also been used as a cutting edge as damage indicates. The form of the curved blade is similar to the first Late Bronze IIb knife presented above (GE Inv. No: 35.1699).[514] Therefore, this knife too must have functioned as a utensil, possibly as a razor, instead of an offensive weapon.

[511] Hoskin Ehrich, "1938 Excavation Report for Tarsus-Gözlükule, 2-3 M Levels," 155-156.
[512] The floor is apparently located at the south edge of "E.II" which is around the southeastern section of the LB IIa monumental building.
[513] Hoskin Ehrich, "1938 Excavation Report for Tarsus-Gözlükule, 2-3 M Levels," 155-156.
[514] See pages 137-38 (Figure 60) in this section for the other Late Bronze IIb knife and their comparanda.



Figure 74. The copper-based knife, likely a razor, from the Late Bronze IIb fill above the destruction debris from the southeastern section of the Late Bronze IIa monumental building

Now that I have presented all 20 metal artifacts from the Late Bronze IIb level uncovered from Section A at the summit of the mound, I will move onto those excavated from Section B located in the saddle of the mound.

6.2 Metal artifacts of the Late Bronze IIb level from Section B

The 14 metal artifacts unearthed from Section B are five tools (two awls, one chisel, two knives), two weapons (two arrowheads), two fasteners for clothing (one roll-headed pin and one fibula), two special, cultic objects (one votive figurine and one model chariot wheel) one hook, one ring and one ornament. All of these, except for the ornament and the model chariot wheel which are both made of lead, are copper-based objects.[515] The stratigraphic contexts from which these metal finds were excavated are as follows (Figure 75):

Nine out of 14 metal artifacts were recovered from a total of six pits. Of the remaining five, four, which are one leather knife, one hook, one votive figurine and one arrowhead, were excavated from a leveling fill, and one, that is a lead ornament, was found within a partially excavated structure named Unit L.

[515] 3 out of 12 copper-based artifacts were analyzed by either Kuruçayırlı or Dardeniz as part of their thesis studies.

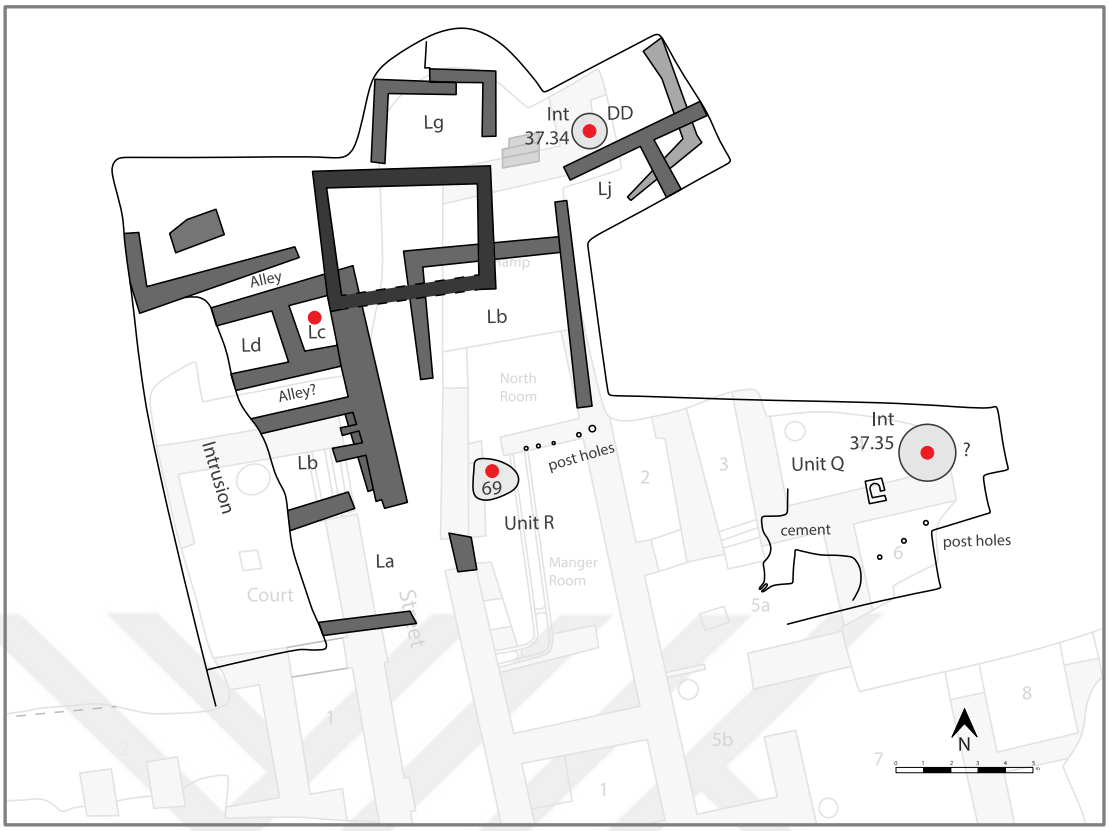


Figure 75. Diagrammatic plan of the Late Bronze IIb architectural remains in Section B superimposed on the Late Bronze IIa plan with approximate find locations of 6 out of 14 metal artifacts indicated in red (After Goldman 1956, plan 23 and 24; drawn by Luka Koumari)

The metal artifacts found discarded in pits from Section B are one of the two arrowheads, the model wheel, the two awls, the double-ended chisel, one of the two knives, the pin, the ring and the fibula. Three out of six pits that yielded metal artifacts are illustrated in the above plan while the rest is presented with detailed descriptions below.

The arrowhead (GE Inv. No: 36.912; Goldman fig. 427/82) and the miniature lead wheel (GE Inv. No: 36.769; Goldman fig. 435/13), were found in a sealed pit (Intrusion 69) dug directly over the Manger Room of the "East House".[516] Apart from the two mentioned artifacts, the pit yielded a high quantity of finds. These are twenty-one published clay bullae including the one bearing the personal seal

[516] Cox, "1936 Excavation Report for Tarsus-Gözlükule," 233b-234.

impression of Puduhepa, who was the wife of the Hittite Great King Hattušili III and was of Kizzuwatnaean descent, the broken land deed tablet with a Tabarna seal, a bracelet of blue frit beads strung on a bronze wire, and a number of unpublished metal, stone and bone objects.[517] The pottery from the pit is referred to as mostly "Plate Ware", also known as Cilician LBA Plain Ware, together with two fragments of a painted deep bowl stylistically dated to Aegean-Style IIIB or IIIC Early.[518] The Tabarna seal impression on the land deed tablet is dated to the Old Kingdom period, no later than Telipinu's reign.[519] The textual material spanning centuries most likely indicates that these documents were archived and stored in Tarsus before they ended up deposited in the sealed Late Bronze IIb pit. [520]

According to the drawing of Cox, the arrowhead was originally barbed with one barb found broken and the other damaged. The inventory number of the object is not recorded in the field notebook, however, based on the drawing I have recognized the artifact from the TGK depot. The arrowhead is flat with narrow, rounded midrib. It has a straight stem and a medium sized tang, square in section (Figure 76). The results of Dardeniz's chemical analysis indicates that it is made of bronze with 8.7% tin.[521] As mentioned, comparanda for barbed arrowheads from Boğazköy-Hattusha are dated to *Büyükkale IIIb* and *IVb*.[522]

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[517] Cox, "1936 Excavation Report for Tarsus-Gözlükule," 233b-236; Goldman, "Excavations at Gözlü Kule, Tarsus, 1936," 280-281; Gelb, "Hittite Hieroglyphic Seals and Seal Impressions," 243; Güterbock, "Observations on the Tarsus Seal of Puduhepa, Queen of Hatti," 143-144; Goetze, "Cuneiform Inscriptions from Tarsus," 1-16.
[518] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 220 (Figure 335/1258); Mountjoy, "The Mycenaean Pottery from the 1934-1939 Excavations at Tarsus," 119-120 (Figure 11, 288); Mommsen, Mountjoy and Özyar, "Provenance Determination of Mycenaean IIIC Vessels from the 1934-1939 Excavations at Tarsus-Gözlükule by Neutron Activation Analysis," 912 (Table 1, Sample 30).
[519] Rüster and Wilhelm, Landschenkungsurkunden hethitischer Könige, 50-51. See Özyar, "Contributions of Tarsus-Gözlükule to Hittite Studies," 290-91 for the dating history of the Tabarna seal impression.
[520] Özyar, "Contributions of Tarsus-Gözlükule to Hittite Studies," 291.
[521] Dardeniz, "Chemical Analysis and Characterization of First Millennium B.C. Arrowheads from Tarsus," 55 (Table 6.1, Sample 80).
[522] Boehmer, *Die Kleinfunde von Boğazköy*, 105-106 (Plate XXVII, 832-37, pl. XXVIII, 838-45).



Figure 76. The bronze arrowhead from a Late Bronze IIb pit (Intrusion 69) together with its drawing, where the barbs are partially intact, from the 1936 field notebook on the right (After Cox 1936, 233)

I address the second published metal artifact from the pit which Goldman described to be a "wheel-shaped object with protruding perforated hub" as a model wheel.[523] As Goldman noted, this identification is due to the representation of the nave or cylindrical hub around the axle hole on its each side (Figure 77). There is a break on the outer section of the wheel. The lead wheel which is a unique find from the mound may have been part of a model chariot or a wagon, perhaps of composite material. Earlier specimens for such wheels are clay models from Early Dynastic Mesopotamia dating to the beginning of the third BCE.[524] The lead specimen and later metal examples[525] were likely modeled in the tradition of these earlier examples. Terracotta model wheels are also excavated from Alişar in Anatolia.[526] Some of these and similar finds have also been argued to have had cultic significance.[527] As only a single model wheel was found in the pit, the object may have been in secondary use or the wheel may have been all that had remained of a broken model vehicle at the time it was discarded.

[523] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 302.
[524] Littauer and Crouwel, *Wheeled Vehicles and Ridden Animals in the Ancient Near East*, 15-36.
[525] Littauer and Crouwel, "Early Metal Models of Wagons from the Levant," 102-126.
[526] Von der Osten, *The Alishar Hüyük. Seasons of 1930-32. Part II,* 284 (Figure 308, c2563, c1991, c2053).
[527] Raccidi, "Wagons and Carts in the 3rd Millennium BC Syrian Jazirah: A Study Through the Documentation," 178; Littauer and Crouwel, *Wheeled Vehicles and Ridden Animals in the Ancient Near East*, 62.

Further, it is decorated with concentric grooves that have no contemporary or earlier parallels that I have come across. Later comparanda exist from Cyprus including a painted terracotta chariot wheel dated to the Cypro-Archaic I period that has a visually similar decoration around its hub apparently associated with the Bichrome technique and an unpublished limestone parade chariot figurine dated to early 5th century BCE that has wheels with concentric circle decoration.[528]



Figure 77. The lead model wheel from a Late Bronze IIb pit (Intrusion 69) in front and side view

The two copper-based awls (GE Inv. No: 37.811, 37.817; Goldman fig. 425/48-9), were unearthed from a pit (Intrusion 37.34) detected at a depth of 16.70 m and located in the northeast section of the trench.[529] The pit is recorded in the field notebook only in relation to the Iron Age remains. As the plans of Iron Age and Late Bronze II levels in Goldman's vol. II and III publications do not precisely superimpose and leave out some intermediate phases, the location of the pit can only be determined approximately. According to Hoskin Ehrich, the pit only yielded the so-called "Plate Ware", now referred to as Cilician LBA Plain Ware**,** and was located at the south end of Unit O, which corresponds to a Middle Iron Age structure that is

[528] Karageorghis, Merker and Mertens, *The Cesnola Collection of Cypriot Art. Terracottas,* 40 (cat. 61). The latter example is part of a museum collection displayed at the Barracco Museum of Antique Sculpture at Rome, Italy.
[529] Hoskin Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 117.

approximately located above the Early Iron Age apsidal building (Unit U).[530] Therefore, the pit must have been located below the apsidal building, and was probably contemporary with or later than Unit L based on the level of its foundation bases.

Only one of the awls have survived to be included in the GSC while the other is presented based on the photograph that Goldman published (Figure 78a). The awl which did not survive is pointed at both ends and is 8.5 cm long. The other awl is pointed on one end and flattened on the other (Figure 78b). According to Kuruçayırlı's chemical analysis, it is made of bronze with 4.4% tin.[531] It is rectangular in section with irregular edges perhaps due to corrosion. On the pointed side, there are two sections where the body is narrower which seems intentional and not due to corrosion, somewhat similar to the Late Bronze I awl presented in chapter four.[532] As the other awls from the Late Bronze levels, these must have been used to mark, puncture or drill holes in different material including leather, wood or metal.

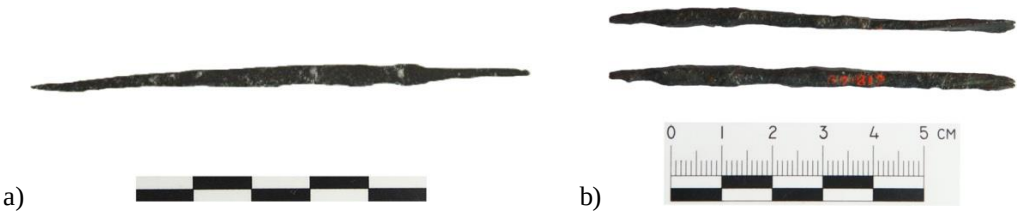

Figure 78. The awls from a Late Bronze IIb pit (Intrusion 37.34) a) Copper-based awl (GE Inv. No: 37.811) b) Bronze awl (GE Inv. No: 37.817) in front and side view (After Goldman 1956 fig. 425)

The chisel (GE Inv. No: 37.762; Goldman fig. 426/67) was recovered from a large pit (Intrusion 37.35) cut into destruction debris of the "East House".[533] Hoskin

[530] Hoskin Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 117.; Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. III: The Iron Age,* plan II and III.
[531] Kuruçayırlı, "Copper Metallurgy in Cilicia and the Amuq in the Second Millennium BC: Insights into Aspects of Bronze Age Technology and Trade," 307 (TGK 37.817).
[532] See pages 84-5 (Figure 32) of this thesis.
[533] Hoskin Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 147.

Ehrich documented that this pit was detected in the area of Unit V, a Late Iron Age structure in the southeastern section of the trench, which provides an approximate location for the intrusion (Figure 75). It was excavated below a 4-meter N-S wall fragment of stone foundation and mudbrick superstructure referred to as the "Mycenaean Wall".[534] Located adjacent to a hearth, the pit (Intrusion 37.35) was 2 meters in diameter, at least one meter deep and yielded copious amounts of "painted pottery" with several complete or nearly complete vessels.[535] Among other finds from the pit were a biconvex black steatite pierced seal with Anatolian Hieroglyphic inscription[536], a knuckle bone[537], an unpublished copper-based arrowhead, an unpublished copper-based needle with "a plate-like, pierced object", and a "stick-like tool of bronze, somewhat thickened at one end".[538] If the so-called "Mycenaean Wall" is assumed to be a Late Bronze IIb feature as Hoskin Ehrich suggested by the name, the pit must be dated to an earlier phase of Late Bronze IIb.

The tool is double ended with a flaring blade that has a double beveled, flat cutting edge and is rectangular in section in the central part for grip (Figure 79). The only other double ended chisel from the mound is the one recovered from the Late Bronze IIa monumental building that I have presented under chapter five.[539] Goldman contemplated that these were either chisels or scrapers. As mentioned, comparanda from Tell Atchana in the Amuq is recovered from an unstratified context.[540]

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[534] Hoskin Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 104, 122.
[535] Hoskin Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 122, 125.
[536] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 251 (Figure 403/44, 407/44).
[537] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 318 (Figure 440/118).
[538] Hoskin Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 124, 131.
[539] See pages 95-6 (Figure 35) of this thesis.
[540] Woolley, *Alalakh. An Account of the Excavations at Tell Atchana in the Hatay, 1937-1949*, 281 (39/290; pl. LXXIII, Ch. 4)



Figure 79. The copper-based double-ended tool, possibly a chisel, from a Late Bronze IIb pit (Intrusion 37.35) in front and side view

Two artifacts, which are the copper-based knife (GE Inv. No: 37.841; Goldman fig. 423/7) and the roll-headed pin (GE Inv. No: 37.850; Goldman fig. 431/198), were recovered from a pit (Intrusion 37.47) cut into the destruction debris of the "East House".[541] The bottom of the pit is not recorded and perhaps was not completely dug since, according to Hoskin Ehrich, it extended below the Late Bronze IIa layer.[542] The pit is not illustrated in the sketch plans, however, apparently it was found below an unpublished structure named "Unit CC" which is likely located towards the north of the trench.[543] Among the finds from the pit, Hoskin Ehrich also recorded the handle of a large vessel with an Anatolian Hieroglyphic seal impression in which two signs traditionally transliterated as BONUS.SCUTELLA are legible.[544] The logogram here indicates a professional title which Ali Dinçol and Belkıs Dinçol interpreted as *"Tafeldecker"* while Annick Payne proposes to transliterate the sign as SIGNACULUM interpreting it to mean "baker".[545]

[541] Hoskin Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 210-211.
[542] Hoskin Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 217.
[543] Hoskin Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 209.
[544] Hoskin Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 210; Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, (Figure 403/47, 407/47).
[545] Dinçol and Dinçol, *Die Prinzen- und Beamtensiegel aus der Oberstadt von Boğazköy-Hattusa vom 16.Jahrhundert bis zum ende der Grossreichszeit*, 69-70; Payne, "Bread Matters: Of Loaves and Stamps," 78.

The knife has a curved blade and a thin tang that tapers slightly to a flat butt (Figure 80a). The form of the blade, though longer, is similar to the two Late Bronze IIb knives presented above (GE Inv. Nos: 35.1699, 38.1622).[546] Damage patterns might indicate that the concave side was used as the cutting edge which would be interesting since other knives from this period have their cutting edge on their convex side. Nonetheless, as the mentioned knives, it must have functioned as a utensil, possibly a razor, instead of an offensive weapon. Comparanda from Boğazköy-Hattusha is dated to *Büyükkale III*.[547] Another tool with concave cutting edges is the curved sickle type from Boğazköy-Hattusha which date later to *Büyükkale II* and *III*.[548]

The pin, which is the second metal artifact from the pit, is roll-headed with a straight stem (Figure 80b). The width of the head is the same size as with the stem and hence, narrower than the rest of the roll-headed pins from the Middle Bronze II and Late Bronze levels.



a) b)

Figure 80. The two metal finds recovered from a Late Bronze IIb pit (Intrusion 37.47): a) Copper-based knife b) Copper-based roll-headed pin

The ring (GE Inv. No: 37.656; Goldman fig. 432/262b) was recovered from a large pit (Intrusion 37.49) likely dated to Late Bronze IIb level as it yielded the so-

[546] See pages 137-38 and 157-58 of this thesis for the mentioned knives, respectively.
[547] Boehmer, *Die Kleinfunde von Boğazköy,* 78-9 (Plate XVI, 267).
[548] Boehmer, *Die Kleinfunde von Boğazköy,* 145-6 (Plate XLVI 1300, 1302-4).

called “Plate Ware” pottery, also known as Cilician LBA Plain Ware, and the bottom of the feature was found at a depth of 19.27 m.[549] It was detected below the foundations of an unpublished earlier Late Bronze IIb structure named “Unit EE” which was likely located in the north section of the trench.[550] Among the small finds from the intrusion were a bronze needle and a clay vessel that Hoskin Ehrich interpreted as a small crucible, though its size suggests otherwise.[551] The ring has not survived to be included in the GSC, though based on Goldman’s account, it is 2.3 cm in diameter and is flattened on one side (Figure 81).



Figure 81. The copper-based ring from a Late Bronze IIb pit (Intrusion 37.49) (After Goldman 1956, fig. 432)

The final artifact found as discarded in Section B, that is the fibula (GE Inv. No: 38.828; Goldman fig. 432/246), was recovered from a pit (Intrusion 38.47) located in the northwest corner of the trench.[552] This must have been a Late Bronze IIb feature since it is recorded that the pit yielded “local Mycenaean, red banded” pottery.[553] It has not survived to be included in the GSC, however, Goldman included a photograph of the artifact in the publication.

[549] Hoskin Ehrich, “1937 Excavation Report for Tarsus-Gözlükule,” 217, 219.
[550] Hoskin Ehrich, “1937 Excavation Report for Tarsus-Gözlükule,” 217.
[551] Hoskin Ehrich, “1937 Excavation Report for Tarsus-Gözlükule,” 217.
[552] Hoskin Ehrich, “1938 Excavation Report for Tarsus-Gözlükule,” 324.
[553] I have attained the mentioned record from an unpublished scanned document titled as “Section B 1938 Storage List”.

The fibula has an asymmetrical bow, in the shape of a rounded triangle, with a slightly swollen off-center arc (Figure 82). The catch plate, spring and pin were preserved, though the pin seems broken. It is classified into Blinkenberg's Type XIII.[554] Stronach categorized this form as a later variant of his "East Mediterranean" type, likely developed during the late 12th or early 11th century BCE.[555]



Figure 82. The Late Bronze IIb copper-based fibula from a Late Bronze IIb pit (Intrusion 38.47) (After Goldman 1956)

The following four metal artifacts, one knife, one hook, one votive figurine and one arrowhead were excavated from fill contexts.[556] The knife (GE Inv. No: 38.634; Goldman fig. 423/12) was found below a leveling fill which I propose was deposited following two earlier phases of the LB IIb level.[557] Contrary to this, Hoskin Ehrich proposed that the fill belonged to a leveling process following the conflagration of the LB IIa "East House".[558] My argument is based on the following line of thought: To begin with, the knife was excavated from an area named "N1" that is not illustrated in Goldman's published Late Bronze IIa or b plans, yet based on the description from the field notebooks, it must have been located somewhere in

[554] Blinkenberg, *Fibules Grecques et Orientales,* 230.
[555] Stronach, "The Development of the Fibula in the Near East," 182 (Figure 1, 4-5).
[556] The find locations of these four artifacts are not indicated in the new plan presented above due to insufficient data.
[557] Hoskin Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 201.
[558] Hoskin Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 104.

the north section of the trench, possibly east of Room Lj (Figure 75).[559] In this area, Hoskin Ehrich excavated a fill earth with a gray/green tint, the aforementioned leveling fill, which was also detected in another area where later the Early Iron Age Apsidal building was constructed.[560] Hoskin Ehrich then noted that an unpublished structure named "Unit EE" was unearthed in the "N1" area, presumably below the point where the knife was found and underneath the leveling fill.[561] According to her description, "Unit EE" consisted of two mudbrick walls making a corner inside of which was a rectangular hearth and aligned with "Unit DD"; a structure that Yalçın dated to the early phase of Late Bronze IIb[562], although there may have been an additional earlier phase if "Unit EE" and "Unit DD" were contemporary since a pit containing the so-called "Plate Ware" pottery, now referred to as Cilician LBA Plain Ware, (Intrusion 37.49) was detected below "Unit EE".[563] This then indicates to me that the leveling fill must have been deposited following the first two phases of the LB IIb level and as the knife was recovered from the debris above "Unit EE", I date the artifact to this third, next phase. According to Goldman, the knife was found at a depth of 17.70 m., although, it is possible that the find depth was even lower as the excavator previously recorded that a depth of 17.90 m was reached in the area prior to the discovery of the artifact.[564]

[559] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, plan 24.
[560] Hoskin Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 104, 184, 186, 193, 195, 199-200.
[561] Hoskin Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 213. If "Unit EE" was found above the leveling fill, which as far as I am concerned Hoskin Ehrich do not allude to, then the argument I present here must be disregarded and the knife would more likely be dated to the Late Bronze IIa level.
[562] Yalçın, "A Re-Evaluation of the Late Bronze to Early Iron Age Transitional Period: Stratigraphic Sequence and Plain Ware of Tarsus-Gözlükule," 209 (Figure 4).
[563] Hoskin Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 217.
[564] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 288; Hoskin Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 195.

The knife has a 12 cm-broad, fan-shaped blade with a notch at the center of its cutting edge and a contracting stem that connects to a sharply pointed, slender tang (Figure 83). As mentioned, it is similar in form to the knife excavated from Room T8 of the LB IIa monumental building which I have presented in the chapter five.[565] Both of these knives were interpreted by the Goldman team as leather knives.



Figure 83. The copper-based (leather) knife from below the Late Bronze IIb leveling fill

Both the hook and the votive figurine were unearthed from the abovementioned Late Bronze IIb leveling fill located in the north section of the trench. As mentioned, Hoskin Ehrich argued that the fill was deposited for rebuilding in the area subsequent to the conflagration of the "East House", however, I propose that it was deposited later as an unpublished structure from the early phase of the LB IIb level was unearthed below it.[566] Goldman recorded the find depth of the former artifact at a depth of 17.00 m and the latter at 16.80 m.[567]

According to Hoskin Ehrich, the hook (GE Inv. No: 37.658; Goldman fig. 429/124) was recovered during the excavation of the leveling fill in the area of the

[565] See pages 99-100 (Figure 38) of this thesis for the knife and further information.
[566] Hoskin Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 104, 128.
[567] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 293, 299 (124, 276).

Early Iron Age apsidal building and the north wall of the Iron Age Unit Y, possibly north of Room Lb (Figure 75).[568] The artifact has a curved, flared head that is broken and tapers to a curved, broken tip which is pointed sideways (Figure 84). The body is rectangular in section with rounded edges. The sides of the head seem to be hammered and slightly folded on the outer, convex face. I address this artifact as a hook in reference to its shape, however, its function is unclear to me.



Figure 84. The copper-based hook (?) from the Late Bronze IIb leveling fill

The votive figurine (GE Inv. No: 37.655; Goldman fig. 433/276) was found within the leveling fill in the area of the Late Iron Age "Unit X" which was excavated in the north section of the trench.[569] First addressed as a headless figurine in the field notebook, it was interpreted by Goldman as the upper half of a (warrior with a crested helmet) figurine in comparison to the metal figurines excavated from the sites of Qatna and Zincirli.[570] Since then, artifacts identified as metal figurines have been discovered in various sites including Oylum Höyük,[571] Tilmen Höyük[572],

[568] Hoskin Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 128.
[569] Hoskin Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 133-4.
[570] Du Buisson, "L'Ancienne Qatna ou les Ruines d'El-Mishrifé au N.-E. de Homs (Émèse)," 19 (Plate XV, 3, B19); Andrae, *Die Kleinfunde von Sendschirli,* 113 (Plate 49, b).
[571] Engin, "Oylum Höyük Kazılarında Ele Geçen bir Grup Orta Tunç Çağı Yapı Adak Eşyası," 20-1.
[572] Duru, *Tilmen Höyük Kazıları I,* Plate 111.

Maşat Höyük[573] and Tell Atchana[574]. In addition, there are a number of similar objects in museums and private collections of supposed Anatolian origin.[575] These artifacts are interpreted as foundation peg figurines, one category of votive objects that were ritually deposited in the foundations, floors or walls of buildings, that were first known from Early Dynastic Mesopotamia.[576] In a Hittite text, the ritual is described in association with erecting a temple and securing it with four bronze pegs.[577]

It appears that, if taken as a votive peg, the Gözlükule specimen must have been found out of context, discarded in the bottom of a pit. The figurine itself has two projecting tapered arms curved upwards, one broken, two eye-like holes in the wider upper section, indented on one face, and a pointed upward cone-like projection protruding from the head (Figure 85). The core of the figurine taken to be in the shape of a peg is rounded on the bottom. Although votive pegs are generally made of either metal or clay, this example gives one the impression that it may be the skeleton of a composite artifact where the projected cone would be inserted into a pointed cap perhaps made of precious metal, and some other material would be filling the pierced holes in the upper section to elaborate the eyes. According to Kuruçayırlı's chemical analysis, the figurine is made of arsenical bronze with 5% tin and 1% arsenic.[578]

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[573] Özgüç, "A Votive Foundation Nail in the Temple of Maşat Höyük," 228.
[574] Woolley, *Alalakh. An Account of the Excavations at Tell Atchana in the Hatay, 1937-1949*, 276 (Plate LXX, AT/39/67); Dardeniz, "Cultic Symbolism at the City Gates: Two Metal Foundation Pegs from Tell Atchana, Alalakh (Turkey)," 32-3 (Figure 1, 3).
[575] Akdoğan, "Yapı-Adak Çivisi Biçiminde Tanrı-Tanrıça Çifti," 27-36; Özcan and Akgün, "İki Hitit Yapı-Adak Çivisi," 47-54; Özcan and Akgün, "Konya Arkeoloji Müzesi'nde Bulunan Yapı-Adak Çivileri," 91-110; Aydıngün, "Gaziantep Müzesi Yapı-Adak Çivileri," 53-62. Further, a foundation figurine of supposed southeastern Anatolian origin was acquired by the British Museum in the 1880's (BM E12542).
[576] Ellis, *Foundation Deposits in Ancient Mesopotamia,* 115-187.
[577] Ellis, *Foundation Deposits in Ancient Mesopotamia,* 165.
[578] Kuruçayırlı, "Investigation of Metal Artifacts of Tarsus/Gözlükule from the Second and Third Millennia B.C.," 45 (Table 5.1, Sample 37.655).



Figure 85. The bronze votive figurine from the Late Bronze IIb leveling fill in front, side and back view

From the area of the Late Iron Age "Unit X", Hoskin Ehrich also recorded an arrowhead (GE Inv. No: 38.23), which Goldman dated to the Assyrian period, and few other metal oddments.[579] Goldman published this arrowhead in the Iron Age volume[580] implying that it was found above Unit X, however, the mentioned building was situated at a general level between 14.00-13.00 m. while Hoskin Ehrich recorded that the arrowhead was found between 16.80-90 m., a find depth similar to the hook and the votive figurine presented above. Therefore, the arrowhead must have also been excavated below Unit X, in the Late Bronze IIb leveling fill.

The arrowhead is flat with angular and high midrib in section and has a straight stem and a damaged, thin tang that tapers to point (Figure 86). The shape of the blade cannot be discerned as the edges are heavily damaged and the tip is missing. The general form, which is not paralleled in the Assyrian period assemblage from the mound, also suggests that the arrowhead is likely dated to Late Bronze. According to Dardeniz's chemical analysis, it is made of unalloyed copper.[581]

[579] Hoskin Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 133-44.
[580] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. III: The Iron Age*, 373 (4).
[581] Dardeniz, "Chemical Analysis and Characterization of First Millennium B.C. Arrowheads from Tarsus," 53 (Table 6.1, Sample 17).



Figure 86. The copper arrowhead previously dated to the Assyrian period from the Late Bronze IIb leveling fill

Finally, the lead ornament (GE Inv. No: 38.852; Goldman fig. 435/14) was recovered in one of the rooms, referred to as Room Lc, from a modest structure located at the west section of the trench.[582] The structure consisted of two rooms, Lc and Ld, and was freestanding, delimited by alleys on the north and south, and by a street to the east.[583] The rooms were small, only 2 meters wide and no sign of communication between the two was found in the level of foundations. The find depth suggests that the artifact was found between the two existing floor levels, that were thickly paved with river pebbles, at 16.40 m.[584] Among the finds recorded here were a bone button and a piece of bone inlay (Figure 87b).[585] Goldman published these two bone artifacts in the Iron Age volume and dated them to the 6th century BCE with a find level at a depth of 13.25-13.40 m.[586] On the other hand, Hoskin Ehrich's record suggests that they were recovered below Room Lc, and hence, more likely from the Late Bronze IIb level.

[582] Hoskin Ehrich, "1938 Excavation Report for Tarsus-Gözlükule," 346-347.
[583] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 58-59.
[584] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 58-59, 303.
[585] Hoskin Ehrich, "1938 Excavation Report for Tarsus-Gözlükule," 346.
[586] Goldman, Iron Age, 385 (Figure 178/31, 34).

Goldman identified this lead artifact as a spatulate pertaining to the form of the broad end, however, the size is too small for it to be such an implement by itself (Figure 87a). The broad end has a small rectangular-shaped shallow indentation that is bordered only on three sides. It has a small trail-like tapering protrusion that is curved sideways on the broken end. I identify it as an ornament due to its small size, however, the form is unclear to me and has no parallels that I have come across.

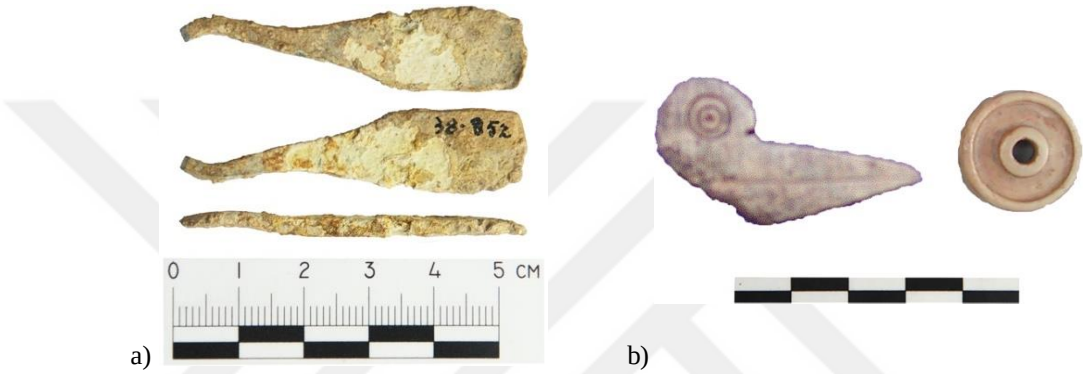


Figure 87. The three artifacts recovered from the Late Bronze IIb Room Lc: a) The lead ornamental object in front, back and side view b) The bone inlay and the bone button

6.3 Evidence for Late Bronze IIb metalworking and metal production

During my re-investigation of the Late Bronze metal artifacts in the field notebooks, I have noticed that some of the pits from which metal finds were obtained also yielded other material denoting some form of metalworking and metal processing. My analysis unfolded that the Goldman excavations obtained material evidence for producing and working metals from a total of six pits, four in Section A, and two in Section B, that I propose are dated to Late Bronze IIb. Only two of these six pits are briefly mentioned in Section 6.1. In addition, scrap metal is also noted from Late Bronze IIb fill deposits, further signaling metalworking on site. In this section, I will put forward these newly discovered waste or discarded material that evidence metalworking and processing during the Late Bronze IIb period.

The four pits in Section A are identified as Intrusion 36/5, "The Great Pit" which consists of two large intercepting pits and Intrusion 37/4 in the field notebooks (Figure 88). The first (Intrusion 36/5) is located northwest of Unit 4 as a pit filled with ash and burned earth sunk into the southwestern section of the Late Bronze IIa monumental building, near another intrusion, that I have previously presented, from which a copper-based ring was retrieved (Intrusion 36/4).[587]According to Ehrich, this ash pit yielded "pieces of chewed up, badly decomposed bronze" likely representing slag, along with the so-called "Plate Ware" pottery, now referred to as Cilician LBA Plain Ware.[588] The base of this small and shallow pit is recorded at a depth of 3.47 m.[589] As mentioned, the second feature ("The Great Pit") consists of two intercepting large pits sunk into southeastern section of the Late Bronze IIa monumental building and from which three metal artifacts, two arrowheads and a chisel, were obtained. According to Hoskin Ehrich, either one or both of these pits also yielded metallurgical waste noted as "bits of bronze slag".[590] The fourth and final feature (Intrusion 37/4) is a 3-meter deep trash pit cut into the north inner wall of Room T15 of the Late Bronze IIa building.[591] I have also mentioned this pit in Section 6.1 in reference to two copper needles found within it. Ehrich recorded that the pit also produced thick walled soft baked clay fragments with bronze adhering to their inner surfaces, identified as possible crucible fragments, along with decomposed bronze chips and some slag.[592]

[587] Ehrich, "1936 Excavation Report for Tarsus-Gözlükule," 29.
[588] Ehrich, "1936 Excavation Report for Tarsus-Gözlükule," 29.
[589] Ehrich, "1936 Excavation Report for Tarsus-Gözlükule," 29.
[590] Hoskin Ehrich, "1938 Excavation Report for Tarsus-Gözlükule, 2-3 M Levels," 150.
[591] Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 58, 79.
[592] Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 60.

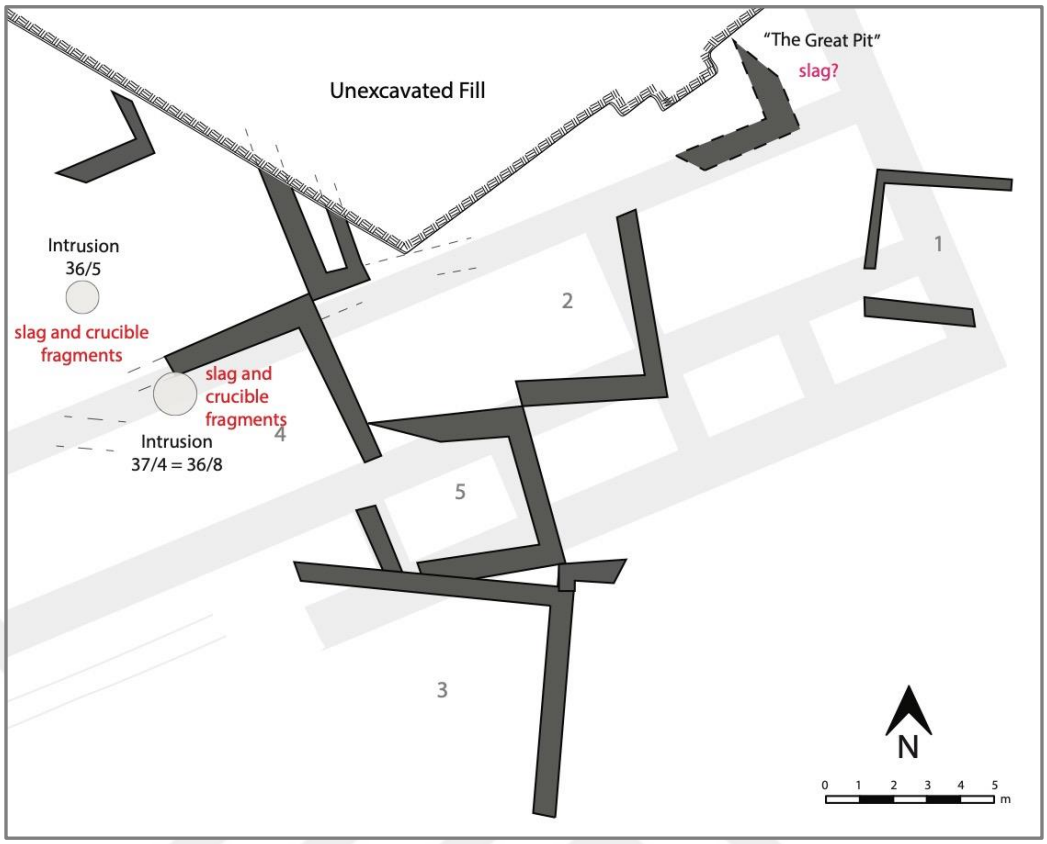


Figure 88. The two pits which yielded slag and crucible fragments (Intrusion 36/35 and Intrusion 37/4) together with "The Great Pit" from which slag was recovered illustrated in relation to the Late Bronze IIb remains superimposed on the Late Bronze IIa monumental building (After Goldman 1956 plan 22; drawn by Luka Koumari)

Since three of the four pits (Intrusion 36/5 and "The Great Pit") were sunk into the Late Bronze II monumental building and produced Cilician LBA Plain Ware pottery, they certainly must be identified as Late Bronze IIb features. Although its pottery reading is unavailable, I also identify the fourth pit (Intrusion 37/4) as a Late Bronze IIb feature since it is cut into the monumental building and its top elevation matches the Late Bronze IIb occupation level, however, it must be noted that it is unusually deep. Nevertheless, the finds from these pits are clearly discarded or waste material used in the processing of metals. While there is not sufficient data to suggest that smelting took place within these features, the small and shallow pit, Intrusion 36/5, filled with ash, burned earth and "badly decomposed bronze" bear a resemblance to pit furnaces. On the other hand, it is more likely that raw or scrap

metal were re-melted and re-fined in crucibles while the slag must have been produced as a waste product of secondary smelting or refinement rather than smelting, since primary smelting likely first occurred in ore processing sites nearby ore deposits.

The two pits in Section B (Intrusion 38.39 and Intrusion 37.5) which must have been dug during the Late Bronze IIb period yielded two molds which are worth reconsidering here.[593] The locations of the pits are not clear and therefore are not illustrated in plan, however, that they were sunk into the Late Bronze IIa layer and that they yielded Late Bronze II pottery suggest these were Late Bronze IIb features. The first of the artifacts, a mold of sandstone, was found in a 1.5 meter-deep pit (Intrusion 38.39), which was detected at a depth of 17.20 m., and yielded Cilician LBA Plain Ware pottery and fragments of what Ehrich refers to as an "enormous tub".[594] The mold is roughly rectangular in shape and has a single casting surface with the shallow negative of a round disk-shaped object, 3 cm in diameter (Figure 89a). The pour channel suggests that it is one half of a bivalve mold. The negative is decorated in three sections with incised angular wavy-lines on the outer two layers and gouged circles on the inner layer around a larger central circular depression. When cast, the object would have had a raised, ornamental surface. On the side of the mold, near the channel where the molten metal would be poured, is an incised straight line.

[593] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 306 (Figure 436/9, 10).
[594] Hoskin Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 148-49.

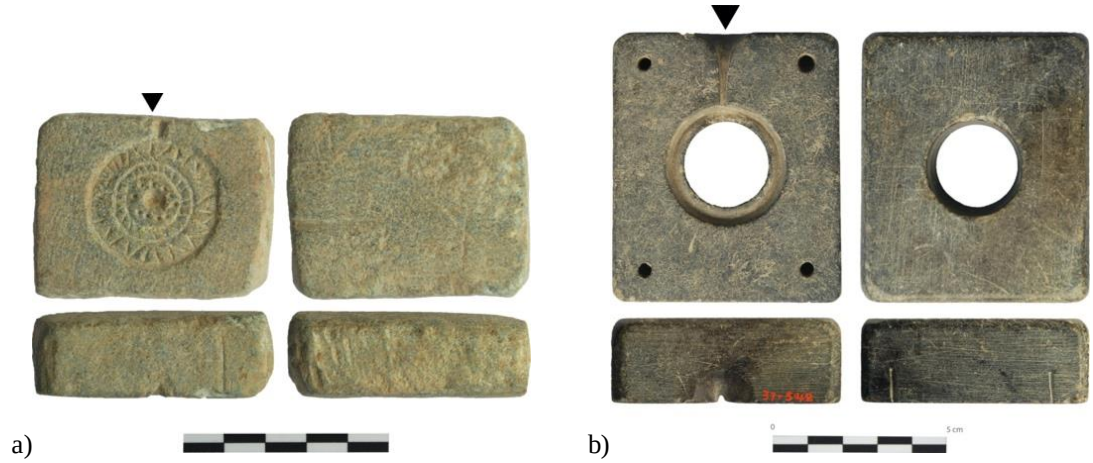


Figure 89. The two bivalve stone molds recovered from Late Bronze IIb pits (Intrusion 37.5 and Intrusion 38.39) at Section B

The second mold, of a darker grey stone, was found towards the bottom of a pit (Intrusion 37.5) that yielded painted pottery fragments which, according to Ehrich, "breathed the same air as Mycenaean".[595] Among other finds from the pit were fragments of a small bronze vessel, a terracotta animal figurine, a fragment of a faience vessel and a hollow cylinder bone object with dotted incised circles which Goldman interpreted as a handle or a small cylindrical box.[596] The faience vessel fragment, which was published by Goldman as Middle Iron,[597] and was later studied by Hölbl who proposed to date the artifact to 10th-9th century BCE,[598] must have been an intrusive find. The rectangular mold has a single casting surface with the negative of a ring and four dowel-holes in each corner (Figure 89b). The pour channel and the dowel-holes indicate that this object, too, is one half of a bivalve mold. The space in the center of the mold must have been pegged during casting to create the ring shape. When cast, the ring would have an outer diameter of 2.5 cm and an inner diameter of

[595] Hoskin Ehrich, "1937 Excavation Report for Tarsus-Gözlükule," 145-146.
[596] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 316 (Figure 439/92).
[597] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. III: The Iron Age*, 395 (Figure 181/1).
[598] Hölbl, *Aegyptiaca aus Al Mina und Tarsos im Verbande des Nordsyrische-Südanatolischen Raumes,* 107 (Cat. No. 120).

3.5 cm. Similar to the sandstone mold, on one side near the channel where the molten metal would be poured, are two incised straight lines.

In addition to slag and crucible fragments from pits, fragments of objects that have likely become scrap metal were uncovered from Late Bronze IIb fill deposits. An irregular sheet of gold, possibly used as scrap metal for metalworking, was recovered in fill at a depth of 2.30 m., likely associated with Unit 2 of the Late Bronze IIb occupation.[599] A broken fragment of a spearhead (GE Inv. No: 38.1591) and the small gold bead (GE Inv. No: 38.1128), presented in Section 6.1, were also recovered from fill deposits associated with the Late Bronze IIb settlement. These appear to represent oddments that have become scrap metal, further supporting the presence of workshops.

The recent TGK excavations have also yielded scrap metal finds including clipped arrow- and spearhead segments from Late Bronze IIb fill deposits that demonstrate metalworking and processing on site.[600] In the preliminary article on the Late Bronze Age levels exposed by the TGK excavations, these were interpreted as an indication of metal workshops in the Late Bronze II levels, more likely associated with Rooms T10-12 of the Late Bronze IIa monumental building. Now, in light of revisiting the Goldman excavation evidence for metal processing from Late Bronze IIb trash pits and fill deposits, these indicators might perhaps also be associated with the Late Bronze IIb level. On the other hand, since fill deposits are not as secure as trash pits, it is difficult to determine whether these were associated with workshops within the Late Bronze IIa monumental building or the surmised workshops from the

[599] Hoskin Ehrich, "1938 Excavation Report for Tarsus-Gözlükule, 2-3 M Levels," 95
[600] Özyar, Ünlü and Pilavcı, "Recent Fieldwork at Tarsus-Gözlükule: The Late Bronze Age Levels," 57, 60-1 (Figure 5-9/c-d).

Late Bronze IIb settlement on site where metalworking and processing were maintained.

6.4 Conclusions

I have now presented all 34 metal artifacts that I have designated to the Late Bronze IIb level excavated at Section A and B. These artifacts are comprised of 14 tools, nine weapons, three garment fasteners, three pieces of jewelry, two cultic objects, one foot of a vessel, one hook and one ornament. As observed in the archaeological record, the period was marked by the construction of new small-scale, little organized units over the remains of the Late Bronze IIa monumental building which was destroyed in heavy conflagration. During the lifetime of these structures, the residents had dug numerous trash pits in the vicinity. These features are the most important sources of documentation for metal use, production and, by nature, discard throughout the Late Bronze IIb period. In this section, I will recapitulate the results of my analysis of the metal artifacts together with new the evidence I present for metalworking and processing on site, and suggest an interpretation for their function, use and discard vis-à-vis the preceding level.

Aptly, the most striking change regarding the metal assemblage when compared to the preceding level on the whole is in terms of its depositional context. While most Late Bronze IIa metal artifacts were unearthed within two main buildings, as presented above, in Late Bronze IIb the majority of metal finds, 18 in number, were recovered from trash pits which explains why the bulk of the artifacts consists of discarded material. Previously, Goldman had published 14 metal artifacts as recovered from intrusions, but not indicated the location of the intrusions on site plans, also not commented on metalworking during the Late Bronze IIb period. My

examination revealed that more than half, 18 out of 34, of the Late Bronze IIb metal objects were found as discarded in trash pits during the Goldman excavations and I have described the approximate locations of these pits based on earlier records and indicate some of these features in the new plans presented.

Considering the widespread reuse and recycle of copper, for what purpose were these valuable objects discarded in pits? Previous chemical analyses of 9 out of the 18 metal objects retrieved from pits revealed that most were made of bronze while one, the foot of a vessel, was a unique copper alloy containing high amounts of tin, zinc and lead. Some of the objects, for instance the model wheel and the foot of a vessel, give the impression of discarded parts, perhaps of broken paraphernalia with cultic connotations. Others include tools such as needles, chisels and awls, clothing fasteners, rings and knives: metal objects that are not typically disposed. An explanation for part of the discarded assemblage could be that some accidentally found their way into these pits when these were dug into the mound stratigraphy by the ancient inhabitants or that the fill and soil around the intrusion were somehow mixed up during modern excavation. Nevertheless, at the moment the question cannot be answered but only highlighted since, if intentional, discarding metal objects with material value must be explained, and that requires research beyond the scope of my thesis.

As presented in Section 6.3, a total of six Late Bronze IIb pits have also yielded evidence for metalworking and production which include crucible and decomposed metal fragments, slag and molds. Additionally, there is also the presence of scrap metal from Late Bronze IIb fill deposits excavated by both the Goldman team and the recent TGK excavations. These all suggest strongly that

metalworking and processing were maintained following the destruction of major administrative structures on site at the end of the Late Bronze IIa level.

My analysis further determined the find locations of the remaining 16 metal artifacts which were found in various Late Bronze IIb contexts from Section A and Section B. Two metal artifacts were likely found within Late Bronze IIb units: the incised copper arrowhead possibly retrieved from Unit 2 at Section A and the lead ornament found in Room Lc at Section B. The other 14 were found in fill debris that is neither associated with structure nor trash pits. All in all, the residents of these units seem to have owned, used and worked metal tools, ornaments and weapons as evidenced by discarded finds from pits and fill debris.

The use of metal objects from the Late Bronze IIa to the Late Bronze IIb period does not signal a dramatic change as has been observed in the architecture. During this period, it appears that customs pertaining to crafts and personal adornment were maintained at large. Basic tools for various professions such as chisels, awls and needles prevalent in almost all levels here at Tarsus-Gözlükule remain the same in form and function over very long periods of time indicating well-established and maintained craft traditions. Similarly, while specific personal items such as the fibula may indicate the emergence of new customs, at least to a certain degree, fastening traditions of garments seem to continue as the roll-headed pin also remained in use.

Finally, the continuity in the use and production of metal tool and articles is further supported by the evidence from pottery consumption as well as production. It has been understood that the ceramic plain wares of the preceding Late Bronze IIa

period were continued to be used together with a small percentage of the newly introduced Aegean-style pottery which were both imported and locally produced.[601]

The surmised continuity of metal production indicates that these crafts were not limited to centrally controlled institutions as I have alluded to in Section 5.4. After all, the craft of metalworking must be viewed as the culmination of accumulated skill and knowledge passed down from generation to generation, withstanding changes in political and diplomatic domain. Hence, despite the demise of major administrative buildings evidently tied to political turmoil with the collapse of Hittite control, the continuity of both metal and pottery traditions together substantiates the overall uniformity in the Late Bronze II material culture of Tarsus-Gözlükule.

[601] Goldman, *Excavations at Gözlü Kule, Tarsus, Vol. II: From the Neolithic through the Bronze Age*, 203-205; Yalçın, "A Re-Evaluation of the Late Bronze to Early Iron Age Transitional Period: Stratigraphic Sequence and Plain Ware of Tarsus-Gözlükule," 201; Mountjoy, Mommsen and Özyar, "Neutron activation analysis of Aegean-style IIIC pottery from the Goldman excavations at Tarsus-Gözlükule," 75-89; Özyar, Ünlü and Pilavcı, "Recent Fieldwork at Tarsus-Gözlükule: The Late Bronze Age Levels," 63-7.

CHAPTER 7

CONCLUSION

The aim of this thesis was to re-contextualize the metal artifacts of the Late Bronze Age levels within the settlement of Tarsus-Gözlükule in order to add meaningful layers of analysis back into the picture. As examined in the third chapter, the Late Bronze metal objects were meticulously excavated, studied and published by Hetty Goldman and her team from the 1930s into the 1960s. On the other hand, the resulting publication in a way adhered to the methodological conventions of the twentieth century where the numerous "small finds", a categorization that included the metal objects, were not studied in tandem with the rest of the material culture including other excavated finds, features and architectural remains. The reinvestigation of Late Bronze metal artifacts with the new phase of archaeological research at Tarsus-Gözlükule in the early twenty-first century resulted in a number of studies focused on material composition through chemical analysis. These studies produced valuable insight and results, yet their potential remained in some ways dormant in the absence of further contextual analysis. In consideration of these, in this thesis, I have aimed to reintroduce these decontextualized metal objects in a regenerated context. This in turn revealed various aspects of these significant artifacts produced at this site, which I discussed given the scope of my thesis, and which can now be further examined within theoretical frameworks.

As part of my research for this thesis, I have re-examined 137 metal artifacts through their unpublished field notebook, publication and visual records. Based on this examination, I have assigned 31 to Middle Bronze II, 11 to Late Bronze I and 94 to Late Bronze II levels. Within the Late Bronze II metal assemblage, 38 were

assigned to Late Bronze IIa and 34 were assigned to Late Bronze IIb. As illustrated in the new plans produced for each period, where the finds are indicated along with settlement remains, the approximate find locations of a lot of these artifacts, previously unknown, were revealed.

The results of my analyses, presented at the end of each three main chapters, displays that there was much to be learned from context. The main points that I have discussed may be summarized in the following manner:

In the fourth chapter, I have shown that a high number of the Middle Bronze II metal finds were recovered from the large building to which I have assigned four more copper-based pins. Most tools and weapons from this building were found in a deposit at the southeastern wall corner of Room D, which Goldman interpreted as a foundation deposit. I have argued that this was more likely a metal hoard since the objects became scrap metal and were found within a wall as divided into copper and lead objects, suggesting the intention for retrieval and reuse.

Through the eleven metal artifacts now assigned to the following heavily disturbed Late Bronze I level, to which Goldman previously assigned one metal find, I have shown that metal tools and ornaments akin to preceding types remained in use during this period. Furthermore, despite the fragmentary state of the level due to succeeding constructions, I was able to suggest that four were found in associated with wall fragments, another four were retrieved from pits, while one pin was found inside the remains of a structure.

In the fifth chapter, I demonstrate that two thirds of the Late Bronze IIa metal finds were recovered from Section A, while one third was from Section B. Most of the metal artifacts from Section A, 25 out of 27, were retrieved from the Late Bronze IIa monumental building, to which Goldman previously designated seven metal

finds. Based on my analysis, I propose that, in addition to the workshop rooms for processing and working metal in the south wing, the metal tools retrieved from the rooms located on the west wing may imply a further institutional workshop quarter within the building, in comparison to the distribution of finds from the Boğazköy temples. Moreover, in addition to the slag, crucible and decomposed metal fragments presented by Goldman, two clipped weapons from the monumental building further evidence scrap metal that were used in the metal workshops. Of the 11 metal artifacts excavated from Section B, eight were recovered from the "East House" as single finds from five separate rooms, while three were found on the wide street between the "East House" and the "West House". Most of these objects seem to represent personal items of wealth, associated with the official residents of these structures.

In the sixth chapter, I have revealed that a large number of the metal artifacts from the Late Bronze IIb level, 18 out of 34, were recovered from trash pits. Of the remaining, 14 were found in fill deposits that are neither associated with pits or units. Only two were possibly retrieved from within structures: The incised copper arrowhead from Unit 2 at Section A and the enigmatic lead ornament from Room Lc at Section B. Most importantly, in the third section of this chapter, I have presented hitherto unmentioned evidence for metalworking and processing during the Late Bronze IIb period in the form of slag, crucible and decomposed metal fragments and molds mainly retrieved from pits as well as fill debris. These illuminate the continuity of metalworking and production from the Late Bronze IIa to the IIb period.

The presented observations and remarks were possible only in the light of a contextual approach which was the missing link of previous studies of metal finds from the mound. In the light of these, the story of this settlement from the

perspective of the metal artifacts that have been produced, used and discarded within the course of seven centuries may be narrated in the following manner:

In the course of the eighteenth century BCE, a two-story building of multiple rooms arranged around a larger central room was erected at the summit of Tarsus-Gözlükule. During its lifetime, the building was damaged in conflagration and, then, rebuilt. After this conflagration, at some point and for some reason, the local residents of this building stored a hoard of 19 copper-based and lead objects that have become scrap metal, likely with the hopes of retrieving them, in one of the walls of the central room.

Around a century later, the building was eventually abandoned by its residents who have only left few tools, pins and scrap in terms of the metal objects they have once owned. Over the remains of this building, smaller units were built around which numerous trash pits were also dug. These settlers continued to use similar tools and ornaments from which a dozen were left or discarded.

Possibly in the course of the sixteenth century BCE, a monumental building, unprecedented in size, was erected, presumably with a royal commission from the Hittite capital of Hattuša as an outcome of growing political control over the region. Around the same time, large residential buildings were constructed not farther to reside official members of staff. Arranged around a spacious inner court, the monumental building was designed to house institutional workshops, very likely more than one, after its antecedents in the Hittite heartland. In this building, numerous craftspeople, metalworkers and smiths, likely a mixture of local and itinerant, were assembled and employed to produce items of various alloys of base and precious metals likely including cult paraphernalia, insignia or jewelry. Hypothetically at some point during the twelfth century, these official buildings were

completely destroyed in heavy conflagration, where some of the tools and scrap metal used by official craftspeople, ornaments and weaponry were concealed under fallen debris. Over the remains of these, small-scale units with little apparent organization, in time built over one another, were constructed. The residents of these units, who maintained their way of life for around a century, continued to use, work, produce and discard similar metal tools, ornaments and weapons, with few new elements introduced in the realm of personal items.

The rise and demise of large constructions, whether palatial, sacred or official, associated with political control over urban centers and regions undermine the complete story presented through the remaining facets of material culture, whether metals or pottery as shown in earlier studies. As portrayed here, alterations in the architectural organization from the Late Bronze IIa to Late Bronze IIb or what possibly occurred from the Middle Bronze II to Late Bronze I, reflects change in political and administrative spheres. The continuation of trends in the production and consumption of metal objects, independent of political administrations, signifies, highlights the people and the households that were, in actuality, existent within the settlement. This perspective is also the reason why I have argued for the existence of private metalworking and production in Tarsus-Gözlükule which maintained the necessities, taste and desire of the living urban community throughout centuries.

The growing interest in the scholarship for theoretical concepts of materiality and material agency have been the guiding light for me to re-centralize the metal objects in the settlement history of Tarsus-Gözlükule. I have aimed to demonstrate the insights to be gained through contextualizing any form of material in practice as well as theory and hope that more studies of metals and metallurgy will be devoted to re-investigating context in the future.

APPENDIX

CATALOGUE OF METAL ARTIFACTS

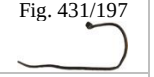
Cat. No	Type	Class	Material	Date	Find location	Associated finds	Dimension	Description	GE Inv. No, Goldman Ref., Image
1	Chisel	Tool	Bronze (71% Cu 4.5% Zn* 4.2% Sn)	Middle Bronze II (A.V)	Room D of MB II Building, cache in southeast corner	Hoard of metal finds and three sherds	L: 12.9 cm W (body): 0.75 cm D (socket): 1.8 cm	Hollow socketed chisel. The body is angular and has a rectangular cross section. The blade is tapered to a flat cutting edge. The conical socket was shaped by hammering the handle part into a thin sheet and then hammering the sides of the sheet into a curve. The walls of the socket are unconnected, space left between is now broken. The handle, most likely wooden, is not preserved.	36.668 p. 290 Fig. 426/63 
2	Chisel	Tool	Copper-based	Middle Bronze II (A.V)	Room D of MB II Building, southeast corner	Hoard of metal finds and three sherds	L: 18.5 cm W: ca. 1 cm	Chisel with long, narrow and angular body, rectangular section. The blade is tapered to a flat cutting edge. The handle has a rounded end. The artifact was recorded in a corroded state.	36.671 p. 290 Fig. 426/64
3	Chisel	Tool	Arsenical bronze (3.1% Sn)	Middle Bronze II (A.V)	Room C of MB II Building, southwest corner	-	L: 10 cm W: 0.35 cm	Long and narrow bodied fishtail type chisel. The body is angular and has square cross section. The blade is slightly flared with a rounded and tapered cutting edge. The artifact is partly corroded on its ends.	36.934 p. 290 Fig. 426/65
4	Needle	Tool	Arsenical copper (76% Cu 4% Zn* 1% As)	Middle Bronze II (A.V)	Room B of MB II Building, northeast corner	-	L (Prs.): 7 cm D: 0.1 cm	Thin, small sized needle. The head is broken on top and on one side. The eye is not preserved. The tip is slightly bent.	36.861 p. 294 (146) Not ill.
5	Tweezer	Tool	Brass (51% Cu 3.7% Zn)	Middle Bronze II (A.VI)	"eastern edge of (mudbrick) wall .. dividing line between SE1/4 and SW1/4"	-	L: 4.5 cm W: 0.5 cm	Round tipped tweezer, one tip broken on one side, badly preserved. It was found with its tips twisted inward. Produced from two separate pieces, one curved and the other straight, joined together, then hammered to flatten the body and tip. The curved piece is bent on its joined end to allow movement for gripping.	36.888 p. 291 Fig. 426/74 
6	Awl	Tool	Copper-based	Middle Bronze II (A.V)	Room A of MB II Building, southwest corner	-	L: 2.7 cm D: 0.2 cm	The awl was found broken in three even-length fragments according to the drawing in the field notebooks. No photographic record of the artifact has been preserved.	38.908 p. 290 (43) Not ill.

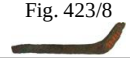
Cat. No	Type	Class	Material	Date	Find location	Associated finds	Dimension	Description	GE Inv. No, Goldman Ref., Image
7	Drinking tube	Utensil	Arsenical bronze (93% Cu 2.2% Sn 1% As)	Middle Bronze II (A.V)	Room D of MB II Building, southeast corner	Hoard of metal finds and three sherds	L: ca. 30 cm D: 0.7 cm	Bent drinking tube with eighteen perforations positioned in three rows of at its open end. The tube was produced by hammering a thin sheet into its tubular shape.	36.669 p. 298 Fig. 433/274b 
8	Drinking tube	Utensil	Arsenical Bronze (87% Cu 2.2% Sn 1% As)	Middle Bronze II (A.V)	Room D of MB II Building, southeast corner	Hoard of metal finds and three sherds	L: ca. 30 cm D: 0.7 cm	One half of a bent and tangled drinking tube. The tube was produced by hammering a thin sheet into its tubular shape.	36.676 p. 298 Fig. 433/274a 
9	Drinking tube	Utensil	Arsenical bronze (88% Cu 2.9% Sn 1.1% As)	Middle Bronze II (A.V)	Room D of MB II Building, southeast corner	Hoard of metal finds and three sherds	L: ca. 30 cm D: 0.7 cm	One half of a bent and tangled drinking tube. The tube was produced by hammering a thin sheet into its tubular shape.	38.4 p. 298 Fig. 433/274a 
10	Flat axe	Weapon	Bronze (4.6% Sn)	Middle Bronze II (A.V)	Room D of MB II Building, southeast corner	Hoard of metal finds and three sherds	L: 11.5 cm W (min): 2.2 cm W (max): 4.4 cm	Flat axe with blade tapered to the flat butt and slightly convex flaring cutting edge.	36.659 p. 289 (22?) Not ill. 
11	Flat axe	Weapon	Copper-based	Middle Bronze II (A.V)	Room D of MB II Building, southeast corner	Hoard of metal finds and three sherds	L: 11.6-13.7 cm	No visual record of the artifact has been preserved. Goldman recorded that the flat axe had a blade tapering toward a flat butt and a flaring convex cutting edge. It is recorded to be similar to the other flat axes from the hoard.	36.660 p. 289 (23?) Not ill.
12	Flat axe	Weapon	Copper-based	Middle Bronze II (A.V)	Room D of MB II Building, southeast corner	Hoard of metal finds and three sherds	L: 11.6 cm W (min): 2 cm W (max): 4 cm	Flat axe with blade tapered to the flat butt and slightly convex flaring cutting edge.	36.663 p. 289 Fig. 424/24 
13	Flat axe	Weapon	Copper-based	Middle Bronze II (A.V)	Room D of MB II Building, southeast corner	Hoard of metal finds and three sherds	L: 13.7 cm W (min): 2 cm W (max): 4 cm	Flat axe with blade tapered to the flat butt and slightly convex flaring cutting edge.	36.662 p. 289 Fig. 424/26 
14	Flat axe	Weapon	Copper-based	Middle Bronze II (A.V)	Room D of MB II Building, southeast corner	Hoard of metal finds and three sherds	L: ca 12 cm W (min):2.5 cm W (max): 5 cm	Flat axe with blade tapered to the butt and slightly flaring cutting edge.	36.661 p. 289 Fig. 424/25 

Cat. No	Type	Class	Material	Date	Find location	Associated finds	Dimension	Description	GE Inv. No, Goldman Ref., Image
15	Flat lugged axe	Weapon	Copper-based	Middle Bronze II (A.V)	Room D of MB II Building, southeast corner	Hoard of metal finds and three sherds	L: 16.3 cm W (max): 4.2 cm	Lugged or flanged type axe (Ärmchenbeile). The axe is divided into two parts by minorly pronounced lugs that curve out from the middle section. The blade is bi-concave and has a convex cutting edge. The haft is slightly shorter than the blade and tapers down from the lugs to a convex butt.	36.657 p. 289 Fig. 424/20 
16	Flat lugged axe	Weapon	Copper-based	Middle Bronze II (A.V)	Room D of MB II Building, southeast corner	Hoard of metal finds and three sherds	L: 10.8 cm W (max): 4 cm	Lugged or flanged type axe (Ärmchenbeile). The axe is divided into two parts by minorly pronounced lugs that curve out from the middle section. The blade is bi-concave and has a convex cutting edge. The flaring of the blade is more angular. The haft is slightly longer than the blade and tapers down from the lugs to a flat end.	36.658 p. 289 Fig. 424/21 
17	Double axe	Weapon	Copper-based	Middle Bronze II (A.V)	Room D of MB II Building, southeast corner	Hoard of metal finds and three sherds	L: 21.1 cm W: 2.7 cm	Double-axe with shaft-hole, the so-called Emirdağ type. The blade is slightly curved and has a sleeve around the top of the elliptical shaft-hole. The two cutting edges are rounded.	36.656b p. 289 Fig. 425/27 
18	Dagger	Weapon	Copper-based	Middle Bronze II (A.V)	Room D of MB II Building, southeast corner	Hoard of metal finds and three sherds	L (Prs.): 6.3 cm W (min): 1 cm W (max): 2.2 cm	Small dagger with trapezoidal butt, badly corroded. The tip of the tapered blade is clipped or broken. There are three rivets in triangular formation on the blade-base. Corrosion pattern indicates the edge line of the haft below the rivets.	36.666 p. 292 Fig. 428/107 
19	Dagger	Weapon	Copper-based	Middle Bronze II (A.V)	Room D of MB II Building, southeast corner	Hoard of metal finds and three sherds	L: 12.9 cm W (max.): 3.7 cm	Small dagger with triangular butt, corroded. The blade is sharply tapered with possible traces of fuller. There are six rivets in triangular form preserved on the butt. Goldman recorded traces of an ivory handle. Edge line of the haft is visible below the rivets.	36.667 p. 292 Fig. 428/108 
20	Dagger	Weapon	Copper-based	Middle Bronze II (A.V)	Room D of MB II Building, southeast corner	Hoard of metal finds and three sherds	L: 17.8 cm W (max.): 5 cm W (min.): 1.5 cm	Dagger with a long, slender blade with round shoulders and a short tang on which are three rivet holes in triangular formation; one on tang and two on shoulders. The tip of the blade is clipped or broken.	36.665 p. 292 Fig. 428/104 
21	Dagger	Weapon	Copper-based	Middle Bronze II (A.V)	Room D of MB II Building, southeast corner	Hoard of metal finds and three sherds	L: 18.1 cm (Prs.)	Dagger with round shoulders. The blade is tapered to a sharp point and seems to be rhombic in section. The edges of the blade are chipped. The tang is broken. There are two rivet holes on the shoulders of the blade.	36.664 p. 292 Fig. 428/106 

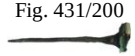
Cat. No	Type	Class	Material	Date	Find location	Associated finds	Dimension	Description	GE Inv. No, Goldman Ref., Image
22	Dagger	Weapon	Copper-based	Middle Bronze II (A.V)	Room E of MB II Building, against west wall	-	L: 10.4 cm (Prs.) W (max.): 3.7 cm	Dagger with triangular butt, badly corroded. The blade is sharply tapered with an elliptical section. The tip of the blade is missing, likely clipped. There are three rivets set in triangular formation on the butt; two complete and one half-preserved. Edge line of the haft is visible below the rivets.	36.937 p. 292 (105) Not ill. 
23	Pin	Fastener	Copper-based	Middle Bronze II (A.V)	Room D of MB II Building	-	L: 7 cm D (hole): ca. 0.1 cm	Double-spiral headed pin with a head that curls into two tight, symmetrical turns on each side in circular shape. The tip is bent.	36.883 p. 295 Fig. 431/209 
24	Pin	Fastener	Arsenical copper (96% Cu 1% As)	Middle Bronze II (A.VI)	"4.83-5.07" Unit	Two pins (#25, 26)	L: 9.4 cm D (hole): ca. 0.3 cm	Double-spiral headed pin that curls to flat, thin spirals on either sides of the stem in a circular shape with a straight stem, circular in section. One of the curls is broken.	37.478 p. 295 Fig. 431/208 
25	Pin	Fastener	Arsenical copper (95% Cu 2.3% As 1.3% Fe)	Middle Bronze II (A.VI)	"4.83-5.07" Unit	Two pins (#24, 26)	L: 8.7 cm D (hole): ca. 0.3 cm	Roll-headed pin with a straight stem that is slightly bent towards the tip, circular in section. The head is flattened and then rolled.	37.763 p. 295 Fig. 431/192 
26	Pin	Fastener	Copper-based	Middle Bronze II (A.VI)	"4.83-5.07" Unit	Two pins (#24, 25)	L: 9.4 cm D (hole): ca. 0.3 cm	Roll-headed pin with a straight stem, circular in section. The head is very flattened and then rolled.	38.477 p. 295 Fig. 431/191
27	Pin	Fastener	Arsenical copper (82% Cu 2.7% Fe 2.3% Zn* 1.6% As)	Middle Bronze II (A.VI)	"Court" of the "Terrace House Unit"	Metal fragment, stone bowl fragment and a terracotta bull's head	L: 6.2 cm W (stem): 0.4 cm W (head): 0.7 cm	Pin with a conical head and straight stem, badly corroded. The artifact was published as a toggle pin; however, the eyelet is not visible.	36.925 p. 296 Fig. 431/233 
28	Finger Ring	Ornament	Copper-based	Middle Bronze II (A.V)	Room B of MB II Building?	-	Outer D: 2.1 cm Inner D: 1.7 cm	It is an open ring that widens to a curved flat bezel with what appears to be faint traces of decoration on surface, apparently damaged or erased off. The bezel was not made to hold a gemstone. The size indicates it was crafted for a slim finger.	36.860 p. 297 Fig. 432/260 
29	Coil	Scrap metal	Lead	Middle Bronze II (A.V)	Room D of MB II Building, southeast corner	3 other lead coils (#30, 31, 32)	L: 6.5 cm W: 5.5 cm Th: 0.5 cm	Coiled piece of lead with flat, cut ends and rectangular section. Possibly used as scrap metal.	p. 302 Fig. 435/6a 

Cat. No	Type	Class	Material	Date	Find location	Associated finds	Dimension	Description	GE Inv. No, Goldman Ref., Image
30	Coil	Scrap metal	Lead	Middle Bronze II (A.V)	Room D of MB II Building, southeast corner	3 other lead coils (#29, 31, 32)	L: 5.8 cm W: 5.5 cm Th: 0.5 cm	Coiled piece of lead with flat, cut ends and rectangular section. Possibly used as scrap metal.	p. 302 Fig. 435/6c 
31	Coil	Scrap metal	Lead	Middle Bronze II (A.V)	Room D of MB II Building, southeast corner	3 other lead coils	L: 5.5 cm W: 5.5 cm Th: 0.5 cm	Coiled piece of lead with flat, cut ends and rectangular section. Possibly used as scrap metal.	p. 302 (6) Not ill. 
32	Coil	Scrap metal	Lead	Middle Bronze II (A.V)	Room D of MB II Building, southeast corner	3 other lead coils	L: 5.5 cm W: 4.7 cm Th: 0.7 cm	Coiled piece of lead with flat, cut ends and rectangular section. Possibly used as scrap metal.	p. 302 Fig. 435/6b 
33	Coil	Scrap metal	Lead	Middle Bronze II (A.V)	Room III of MB II Building	-	L: 2.9 cm L (uncoiled): ca. 10 cm D: 0.3 cm	Coiled piece of lead with cut ends and round section. Possibly used as scrap metal.	37.258 p. 302 (7) Not ill.
34	Chisel	Tool	Arsenical copper (98% Cu 1.2% As)	Late Bronze I	The “4.46 wall”, under the north end	-	L: 4.2 cm W (head): 1.2 cm W (tip): 0.7 cm Th: 0.4 cm	Chisel with a flaring cutting edge that tapers to a rounded end which was inserted into the, now disintegrated, handle. It is rectangular in section.	36.886 p. 290 Fig. 426/66 
35	Needle	Tool	Copper (91% Cu)	Late Bronze I	Pit (Intrusion 36/32)	Semi-circular arc (#43)	L: 5.3 cm (Prs.) D: 0.25 cm	Needle with a tear-shaped eyelet and a thick body, round in section. The size of the eye and overall thickness indicates it might have been used to sew thicker threads, such as a yarn or tapestry needle. The eye of needle is larger than the diameter of the body.	36.905 p. 294 Fig. 429/147
36	Needle	Tool	Copper-based	Late Bronze I	The “4.43 wall”, E-W extension, in lower part	Needle (#37)	L: 9.2 cm D: 0.2 cm	Needle with a bent tip. The eye of the needle is small and flattened.	36.939 p. 294 Fig. 429/145
37	Needle	Tool	Copper-based	Late Bronze I	The “4.43 wall”, E-W extension, in upper part	Needle (#36)	L: 11.4 cm D: 0.2 m	Curved needle with bent tip and head. The eye of needle is small and flattened.	36.940 p. 294 Fig. 429/148 

Cat. No	Type	Class	Material	Date	Find location	Associated finds	Dimension	Description	GE Inv. No, Goldman Ref., Image
38	Tweezer	Tool	Copper alloy with nickel (81% Cu 1.3% Ni 1.1% Fe)	Late Bronze I	Fill deposit, beneath the LB IIa court, likely associated with a wall fragment	-	L: 6.2 cm W: 0.5 cm	Flat tipped tweezer with one end broken, well-preserved. Produced from one piece of metal bent in half and hammered to flatten the body and tips.	37.467 p. 291 Fig. 426/75 
39	Awl	Tool	Bronze (89% Cu 6.7% Sn)	Late Bronze I	Unclear	-	L: 7.5 cm W: 0.2 cm	Awl with triangular section, possibly double-ended. There are some irregularities on the sides: there is a tapered section towards the less sharp end and an indentation on the sharply pointed end, although corrosion prevents certainty of their originality.	38.691 p. 290 Fig. 425/42
40	Arrowhead	Weapon	Copper (93% Cu)	Late Bronze I	Pit (Intrusion 37/3)	"Gray ware sherd-incised white filled design. Very curved probably a neck piece."	L: 9.6 cm L (tang): 1.4 cm W (max): 1.7 cm W (tang): 0.4 cm	The arrowhead is lance-shaped with a wide, weak midrib and a short tang, rectangular in section, that tapers to butt. The edges of the blade, particularly in the mid to lower section, are notched and damaged, while the damaged tip of the blade curves slightly upwards. On both sides of the blade, there are shallow circles gouged on the midrib and the edge of the blade in groups of two and three circles.	37.181 p. 291 Fig. 427/86 
41	Pin	Fastener	Copper-based	Late Bronze I	Fill deposit, likely associated with a wall fragment	Plain clay whorl (GE Inv. No: 37.162)	L (bent): 8.5 cm W: 0.25 cm	Roll-headed pin with a bent stem, circular in section.	37.824 p. 295 Fig. 431/197 
42	Pin	Fastener	Arsenical brass? (6.4% Zn 1.8% As)	Late Bronze I	Pit (Intrusion 36/34)	-	L (Prs.): 9.5 cm D (head): 0.55 cm D (eyelet): 0.6 cm	Toggle pin with a conical head and slightly curved stem, broken on end. The eyelet is located on the upper part for which the stem thickens.	36.935 p. 296 Fig. 432/236
43	Semi-circular arc	Ornament	Copper-based	Late Bronze I	Pit (Intrusion 36/32)	Needle (#35)	L: 1.5 cm Th: 0.35 cm	Small semi-circular arc decorated with knobs.	36.868 p. 297 Fig. 432/255 
44	Open ring	Ornament?	Copper-based	Late Bronze I	The “4.43 wall”, N-S extension, west side, towards south end	-	L: 2.9 cm W: 2.6 cm Th: 0.25 cm	Open ring is circular in section, with overlapping, cut ends. Small sections of the ring is thinner, possibly due to corrosion.	36.918 p. 297 Fig. 432/257 
45	Chisel	Tool	Bronze (100% Cu 5.6% Sn)	Late Bronze IIa	Street between “East House” and “West House”, Section B	Pin (#63)	L: 9.4 cm W (blade): 2.2 cm	Chisel with a wide, flaring blade that has a flat, double beveled cutting edge and shaft, rectangular in section, that tapers to flat end.	37.814 p. 291 Fig. 426/70 

Cat. No	Type	Class	Material	Date	Find location	Associated finds	Dimension	Description	GE Inv. No, Goldman Ref., Image
46	Chisel	Tool	Bronze (91% Cu 4.5% Sn)	Late Bronze IIa	Room T5 or T7 Monumental building, Section A	Frit wedjat eye	L (Prs.): 7.4 cm W (min): 0.4 cm W (max): 1.7 cm	Double-ended chisel-like tool with a flaring fish-tail like beveled blade on one end and presumably similar blade on the other broken end. The shaft is rectangular in section with convex sides in its middle part bound by two bulges.	38.1626 p. 291 (68) Not ill. 
47	Needle	Tool	Copper-based	Late Bronze IIa	Room 6 of "East House", Section B	-	L: 10.3 cm	Long needle with a small teardrop-shaped eyelet.	36.1087 p. 294 Fig. 430/151
48	Awl	Tool	Bronze (59% Cu 5.7% Sn)	Late Bronze IIa	East section Monumental building, Section A	-	L: 8.9 cm L (handle): 7 cm D (handle max): 2.2 cm W (blade): 0.5 cm	Awl with a blade that is square in section with a broken point. The blade is set in antler handle that is round in section and slightly tapers to a flat butt.	38.1713 p. 290 Fig. 425/47 
49	Awl	Tool	Copper (100% Cu)	Late Bronze IIa	North of Room T5 Monumental building, Section A	-	L: 6.7 cm W: 0.3 cm	Awl, square in section, tapers to point, with a flat butt.	38.1628 p. 290 Fig. 425/44
50	"Scraper"	Tool	Copper-based	Late Bronze IIa	Doorway between Room T13 and T15 Monumental building, Section A	-	L: 8.9 cm W (max): 3.9 cm	Object with a blunt, ovate blade with corroded edges and a broad tang that tapers to flat end.	38.1621 p. 289 Fig. 423/17 
51	Sickle	Tool	Copper-based	Late Bronze IIa	Manger Room "East House", Section B	-	L: 26.5 cm	Sickle with a curved blade that is rhombic in section and tapes to sharp point. The short tang project from the curved blade and is curved, possibly for handle. The artifact was recorded to be found with straws still adhered to the blade.	36.760 p. 288 Fig. 423/15 
52	Knife	Tool	Copper-based	Late Bronze IIa	Room 10 of "East House", Section B	Arrowhead (#58)	L: 7.5 cm W: 0.6 cm	Knife with a short and narrow blade that stems from a straight and long tang in angle. The cutting edge seem to be located on the outer convex edge. The artifact is likely a razor knife.	37.661 p. 288 Fig. 423/8 
53	"Leather Knife"	Tool	Copper-based	Late Bronze IIa	Room T8 Monumental building, Section A	-	L: 9.8 cm W (max): 6.5 cm	Knife with a fan-shaped blade and a sharply pointed, slender tang. The blade is very corroded.	p. 288 (13) Not ill. 

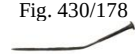
Cat. No	Type	Class	Material	Date	Find location	Associated finds	Dimension	Description	GE Inv. No, Goldman Ref., Image
54	Spearhead	Weapon/ Scrap?	Arsenical copper (93% Cu 2.1% As)	Late Bronze IIa	Room T7 Monumental building, Section A	-	L: 5.7 cm W (max): 2.2 cm	Spearhead cut from pit with a blunt point, possibly scrap metal.	38.1618 p. 292 Fig. 427/96 
55	Spearhead	Weapon	Copper-based	Late Bronze IIa	Room 9 of "East House", Section B	-	L: 30.8 cm	Socketed spearhead that has a lance-shaped blade with high, narrow and angular midrib. The socket has a band around its end which might have been ferrule. Goldman recorded two holes for attachment, though not visible in photograph.	38.1645 p. 292 Fig. 427/97 
56	Arrowhead	Weapon	Copper (53% Cu)	Late Bronze IIa	Street, west of Monumental building, Section A	-	L: 12.2 cm L (tang): 5.6 cm W (max.): 1.5 cm	Arrowhead with a flat, lance-shaped blade without a midrib, or a very weak one, a contracting stem and a tang with a rectangular section that tapers to a rounded end. It is a variant of the lanceolate type.	35.1718 p. 291 Fig. 427/78 
57	Arrowhead	Weapon/ Scrap?	Brass (65% Cu 1.2% Zn)	Late Bronze IIa	Room T8 Monumental building, Section A	-	L. 6.5 cm L (tang): 2.7 cm W (max): 2.1 cm	Barbed arrowhead with straight edges and angular shoulders, flat with narrow and high midrib in section. The tang is rectangular in section. The point is perhaps cut at an angle and the barbs also seem to have been clipped. The midrib has a knobbed texture, very damaged.	36.695 p. 291 Fig. 427/79 
58	Arrowhead	Weapon	Copper / Cu alloy (91% Cu 2.6% As 1.5% Sn 1% Zn)	Late Bronze IIa	Room 10 of "East House", Section B	Knife (#52)	L: 10.3 cm	Barbed arrowhead with a blade that is flat or slightly rhombic with low and wide midrib in section and a long tang, round in section.	36.930 p. 291 Fig. 427/83 
59	Arrowhead	Weapon	Arsenical copper (92% Cu 1.9% As 1% Fe)	Late Bronze IIa	Room 1 of "East House", Section B	White paste bead (GE Inv. No: 36. 632)	L: 6.9 cm	Arrowhead with a blade that is lance-shaped and rhombic with very low, angular midrib in section, and a straight stem. The tang is rectangular in section and bent.	36.1120 p. 291 Fig. 427/88 
60	Dagger	Weapon	Copper-based	Late Bronze IIa	Room T15, within the foundation of the south wall, Monumental building, Section A	-	L: 4.3 cm W (max): 3 cm W (min): 2.1 cm D (rivet hole): 0.4 cm	Short tang with a flat butt that is cut from the blade, possibly of a dagger. There is one preserved rivet hole on the tang and another one visible on the cut convex edge.	37.177 p. 293 Fig. 428/109 
61	Nail	Fastener	Bronze (91% Cu 4.4% Sn)	Late Bronze IIa	Room T15 Monumental building, Section A	"Pierced thin flat disk of bronze"	L: 7.4 cm D (body): 0.45 cm D (head): 0.95 cm	Nail with a perfectly rounded conical head and a blunt tip. The body is square in section with rounded edges.	36.730 p. 293 Fig. 429/114 

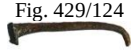
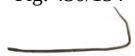
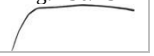
Cat. No	Type	Class	Material	Date	Find location	Associated finds	Dimension	Description	GE Inv. No, Goldman Ref., Image
62	Pin	Fastener	Copper-based	Late Bronze IIa	“East House”, Section B	-	L: 6.8 cm D (head): ca. 0.4 cm	Roll-headed pin with a straight stem.	36.907 p. 295 Fig. 431/199 
63	Pin	Fastener	Bronze (84% Cu 4.4% Sn)	Late Bronze IIa	Street between “East House” and “West House”, Section B	Chisel (#45)	L: 6 cm L (head): ca. 1.5 cm D (head): ca. 0.5 cm	Roll-headed pin with a straight stem. The head is wider than the stem with a broader hole.	37.836 p. 295 Fig. 431/200 
64	Pin	Fastener	Brass (57% Cu 3.8% Zn)	Late Bronze IIa	Room T15 Monumental building, Section A	Two pins (#65-66)	L: 7.4 cm D (head max): 0.9 cm D (stem avg.): 0.3 cm	Toggle pin with a conical head and a straight stem that thickens in section for an eyelet on its upper part. Badly corroded with a broken point.	36.926 p. 296 Fig. 431/235 
65	Pin	Fastener	Copper-based	Late Bronze IIa	Room T15 Monumental building, Section A	Two pins (#64-66)	-	No visual record of the artifact has been preserved. According to Goldman, it was a toggle pin with a broken point.	36.927 p. 296 (235) Not ill.
66	Pin	Fastener	Copper / Bronze? (100% Cu 1.6% Sn)	Late Bronze IIa	Room T15 Monumental building, Section A	Two pins (#64-65)	L (Prs.): 5.5 cm D (head): 0.6 cm D (body): 0.25 cm	Pin with a compressed spheroid head that is flattened at top, a straight stem and a broken point. The stem is thinner in the middle section which possibly indicates the true diameter of the pin.	36.928 p. 295 Fig. 430/176 
67	Fibula	Fastener	Copper-based	Late Bronze IIa	Northern entrance of “East House”, Section B	-	L: 6.2 cm W (bow): 0.4 cm	Fibula with a horizontal bow parallel to the missing pin with coiled spring at both ends (“violin bow”). The end of one coil flare to broken end which might have been the catch plate on which the pin was connected to.	37.833 p. 297 Fig. 432/245 
68	Stud	Accessory	Copper-based	Late Bronze IIa	Room T15, below hearth Monumental building, Section A	Twelve studs in total	D: 0.9 cm W (prong): 0.2 cm	Hemispherical studs with prongs protruding from opposite sides for attachment, likely to leather.	38.1593 p. 293 Fig. 429/117 
69	Ring	Ornament	Copper / Brass? (66% Cu 8.8% Zn* 4% Fe)	Late Bronze IIa	Street between “East House” and “West House”, Section B	-	D: 2.1 cm W: ca. 0.3 cm	Open ring with flat, splayed ends that, according to the field notebook and Goldman, once held a lump of iron as bezel, now disintegrated. The ring is rectangular in section with rounded edges.	38.15 p. 298 Fig. 432/261 

Cat. No	Type	Class	Material	Date	Find location	Associated finds	Dimension	Description	GE Inv. No, Goldman Ref., Image
70	Vessel	Vessel	Copper-based	Late Bronze IIa	Room T14 Monumental building, Section A	-	D (of rim): 12.1 cm H: 5.6 cm	Hemispherical bowl with a plain rim and a rounded base.	p. 298 Fig. 433/270 
71	Open ring	Scrap metal	Lead	Late Bronze IIa	Fill deposit, south of the Monumental building, Section A	-	L: 1.7 cm	No visual record of the artifact has been preserved. Goldman recorded that it was irregular with overlapping ends.	37.10 p. 303 (8) Not ill.
72	Chisel	Tool	Copper-based	Late Bronze IIb	Under wall fragment cut in Room T15 of LB IIa building, Section A	-	L: 22.1 cm. D (socket): 3 cm W: ca. 1.5 cm	Socketed chisel with a slightly flaring cutting edge, possibly intended for heavier work. The socket has a split to adjust to the size of the inserted handle.	36.741 p. 291 Fig. 426/69 
73	Chisel	Tool	Bronze (86% Cu 7% Sn)	Late Bronze IIb	Under wall fragment cut in court of the LB IIa building, Section A	-	L: ca. 5 cm	Chisel with a slightly flaring, likely beveled blade, rectangular in section, and a shaft, square in section, with a blunt end.	38.1624 p. 291 Fig. 426/73 
74	Chisel	Tool	Bronze (90% Cu 6% Sn)	Late Bronze IIb	"The Great Pit", Section A	Two arrowheads (#91-2)	L: 2.3 cm W (max): 1.1 cm	Chisel blade that is short, double beveled and slightly flaring. It has a convex, rounded cutting edge and a flat butt, rectangular in section.	38.1226 p. 291 (71) Not ill. 
75	Chisel	Tool	Copper-based	Late Bronze IIb	Pit (Intrusion 37.35), Section B	Steatite seal, copper -based arrowhead, needle, knuckle bone	L: 8.5 cm W (center): 0.6 cm W (blade): 1.1 cm	Double ended tool identified as a chisel. The blades are flared and double beveled with flat cutting edges. The central section is rectangular in section for grip.	37.762 p. 290 Fig. 426/67 
76	Needle	Tool	Copper (81% Cu)	Late Bronze IIb	Trash pit (Intrusion 37/4), Section A	Needle (#77)	L: 12.9 cm D (body): 0.2 cm	Long needle with small-tear shaped eyelet.	37.471 p. 294 Fig. 430/150
77	Needle	Tool	Copper-based	Late Bronze IIb	Trash pit (Intrusion 37/4) Section A	Needle (#76)	L: 13 cm D (body): 0.2 cm	Long needle with small-tear shaped eyelet and a slightly bent tip.	37.476 p. 294 Fig. 430/149
78	Awl	Tool	Copper-based	Late Bronze IIb	Pit (Intrusion 37.34), Section B	Awl (#79) and several fragments of bronze	L: 8.5 cm	Awl with both ends pointed.	37.811 p. 290 Fig. 425/49

Cat. No	Type	Class	Material	Date	Find location	Associated finds	Dimension	Description	GE Inv. No, Goldman Ref., Image
79	Awl	Tool	Bronze (98% Cu 4.4% Sn)	Late Bronze IIb	Pit (Intrusion 37.34), Section B	Awl (#78) and several fragments of bronze	L: 8 cm	Awl with irregular, damaged edges and both ends tapered; one is sharp while the other is flattened.	37.817 p. 290 Fig. 425/48
80	Awl?	Tool	Bronze (85% Cu 6.6% Sn)	Late Bronze IIb	Fill deposit, east of Unit 2, Section A	Spearhead (#86)	L: 7.7 cm W (min): 0.3 cm W (max): 0.6 cm	Object that is identified by Goldman as an awl. It is rectangular in section and tapers minutely to a rounded, blunt end on one side and a flat end on the other, perhaps broken.	38.1590 p. 290 Fig. 425/46
81	Knife	Tool	Copper-based	Late Bronze IIb	Above LB IIa destruction fill debris, Section A	Stone tabular palette (GE Inv. No: 38.1158)	L: 9 cm	Knife with a thin, convex cutting edge and a slightly concave back that tapers to pointed tip. The tang is in the same thickness of the blade and tapers to pointed butt.	38.1622 p. 288 Fig. 423/6 
82	Knife	Tool	Copper (53% Cu)	Late Bronze IIb	Ash pit (Intrusion 35), Section A	-	L: 9.5 cm (Prs.) W: 1.4 cm D (tang): 0.4 cm	Knife with a curved blade that has a convex cutting edge and slightly concave back, tapers straight towards the now broken tip. The artifact is possibly a razor knife.	35.1699 p. 288 Fig. 423/5 
83	Knife	Tool	Copper-based	Late Bronze IIb	Above LB IIa destruction fill debris, Section A	Tweezer	L: 6.3 cm W (max): 0.9 cm	Knife with a triangular shaped blade, now notched and corroded, that has an apex closer to the tang. The back of the blade is flat. The tang is short and has a knob-shaped rolled end. The artifact is possibly a razor knife.	38.1600 p. 288 Fig. 423/11 
84	Knife	Tool	Copper-based	Late Bronze IIb	Pit (Intrusion 37.47), Section B	Pin (#95), large vessel handle impressed with seal	L: 13.9 cm L (tang): 2.4 cm	Knife with a curved blade and a thin tang that tapers to a flat butt. The artifact is possibly a razor knife.	37.841 p. 288 Fig. 423/7 
85	Knife	Tool	Copper-based	Late Bronze IIb	Below leveling fill deposit, Section B	-	L: 10 cm W: 12 cm	Knife with a broad, fan-shaped blade with a notch at the center of its cutting edge, and a contracting stem that connects to a sharply pointed, slender tang.	38.634 p. 288 Fig. 423/12 
86	Spearhead	Weapon /Scrap?	Copper-based	Late Bronze IIb	Fill deposit, east of Unit 2, Section A	Awl (#80)	L: 6 cm D (max): ca. 2.5 cm	Hollow socket fragment of a spearhead with a slit on the wider open end. It is broken on the other end.	38.1591 p. 292 Fig. 427/98 

Cat. No	Type	Class	Material	Date	Find location	Associated finds	Dimension	Description	GE Inv. No, Goldman Ref., Image
87	Arrowhead	Weapon	Bronze (87% Cu 2.5% Sn)	Late Bronze IIb	Above LB IIa destruction fill debris, Section A	Bead (#100), large disk of thin bronze and several spindle whorls	L: 8.8 cm W (Prs.): 3.2 cm W (midrib): 1 cm	Barbed arrowhead that is rhombic with low, wide midrib in section. One of the barbs is missing while the other is partially broken off.	38.1611 p. 291 Fig. 427/80 
88	Arrowhead	Weapon	Copper (94% Cu)	Late Bronze IIb	Fill deposit, west of Unit 2, Section A	-	L: 9 cm	Arrowhead with a blade that is lance-shaped, rhombic with low, narrow and angular midrib in section., heavily damaged. It has rounded shoulders, a straight stem and a tang, square in section.	38.1614 p. 291 Fig. 427/89 
89	Arrowhead	Weapon	Copper (97% Cu)	Late Bronze IIb	Fill deposit within Unit 2?, Section A	Worked stone and a tiny bit of gold leaf	L: 8.8 cm W (max): 1.5 cm	Arrowhead that is rhombic in section with a narrow midrib. The triangular blade has angular shoulders and a contracting stem with no barbs. The tang, rhomboidal in section, is broken on end and the tip of the blade curves slightly upward. One side of the midrib is incised with a cross-shaped symbol, after it was cast.	38.1601 p. 291 Fig. 427/90 
90	Arrowhead	Weapon	Bronze (80% Cu 4.3% Sn)	Late Bronze IIb	(Fire?) pit (Intrusion 36/10), Section A	-	L: 9.4 cm L (tang): 4.3 cm W (midrib): 0.5 cm	Arrowhead with a damaged blade that is flat with wide, angular midrib in section and a long tang, rectangular in section. It may have been barbed.	36.732 p. 291 Fig. 427/85 
91	Arrowhead	Weapon	Bronze (66% Cu 3.8% Sn)	Late Bronze IIb	"The Great Pit", Section A	Another arrowhead and a chisel (#92, 74)	L: 5.6 cm W (max): 1.8 cm	Arrowhead that is barbed and rhombic with low, wide midrib in section with a long, straight stem and a short tang tapered to point.	38.1627 p. 291 Fig. 427/81 
92	Arrowhead	Weapon	Copper (98% Cu)	Late Bronze IIb	"The Great Pit", Section A	Another arrowhead and a chisel (#91, 74)	L: 8.1 cm W (max): 1.3 cm	Arrowhead that is lance-shaped and rhombic in section with rounded shoulders, a contracting stem and a tang rectangular in section.	38.1619 p. 291 Fig. 427/91 
93	Arrowhead	Weapon	Bronze (89% Cu 8.7% Sn)	Late Bronze IIb	Sealed pit, (Intrusion 69) over the "East House", Section B	Model wheel (#103), 21 bullae, land deed tablet, frit bracelet, etc.	L: 8.6 cm L (blade): 4.9 cm	Barbed arrowhead that is flat with narrow, rounded midrib, a straight stem and a medium sized tang, square in section. The barbs are illustrated in field notebook record and are now broken.	36.912 p. 291 Fig. 427/82 
94	Arrowhead	Weapon	Copper-based	Late Bronze IIb	Leveling fill deposit, Section B	Votive figurine (#102), thin plate and twisted rod of bronze	L: 6.2 cm W (stem): 0.6 cm	Arrowhead with a blade that is flat with angular and high midrib in section, straight stem and a damaged tang that tapers to point. The shape of the blade is not recognized due to corrosion and damage.	38.23 Vol. III, p. 373 (4) Not ill. 

Cat. No	Type	Class	Material	Date	Find location	Associated finds	Dimension	Description	GE Inv. No, Goldman Ref., Image
95	Pin	Fastener	Copper-based	Late Bronze IIb	Pit (Intrusion 37.47), Section B	Knife (#84), large vessel handle impressed with seal	L: 5.4 cm D (hole): ca. 0.4 cm	Roll-headed pin with a straight stem and a narrow head.	37.850 p. 295 Fig. 431/198 
96	Pin	Fastener	Copper-based	Late Bronze IIb	Under wall cut in Room T15 of LB IIa building, Section A	-	L (bent): 12.5 cm D (head): 1 cm D (stem): 0.3 cm	Pin with a round, thin head and a long bent stem.	37.822 p. 295 Fig. 430/178 
97	Fibula	Fastener	Copper-based	Late Bronze IIb	Pit (Intrusion 38.47), Section B	-	L (bow): 5 cm	Fibula with an arched, asymmetrical bow with a slightly swollen off-center arc. The catch plate and spring appear fully preserved while the pin is broken.	38.828 p. 297 Fig. 432/246 
98	Ring	Ornament	Copper-based	Late Bronze IIb	Pit (Intrusion 37.49), Section B	Bronze needle and clay vessel	D: 2.3 cm	Closed ring that Goldman recorded as flattened on one side.	37.656 p. 298 Fig. 432/262b 
99	Ring	Ornament	Copper-based	Late Bronze IIb	Ash pit (Intrusion 36/4) Section A	Two bullae, fragments of pins, bone ring, metal oddments	D: 2.3 cm W: 1.1 cm Th: 0.2 cm	Closed ring made of flat strip with irregular edges. Grooves on one side of the coarse outer face may imply some residue of decoration, though now corroded. Possibly a finger ring.	36.751 p. (267) Not ill. 
100	Bead	Ornament/ Scrap?	Gold	Late Bronze IIb	Above LB IIa destruction fill debris, Section A	Arrowhead (#87), large disk of thin bronze and spindle whorls	H: 0.3 cm D: 0.45 cm	Small spherical gold bead with wide perforation.	38.1128 p. 301 Fig. 434/9 
101	Foot of a vessel	Vessel	Copper with tin, zinc and lead (66% Cu 11% Zn 10% Pb 8% Sn)	Late Bronze IIb	Pit (Intrusion 38/22), Section A	A bronze tool	H: 4.3 cm W (min): 0.5 cm	Vessel or stand foot in the shape of an animal's leg. The circular base represents the foot of the animal which is turned outwards from the vessel and has a knobbed texture in the front and bottom. There is an angular protrusion on the back of the leg, anatomically reminiscent of the fetlock, and a spur in the front curved upward.	38.1623 p. 298 Fig. 433/272 

Cat. No	Type	Class	Material	Date	Find location	Associated finds	Dimension	Description	GE Inv. No, Goldman Ref., Image
102	Votive figurine	Cultic	Arsenical bronze (78% Cu 5% Sn 1% As)	Late Bronze IIb	Leveling fill deposit, Section B	Arrowhead (#94), thin plate and twisted rod of bronze	H: 4 cm W (middle): 0.9 cm	Votive peg-shaped figurine with two projecting tapered arms curved upwards, one broken, two eye-like holes in the wider upper section, indented on one face, and a pointed upward cone-like projection protruding from the head.	37.655 p. 299 Fig. 433/276 
103	Model wheel	Cultic	Lead	Late Bronze IIb	Sealed pit, (Intrusion 69) over the "East House", Section B	Arrowhead (#93), 21 bullae, land deed tablet, frit bracelet, etc.	H: 0.3 cm D: 2.2 cm	Model wheel with s cylindrical protrusion on each end representing the nave around the axle hole. The object is decorated with concentric grooves on each end and has a break on the outer section.	36.769 p. 303 Fig. 435/13 
104	Ornament?	Ornament?	Lead	Late Bronze IIb	Room Lc of Unit L, Section B	Bone button and bone inlay	L: 5.6 cm W (max): 0.8 cm	Small object with a broad rectangular-shaped head that is indented and a small tapering protrusion that is curved sideways on the broken end. It was identified by Goldman as a spatulate.	38.852 p. 303 Fig. 435/14 
105	Hook?	?	Copper-based	Late Bronze IIb	Leveling fill deposit, Section B	-	L: 7.5 cm	Hook-shaped object with a curved, flared head that is broken and tapers to a curved, broken tip, pointed sideways. The side of the head is slightly folded on the outer, convex shape.	37.658 p. 293 Fig. 429/124 
106	Chisel	Tool	Copper-based	Late Bronze II	Unclear, Section B	-	L: 2.4 cm	Short chisel blade with a slightly convex and flaring cutting edge, rectangular in section.	37.854 p. 291 Fig. 426/72 
107	Needle	Tool	Copper-based	Late Bronze II	Unclear, Section B	Tack (#118) and other metal oddments	L: 7.2 cm	Long needle with a bent tip. The eyelet is not preserved on the head.	36.1085 p. 294 Fig. 430/154 
108	Needle	Tool	Copper-based	Late Bronze II	"Pit Stable", Section B	"Curved stick of bronze" (GE Inv. No: 38.836)	L: 8.1 cm	Long needle with a small tear-shaped eyelet. The tip is slightly bent.	38.835 p. 294 Fig. 430/153
109	Needle	Tool	Copper-based	Late Bronze II	Unclear, Section B	-	L: 12 cm	Long needle with a bent tip. The eyelet is not preserved on the head.	38.29 p. 294 Fig. 430/152 

Cat. No	Type	Class	Material	Date	Find location	Associated finds	Dimension	Description	GE Inv. No, Goldman Ref., Image
110	Needle	Tool	Copper-based	Late Bronze II	Unclear, Section B	-	L: 5.7 cm	Needle with a small tear-shaped eyelet and a broken tip.	38.685 p. 289 Fig. 424/21
111	Awl	Tool	Copper-based	Late Bronze II	Unclear, Section A	-	L: 6.7 cm	Awl, square in section, that tapers towards the ends, one pointed and the other blunt. The blade is curved with a square-shaped protrusion in the middle of the awl.	38.26 p. 290 Fig. 425/45 
112	Knife	Tool	Copper-based	Late Bronze II?	Below floor the area of Unit Y, Section B	-	L: 9.2 cm	Knife with a damaged concave or flat cutting edge and a slightly convex back. The partial rivet hole on the flat end indicates that the tang was cut.	37.828 p. 288 Fig. 423/10 
113	Knife	Tool	Copper-based	Late Bronze II	South of Unit V, Section B	-	L: 9 cm W (tang): 0.4 cm	Knife with a damaged, convex cutting edge and a flat back. The tang is long and bent on the tapered end.	37.764 p. 288 Fig. 423/9 
114	Meat hook	Utensil	Copper-based	Late Bronze II	Unclear, Below floor, Section B	"Insignificant bronze bits" and a bone object (GE Inv. No: 36.792)	L: 7.1 cm	S-shaped object with one end in a slightly wider angle than the other, similar to contemporary S-hook, also referred to as meat hooks, used in hanging meat or the carcasses of animals.	36.1084 p. 293 Fig. 429/125 
115	Arrowhead	Weapon	Bronze (83% Cu 6% Sn)	Late Bronze II	"North Cut", Room T8 of LB IIa monumental building, Section A	Arrowhead (#116), stone bead (GE Inv. No: 36.113)	L: 12.2 cm L (tang): 5.6 cm W (max.): 1.5 cm	Arrowhead with a lance-shaped blade, rhombic in section, an expanding stem and a long tang that is rectangular in section.	36.734 p. 291 Fig. 427/84
116	Arrowhead	Weapon	Bronze (83% Cu 8.8% Sn)	Late Bronze II	"North Cut", Room T8 of LB IIa monumental building, Section A	Arrowhead (#115), stone bead (GE Inv. No: 36.113)	L: 8.8 cm L (tang): 5.2 cm W (max): 1.3 cm	Arrowhead with a blunted blade that has rounded edges and a wide, broad and rounded midrib. The tang is long and rectangular in section. Ehrich recorded that it was found with wood still adhered to the artifacts and that rivets were intact.	36.735 p. 292 Fig. 427/92 
117	Arrowhead	Weapon	Arsenical copper (96% Cu 1.7% As)	Late Bronze II	Pit (Intrusion 37.38)	Two bronze implements and two bullae (GE Inv. No: 37.699, 37.639)	L: 9.7 cm W (max): 1.3 cm	Arrowhead with a lance-shaped blade, flat with no midrib in section, angular shoulders, contracting stem and a tang rectangular in section. The edges of the arrowhead are damaged, particularly in the middle section.	38.21 p. 291 Fig. 427/87 

Cat. No	Type	Class	Material	Date	Find location	Associated finds	Dimension	Description	GE Inv. No, Goldman Ref., Image
118	Tack?	Fastener	Copper-based	Late Bronze II	Unclear, Section B	Needle (#107) and other metal oddments	L: 1.6 cm D (head): ca. 1 cm	Short tack-like object with a decorative flat, circular and fluted head.	36.1200 p. 293 Fig. 429/115 
119	Pin	Fastener	Arsenical copper (92% Cu 2.7% As 1% Fe)	Late Bronze II?	Pit (Intrusion 37/35), Section A	Bronze needle, pin fragments and whorl	L: 7.3 cm D (head): 0.9 cm D (stem): 0.2 cm	Pin with a spheroid head and a straight stem.	37.826 p. 295 Fig. 430/175 
120	Pin	Fastener	Copper-based	Late Bronze II?	Pit (Intrusion 37.36), Section B	“Two pieces of jewelry”	L: 5.6 cm D (head): 0.7 cm	Pin with a spheroid head and a straight stem, slightly bent in the middle.	37.663 p. 295 Fig. 430/177 
121	Fibula	Fastener	Bronze (45% Cu 11% Sn)	Late Bronze II?	Unidentified fill deposit above the LB IIa monumental building, Section A	-	L: 2.3 cm W: ca. 0.5 cm	Small fibula with an arced bow with two beads at each broken end, one tapered and the other flat. The spring, which was likely on the flat end, and pin are missing.	38.1613 p. 297 Fig. 432/249 
122	Fibula	Fastener	Copper-based	Late Bronze II	Unclear, Section B	“Insignificant bits of bronze”	L: 7 cm	Fibula with an arced bow, slightly swollen in the center, with two biconical beads surrounded by two smaller ones on each arm. The pin and spring are missing.	36.889 p. 297 Fig. 432/247 
123	Fibula	Fastener	Bronze (78% Cu 2.7% Sn)	Late Bronze II	Unclear, Section B	-	L: 2 cm	Small fibula with an arced, slightly swollen bow that is decorated with a bead on one arm. The pin and spring is missing.	37.469 p. 297 Fig. 432/248 
124	Ring	Ornament	Copper-based	Late Bronze II	Unclear, Floor of Unit AA? Section B	-	D: 2.1 cm Th.: 0.3 cm	Closed ring of a perfectly round band beveled on the outer side. The artifact was likely a finger ring.	38.681 p. 298 Fig. 432/262a 
125	Earring or pendant	Ornament	Gold	Late Bronze II	Unidentified pit, Section A	-	L: 2.3 cm W (leaf, max): 1 cm	Two leaf-shaped sheets of gold with tangs twisted together. Each sheet is embossed with small dots in a line following the contours of the leaf and towards the larger boss in the center made in repousse.	38.289 p. 301 Fig. 434/7 

Cat. No	Type	Class	Material	Date	Find location	Associated finds	Dimension	Description	GE Inv. No, Goldman Ref., Image
126	Ornament, jewelry?	Ornament	Gold and copper-based	Late Bronze II	Unclear, Section B	-	L: 3.4 cm W: 2.4 cm	Copper-based, ornamental open ring covered with a thin gold plate, decorated with grooves on both ends. The middle section is thickened and pierced. The artifact was found together with three similar copper-based and gold plated fragments that do not seem to be part of it.	p. 301 Fig. 434/8 
127	Lid	Vessel	Lead	Late Bronze II	(Islamic?) Pit (Intrusion 38.20) cut in court of LB IIa building, Section A	-	D: 6.3 cm	Circular object with rolled edges and two evenly spaced perforations near edge, identified by Goldman as a lid.	38.1137 p. 303 Fig. 435/10 
128	Open band	Scrap metal	Copper nickel alloy (81% Cu 8.1% Ni)	Late Bronze II	West of Unit M, Section B	-	D: 2.4 cm Th.: 0.1 cm	Open ring with overlapping ends: one end is tapered to round end while the other thickens to a flat, perhaps broken, end.	37.856 p. 297 Fig. 432/258 

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